IJPSR (2013), Vol. 4, Issue 1 **(Research Article)**

INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES AND RESEARCH

Received on 15 September, 2012; received in revised form, 30 October, 2012; accepted, 27 December, 2012

ASSESSMENT OF DRUG USE PRACTICES AND COMPLETENESS OF PRESCRIPTIONS IN GONDAR UNIVERSITY TEACHING REFERRAL HOSPITAL

Endalkachew Admassie*[1], Birhan Begashaw [2] and Wubshet Hailu [1]

Department of Pharmacology, School of Pharmacy, College of Medicine and Health Sciences [1], University of Gondar, Gondar, Ethiopia

Department of Hospital Pharmacy, Gondar University Teaching Referral Hospital [2], University of Gondar, Gondar, Ethiopia

Keywords:

Prescriptions, Completeness, Drug use, Injections, Antibiotics

Correspondence to Author:

Endalkachew Admassie

Department of Pharmacology, School of Pharmacy, College of Medicine and Health Sciences, University of Gondar, Gondar, Ethiopia

E-mail: endalkonline@gmail.com

QUICK RESPONSE CODE

IJPSR: ICV- 5.07

Website: www.ijpsr.com

ABSTRACT

Background: Rational drug use is a tool through which safe, effective and economic medication is provided. Rational prescribing ensures adherence to treatment and protects drug consumers from unnecessary adverse drug reactions. Rational dispensing on the other hand, promotes the safe, effective and economic use of drugs.

Objectives: The aim of this study was to assess drug use practices and completeness of information on prescriptions in Gondar University Hospital.

Methodology: A combination of retrospective and cross sectional study was conducted in outpatient pharmacy in the facility. Of the total of 30,000, some 1145 prescriptions containing drugs prescribed during the month of May 1, 2010 to April 30, 2011 were reviewed for retrospective and 31 patients coming with their prescriptions to outpatient pharmacy were interviewed in the middle of the week on the day of January 25, 2012.

Results: The mean number of drugs per prescriptions was 1.76, percentage of prescriptions containing $\leq$ 2 drugs per prescription was 80.87%. The generic name of the medication was used in 99.16 % of the prescriptions. Antibiotics were prescribed in 29.14 % of prescriptions and injections were prescribed in 28.50% of prescriptions. The drugs prescribed in 98.89% of prescriptions were part of the hospital essential drug list indicating the acceptance of this list by health care professionals. Patients age, sex and card number were written 86.64%, 67.93% and 73.54% respectively. Address of the patient and diagnosis were omitted 97.29% and 99.99% respectively. The correct name and strength of the drug were clearly stated in 80% of the prescriptions whereas dose, frequency and durations were clearly indicated in 81.38%, 76.07% and 82.01% of the prescriptions respectively. 33.42%, 96.69%, 72.56% and 16.09% of the prescriptions contain the name, signature, date and qualification of the prescribers. 80% of patients interviewed had adequate knowledge of how to take the medication prescribed. 61.29%, 29.03% and 19.35% of patients knew the precaution, strength and name of the drugs. From all drugs received by the patients only 8.47% (only the drugs in the tablet bag) were adequately labeled which was low from the literature.

Conclusion: From the results of the study, it can be concluded that not all prescriptions were complete as few of them lack the necessary information. So there is a need for managerial and educational intervention to improve prescribing and dispensing practices.

INTRODUCTION: In 1985, World Health Organization (WHO) defined that "Rational use of drugs requires that patients receive medication appropriate 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". The indicators of prescribing practices measure the performance of healthcare providers in several key dimensions related to the appropriate use of drugs [1].

Rational drug use is a tool through which safe, effective and economic medication is provided. It is promoted by the collaborated efforts of prescribers, dispensers and drug consumers. Rational prescribing ensures adherence to treatment and protects drug consumers from unnecessary drug adverse reactions. Rational dispensing on the other hand, promotes the safe, effective and economic use of drugs [2].

The inappropriate drug use is characterized by the use of drugs when no therapy is indicated, the use of the wrong drug for a specific condition requiring drug therapy, the use of drugs with doubtful/ unproved efficacy, the use of drugs of uncertain safety status, failure to provide availability of safe and effective drugs, and the use of correct drugs with incorrect administration, dosages and duration [3, 4, 5].

With an increasing quantity and variety of pharmaceuticals available today in both developed and developing countries, their potential inappropriate use is a growing concern. Note only the health risks associated with inappropriate drug prescription but also the economic cost to facilities and patients must be considered. As a result, strategies to identify, resolve and prevent inappropriate pharmaceutical use have been the topic of numerous articles, conference and studies [1].

Irrational use of drugs may lead to prolongation of illness, development of adverse effects, loss of clients, an increase cost of treatment and abusing of pharmaceutical [5]. Of the many factors that contribute to in appropriate drug use, in both developed and developing countries, the poor prescription practices of healthcare providers have received considerable attention [3]. What has been established, however, is that inappropriate drug prescription is affected by a variety of complex, underling factors which can be categorized as deriving from patients, prescribers, facility administration, supply system, regulation, and drug information and /or misinformation [3, 4, 5].

Hogerzeil, who corroborated this finding, has stated that: "Treatment guidelines developed without wide consultation, distributed without proper introduction and training, not accompanied with a system to make the same drugs available in the health system, and without mechanism for continuous supervision and medical audits are unlikely to have an impact on prescribing" [6].

Other factors identified as contributing to inappropriate drug prescription include: lack of training combined with poor prescriber supervision and monitoring [7], drug availability [8], patient expectations and beliefs [9] and prescriber beliefs and attitudes [10].

The study of assessment of drug use indicators practice at Gondar University Hospital is important to address inappropriate drug use and identify problem areas/ possible areas for interventions. Conducting prescription review is found to be essential and it is intended to identify the most important drug use problem of the hospital and propose appropriate interventions. The result of the study will be used as a base line for evaluating the impact of consecutive interventions implemented to improve drug use at hospital.

This study also considered indicators of the environment in which a prescription was written and dispensed. Complementary WHO drug and patient indicators were tested: prescription in accordance with standard treatment guide lines, average dispensary times. Other indicators were modified such as patient knowledge, to include not only regimen but also name, purpose and side effects of the drug prescribed.

MATERIALS AND METHODS:

Study Design and Area: A combination of retrospective and cross sectional studies was applied in the facility to assess the prescribing and dispensing practices at the hospital. In a retrospective review, a sample prescription records that took place in the past were selected from out patient pharmacy of the hospital preferably over a one year period from May 1, 2002 to

April 30, 2003 E.C. to control for seasonal variations. Because the retrospective method was used, every prescription was assumed to be in one encounter of the patient who did not take the medicine was not counted. On the other hand, cross sectional approach was used for gathering information related to dispensing time, adequacy of labeling and patient understanding on the dispensing medicines during patient visits that took place on the day of the indicators survey. This method is done by examining the prescriptions and medicine envelopes and by interviewing patients as they left the dispensing venue. Data for computation of core prescribing, patient use and facility indicators were collected as per the recommendations of WHO guide line for investigating drug use at the health facilities [19].

The study was conducted at Gondar University Hospital which is located in North Gondar Zone about 727kms North West of the capital, Addis Ababa. It is not only the Referral Hospital from the Amhara region but also is the teaching hospital. The hospital serves for about five million people in its catchment area. It has 468 beds in five different inpatient departments and 14 wards. Nearly 100,000 patient visits are reordered at the out patient clinics and there are more than 11,000 admissions every year. The hospital has 9 Pharmacists, 11 pharmacy technicians. Under the hospital pharmacy, there are one medical store, one supply store, one outpatient pharmacy, ART pharmacy and two inpatient pharmacies. Except ART pharmacy, the pharmacy units are organized to provide 24 hours service to the clients.

Source population: The samples for the study were taken from Gondar University Hospital Out- Patient Pharmacy (OPP) prescriptions which were written and dispensed from May 1, 2010 to April 30, 2011 for retrospective study and all patients visited outpatient pharmacy with their prescriptions for taking their drugs on the day of January 25, 2012.

Study population: The study subjects were randomly selected from all out patient pharmacy prescriptions which contain drugs from May 1, 2010 to April 30, 2011 for retrospective study and people who were coming with their prescriptions to the outpatient pharmacy to receive their drugs on that day.

Ethical consideration: Ethical clearance was obtained from the ethics review committee of the college of medicine and health sciences of University of Gondar. Permission catalogue was formally obtained from the medical director's office through a letter of collaboration from School of Pharmacy, University of Gondar.

Data processing and Analysis: All the data were collected using WHO standard data collection formats and the data were checked for accuracy, consistency, omission and irregularities. Then, the data were entered in to Microsoft Excel 2007, data collection formats and summarized using standard summary forms. All the required statistical analysis was carried out using Microsoft Excel 2007.

RESULTS AND DISCUSSION:

1. **Rational Drug Use:** Data was collected and analyzed based on WHO core drug indicators to assess the drug use situations at Gondar University Hospital and the results are summarized as follows below;

a. **Use of standard prescription paper and completeness of information:** The purpose of the indicator was to review the presence and proper use of standard prescription paper in the facility. The selected prescriptions were checked for legibility or clarity and completeness of the required information. The data on the completeness of the information is summarized in **table 1** below.

b. **Use of Standard Prescription Paper:** A prescription is an important therapeutic transaction between the prescriber and drug consumer through dispenser and it is a written order for one or more medication(s), and instruct(s) how to prepare, dispense the drug and counsel the patient. The content of any prescription should include name, level of health institution and the main information: patient information (name, card number, address, sex, age and diagnosis), drug relation information (name, strength, dosage form, frequency and duration of treatment), and prescriber and dispenser name, qualification, signature and the date for prescriber's and dispenser's [2].

TABLE 1: SUMMARY OF PRESCRIPTION PAPER ISSUED WITH COMPLETE INFORMATION REQUIRED, GONDAR UNIVERSITY TEACHING REFERRAL HOSPITAL, APRIL 2010-MAY 2011. (N= 1145)

Indicators studied	Number	percentage	Gold standard
Type of prescription paper used			
Standard prescription paper used	1144	99.91	100
Patient information			
Name	1143	99.83	100
Age	992	86.64	100
Sex	984	67.93	100
Address	31	2.71	100
Diagnosis	10	0.01	100
Card number	842	73.54	100
Drug related information= 2035			
Correct name and strength	1628	80	100
Dose	1656	81.38	100
Duration	1548	76.07	100
Frequency	1669	82.01	100
Prescriber information			
Name	374	32.66	100
Signature	1082	94.50	100
Date	812	70.92	100
Qualification	180	15.72	100
Dispenser information			
Name	0	0	100
Signature	4	0.35	100
Date	0	0	100
Qualification	0	0	100
Total number of prescription =1145			
Number of drugs per prescriptions	2035		
Number of drugs actually dispensed	1795	88.21	100
Number of generic	2018	99.16	100
Number of antibiotics	593	29.14	<25
Number of injection	580	28.50	<13
Number of EDL	2013	98.89	100

The sampled prescriptions were verified for their conformity with the standard prescription developed by Food, Medicine and Health Care Administration and Control Authority (FMAHCA) of Ethiopia and recommended for use by all health facilities. From 1145, 99.91% of analyzed prescriptions were issued with FMHACA standard prescriptions, but 1 (0.09%) prescription was not standard (there was an exchange of psychotropic prescription by narcotic). There were a lot of prescriptions coming to pharmacy with narcotic and psychotropic drugs written on the normal prescriptions but returned back to the prescribers to correct them. According to the results, the use of standard prescription paper for all cases of prescribing was found to be encouraging. For this, the activity of dispenser was thought to play a great role.

c. **Patient related information:** It refers to those which are included on the prescription and identify patients. The present findings showed that 99.83% patient name was written. The diagnosis is important for pharmacists to know the consistency of diagnosis and drugs, audit prescription and know potential drugs interaction and contraindication (20). However, diagnosis and patient addresses were written only in 10(0.01%) and 31(2.71%) of the cases respectively.

Including diagnosis on the prescription will help the pharmacist to contribute to positive therapeutic outcomes through avoiding in-advertent prescribing and medication errors. Making the write diagnosis is the corner stone for choosing the right kind type of therapy [2].

A standardized prescription paper to be used by prescribers in Ethiopia provides an exclusive part for diagnosis. It is apparent that rational selections of drugs' dose and dosage forms would be highly determined by the age of the patient. The dose that should be administered to children would naturally be different from those given to adults, since age plays an important role in a successful management of the therapy [21].

If the pharmacists dispenses the drug without asking the age of the patient, he/she might wrongly dispense an adult dose to a child and vice versa, hence causing in either a therapeutic failure or over dosage causing toxicity. The result is an indication that some prescribers need to be reminded of the scientific rational behind dose optimization versus patient age.

As shown in table 1 above, age, sex, and card number were written in 992 (86.64%), 984 (67.93%), and 842 (73.54%) of all prescriptions respectively. Sex of the patients should also be specified on all prescriptions as some medicines could have sex dependent pharmacokinetic profiles [22]. Although all prescriptions should have contained sex according to WHO standard, in this study only 67.93% of all prescriptions had it, thus this data needs to be improved as part of promoting the rational drug prescribing by the Hospital.

TABLE 2: SUMMARY OF OBSERVED PROBLEMS IN THE SAMPLED PRESCRIPTIONS, GONDAR UNIVERSITY TEACHING REFERRAL HOSPITAL, APRIL 2010-MAY 2011. (N= 1145)

Problems encountered	Percentage	NC
Patient information		
Patient name not mentioned	2 (0.17%)	
Age not mentioned	153 (13.36%)	1(0.01%)
Sex not written	161 (14.06)	1(0.01%)
Card number not written	303 (26.46%)	39 (3.49%)
Address not written	1114 (97.29%)	
Diagnosis not written	1135 (99.13%)	
Drug related information		
Name and strength not correctly written	407 (20%)	
Dose not clearly mentioned	379 (19.62%)	
Duration not written	487 (23.93%)	
Frequency not written	366 (17.99%)	
Prescriber information		
Prescriber identification(name)	771 (67.34)	
Signature	63 (5.50%)	
Date	333 (29.08%)	
Qualification	965 (84.28%)	
Dispenser information		
Dispenser identification(name)	1145 (100%)	
Signature	1141 (99.65%)	
Date	1145 (100%)	
Qualification	1145 (100%)	

NC- The information was written on the prescription paper but unreadable

d. **Drug related Information:** The prescription was checked for having complete information on the name, dose, frequency and duration of prescribed drugs together with legibility. Ideally, all information on the prescription should be fulfilled clearly, legibly without any ambiguity (2). As shown in table 1, out of 2035 drugs issued in 1145 prescriptions, the correct name and strength of the drug were clearly stated in 80% of the prescriptions. That means 20% of them were not clearly stated. Where as, dose, frequency and durations were clearly indicated in 81.38%, 76.07% and 82.01% of the prescriptions respectively. This indicates that the trend on the improvement of the issuance of the prescription with complete and clear information was not satisfactory, when we compare it with the 100 % it should have been according to WHO.

e. **Prescriber Information:** A prescriber is not always a medical doctor; he/she can be a paramedical worker such as a medical assistant, a midwife, or a nurse who makes a diagnosis and orders drug(s) to patients. Clinical pharmacists are allowed to prescribe in some states through the use of drug formulary or collaboration agreements. Therefore, in order to identify the person involved in prescribing, the prescription should include the prescriber's name, qualification, signature and the date on which the prescription is written. Prescriber's name and address indicated on the prescription will allow either the patient or the dispenser to contact the prescriber for any clarification or potential problem with the prescription [23].

Regarding to the prescriber information; the name and qualification of the prescriber were not well indicated on some of the prescriptions posing the issue of accountability in the medico-legal system as shown from the result. This information will be important for cross check evaluations in cases of prescriptions errors and help in easy identification of the liable prescriber. In this study, 374 (33.42%), 1082 (96.69%), 812 (72.56%) and 180 (16.09%) of the prescriptions contain the name, signature, date and qualification of the prescriber in their respective order. As shown from the results, most of the time, the date of the prescriptions also was not written properly.

f. **Dispenser Information:** Likewise, the dispenser is not always a pharmacist but also can be a pharmacy technician and an assistant who is licensed to or authorized to dispense drugs [14]. It is the primary responsibility of the pharmacist to assure the correct dispensing of the drug and maintaining the quality of the drug dispensed. Dispensing error may be common when the dispensing is performed at low level of health care provider.

Therefore, information which used to identify the dispenser who issued the drug to the patient (including the dispenser's name, qualification, signature and date) on the prescription should be briefly recorded. From the 1145 prescriptions, only 04 (0.35%) prescriptions contain dispensers' signature. There were no prescriptions which contain the name, qualification and date of the dispensers. So, this assessment indicates that dispenser information was very poor in this hospital.

2. **Prescribing Indicator:** The three core drug use indicators of WHO were used to assess the drug use problem in hospital. The result of the indicator is summarized in comparison with the WHO standard values as shown below in **table 3**.

TABLE 3: SUMMARY OF THE PRESCRIBING PRACTICES IN GONDAR UNIVERSITY HOSPITAL, GONDAR UNIVERSITY TEACHING REFERRAL HOSPITAL, APRIL 2010-MAY 2011. (N= 1145)

Indicator studied	GUH	Standard WHO
Total number of prescriptions analyzed	1145	
Average number of drugs per prescription	1.77	≤2
Average number of drugs actually dispensed per prescription	1.13	-
% of drugs prescribed by generic name	99.16	100
% of prescriptions with an antibiotic prescribed	29.14	25
% of prescriptions with an injection prescribed	28.50	13.4-24.1
% of drugs prescribed from essential drug list or formulary	98.89	100
Average consultation time(in minutes)	-	>10
Average dispensing time(in minutes)	4.30	>5
% of drug actually dispensed	89.39	100
% of drug adequately labeled	8.47	100
Patients' knowledge of correct dosage		100
Availability of copy of essential drugs list or formulary in the facility	Yes	Yes
Availability of National STG	Yes	Yes
Availability of VEN	Yes	100
Availability of drugs for 10 top diseases	66%	100

a. **Average number of Drugs per Prescription:** Prescribing multiple drugs to patients at once (technically called poly-pharmacy) is not generally recommended as problems like dose missing, over dosing and drug-drug interaction or drug food interaction may occur. In order to measure the degree of poly pharmacy, which is the measure of the unnecessary prescribing, the number of drugs prescribed for each case was counted and the average number of drugs per prescription was calculated.

TABLE 4: NUMBER OF DRUGS PER PRESCRIPTION AT GONDAR UNIVERSITY HOSPITAL, GONDAR UNIVERSITY TEACHING REFERRAL HOSPITAL, APRIL 2010-MAY 2011. (N= 1145)

Number of drug(s) on prescription	Number of patient (prescription)	Total number of drugs prescribed	% from total drug prescribed
1	562	562	49.08
2	364	728	31.79
3	152	456	13.28
4	51	204	4.45
5	12	60	1.05
6	3	18	0.26
7	1	7	0.09
Total	**1145**	**2035**	**100**
Maximum number of drugs per prescription		7	
Minimum number of drugs per prescription		1	
Average number of drugs per prescription		1.76	
% of prescription contain ≤ 2 drugs per prescription		80.87%	

The average number of drugs prescribed per prescription (encounter) was 1.76 (minimum 1 and maximum 7). The result was better than the other countries studies reviewed above [11, 12, 13, 15, 17]. This result shows presence of acceptable prescribing practice based on WHO recommendation of less than two drugs per prescription**.**

b. **Percentage of Drugs prescribed by Generic Name:** In western Nepal [24], the generic name percent was 19.2, while in Mumbai, India, the percentage was 73.4% [13]. However, the indicator could reach 94% [6]. It was found that 2018 (99.16%) of drugs were prescribed by generic name at Gondar University Hospital. Therefore, it was found to be very encouraging and better than from other countries reviewed above [11, 12, 13, 15, and 17].

c. Percentage of Prescriptions with an Antibiotic Prescribed: The antibiotic prescriptions % in China was about 39% and the indicator was different in many countries. In Bhopal, India [25], primary health centers, 63.5% encounter was from the prescribed antibiotic. Apart from this country, this indicator was between 29 and 43% [6]. In Nigeria, antibiotic % was 50.3% [22] in out-patients and 96.7% in in-patients.

The rational use of drugs has socioeconomic and clinical meaning. A short treatment of drug could increase morbidity while a long duration resulted in patient exposure to antimicrobials. This increases the risks of ADR, the incidence of antimicrobial resistance and unnecessary expenditure. For Chinese, poor research and development, easy availability of antibiotics (some antibiotics are available in the drug store), patients' expectation, potential profits of prescription and poor antibiotic management affected the rational use of antibiotic [20]**.**

As shown above table 3, the antibiotic % in the hospital was 593 (29.14%). This figure shows that the use of antibiotics was somewhat higher than the WHO standard and Brazil [17] but less than other hospitals in African countries.

d. **Percentage of Prescriptions with an Injection Prescribed:** The injection percent, in table 3, was 28.50%, while the indicator was higher in some countries. In western Nepal [24], 0.96% encounters from the prescribed were injection, while in Indian, Mumbai, 13.8% drugs from the prescribed were injection. However, the indicator ranged from 0.2 to 48% among different countries [6].

Due to the fact that more injections were used by the emergency patients, emergency prescriptions were included in our studies. According to WHO standard (13.4-24.1%), use of injections was somewhat larger in this hospital, even though it was better than countries like Yemen 46% [14] and far lesser from other countries like Sudan (10.15%) [12] and India (3.9%) [13]. Due to the fact that more injections were used by the emergency patients, emergency prescriptions were included in our studies. Not only this but also due to Normal saline, Dextrose 40%, Ringer lactate and DNS higher usage also have its own contribution to the higher figure. Sometimes, patients who came to the outpatient pharmacy have gotten the service, so this could inflate the use of injections.

Excessive and unnecessary use of injections is expensive in terms of health care cost to patients, health staff time and sterilization of equipment. Injectable drugs can be complicated by injection abscess, paralysis, and infection with deadly viruses such as Human Immuno Deficiency Virus [26]. This injection use at GUH may be due to the reason that most of the time patients admitted to the hospital were in a serious disease condition requiring an urgent and quick acting medications and also simply because of some patients believe injections are more potent than oral form of drugs, hence they directly request physicians to order them with these form of medications. Therefore, patient education on the consequence of injection use has an invaluable advantage in contributing to rational prescribing.

e. **Percentage of Drugs prescribed from Essential Drug List:** The WHO recommended that 100% of drugs should be prescribed from EDL. The study shown in India, Yemen, Tanzania, and Delhi 45.7% [13], 78.9% [14], 70% [16] and 75-95% [15] were prescribed from EDL respectively. But when we came to our study, 98.89% were prescribed from EDL. So, in this study, almost all drugs were prescribed from EDL and it is encouraging.

3. **Patient Care Indicator:** In order to understand the way drugs are used it is important to consider what takes place at health facilities from both the provider's and the patient's perspective. Patients enter facilities with a set of symptoms and complaints, and with expectations about the care they will receive, they typically leave with a package of drugs or with a prescription to obtain them in the private market. The patient care indicator address key aspects of what patients experience at health facilities, and how well they have been prepared to deal with the pharmaceuticals that have been prescribed and dispensed.

4. The time that prescribers and dispensers spend with each patient sets important limits on the potential quality of diagnosis and treatment. Patients for whom pharmaceuticals are prescribed should, at a minimum, receive well-labeled medications, and should understand how to take each drug [19]. A total of 31 clients, 9 (29%) male and 22 (71%) female were included on the prospective study to evaluate patient use indicators of which 15 (48.39%) were literate.

TABLE 5: SUMMARY ON THE RESULT OF PATIENT USE INDICATORS, GONDAR UNIVERSITY TEACHING REFERRAL HOSPITAL, (N= 31).

Indicators	Standard WHO	GUH (2012)
Interviewed patients		31
Number of drugs prescribed		58(100%)
Number of drugs actually dispensed	100%	52(89.66%)
Number of drugs adequately labeled	100%	4(6.90%)
Patient having knowledge on the dispensed drug	100%	89.52%
Name of the drug		6(19.35%)
Strength of the drug		9(29.03%)
Frequency	100%	100%
Duration	100%	100%
Indication		28(90.30%)
Precaution	100%	19(61.29%)
Dose	100%	30(96.77%)
Dosage form	100	31(100%)

a. **Average Dispensing Time:** The purpose is to measure the time that medical personnel (pharmacist or pharmacy technician) spend with the patients during dispensing drugs in the pharmacy. Time was recorded during the dispensing drugs to the patient, that is, the time between arriving at the dispensary counter and leaving. Waiting time was not included.

Based on WHO standard, the average dispensing time should be > 5 minutes. The average dispensing time was found to be 4.30 minutes in our hospital. When we compared to other studies like Sudan 46.3 second [12] and Brazil 18.4 second [17], the dispensing time was near to WHO standard and also comparable to the study made in India 3.1 minutes [13]. Since, there was recording of patients name, area where they come, identification number, types of drugs prescribed with units and strengths; this made the time to be somewhat longer.

b. **Percentage of Drugs adequately Labeled:** The purpose is to measure the degree to which dispensers' record essential information on the drug packages they dispense. For this assessment, "Adequate Labeling" is operationally defined as a label which contains name, strength, dosage, duration and quantity of the drug dispensed. Adequacy of labeling was assessed by checking the labels of drugs dispensed to 31 out patients in the hospital on the day of the visit. A label should be considered adequate if it confirms all the above requirements.

The main function of a label on a dispensed drug is to uniquely identify the contents of the container and to ensure that the patient have clear and concise information about the use of the drug. Each dispensed drug must be appropriately labeled to comply with legal and professional requirements [3]. According to this study, the hospital average percentage of drugs adequately labeled were 4 (7.69%). In Sudan and India it was 37.6% [12] and 43.8% [13]. These results have shown deviation from the ideal value of 100%. There was no label on the strip, insulin, bottle which contains syrup but was on the paper bag.

So, that was the reason that the result shows inadequate labeling value. The labeling of drugs dispensed at GUH was very poor. In this hospital where 51.61% of clients were illiterate, dispensing drugs without label, incomplete label, illegible label will obviously increase the chance of medication error, drug related adverse events and therapeutic failure.

Therefore, there is an urgent need for managerial interventions to equip the dispensary with the necessary dispensing aid and enforce practitioners to put label on each and every dispensed drug to patients.

c. **Patient knowledge of Correct Dosage:** The purpose of the indicator is to measure the effectiveness of the information given to patients on the dosage schedule of the drugs they receive. 31 out patients leaving the dispensing unit on the day of the assessment were interviewed about the name, strength, dosage form, duration, frequency, dose and quantity of the drug received from the pharmacy on that day.

As shown in **table 6**, in Gondar University Hospital, 99.19 % of patients were able to repeat the correct dosage schedule of the drugs they had received and it was near to the expected value of 100% and was better than studies conducted in other countries (Sudan 37.2%, Brazil and Tanzania 70% and India 64.5%) [12, 13, 16, 17].

Dispensing drug without adequate labeling, poor performance of dispensers or confirming their drug instructions at the time of dispensing, low educational status of the patients contributes to low adherence to treatments. Therefore both educational and managerial interventions are required to upgrade patient knowledge and adherence to treatment.

5. **Health Facility Indicators:** The ability to prescribe drugs rationally is influenced by many features of the working environment. An educate supply of essential drugs and access to unbiased information about these drugs are particularly important. With out these it is difficult for health personnel to function effectively [18].

a. **Availability of EDL/Formulary and STG:** The purpose is to indicate the extent to which copies of the national essential drugs list or local formulary are available at health facility. These materials were available in the facility.

b. **Availability of Key Drugs:** The purpose was to measure the availability at health facilities of key drugs recommended for the treatment of some common health problems. Access to essential drugs is one of the basic requirements for delivery of proper health care. To measure the physical availability of essential drugs, 68 essential drugs which were used to treat the most common health problems in the catchment area were selected. The bin card was assessed in the hospital's pharmacy in order to collect the required data on physical availability of these key drugs. So, 66% of key drugs were available.

c. **Stock out duration:** To measure the historical availability of essential drugs, a retrospective survey was undertaken by reviewing the stock cards of the facilities covering a period of 1 year. The number of days for which key essential drugs were not available if the stock was zero within the review period. The average stock out duration was calculated at the facility level which was 103 days from a 1 year period.

Availability of drug is also one of the main factors that influence prescribing practice. There fore, establishing a system to maintain continuous supply of drugs included on the formulary list is useful to avoid prescribing alternative medicines with limited comparative studies.

CONCLUSION: From the results of the study, it can be concluded that not all prescriptions were complete as few of them lack the necessary information such as sex, age, diagnostic result of the patients, the name and qualification of the prescriber and dispenser. With regard to the WHO limit of injection use and antibiotic use, Gondar University Hospital fails to maintain the limit, so it needs some improvement. More over the average number of drugs per prescription and number of different types of drugs that were prescribed from National Drug List of Ethiopia was within the range of the WHO standard.

RECOMMENDATIONS: Appropriate interventional strategies like educational, managerial or regulatory interventions should be made to decrease injection over use, domesticate the culture of providing all the important information on prescriptions and promote rational prescribing patterns. There is also a need for managerial and educational intervention for prescriber and hospital pharmacists to improve prescribing and dispensing practices. Even though the service of the hospital pharmacy can be rated as good, labeling of the drug and precaution should be given attention. In addition, availability of key drugs for those most problems in the facility should be put in place at the Hospital.

ACKNOWLEDGEMENT: This review of drug use evaluation for Gondar University Hospital was realized by the collaborative efforts of experts from USAID/SIAPS Ethiopia, Pharmaceuticals Fund and Supply Agency/PFSA/ of Ethiopia, Gondar Area Branch and senior pharmacists of Gondar University Hospital.

In this regard, we would like to express our deepest gratitude to the partners such as USAID/SIAPS, PFSA, and those experts involved directly or indirectly in the study of drug use evaluation.

REFERENCES:

1. Ross degnan D., Laing RO, Santos B, Otori-Adjel D, Lamoureux C, Hogerzeil H. Improving pharmaceutical use in primary health care in developing countries: a critical review of experience and lack of experience, Presented at the International Conference on Improving Use of Medicines, Chiang Mai, Thailand 1997.
2. Drug Administration and Control Authority of Ethiopia. Standard treatment guide lines for general Hospitals: DACA; January 2010, xvi-xvii.
3. Hogerzeil, H. Promoting appropriate drug prescription: an international perspective. *British Journal of clinical pharmacology* 1995, 39(1), 1–6.
4. Ross Degnan D. A strategy for promoting improved pharmaceutical use. The international Network for Rational use of drugs. Social Science and medicine 1992; 35 (11): 1329-1341.
5. WHO. Organization of Health Care in Developing Countries, Report of the Conference of experts, the rational use of drugs, Nairobi, 25- 29 November 1985, WHO. Geneva 1987. 1-6.
6. WHO. How to investigate drug use in health facilities: selected drug use indicators, Action Program on Essential Drugs 1993, WHO/DAP/93.1.
7. Hogerzeil, H. Training in appropriate prescribing. INRUD *News* 1994; 4 (2):11.
8. Bapna, J.S., Shewade, D.G., Pradham, S.C. Training medical professionals on the concepts of education and rational drug use. *British Journal of Clinical Pharmacology* 1994; 37 (4): 399-400.

9. Hogerzeil, H., & Walker, J. Impact of an essential drug programme. Journal of Family Practice 1989; 43(1):56-62.
10. Homedes, N., Ugalde, A. Patients' compliance with medical treatments in the third world. What do we know*? Health Policy and Planning* 1993; **8**(4): 291-314.
11. Hamm, R.M., Hicks, R.J., Bemben, D.A. Antibiotics and respiratory infections: are patients more satisfied when expectations are met? *Journal of Family Practice* 1996; **43**(1): 56-62.
12. Enwere, OO., Falade, CO., Salako, BL. Drug prescribing pattern at the medical outpatient clinic of a tertiary hospital in southwestern Nigeria. Pharmacoepidemiol Drug Saf. 2007, 16(11): 1244-1249.
13. Awad, AI., Himad, HA. Drug-use practices in teaching hospitals of Khartoum State, Sudan. Eur J Clin Pharmacol. 2006, 62(12): 1087-1093.
14. Hazra A, Tripathi SK, Alam MS. Prescribing and dispensing activities at the health facilities of a non-governmental organization. Natl Med J India 2000, 13(4): 177-82.
15. Bashrahil KA. Indicators of rational drug use and health services in Hadramout, Yemen. East Mediterr Health J. 2010, 16(2): 151-155.
16. Biswas, NR., Pal, PS., Jain, SK., Malhotra, SP., Gupta, A., Pal, SN. Patterns of prescriptions and drug use in two tertiary hospitals in Delhi. Indian J Physiol Pharmacol. 2000, 44(1): 109-112.
17. Massele AY, Ofori-Adjei D, Laing RO. A study of prescribing pattern with special reference to drug use indicators in Dar es Salaam region, Tanzania. Trop Doct., Jul 1993; (3): 104-107.
18. Santos, V., Nitrini SM. Medicine prices, availability and affordability in Southern Brazil: a study of public and private facilities. Rev Saude Publica 2004: 38(6): 819-826.
19. WHO. Action Program on Essential drugs, How to investigate drug use in health facilities. World health organization, Geneva 1993: 1-87
20. Zou, J., Li ,L., Zhang, C., Yan, Y., Gao, F., and Zhang, H. Analysis of outpatient prescription indicators and trends in Chinese Jingzhou Area between September 1 and 10, 2006-2009. African Journal of Pharmacy and Pharmacology 2011, (2), 270-275,
21. Biiungi H. The domestication of injections: A Study of Social Relations of Health Care in Bosoga, Estern Uganda, Institute of Anthropology, University of Copenhagen 1994a, 1-28.
22. Chukwuani, CM., Onifade, M., Sumonu, K. Survey of drugs use practice and antibiotics prescribing pattern at a general hospital in Nigeria. Pharm world Sci 2002; 24 (5): 188-195
23. The Drug Administration and Control Authority (DACA) of Ethiopia. Zonal Hospital Standard Treatment Guideline 2010. xi-xii
24. Lamichhane, DC., Giri, BR., Pathak, OK., Pantha, OB., Shankar, PR. Morbidity profile and prescribing patterns among outpatients in teaching hospital in Western Nepal. Mogil J Med. 2006, 9 (2): 126-133.
25. Decosta, A., Bhartiya, S., Nandeswar, S., Diwan, VK. Patterns of drug in the public sector primary health centers of Bhopal district. Pharm. World Sci. 2008, 30 (6): 684-693.
26. Isah, AO., Ross-Degnan, D., Quick, J., Laing, R., Mabadeje, AFB., The development of standard values for the WHO drug use prescribing indicators.: International Conferences on Improving Use of Medicines. WHO, Essential Medicines and Policy Department 2008. http://www.who.int/selectionmedicines/en.

How to cite this article:
Admassie E, Begashaw B and Hailu W: Assessment of Drug Use Practices and Completeness of Prescriptions in Gondar University Teaching Referral Hospital. *Int J Pharm Sci Res*. 2013; 4(1); 265-275.