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PRESCRIBERS' ADHERENCE TO THE BASIC PRINCIPLES OF PRESCRIPTION ORDER WRITING IN A TEACHING HOSPITAL, ETHIOPIA

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ABSTRACT

Background: Prescription, a therapeutic transaction between physicians and patient, must be error free, legible and contains all the information to facilitate the dispensing process. However, most of the prescriptions written and arrived at dispensing units are incomplete making the dispensing activity more complicated. **Objective:** To assess prescribers' adherence to the basic principles of standard prescription order writing in the different pharmacy units of Mizan Tepi University Teaching Hospital (MTUTH), Ethiopia. **Methods:** A descriptive cross sectional study was conducted in MTUTH from 5-24, March 2016. Data was extracted from prescription papers using structured data collection format. Three hundred ninety six prescription papers were selected using systematic random sampling method from prescription papers collected over one year period. The data was filled in well-structured checklist and analyzed using SPSS windows version 20 for frequency distribution. **Results:** Of 396 prescription papers analyzed, only 11(2.7%) prescription papers contained complete patient information. On the other hand, 345(87.1%), 142(35.9%), 357(90.2%), and 272(68.7%) prescription papers contained strength, dose, frequency of administration of drugs and duration of treatment, respectively. Only 17(4.3%) prescription papers contained complete dosage regimen recommendations. Complete prescribers information was found in 268(69.8%) prescription papers. Generally, none of the prescriptions papers complete; i.e., at least one variable was missing. **Conclusions:** The study revealed a good adherence of prescribers on the basic principles of prescription order writing for some variables and poor adherence for other variables. In order to minimize the therapeutic errors, prescribers should adhere to these principles and hence write all the necessary information required to make prescription papers valid for dispensing. Dispensers on their behalf should not dispense prescription papers with incomplete information. Large scale future studies are important on the area.

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INTRODUCTION

Medicines are an essential component of health care delivery. When used rationally, they produce the desired effect of improving patient ailments. Their irrational use on the other hand leads to prolongation of the illness, development of adverse effects and unnecessary expenses [1]. Prescription is one of the therapeutic transactions between physician and patient [2]. A clear communication of a prescription order to other members of the health care team and to the patient is a vital step in drug therapy. Ideally, prescription will be written for an optimal drug product for a specific patient and indication. It will contain no errors, be free of ambiguity and contains all of the necessary information to allow it to be filled properly by the pharmacist and taken appropriately by the patient [3]. Prescription papers should be written legibly in ink, dated and signed by the prescriber. The names of drugs and formulations should be written clearly and not abbreviated. Using approved name, dose and frequency of drug administration should be stated [4].

Medication errors are currently a worldwide public health issue and one of the most serious is prescription errors [5]. Inappropriate prescribing practice has become a problem all over the world, particularly in developing countries. Various kinds of irrational prescribing practices have been reported from many countries, these includes over, under, incorrect, multiple and extravagant prescribing. With the number of prescriptions growing every year, health professionals who write prescription orders need to be particularly cautious to avoid mishaps [6]. Bad prescribing habits lead to ineffective and unsafe treatment, exacerbation or prolongation of illness, distress and harm to the patient and higher cost [7].

Many prescribers are not adherent to the basic principles of prescription order writing. Hence the study was carried out to identify problems associated with prescription order writing and show the scope of the problems in the study area so that valuable recommendation that may initiate interventions by the responsible authorities can be forwarded and is already forwarded. Furthermore, the study can serve as base line for further investigations in the field.

METHODS AND MATERIALS

The study was conducted at Mizan Tepi University Teaching Hospital (MTUTH). The Hospital is located in south west Ethiopia, Mizan Teferi. It is affiliated with Mizan-Tepi University. The hospital provides different pharmacy services (inpatient, outpatient and emergency) to both inpatients and out patients. Physicians, public health officers and nurses were engaged in prescribing drugs in the hospital during the study period.

A retrospective descriptive cross sectional study was conducted from 5-24, March 2016. All prescription papers available in MTUTH from September 2014 to August 2015 constituted the source population while all prescription papers available only in the inpatient, outpatient and emergency pharmacy units of the hospital during this period were the study population for the study. Prescription papers only written in MTUTH and containing at least one drug were included while any prescription paper containing only medical equipments, supplies and reagents were not considered for the study.

Sample size required for the present study was calculated using single population proportion formula. $(1.96)^2$ was used for $(Z\alpha/2)^2$, 50% for P and 5% for d and the minimum sample size accordingly was found to be 384.16. A 3% contingency was given to result in final sample size of $395.68 \approx 396$. The emergency, outpatient and inpatient pharmacy units accounted for 46%, 30% and 24% of prescriptions available during the one year period. Hence the respective sample size for the three units was calculated proportionally and the following sampled prescription papers were recruited for the present study as follows: 182, 119 and 95 prescription papers from emergency, outpatient and inpatient pharmacy units, respectively. Systematic random sampling technique was utilized to select the sample prescription papers.

A data collection instrument was prepared and used to assess whether the following information were written or not on the studied prescription papers: complete patient information, date of prescription, diagnosis, complete dosage regimen recommendation and complete prescriber's information. The comprehensiveness of the data collection instrument was assessed by an expert on the field and pretested before commencement of the actual data collection. The collected data was then analyzed using SPSS Windows version 20 and the results were presented using graph and table for frequency distribution. Before the commencement of the actual data collection process, an ethical clearance was obtained from Mizan Tepi University. The following operational definitions were used for the study:

Complete patient information:

All name, age, weight, sex, address and card number of a patient are written in the prescription paper.

Complete dosage regimen recommendations:

All drug name, strength, dose, dosage forms, route of administration, frequency of drug administration and duration of treatment are written in the prescription paper.

Complete prescriber information:

All name/initial, qualification and signature of the prescriber are written in the prescription paper.

Complete prescription paper:

Prescription paper complying with all basic principles of prescription order writing (BPPW) (prescription paper with complete patient information, date of prescription, diagnosis, complete dosage regimen recommendation and complete prescriber information).

RESULTS

Percentage of prescription papers with patient information

Out of 396 prescription papers considered for analysis, the prescription papers contained name, age, sex of the patient and card number. Weight of patients was recorded only in 29(7.5%) prescription papers while address of patients was appeared in 82(20.7%) prescription papers. More than 80% of prescription papers were dated while only less than half of them had diagnosis. Overall, 11(2.7%) prescription papers contained complete patient information (Table 1).

Table 1:- Percentage of prescription papers with patient information, date and diagnosis available in MTUTH from Sept 2014 to Aug 2015.

Variables	Freq (%) of contained information
Name	396 (100)
Age	396 (100)
Weight	29 (7.3)
Sex	396 (100)
Address	82 (20.7)
Card No	396 (100)
All*	11(2.7)
Date	329(83.1)
Diagnosis	40(10.1)

*(name, age, weight, sex, address and card number)

Percentage of prescription papers with dosage regimen recommendations

Of the total prescription papers analyzed, strength of drugs, route of administration and type of formulation were mentioned for 345(87.1%), 347(87.6%) and 71(17.9%) of the drugs, respectively. Similarly; dose, frequency of administration and duration of treatment were mentioned in 35.9%, 90.2% and 68.7% of the prescription papers, respectively. All prescription papers contained name of drugs. Only 17 (4.3%) prescription papers contained complete dosage regimen recommendation (Figure 1).

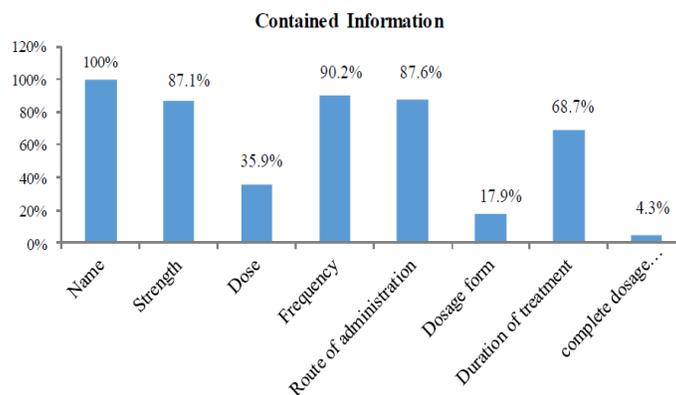


Fig 1:- Percentage of Prescription papers with dosage regimen recommendations available in MTUTH from Sept 2014 to Aug 2015.

Prescription papers with prescriber information

Name and qualification of prescribers were found in 373(94.2%) and 278(70.2%) prescription papers, respectively. Three hundred sixty four (91.9%) prescription papers were signed by prescribers. In General, there were 268(69.8%) prescription papers containing complete prescribers information.

Prescription papers with complete information

According to this study, none of the prescription papers were totally complete; at least one variable was missing.

DISCUSSION

In the present study; name, age, sex and card number of patients were mentioned in 100% of the prescription papers included for analysis. Patient's name was recorded in the present study higher than the report of a study done in Iraq and Jimma which reported only 96.6% and 93.3%, respectively [8, 9]. This could be due to prescriber's awareness on the importance of patient identification in dispensing process in our study. The report on writing age of patients was also appreciable when compared to reports of studies conducted in Malaysia, Iraq, and Ethiopia which reported the practice to be 67.3%, 15.5% and 63.8%, respectively [8, 10, 11]. Factors, like age of the patient are an important factor in calculation and selection of appropriate dosage forms, under special circumstances. Similarly; sex was written in our study better than findings from Gondar (83.2%) and Wollo (1.1%), both from

Ethiopia [11, 12]. Writing a complete prescription paper containing this patient information can prevent medications and related counseling issues to be provided for the wrong client. This information is necessary in that it enables the dispenser to identify to whom directly the prescription order is written. In case additional information is needed to look in individual medical records, writing card numbers is very important for easy retrieval of the record.

In this study the weight of the patient however, was recorded in only 7.3% of the prescription papers. It was relatively better to the Iraq study (2.2%) [8]. Inability to record weight of the patient may be due to unavailable measuring device nearby to the prescribers. Our finding showed that, 20.7% of the prescription papers contained address of the patient. This is a much better practice when compared with studies done in Iraq (0%) and Jimma (1.3%) [8, 9]. Over all, only 11(2.7%) prescription papers contained complete patient information. This is a poor practice which needs to be improved.

It was found that, percentage of prescription papers in which date was recorded were 83.1%; which was relatively similar finding with studies from Malaysia (82.9%) and Jimma (83.3%) [9, 10]; but, lower when compared to studies done in Addis Ababa (87%) and Gondar (89.2%) [11, 13]. It is important that prescription papers should be dated for retrieval and legal purposes. In this study, 10.1% of the analyzed prescription papers recorded diagnosis (ICD code number). This finding was comparable with the study from Iraq (14.8%), but higher as compared to that of Jimma's study; where none of the prescription papers contained diagnosis [8, 9]. This may be due to lack of confidence and skill of prescribers in confirming the exact diagnosis of a disease. Without diagnosis, dispensers face difficulty to evaluate a prescription order. Hence, prescribers need to write diagnosis for optimal patient outcomes.

As to dosage regimen recommendations are concerned, this study showed that 100% of the prescription papers contained name of the drug. On the other hand, 87.1% of the prescription papers were labeled with product strength. This was higher when compared to studies done in Copenhagen (6.2%) and Jimma (9.6%) [9, 14]. Seventy one (17.9%) prescription papers beared the type of dosage form even though it was lower as compared to the Copenhagen study (57.9%), but higher than the study conducted in Jimma (11.45%) [9, 14]. Dose of the drugs were written in 35.9% of prescription papers; which is lower than the studies done in Copenhagen, Gondar and Jimma which reported 86.6%, 94.2% and 89.8%, respectively [9, 11, 14]. In this study, 90.2% of the analyzed prescription papers contained the frequency of drug administration, which is higher than reports of studies conducted in Jimma (84.9%) and Gondar (6.4%) [9, 11]. Route of drug administration were recorded in 87.6% prescription papers which is relatively comparable with the Gondar (88%) and Jimma (90.4%) studies. Percentage of prescription papers with duration of drug treatment was 68.7%, a lower performance when compared to Copenhagen (94.9%) and Gondar (98.4%) studies. Generally, only 17(4.3%) prescription papers contained complete dosage regimen recommendations, which is a very poor practice. It is very important to write complete dosage regimen recommendations so that dispensers can easily evaluate the appropriateness of the therapeutic order. This in turn has immense clinical significance as to the safety and effectiveness of drug therapy is concerned.

It is very essential to have prescriber's information in every prescription papers. The prescribers' signature appeared in 91.9% of the prescription papers, while the name and qualification of the prescriber were recorded in 94.2% and 70.2% of the prescription papers, respectively. A comparable finding was reported from Malaysia (98.2%), in terms of writing prescriber's name, but the study finding is better as compared to a study conducted in Saudi Arabia (83.3%) [10, 15]. Generally, there were 268(69.8%) prescription papers containing complete prescribers information.

According to this study, none of the prescription papers were complete; at least one variable was missing. This was a lower performance as compared to studies from Malaysia (3.3%), and Addis Ababa, reported as few of the prescription papers contained complete information [10, 13]. Much of omission is occurred in writing diagnosis, address and weight of the patient. The possible causes for omissions of essential components of a prescription order might be due to too hasty prescribing (hurried to prescribe), workload, failure to appreciate the importance of writing every information on the prescription, negligence or carelessness and/or because of unavailable measuring device nearby to prescribers (e.g. for weight). Even though every component of a prescription paper is not equally important, writing every variable is a huge professional requirement. Hence all stakeholders should be involved in assuring the completeness of every single prescription order, particularly prescribers and dispensers.

CONCLUSIONS

In summary, prescribers had excellent adherence with the following variables: sex, age, card number, name of patient and name of the drug while they showed a gap in writing a complete dosage regimen recommendations, particularly gaps related with writing the dose and dosage form of the drugs has to be a concern. None of the analyzed prescription papers were complete; at least one variable was missing. Therefore; regulatory, educational and monitoring programs has be strengthened to bring more awareness so as to reduce the rate of noncompliance and hence minimize the occurrence of prescribing problems that possibly promote dispensing errors. Large scale future studies are important on the area.

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List of abbreviations

BPPW	:	Basic Principles of Prescription order Writing
ICD	:	International Classification of Diseases
MTUTH	:	Mizan Tepi University Teaching Hospital
SPSS	:	Statistical Package for Social Sciences

Authors Statements**Competing interests**

All authors would like to declare that there are no competing interests to disclose.

Authors' contributions

TA; drafted the manuscript and assisted with interpretation of data;

HB: conceived and led the study acquisition of data, interpretation of data and performed the statistical analysis.

TT: assisted with interpretation of data and revised manuscript for intellectual content.

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