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Aspects of Prescribers' Practice and Attitude Towards Rational Drug Use in Health Facilities of Bishoftu Town, Oromia State, Central Ethiopia

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ABSTRACT

Background: *Rational drug use is one of the essential elements of the health care system. In the environment where safe and effective use of drugs does not exist, it could be difficult to imagine a healthy nation. Irrationality in medication use can cause multiple physical, psychological, economic and social effects both at individual and social level. To this effect, the role of prescribers is of paramount importance tackle this problems.*

Objective*: Therefore it is the objective of this study to assess aspects of prescribers' practice and attitudes towards rational drug use in selected health facilities of Bishoftu town, Ethiopia.*

Method: *The study was. A prospective cross-sectional study was conducted on selected health facilities of Bishoftu town, Ethiopia to assess drug prescribing pattern using World health organization (WHO) drug use indicators. Self-administered questionnaires were used to assess attitude of prescribers on rational drug use. The data was entered and analyzed using Statistical Package for Social Science (SPSS) version 16.0 software and presented in the form of tables, graphs and charts.*

Results*: All participants gave attention to patients' age, pregnancy status, chronic disease conditions and previously used medications and associated adverse effects while treating them. Majority of the prescribers, 27 (62.8%) ignored the impact that sex of the patient can have on treatment outcome. Majority of the prescribers 27 (62.8%) knew about mechanism of action, bioavailability and drug interactions (Drug-food or Drug-Drug), Indication, contraindication, and adverse effects of drugs they prescribe. Majority of prescribers 36 (84%) had drug related information sources at their facilities. Significant number 32 (74.42%) and 36 (83.72%) of the prescribers provided sufficient information to the patient about their disease and prescribed drugs respectively.*

Conclusion: *Most prescribers are aware of the importance of rational drug use and apply it in their daily practice. The attitude of the prescribers toward RDU was also good and the influence that hindrance factors posed on prescribers' attitude and their daily practice was found to be minimal. But the practices which deviate from WHO standard like antibiotics and injections prescription should be given attention at the facilities.*

Keywords: Prescriber, Attitude, Rational drug use, Drug use indicators, Health facilities, Bishoftu, Ethiopia

Abbreviations: BSc: Bachelor of Science Degree; EDL: Essential Drug List; MD: Medical Doctor; NGO: Non-Governmental Organization; RDU: Rational Drug Use; SPSS: Statistical Package For Social Sciences; WHO: World Health Organization.

INTRODUCTION

Drugs are highly beneficial in the diagnosis, prevention and treatment of different ailments if used rationally. They enable sick individuals get relieved of their disease and associated complications and result in increased life span and quality of life if used rationally [1]. The expert conference held in Nairobi, 1985 defined rational drug use (RDU) as "a situation where patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time and at the lowest cost to them and their community [2].

As a global issue rational drug use is a multifaceted subject. The role that governments, drug authority, society, manufacturers, the educational system, media, patients and the health care professionals play is highly important [1]. Prescribers in this context have a responsibility in making sure that patients received medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time and at the lowest cost to them and their community [2]. Studies done to document the drug use pattern indicate that over prescribing, misuse of drugs, use of unnecessary expensive drugs, and over use of antibiotics and injections are most common forms of irrational drug use by both prescribers and consumers [3]. As to 2010 WHO report, worldwide, 50% of all medicines are prescribed, dispensed or sold in appropriately, while 50% of patients fail to take their medicine [4,5].

According to a study conducted in three Dutch hospitals, barriers to adhere national guidelines included: physician's lack of knowledge and a lack of agreement with the guideline, lack of awareness about dosage adjustments in renal insufficiency and lack of knowledge about intravenous to oral conversion [6]. Particularly, the appropriate antimicrobial utilization in the case of hospitalized patients is crucial not only in ensuring an optimal outcome, but in curtailing the emergence of resistance and

containing costs [7]. Collecting data on factors associated with irrational prescribing is the first step in managing this issue [8-11].

Several steps have been taken in the recent past to ensure rational drug use including: the development and revision of National essential drug list, development of national formulary, amending pharmacy act and opening drug information centers [12]. On one side, the members of health care team (physician, nurse, and pharmacist) are needed to practice rational drug therapy in order to ensure patient safety [13] but this cannot be implemented without prior patient knowledge regarding medication and their use. Empowering the patient with the knowledge of drugs prescribed enables him/her get the optimum benefits expected from the drug at the lowest risk. Therefore prescribers in collaboration with the other concerned body should struggle to equip the patient with the knowledge of the drugs he/she uses [14]. The practice and attitude of prescribers alone can pose a great challenge in drugs use process and therefore, the present situation of this issue needs to be revealed. Accordingly, this study aimed to assess aspects of prescribers practice and their attitude in selected health facilities of Bishoftu town towards rational drug use.

METHODS AND PARTICIPANTS

Study area and period

The study was conducted on selected health facilities of Bishoftu town. The town is located 47 km east of Addis Ababa, the capital of Ethiopia. The residents of the town are mainly merchants and government employees. There are 25 health facilities in the town, with 2 governments hospitals situated at the center of the town. It has 16 private health facilities (all of which are clinics), 3 health centers and four health posts. The study was conducted from February 1 to 30, 2014.

Study design

A prospective cross-sectional study design was employed to assess drug prescribing pattern using WHO drug use indicators and self-administered questionnaires were used to assess attitude of prescribers on RDU.

Populations

Source population: All health facilities, prescriptions ordered and prescribers found in Bishoftu town health facilities.

Study population: Selected health facilities, prescribers available at selected facilities during data collection period and prescriptions ordered on the date of data collection.

Eligibility criteria

Inclusion criteria: All prescribers who were willing to participate in the study and prescriptions ordered on the date of data collection.

Exclusion criteria: Unwilling prescribers.

Sampling technique and sample size determination

Sampling technique

Simple random sampling technique was used to select study facilities from the total health facilities of the town as well as to select prescription papers among those ordered at each facility during the data collection period.

Sample size determination

The minimum required sample size is calculated using with 5% margin of error, 95% confidence level

$$N= (Z\alpha/2)^2 p\ (1-p) =1.96^2 \times (0.5\ (1-0.5) =384/d^2\ (0.05)^2$$

Where, n – Sample size required

p – Estimate of prevalence rate

d– Margin of sampling error tolerated

Z – The standard normal value at CI of 95% which is 1.96.

As p=0.5 because the prevalence of rational prescribing is not known in the study area

Adding 1.5% for illegible prescriptions, the sample size, n=384+1.5%*384=390

Study variables

Dependent variables: Rational drug prescribing

Independent variables:

1. Age of the prescriber Access Patient – Prescriber communication
2. Sex of the prescriber Patient-Prescriber communication
3. Educational status of the prescriber Access of the prescriber to drug information
4. Residence of the prescriber Type of health facility
5. Patient-prescriber communication Time for patient –Prescriber communication

Data collection and analysis

A structured questionnaires and WHO drug use indicator format were used to collect the necessary data. Two trained pharmacists were involved in the data collection under the supervisions of the investigators.

Data analysis

The data was entered and analyzed using SPSS software and presented in the form of tables, graphs and charts. Statistical significance was considered at p-value <0.05.

Data quality assurance

To assure the quality of collected data, appropriately designed data collection technique and instruments were used. The pretested questionnaires were disseminated to prescribers and points found by prescribers to be unclear were clarified by the investigator. The collected data was reviewed and checked for completeness and consistency of the response

Ethical clearance and consent to participate

Ethical clearance and permission was obtained from the school of pharmacy, college of public health and medical sciences, Jimma University. Before data collection started, permission was obtained from the medical director or head of each health facility. At the time of questionnaire distribution, the participants were informed that the collected data would be kept anonymous and they are not forced to participate.

RESULTS

Socio-demographic characteristics of prescribers

A total of 43 prescribers from 13 health facilities and 390 prescription papers were included in the study. From the total prescribers involved 25 (58.1%) were males. The age of participants ranged from 20 to 49 years while 41.8% of them aged 40-49 years. Educational status of the prescribers ranged from certificate holders to specialists. Majority of the participants 31 (72.1%) worked in public facility (Table 1).

Table 1: Socio-demographic characteristics of prescribers in selected health facilities of Bishoftu town, East Shoa zone, Oromia, Eastern Ethiopia, and February 2014.

Variables	Category	Frequency	Percentage
Age (in years)	20 – 29	11	25.6
	30 – 39	14	32.6
	40 – 49	18	41.8
Sex	Male	25	58.1
	Female	18	41.9
Level of education	Certificate	3	7
	Diploma	15	34.9
	BSc	6	14
	MD	13	30.3
	Specialist	6	14
Place of work	Public health facility	31	72.1
	Private health facility	12	27.9
Note: BSc: Bachelor of Science Degree; MD: Medical Doctor			

A total of 822 drugs were prescribed from 390 prescription papers reviewed during data collection period (Table 2). The mean number of drugs per prescription was calculated to be 2.1± 1.02. Among 822 drugs prescribed 695 (84.55%) were prescribed by their generic names. Prescriptions containing antibiotics and injections were found to be 217 (55.64%) and 111 (28.46%) respectively. Of the total recorded drugs, 728 (88.56%) were prescribed from Essential Drug List (EDL) of the facility (Table 2).

Table 2: WHO drug use indicators values in selected health facilities of Bishoftu town, East Shoa zone, Oromia, Eastern Ethiopia, and February 2014.

Items	Total number of items	Percentage
Prescribed drugs	822	100
Generic drugs	695	84.55
Prescriptions containing antibiotics	217	55.64
Prescriptions containing injections	111	28.46
Drugs prescribed from EDL	728	88.56

Issues related to prescribing practices of prescribers

When patient and medication associated factors are considered: Most of the prescribers gave consideration to patients' age 36 (83.72%) and pregnancy and breast feeding status 33 (76.74%) whereas only 17 (39.53%) of them considered previous medications (Table 3).

Table 3: Prescriber's consideration of patient and medication associated factors in selected health facilities of Bishoftu town, East Shoa zone, Oromia, Eastern Ethiopia, February 2014.

Issues considered	Prescriber's response	Frequency	Percentage
Age	Yes	36	83.72
Pregnancy and breast feeding status	Yes	33	76.74
Sex	Yes	16	37.20
Chronic disease	Yes	23	53.49
Previous medications	Yes	17	39.53

Among various drug information provided to patients by prescribers, how long they should use the prescribed drugs accounted 42 (97.7%) followed by daily dosage, storage condition and pregnancy / lactation usage of the drug accounting18 (41.9%) (Table 4).

Table 4: Drug information given to patients in selected health facilities of Bishoftu town, East Shoa zone, Oromia, eastern Ethiopia, February 2014.

Information	Frequency of prescribers	Percentage of prescribers
Name, daily dosage, storage condition, pregnancy/lactation usage and price of prescribed drug	12	27.90
Name, daily dosage, storage condition and pregnancy/ lactation usage of the drug	7	16.30
Daily dosage, storage condition, pregnancy / lactation usage and price of prescribed drug	4	9.30
Daily dosage, storage condition and pregnancy /lactation usage of the drug	18	41.90
Daily dosage only	2	4.70
Treatment period	42	97.70

Attitude of prescribers toward aspects of rational drug use

The majority of the prescribers agreed with the stated aspects of rational drug use. Exceptional issue was drug prescription in generic name where large number of prescribers 18 (41.9%) remained neutral. Four prescribers (9.3%) disagreed regarding drugs prescription in generic name. Only eleven (25.6%) of the prescribers strongly agreed that injections should not be prescribed for all patients visiting health facilities (Table 5).

Table 5: Prescribers attitude towards rational drug use in selected health facilities of Bishoftu town, East Shoa zone, Oromo, Eastern Ethiopia, February 2014.

Aspects of RDU	Prescribers' response			
	Disagree	Neutral	Agree	S. agree
Name of the disease should be told to the patient	--	5 (11.6%)	2 (74.4%)	6 (14%)
Causes of the disease should be told to the patient	--		4 (79.1%)	9 (20.9%)
Consequences of the disease should be told to the patient	--	4 (9.3%)	1 (72.1%)	8 (18.6%)
Complications associated with the disease should be told to the patient	--	8 (18.6%)	29 (67.4%)	6 (14%)
Patients should be informed on the types of drugs/foods that should not be taken with prescribed drugs	--	--	33 (76.7%)	10 (23.3%)
Prescribers should tell patients how to evaluate the therapy and how to monitor the out come	--	9 (20.9%)	31 (72.1%)	3 (7%)
All drugs should be prescribed in their generic names	4 (9.3%)	18 (41.9%)	16 (37.2%)	5 (11.6%)
All drugs should be prescribed from the Essential Drugs List	--	2 (4.6%)	35 (81.4%)	6 (14%)
Antibiotics shouldn't be prescribed for all patients visiting facility	--	--	34 (79.1%)	9 (20.9%)
Injections should not be prescribed for all patients visiting facility	--	--	32 (72.4%)	11 (25.6%)

Hindrance factors for prescribers to practice rational prescribing

As shown in the figure above 41 (96.4%) of the prescribers participated on professional trainings held by government or Non-Governmental Organization (NGO) and 26 (61.03%) of the total prescribers got incentives from private sectors (Figure 1).

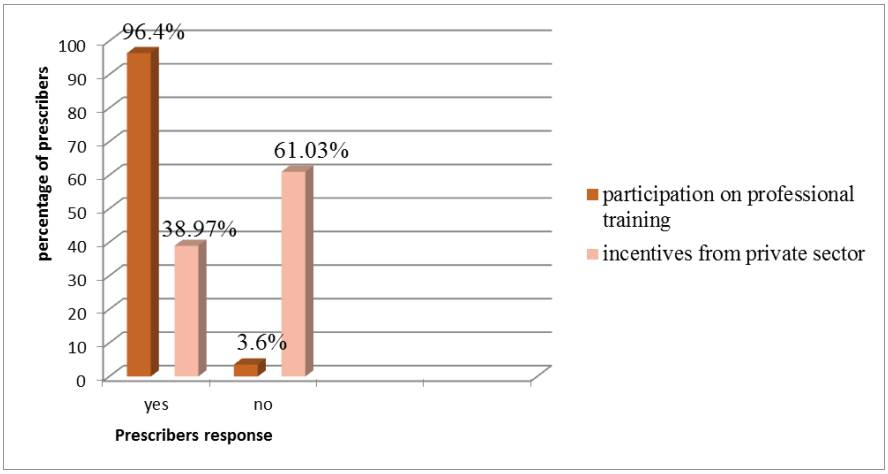

Figure 1: Prescriber's participation on professional training and incentives obtained from private sector in selected health facilities of Bishoftu town, East shoa zone, Oromia, Eastern Ethiopia, February 2014.

DISCUSSION

The process of rational prescribing begins with accurate diagnosis, followed by an evaluation of the prognosis and determination of treatment goals (preventive, curative or symptom-relieving) [15,16]. This process comprises six steps: the prescribers should; 1- evaluate and clearly define the patients' problem; 2- specify the therapeutic objective; 3- select the appropriate drug therapy ; 4- initiate therapy with appropriate details ; 5- provide information, instructions and warnings; 6- evaluate therapy regularly (e.g. monitor treatment results, consider discontinuation of the drug) [17].

Most of the prescribers gave consideration to patients' age 36 (83.72%) and pregnancy and breast feeding status 33 (76.74%) whereas only 17 (39.53%) of them considered previous medications. This result is lower when compared to the results obtained from the study conducted at Kartal Training and Research Hospital, Turkey [18]. This difference might be attributed to lower understanding of the prescribers on the significance of these factors on the patients' treatment outcomes. Among various drug information provided all the prescribers except one (97.7%). Provided information to the patients on how long they should use the prescribed drugs. This was higher when compared to the results of the study conducted in Turkey in which only 80% of prescribers informed the patient about this issue. The prescribers telling the patient regarding daily dosage, storage condition and pregnancy/lactation usage of the drug (41.9%) is, however, lower than the Turkish study [18].

Average number of drugs per patient was found to be 2.1 which are slightly higher compared with the WHO standard of (1.6 to 1.8) drugs per prescription [19]. But, it is comparable with 1.9 in each of a study done at Hawassa University teaching and referral hospital, south Ethiopia and another national baseline study done on drug use indicators in Ethiopia in September 2002 [19]. On the other hand, it is lower than the result of the study conducted in Alexandria, Egypt where the overall mean number of

drugs per prescription was 2.8 [20,21]. This difference might be ascribed to the variation in distribution of diseases requiring multiple drugs and the variation of the knowledge and attitude of the prescribers on rational prescribing. Percentage of drugs prescribed in generic names (84.55%) is comparable with a national baseline study on drug use indicators in Ethiopia in September 2002 (87%) [11] but lower than WHO standard of 100% [19]. Percentage of drugs prescribed from the EDL of the facility was calculated to be 88.56% which is comparable to results of a study conducted in health facilities south-west Ethiopia (89.09 to 91.85%) [22]. However, it is higher than that of Yemen (81.2%) and lower than the WHO standard of 100% [19]. The lower value than the WHO standard could be because not all prescribers prescribed all drugs from EDL of the facility and some prescribers had no EDL at their facility.

The percentage of encounters with antibiotics and injections were 55.64 and 28.46% respectively. These were found to be higher when compared to the standard (20-26.8%) and (13.4-21.4%) respectively [19]. These results are also higher than the results of the study in south west Ethiopia in which encounters with antibiotics and injections ranged from 23.42 to 25.79% and 9.73 to 11.6% respectively [23]. These higher percentages of antibiotics and injections in the current study may be due to due the increasing prevalence of antibiotic resistance and the recent increased availability of parenteral preparations respectively. EDL provides prescribers with a standard list of drugs which are effective, safe, inexpensive and specific in treating important health problems. EDL was available at 11 (84.6%) facilities. EDL availability is higher compared to studies from Tamil Nadu, India where 2% facilities had EDL [24].

High percent of prescribers 18 (41.9%) remained neutral and 9.3% disagreed on the prescription of all drugs in generic name. This result is exceptional when compared to the remaining aspects of Rational Drug Use (RDU) where majority of the participants agreed. This might be the reason for the deviation of generic drug prescription (84.55%) in this study from WHO standard of 100% [19]. A few percent of prescribers strongly agreed that issues like causes of the disease, drugs/foods that should not be taken with prescribed drugs, consequences of the disease and complications associated with it should be talked to the patient. This might indicate the commitment that the prescribers have to serve their patients. Percentage of encounters with antibiotics and injections calculated for the study facilities (55.64 and 28.46% respectively) disagree with prescribers' attitude where high percent of prescribers (79.1% and 72.4% respectively) agreed that antibiotics and injections should not be prescribed for all patients visiting health facilities. This might indicate despite good attitude of most prescribers toward RDU, not all prescribers show RDU principles practically which could be due to the influence coming from patients (patient expectations) and foreign bodies like manufacturing industries. According to RDU principles, the prescribers should provide the patient with sufficient and detailed information on each prescribed medicine and patient diagnosis. The patient needs to know the reason for taking the medicine, how to take the medicine, common and serious adverse effects, potential drug–drug and drug–food interactions and when to return for review of the treatment as well as name, cause, consequence and complications of the disease [15,17,25].

Although achieving all these tasks in daily medical practice is quite difficult, results obtained from this study indicated that majority of the participating prescribers gave adequate information to the patient on their disease, treatment and prescribed medicine. This might have resulted from the availability of drug and disease information sources at the facilities and from knowledge and experiences gained through different trainings. Few prescribers said there were heavy patient load, shortage of consultation time and scarcity of human resource and hence were unable to provide sufficient information on prescribed drugs. This finding is in agreement with the study held in Turkey where heavy patient load and short consultation time were obstacles for the prescribers to provide sufficient information on disease and prescribed drugs [18].

CONCLUSIONS AND RECOMMENDATIONS

Findings from this study indicated that most prescribers are aware of the importance of RDU and apply it in their daily practice. Some of the practices of prescribers which deviate from WHO standard like antibiotics and injections prescription need intervention. The attitude of the prescribers towards RDU was also good and the influence that hindrance factors posed on prescribers' attitude and their daily practice was found to be minimal. Antibiotics and injections should be prescribed with care. Effort is needed to ensure that local drug information resources such as essential drugs list are available at all health facilities. The Ministry of Health and other stack holders should supervise, monitor, and give feedback to prescribers, by developing and implementing interventions about drug use in general and prescribing in particular in order to improve prescribing practices and rational use of drugs. Essential drugs should be supplied to each facility either by government or another body who is in charge of. Further research should also be conducted at the study facilities in order to uncover problems associated with RDU which are not identified in this study.

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