Assessment of Drug Prescribing Pattern in Dessie Referral Hospital, Dessie.

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Abstract

Drug use evaluation is a system of ongoing, systematic, criteria-based drug evaluation that ensures the appropriate use of drugs. The main objective of this study was to assess the drug prescribing patterns at Dessie Referral Hospital using some of the WHO core drug use indicators. Institutional based descriptive cross sectional study was conducted from April 28 to May 10, 2013 by reviewing 362 prescription papers which were selected using systematic random sampling technique. The average number of drugs per prescription was 1.8. Out of all prescribed drugs 91.7% were available in the national Essential Drug List (EDL) and 93.9% of them were prescribed by generic name. The percentage of encounters prescribed with an antibiotic and injection were 52.8% and 31%, respectively. The most commonly prescribed forms of antibiotics were amoxicillin (22.2%) and ampicillin (21.3%). Based on the finding of this study, the prescribing practices for antibiotic and injection showed deviation from the standard recommended by WHO. So, there is a clear need for medical education programs which should rationalize the prescribing of antibiotics and injections.

Keywords: Rational drug use, generic name, WHO core drug use indicators, drug prescribing pattern.

INTRODUCTION

Rational use of medicines requires that 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. Rational drug use evaluation is a system of ongoing, systematic, criteria-based drug evaluation that ensures the appropriate use of drugs [1].

Drugs are important components of health care system and play a crucial role in saving life. The limited information on drug use throughout the world indicates that drugs are not optimally used. This inappropriate use has serious health and economic consequences for the success of national health care system [2].

Irrational use of drugs may take many different forms, such as; poly-pharmacy, over-use of antibiotics and injections, failure to prescribe in accordance with clinical guidelines and inappropriate self-medication [3].

The irrational use of drugs becomes the world wide problem encompassing developing and developed countries; developing countries have rather worsened condition [4, 5]. Globally, more than 50 % of all medicines are prescribed and dispensed inappropriately, while 50 % of patients fail to take the prescribed drugs correctly. Moreover, about one third of the world population lacks access to essential medicines [6, 7, 8].

A national baseline study on drug use indicators in Ethiopia showed that percentage of drugs prescribed by generic name was 87% and the average number of drugs prescribed per encounter found to be 1.9. According to the study, the percentage of encounters with an injection and antibiotic was reported as 23% & 58.1% respectively [**9**].

Rational drug use is complex subject involving the physician, the patient and the dispenser. Each of these is influenced by many factors that are often difficult to measure and quantify. Despite complexity of drug use, a number of indicators have been developed, standardized and evaluated by WHO. These indicators are grouped in to three categories namely: prescribing indicators, patient care indicators and facility indicators [1]. These indicators of prescribing practices measure the performance of health care providers in several key dimensions related to the appropriate use of drugs. The core prescribing indicators measure general prescribing tendencies within a given setting, independent of specific diagnoses [4].

According to WHO drug use evaluation guideline, outpatient prescribing indicators used includes average number of drugs per encounter, percentage of drugs prescribed in generics, percentage of prescriptions with

antibiotics, percentage of prescriptions with injections and percentage of prescribed drugs from Essential Drug List (EDL) [10].

Before activities are started to promote rational drug use, an effort should be made to describe and quantify the situation. Several well-established survey methods are available for this purpose. One assessment method is a prescribing and patient care survey using the WHO health facility drug use indicators [11].

According to the hospital officials, there was no study conducted on the past 2 years. Hence, the study was conducted to assess drug prescribing pattern in Dessie referral hospital and to recommend possible solutions, based on the findings, to different stalk holders.

METHODOLOGY

Institutional based descriptive cross sectional study was conducted by using prescriptions, which were received and documented by dessie referral hospital outpatient pharmacy from January 1, 2013 to December, 31, 2013. Dessie Referral Hospital is located in Dessie town, Amhara regional state in north east Ethiopia, 401 km from Addis Ababa. According to statistical projections for 2006/7, the town population is 201,091 with sex distribution of 53.7% female inhabitants [12]. In the town both governmental and privately owned health facilities are found.

The sample size was calculated using single population proportion formula

$$n = \frac{(1.96)^2\,(0.5)(1-0.5)}{(0.05)^2} = 384$$

Where n= sample size, d= margin of error =0.05, Z level of confidence = 95% (1.96), P- proportion. Assume that Confidence interval (z) is to be 95%, p=50% since there is no reasonable estimate and d 5%. Hence, 384 prescriptions were selected by systematic random sampling

The specific types of data, necessary to measure the prescribing indicators, were recorded from sampled prescriptions using data abstraction format. Prescriptions containing medical supplies and non pharmacological treatments were excluded.

RESULTS AND DISCUSSION

Out of 384 prescriptions, 2 were excluded as per the exclusion criteria, the rest prescriptions were reviewed in the study. Among the 362 prescriptions, 60.8% of them were prescribed for females and the remaining 39.2% were for male patients. The age composition of the study population revealed that 62.2% were between the ages of 15-44 years (Table1).

Table 1: Socio demographic characteristics of patients served in Dessie Referral Hospital, from Jan, 2013 - Dec, 2013 (n = 362 encounters)

Age Group (Years)	**Male**	**Female**	**Total (%)**
<5	15	19	34 (9.4%)
5-14	7	10	17 (4.7%)
15-30	55	94	149 (41.2%)
31-44	30	46	76 (21%)
45-64	30	35	66 (18.2%)
Over 64	15	6	21 (5.8%)
Total	152	210	362 (100%)

Regarding the number of drugs prescribed per encounter, 39.8%, 45.6% and 13% of the encounters (prescription) were prescribed with one, two and three drugs, respectively (Fig.1).

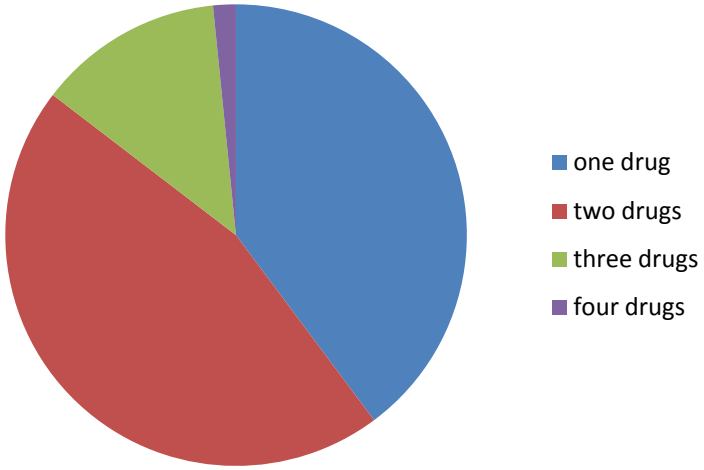

Figure 1: The number of drugs prescribed per encounter in Dessie Referral Hospital from Jan, 2013 - Dec, 2013 (n = 362 encounters)

Appropriate use of antibiotics is necessary to prevent emergence of drug-resistant bacteria. Out of 362 encounters, 52.8% of them were prescribed with antibiotic which is higher than the WHO recommended value (20-26.8%). But, the result is lower than reported from Sudan 63% [13], Uganda 56% [14] and wolkite, south western Ethiopia (63%) [15]. This might be partly explained by the belief of the patients ‘‘there is a pill for every ill’’ which influences the prescriber to over prescribe antibiotics for their patients [16].

The use of injection for treatment accompanied with variety of disadvantages including sepsis at administration, risk of tissue toxicity, costly difficulties in correcting the error [17]. Injections are very expensive compared to other dosage forms and require trained personnel for administration. Moreover, unhygienic use of injections can increase the risk of transmission of potentially serious pathogens, such as hepatitis, HIV/AIDS, and blood-borne diseases [18].

In this study the percentage of encounters prescribed with injection (31.2%) was found to be higher than the standard of WHO (13.4%-24.1%) and the value reported by FDREMOH in 2003 **(**23%). However, slightly higher values, 36%, 38.1% and 48%, were reported by different authors [13, 14, 19]. The might be explained by wrong beliefs and attitudes of patients and health professionals about the efficacy of injection versus oral medication. Moreover, our study setting is a referral hospital, where patients with serious conditions are treated, and injectable are prescribed to produce fast onset of action [20].

In this study, a total of 639 drug products were prescribed. Accordingly, the average number of drugs per prescription was 1.8, at Dessie Referral Hospital which is acceptable as compared with the standard (1.6-1.8). The value from this study is comparable with the study conducted in Hawassa University Hospital, which was 1.9. In a study conducted on prescribing patterns in three hospitals in north Ethiopia, the average numbers of drugs per patient were 0.98 at Gondar Hospital, 1.8 in Bahirdar Hospital, and 2.2 in Debre Tabor Hospital [7] which revealed variable prescribing patterns but much more better than reported by Bhartiy et al., 2008 [21].

Essential drugs offer a cost-effective solution to many health problems in developing countries. The national EDL were selected regarding to disease frequency, affordability, with assured quality and availability in appropriate dosage forms. Regarding the percentage of drugs prescribed in Dessie Referral Hospital from the essential drug list was 91.7%, which is less than the ideal value of 100% set by WHO, and other studies results reported by Desalegn in 2013 from Hawassa university hospital (96.6%) [15] and federal democratic republic of Ethiopia Ministry of Health (FDREMOH) national report in 2003 (99%). However, lesser values were also reported in Nigeria (88%) and South East Asia (91.2%) [22, 23].

The percentage of drugs prescribed by generic names at Dessie Referral Hospital was 93.9% which approaches the standard value set by WHO (100%) and higher than the national value reported by FDREMOH in 2003 (87%). However, it is much higher than reported by Bhartiy and his co worker in India (48.5%) in 2008 [21].

Of a total of 639 prescribed drug products, the most commonly prescribed drugs were antibiotics (34.5%), anti-pains (21.4%) and cardiovascular drugs (15%) (Table 2). From the antibiotics, amoxicillin and ampicillin were the most prescribed drugs with 22.2%, and 21.3%, respectively (Table 3).

Table 2: Percentage of prescribed drugs in Dessie Referral Hospital by their category from Jan - Dec 2013.

Category of Drug	**Number of drugs**	**Percentage**
Antibiotics	221	34.5
Anti-paints	136	21.4
Cardiovascular	101	15.8
GIT	81	12.7
CNS	53	8.2
Anti acid	28	4.3
Others	19	3.1
Total	639	100

Table 3: Antibiotics prescribed at the outpatient pharmacy of Dessie Referral Hospital from Jan - Dec. 2013.

Antibiotics	Frequency	%
Amoxicillin	49	22.2%
Ampicillin	47	21.3%
Cloxacillin	24	10.9%
Ceftriaxone	19	8.6%
Ciprofloxacillin	16	7.2%
Doxycycline	12	5.4%
Metronidazole	10	4.5%
Erythromycin	9	4.1%
Cotrimoxazole	9	4.1%
Cephalexin	7	3.1%
Others	12	5.5%
Total	221	100%

Among injections diclofenac was highly prescribed which accounted 20.9% (Table 4).

Table 4: Injections prescribed at the outpatient pharmacy of Dessie Referral Hospital from Jan – Dec. 2013.

prescribed injection	Frequency	Percentage (%)
Diclofenac	35	20.9%
Ampicillin	30	18%
Gentamycin	23	13.7%
Ceftraxon	19	11.4%
Furosemide	16	9.6%
Cloxacillin	11	6.6%
Vitamin k	9	5.4%
Metronidazole	8	4.8%
Cimetidine	6	3.6%
Others	10	5.6%
Total	167	100%

CONCLUSION

On the basis of the finding of this study, the prescribing practices for antibiotic and injection showed deviation from the standard recommended by WHO. On the other hand, poly-pharmacy, generic prescribing and prescribing from EDL were not found to be a problem in this study. There is a clear need for medical education programs which could rationalize the prescribing of antibiotic and injection. The pharmacy staff should provide the relevant information to prescribers as well as to the communities about effective utilization of drugs by establishing Drug Information Center.

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