ASSESSEMENT OF PRESCRIBING PATTERN IN BORUMEDA HOSPITAL NORTH EAST ETHIOPIA

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Abstract

Introduction: Appropriate drug utilization has a huge contribution to global reduction in morbidity and mortality with its consequent medical, social and economic benefits [1]. Inappropriate prescribing is known all over the world as a major problem of health care delivery. Drug Utilization Reviews (DURs) are useful for obtaining information about drug usage patterns and for identifying high cost drugs, which are of economic interest

Objectives: To assess prescribing pattern in medical outpatient department (OPD) of Boru Meda Hospital, North East, Ethiopia

Methods: A retrospective, descriptive, cross-sectional study was conducted. A total of 385 prescriptions were randomly collected from the OPD prescription papers existing from Jan 2012 to Dec 2012. The prescriptions were analyzed in the context of adherence to some of WHO core prescribing indicators.

Result: Average number of drugs was 1.88. 80.02% prescriptions had drugs prescribed by generic name. Antibiotics were prescribed in 34.57% and 6.06% prescriptions had injectable preparations. (85.26%) of drugs were from essential drugs list for Ethiopia (EDL) (3rd edition).

Conclusion: On the basis of the finding of this study, antibiotics use, adherence to essential drug list and generic prescription showed deviation from the standard recommended by WHO. This calls for sustained interventional strategies and periodic audit at all levels of health care to avoid the negative consequences of inappropriate prescriptions. On the other hand, poly-pharmacy, injectable prescribing were not found to be a problem in this study.

Keywords: Prescription pattern; rational use of drugs; antibiotics, Boru meda, OPD

INTRODUCTION

Appropriate drug utilization has a huge contribution to global reduction in morbidity and mortality with its consequent medical, social and economic benefits [1]. Inappropriate prescribing is known all over the world as a major problem of health care delivery [2].

Rational prescription means that patients receive appropriate medicine in proper dosage, at the lowest cost. Prescription writing is an art as it reflects the instructions given by the prescriber to the patient. Irrational prescription of drugs is a common occurrence in clinical practice. The cost of such irrational drug use is enormous in terms of both scarce resources and the adverse clinical consequences of therapies that may have real risks but no objective benefits. This is especially true in case of developing countries such as Ethiopia with a huge population that makes access to health care delivery systems difficult [1].

Improper prescribing habits lead to ineffective and unsafe treatment, exacerbation or prolongation of illness, distress and harm to the patient and higher costs. They also make prescriber vulnerable to influences which can cause irrational prescribing. Important reasons of irrational drug prescription are lack of knowledge about drugs, unethical drug promotions and irrational prescribing habits of clinicians [2]. Monitoring of prescriptions and drug utilization studies can identify the problems and provide feedback to prescribers so as to create awareness about irrational use of drugs [3]. Variations in types of drugs used and in the way they are used is considerable even when comparing small adjacent areas and in comparing physician working within same area [4].

Drug Utilization Reviews (DURs) are useful for obtaining information about drug usage patterns and for identifying high cost drugs, which are of economic interest [5]. Data about drug usage patterns is not satisfactory. There is lack of data on prescription pattern studies. It is essential to define prescribing pattern and to identify the irrational prescribing habits to send a remedial message to the prescribers. Keeping these facts in consideration the present study was planned to assess the prescription pattern in the Medical OPD of Boru Meda Hospital.

METHODS AND MATERIALS

Study area and period

The study was conducted in boru meda Hospital north east Ethiopia Amhara region; it is found about 411km from Addis Ababa, and 10km from Dessie. The data was collected from October 20, 2013 to October 25, 2013).

Study Design

A retrospective, quantitative, and cross-sectional survey designed to describe the prescribing practices at Boru Meda Hospital.

Data collection and analysis

Two well-trained pharmacy personnel collected data on prescribing indicators retrospectively by using prescriptions papers. The specific types of data necessary to measure the prescribing indicators were recorded for each patient encounter and entered directly into an ordinary prescribing indicator form. 385 prescriptions were collected retrospectively from more than 5000 prescriptions written for a 1-year period from Jan 2012 to Dec 2012. The sample was selected using a random sampling method, and the sampling unit was patient encounters taking place at the outpatient health facility for the treatment of acute and chronic illness. All data in the ordinary prescribing indicator recording form were first analyzed manually and then using Microsoft Excel 2007. The results were reported using frequencies, averages/means and percentages.

Indicators

The WHO following prescribing indicators were used in evaluating the prescription pattern in the health facility, namely, average number of drugs per encounter, percentage of drugs prescribed by generic name, and encounters with (a) an antibiotic prescribed, (b) an injection prescribed and also Percentage of prescribe drugs from essential drug list (EDL) of Ethiopia.

Ethical consideration

A formal letter was written to Boru Meda hospital administrative. Confidentiality of the information obtained from the patient's prescription paper was maintained throughout the study period by coding and putting in the locked cabinet.

Result

A total of 385 patient prescriptions were reviewed. The WHO core indicators were determined.

Average number of drugs per encounter

A total of 726 drugs were prescribed on 385 prescriptions. Of these, 135(35%) prescriptions contained one drug, and only 1(0.32%) contained 5 drugs (Table 1). This gave average of 1.88 drugs per encounter, with 619(85.26%) of drugs from essential drugs list for Ethiopia (EDL) (3rd edition). The percentage of encounters with an injection prescribed was 44 (6.06%).

Table 1- number of drugs per encounter, in Borumeda hospital from Jan 2013 to December 2013

Number of drugs per encounter	Frequency	%
One drug	135	35
Two drug	170	44.15
Three drugs	70	18.18
Four drugs	9	2.34
Five drugs	1	0.32
Total	385	100

Table 2 Summary of results obtained at Boru Meda Hospital from Jan 2013 to December 2013

Prescribing indicators assessed	Total drugs/encounters	Average/percent	Standard derived or ideal
Average number of drugs per encounter	726	1.88	(1.6-1.8)
Percentage of encounter with antibiotics	251	34.57	(20.0-26.8%)
Percentage of encounters with injection	44	6.06	(13.4%-24.1%)
Percentage of drugs prescribed by generic	581	80.4	100%
Percentage of drugs from essential drug list	619	85.26	100%

Percentage of encounters with antibiotics prescribed

Among the total prescriptions; 251(34.57%) contained antibiotics. Of this 216(86.1%) had one antibiotics 33(13.1%) contained two antibiotics and only 2(0.8%) contained three antibiotics.

Percentage of encounters with injection prescribed

Among the total of 385; 44(6.06%) contained injections, of this 40(90.9%) contained one injection and 4 (9.1%) contained two injections.

Percentage of drugs prescribed by generic name

For the 385 patient prescription encounters in the Hospital , Total 726 drugs were prescribed, from this majority of drugs 581(80.4%) were prescribed by generic name 61(8.4%) drugs prescribed by brand names and 84(11.58%) drugs were prescribed with unauthorized abbreviation.

Frequency of prescribed drug types

Prescription of drugs by their therapeutic classification showed that antibiotics were the most prescribed drugs accounting 251(34.57%) followed by analgesics and antipyretics 157(21.6%). (Table 3) Among antibiotics tetracycline 51(20.32%), Amoxicillin 47(18.72%), Ciprofloxaciline 25(9.96%) and Gentamaycine 25(9.96%) were the most prescribed antibiotics respectively(Table 4). Among analgesic and anti pyretics Diclofenac 87(55.42%), was the most frequently prescribed followed by paracitamol 45(28.66%).

Table 3category of drugs based on their therapeutics classifications on prescription of Boru Meda Hospital from Jan 2013 to December 2013

S.NO	Category of drugs	FREQUENCY	%
1	Antibiotics	251	34.57
2	Analgesics & antipyretics	157	21.62
3	Anti fungal and other topical	63	8.67
4	Vitamins and minerals	37	5.09
5	Anti Acids and Anti ulcers	28	3.85
6	Steroids and Hormonal preparation	21	2.89
7	Drugs for correcting fluids and electrolytes and acids base balance	21	2.89
8	Anti tissuve (Cough Depressants)	20	2.75
9	Anti Protozoa's	20	2.75

10	Anti Asthmatic drugs	20	2.75
11	Narcotic & Psychotropic drugs	19	2.61
12	Antihelmetics	18	2.47
13	Anti Histamines	16	2.3
14	Cardiovascular drugs	10	1.38
15	Anti Diabetics	9	1.23
16	Anti Hypertensive	8	1.1
17	Others	8	1.1
18	Total	726	100

Table 4 Distributed of top five antibiotics drugs by their frequency of prescription in Boru Meda Hospital from Jan 2013 to December 2013

S.NO	Drug type	FREQUENCY	%
1	Tetracycline	51	20.34
2	Amoxicillin	47	18.73
3	Ciprofloxaciline	25	9.96
4	Gentamycine	25	9.96
5	Chloramphenicol	19	7.57

Discussions

A prescription provides an insight into a prescriber's attitude to the disease being treated and the nature of health care delivery system in the community [18]. Using the WHO prescribing indicators, this study has provided a better understanding of the prescribing practices in the facility being studied and has shown areas that need intervention.

The analysis of the drugs prescribed per encounter in this study gave average of 1.88 drugs per encounter that was in agreement with the suggested (WHO) criteria which is less than two [20]. However, in other studies using same WHO drugs indicators some were agreed but others do not. Study done in Wollo Region 1.91 drugs per encounter [7] , in Jimma Hospital 1.59 drugs per encounter [8] , In Hosanna Hospital 2.7 , Attat Hospital 2.6, Sodo Hospital 2.4, Mizan Hospital 2.0, in Bahirdar Hospital 1.8, In Debretabor Hospital 2.2 drugs per encounter were prescribed [9-11] and other studies conducted out of Ethiopia New Delhi Hospital 2.75 drugs per encounter [13], Indonesia 3.81drugs per encounter [14], in Pakistan 3.5 drug per counter [15] ,In Cameroon 3.0 drugs per encounter [12]. The variation of the results may be attributed to difference in availability of drugs and prescribers status.

The percentage of drugs prescribed from essential drug list of Ethiopia, In this study was 85.26% which is lower than the standard recommended by WHO(100%)[20]. A study of the patterns of prescription at Jimma Hospital, south west Ethiopia[8] and Hawasa Hospital [16]showed better results, where almost all drugs prescribed for the health problems were on the essential drug list of the country. A national baseline study on drug use indicators in Ethiopia in September 2002 showed that the percentage of drugs prescribed from the essential drug list to be 99%, which is very encouraging [14]. In a study of prescription patterns from 12 developing countries, the percentage of drugs prescribed from the essential drug list was 88% in Tanzania and 96% in Nepal [18].

In this study, injection use was found in 6.06% of encounters. This is low when compared with findings from other studies and even lower than the WHO values of 13.4 – 24.1 [20]. However, much higher values of 26.9 % were reported from a study in Hawasa, Ethiopia 38.1[16], Enugu, Nigeria [15], and those from Sudan and Uganda as reported by Hogerzeil et al [6]. The lower values of injection use found in this facility may be the setting where the study was carried out. In general outpatients departments or units, fairly stable patients are seen and followed up routinely, so the need for injections might be minimal. The use of injections will probably be higher if the study was done in the Accident and Emergency Department of the hospital.

In this study, 34.57 % of encounters had antibiotics prescribed, which is much higher than the WHO reference value of 20.0 – 26.8 % [20]. It is however lower than figures reported by studies done in Hawasa, Ethiopia 58%[16] Ilorin (45.0 %) [8], Benin City (50.4 %), Kano (67.7 %) [9], and in private and public facilities (55 and 75 %, respectively) in Warri [2]. Studies carried out by Hogerzeil *et al* in 12 developing countries reported figures of 47.5 to 100% of encounters with antibiotic prescriptions [6], while workers in Nepal reported lower value of 17.5 % [17]. Scientific literature had reported large scale inappropriate antibiotic use globally. Inappropriate use of antibiotics can

potentially lead to antimicrobial resistance and increase the necessity to use more expensive antibiotics to treat common and life threatening infections.

Percentage of drugs prescribed by generic name in this study was 80.02 which was much lower than the standard derived to serve as ideal (100%) [20]. In a similar study carried out at Jimma Hospital, south west Ethiopia, the percentage of drugs prescribed by generic name was 75.2%, which is low compared to the standard and to our finding [8]. A national baseline study on drug use indicators in Ethiopia in September 2002 also showed the percentage of drugs prescribed by generic name to be 87%, which is higher than our finding [14]. In the study of 12 developing countries, the percentage of generic drugs prescribed was low in Nigeria (58%) and Sudan (63%) but was encouraging in Tanzania (82%) and Zimbabwe (94%) [15-18].Increasing generic prescribing could substantially reduce the cost of drugs for the patients and reduce cost for pharmacies. In addition generic prescribing will eliminate or reduce the incidence of therapeutic duplication errors [19]. Duplicate drug ingestion unknowingly occurs when the patient takes the generic and brand name drugs e.g Lasix(a trade name) plus furosemide. In health facilities and systems burdened with high levels of poly pharmacy, where patients struggle with proper compliance with their old regimen, low generic prescribing will add to their confusion and possibly increase the incidence of adverse events.

The analysis of class of drugs showed that antibiotics were most commonly prescribed class of drugs(34.57%) followed by analgesics and antipyretics(21.6%).This finding is different from the study from Nigeria where analgesics were most commonly prescribed drugs(36.2%)[15].This finding suggests that antibiotic prescribing needs to be regulated. The high percentage of antibiotics prescribed in our study setting may be due to cultural beliefs about antibiotics, patient expectation to receive antibiotics, or prescribers' belief that the therapeutic efficacy of antibiotics is low. On the other hand it might be due to high prevalence of infectious disease in our setup.

Conclusions

On the basis of the finding of this study, antibiotics use, adherence to essential drug list and generic prescription showed deviation from the standard recommended by WHO. This calls for sustained interventional strategies and periodic audit at all levels of health care to avoid the negative consequences of inappropriate prescriptions. On the other hand, poly-pharmacy and injectable prescribing were not found to be a problem in this study. Several activities have proved useful and effective in promoting rational drug use and should be recommended for general use. These are standard treatment guidelines; essential drug lists; establishing drug and therapeutic committee. In addition, concerted efforts are required to introduce interventional strategies to improve prescribing practices by re - orientation and training of clinicians on rational drug use to avoid the negative effects on the individual patients and the healthcare system of the nation. There is a need for periodic audit of prescribing practices to assess the success or otherwise of such interventional programmes.

Abbreviations

WHO: world health organization; EDL: Essential drug list

Competing interests

The authors declare that they have no competing interests

Authors' contributions

AM designed and conducted the study. OS Advised the study, drafted the manuscript, revises it critically and submitted it. All authors have read and approved the final version manuscript.

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