

Prescribers adherence to the basic principles of prescription order writing in shashemene referral hospital and malka oda district hospital

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Abstract

Aim: Prescription writing is a science and an art, as it conveys the message from the prescriber to the patient. Prescribing an inappropriate drug is a global problem.

Objective: The objective of this study was to assess the adherence of prescribers towards the basic principles of prescription order writing.

Materials and Methods: A retrospective study was conducted from February 18 - 22, 2013 to assess the prescriber adherence to basic principle of prescription in Shashemene Referral Hospital (SRH) & Malka Oda District Hospital (MODH) pharmacies on one-year prescriptions.

Results: A Total of 384 prescriptions were analyzed of which 234 & 150 prescriptions were collected from MODH & SRH pharmacies respectively. The main findings were, name of the patients and sex was mentioned in 100% & nearly 98% of the prescriptions in both hospital pharmacies. Some prescriptions were found with missing date and legible handwriting which accounted 58.12%, 10% (MODH) & 59.17%, 10% (SRH). However, similar results were obtained for illegible handwriting (10%) in both hospital pharmacies. The most frequently missed drug information by prescribers was the dosage form which accounted 63.25% & 56.67% for MODH & SRH respectively.

Conclusion: The results showed that there was relatively poor adherence of prescribers following the basic principles of prescription order writing in both hospital pharmacies. However, the results of SRH were better than MODH. There might be a need for continuing education of prescribers and adoption of best methods to improve the quality of prescription order writing and promote the rational use of drugs.

Keywords: Prescribers; Adherence; Prescription Order Writing; Hospital Pharmacies; Ethiopia.

INTRODUCTION

A prescription is an order for medication issued by a physician, dentist, or other properly licensed medical practitioner. Prescriptions designate a specific medication and dosage to be administered to a particular patient at a specified time. The prescription order is a part of the professional relationship between the prescriber, the pharmacist, and the patient. It is written by the prescriber and given to the patient for presentation at the pharmacy. A prescription has different components like, prescriber's information, patient information, date, superscription, inscription, subscription, directions for the patient (signa), refill, and prescriber's signature (1).

The word "prescription" originated from 'pre-' (before) and "script" (written), refers to the prescription is an order that must be written down before a compound drug can be prepared. It is symbolized by Rx, which refers to Late Latin verb recipe "to take" or "take this"(2).

Medicines are an essential component of health care delivery. When used rationally, they produce the desired effect of improving patients' ailments. Their irrational use, on the other hand, leads to prolongation of the illness, development of adverse effects, and unnecessary expense. In Ethiopia, several efforts have been made to promote the rational use of medicines. Among these, the publication of the essential and national medicine lists for Ethiopia, and the introduction of the Standard Treatment Guidelines (STG) are the most notable. As a result of such relentless efforts, some positive trends in the prescribing practice have been observed over time (3).

Although there are some commendable efforts of the Food, Medicine and Healthcare Administration and Control Authority (FMHACA) and relevant professional schools and associations, there are indications that the rational use of medicines in Ethiopia is far from satisfactory. According to a baseline survey of prescription pattern and factors that influence prescribing behavior conducted in

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8 hospitals in southern Ethiopia, the study showed that irrational prescribing (in the form of the higher average number of medicines per encounter, high percentage of injections, high percentage antibiotic prescribing) was highly prevalent. It was also noted that prescribing behavior in over 60% of the respondents was influenced by factors like peer-norms, lack of medical information, workload, etc. rather than sound scientific evidence. These factors were given as the cause of the observed irrational medicinal use (3).

Thus the rational use of medicine 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 use of medicines is a complex issue demanding mainly an integrated action of prescribers, dispensers and users and/or patients. Thus, the rational use of drugs as termed by world health organization (WHO) encompasses the appropriate drug be prescribed, that it be dispensed correctly, and that it be taken in the right dose at the right intervals and for the right length of time. The appropriate drug must be effective, and of acceptable quality and safety (3,4).

According to a study report by Francisco et al., on drug therapy and drug prescribing in primary health care settings in developing countries showed that practitioners tend to prescribe too many drugs and some that are too frequently ineffective. Most countries often have to rationalize the use of medications and develop strategies to improve compliance (5).

Moreover, according to a study conducted on 200 patients in four hospitals in Addis Ababa, revealed that the great majority of patients didn't get adequate information from the prescriber regarding their illnesses, importance, effect, and antagonistic effects of treatment. Thus, merely 5.5% were informed about the medicine - medicine interaction, 7% about the adverse effect of the medicine, and at most 9.5% were given information about contraindication of the medicine they were given (3). Poor understanding about medications leading to non-adherence is a common phenomenon indicated by different studies in Ethiopia (6).

Thus, the present study was undertaken to assess the prescribers' adherence to the basic principles of prescription order writing as an indicator for practice of rational prescribing in Malka Oda District Hospital (MODH) and Shashemene Referral Hospital (SRH), Shashemene Town, West Arsi Zone, Oromia Region, Ethiopia.

MATERIALS and METHODS

Study area

The study was conducted in Shashemene town, which is 240 km away from Addis Ababa, capital of Ethiopia. The town is located in West Arsi Zone, Oromia Region, Ethiopia. It has a total population of 85,871 people, an average altitude of 1,990 m above sea level, a "Wayinadega" climate

zone with a mean annual rainfall of 700-950 mm and mean annual temperature of 12–27 °C. The two hospitals were established at the town around 1961 (Shashemene Referral Hospital) and 2010 (Malka Oda District Hospital).

Study design & period

A retrospective study was conducted in order to assess the prescriber adherence to the basic principle of prescription order writing in Shashemene Referral Hospital & Malka Oda District Hospital pharmacies. The study was conducted from February 18 to 22, 2013, and it includes one-year prescriptions, which were dispensed from January to December 2012.

Source and study population

Source population was the whole prescriptions which were dispensed in pharmacies of both SRH & MODH in 2012. The study population was the prescriptions which were dispensed from January-December 2012.

Sample size determination

Sample size and technique

The sample size was determined by using the following formula:

$$n = \frac{z^2 p (1 - p)}{d^2}$$

where p= an estimate of the prevalence rate of margin
d= the margin of sampling error tolerated
z= the standard normal value
n = number of samples

Since there was no prevalence rate for prescription error, it was possible to take the prevalence rate at 50% (0.5) and confidence interval of 95% and the margin of error as 5% (0.05) then the sample size was calculated as:

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

Thus 150 prescriptions were collected from Sheshemane Referral Hospital and 234 prescriptions from Malka Oda District Hospital, and a total of 384 prescriptions were obtained from both study areas. Systematic random sampling was used to draw the study population. That means prescriptions were selected at the regular intervals from the sampling frame.

Data collection

A structured questionnaire was designed to elicit information in the following areas: patients name, drug information, number of drugs per prescription, prescribers name & signature on the prescription order, date & legible handwriting and adherence to generic & brand drugs. Prescriptions were collected and structured questionnaire was prepared to transfer the relevant information found on the prescriptions. Appropriate operational definitions were used to increase accuracy and reliability of collecting data.

Data collection instrument and analysis

Data was collected by using the structure format that contained three parts. The data collector provided the collected data to the principal investigator on the next day of data collection. The principal investigator arranged the collected data, and investigation was made depending upon the information obtained. Data analysis was done by using suitable methods and was presented by using tables and diagrams.

Ethical consideration

An official letter was taken from Jimma University and submitted to Shashemene Referral Hospital and Malka Oda District Hospital administrations before starting data collection, and consent was obtained from both hospitals.

RESULTS

A total of 384 prescriptions were analyzed to assess the adherence of prescribers to the basic principles of

prescription order writing. 234 prescriptions were collected from Malka Oda District Hospital (MODH) Pharmacy & 150 prescriptions were collected from the Shashemene Referral Hospital (SRH) Pharmacy Table 1.

Among the total prescriptions analyzed at MODH & SRH, there was 100% frequency of mentioning the name of the patient in both hospital pharmacies. Moreover, information regarding patient's age and sex appeared in prescriptions at 97.86% and 97.33% of all the cases in both hospital pharmacies respectively. However, frequency of mentioning the card number was very poor (14.1%) in MODH compared to SRH (91%) (Table 1), Table 2. As shown in Table 2, SRH showed better presence of drug information on prescription like strength, dose, dosage form, route of administration and frequency of medications compared to MODH. However, there was no difference in the distribution of duration of treatment and name of drugs in prescription Table 3.

Table 1. Distribution of patient information on prescriptions

Parameters	Sample size	Malka Oda District Hospital				Shashemene Referral Hospital				
		Yes	%	No	%	Sample size	Yes	%	No	%
Name	234	234	100	0	0	150	150	100	0	0
Age	234	229	97.86	5	2.14	150	146	97.33	4	2.67
Sex	234	232	99.14	2	0.86	150	145	96.67	5	3.33
Card No	234	33	14.1	201	85.9	150	137	91	13	9

Table 2. Distribution of drug information on prescription

Parameters	Malka Oda District Hospital				Shashemene Referral Hospital			
	Yes	%	No	%	Yes	%	No	%
Name	234	100	0	0	150	100	0	0
Strength	208	88.89	22	11.11	140	93.33	10	6.67
Dose	155	66.24	79	33.76	132	88	18	12
Dosage form	86	36.75	148	63.25	65	43.33	85	56.67
Route of administration	190	81.19	44	18.8	131	87.33	19	12.67
Frequency	202	86.32	32	13.68	135	90	15	10
Duration of treatment	197	84.19	31	15.81	126	84	24	16
Total	234				150			

Table 3. Distribution by number of drugs per encounter

Drug per encounter	Malka Oda District Hospital		Shashemene Referral Hospital	
	Number of drug	%	Number of drug	%
Only one drug per prescription	80	15.62	68	23.77
Only two drugs per prescription	156	30.47	108	37.76
Only three drugs per prescription	147	28.71	60	20.97
Only four drugs per prescription	48	9.37	40	13.98
Only five drugs per prescription	45	8.7	10	3.52
More than five drugs per prescription	36	7.03	0	0
Total drugs	512	100	286	100

In both hospital pharmacies, it was found that there existed polypharmacy in prescriptions. The most frequent number of drugs per encounter was two drugs per prescription (30.47% and 37.76% in MODH and SRH respectively). However, there was no prescription containing more than five drugs in SRH unlike MODH (Table 3). In both hospital setups 100% presence of prescribers name & signature was lacking in prescription orders. However, prescriptions from SRH showed better presence of prescribers name & signature (82.66% & 96.67% respectively) compared to MODH (31.62% & 92.3% respectively) (Figure 1).

As shown in Figure 2 above, there were some legibility problems of prescription writing which were noticed in both hospital pharmacies and accounted for 10% of the cases in MODH and SRH. There was prescriber's poor adherence to writing the date of prescription as more than 50% of the prescriptions didn't contain the date. Generic drug prescribing practice was found to be good in both hospital pharmacies, which accounted for 85.47% & 96.67% in MODH and SRH respectively. However, there were relatively very less brand name prescribing pattern in SRH (3.33%) compared to MODH (14.53%) (Figure 3).

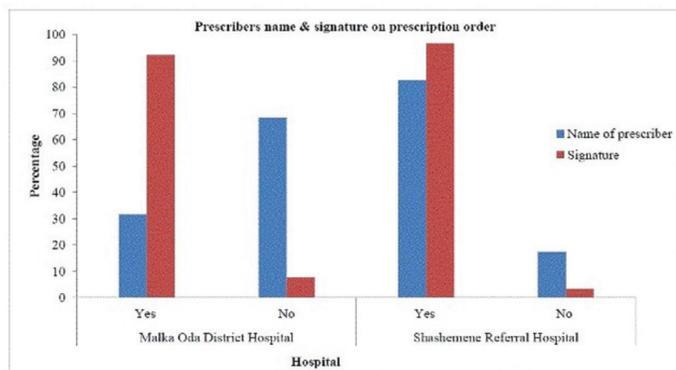


Figure 1. Distributon of prescribers name & signature on written prescription order

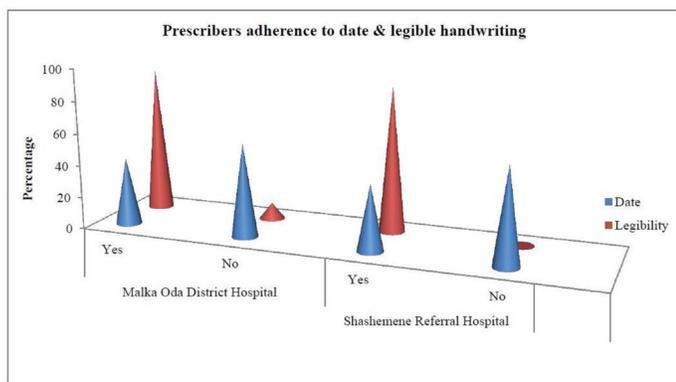


Figure 2. Prescribers adherence to date & legible handwriting about drug information on prescription

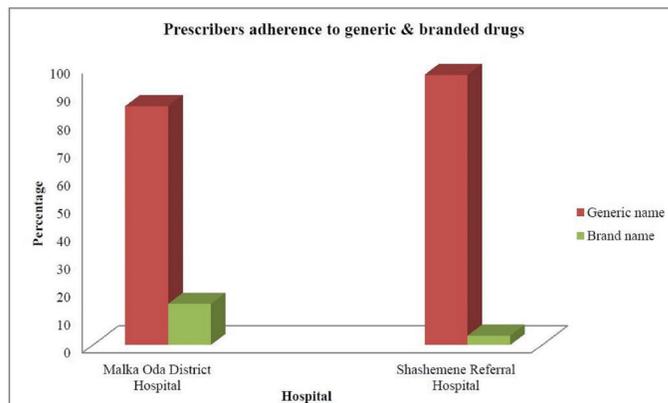


Figure 3. Prescribers adherence to generic & brand drugs

DISCUSSION

The present study revealed that presence of patient information (name, age, sex and card number) recorded on the prescription ranges from 14.1% up to 100%. Name of the patients was mentioned in all the prescriptions (100%) in both hospitals & these values were similar to study done in Nigeria (100%), but in Pakistan (94%) it was slightly less (7,8). Age of the patients was mentioned in 98% of the prescriptions in MODH & 97.5% in SRH hospital pharmacies, these values were more when compared to studies done on the prescriptions in Nigeria (69.9%), Pakistan (54%) [7,8].

However, the above values were nearly similar to the studies done in Serbo (96.6%) and Assendabo (95.3%) health centers, Ayder referral hospital (95.8%) of Ethiopia (9,10). Patient sex was indicated in 99.5% & 96.67% of the prescriptions written in MODH & SRH hospital pharmacies respectively, and still it was more when compared to studies done in other areas of Ethiopia like Serbo (95.3%) and Assendabo (81.9%) health centers, and Ayder referral hospital (95.6%) (8,9).

Moreover, the study results showed that there was a discrepancy in mentioning the card number as a patient information indicator in written prescription orders in MODH (14.1%) and SRH (91%). The percentage values showed a large variation between the hospitals located in the same town. The presence of the card number on prescriptions in SRH (91%) was better compared to the studies done in Serbo (70.8%) and Assendabo (82.1%) health centers of Ethiopia (8). However, it was slightly less than that of Ayder referral hospital (94.5%) (1).

Drug information includes name, strength, dose, dosage form, duration of treatment, route of administration, frequency of administration and total amount to be dispensed required for a complete course of treatment. As shown in the result, drugs' names were mentioned in all the prescriptions for all prescribed drugs.

A survey undertaken in 2006 in Ethiopia described the current treatment practices of hospitals. Sixty-five percent of the prescription order lacks information concerning dose, which in turn could lead to under or over treatment to the patients. Significant number of prescriptions lack information about the methods of drug administration, the interval of administration and the duration of treatment. These malpractices could result the administration of drugs in the wrong route, unwanted shorter or longer interval of drug administration and incorrect duration of treatment (3).

Strength and dose of the drug should be written carefully and correctly. As shown in results of the present study, the strength of the drug was clearly written in 98% of the prescriptions at MODH and 93.3% in SRH. These results when compared with similar studies done in Palestine, which showed that the strength of the medication was missing in 70% of the prescriptions, 15% in Karachi and 83.6% in Hyderabad of Pakistan (8). Moreover, it was also found to be better than the studies done on the prescriptions in Serbo (43.4%) and Assendabo (33%) health centers, and Ayder referral hospital (95.8%) of Ethiopia (9,10). 66.5% of the prescriptions contained the dose of the drug in MODH and 88.3% in SRH. These results were better when compared to other studies done in Pakistan (11), which showed that 39.2% prescriptions did not include dose of medications. Moreover, the study done on the prescriptions in Serbo (14.3%) and Assendabo (10.3%) health centers of Ethiopia (10) showed fewer results than the present study, but at the Ayder referral hospital of Ethiopia (10) was by far better in mentioning the dose of the drug in 99.7% of the prescription orders.

The most frequently missed drug information by prescribers was the dosage form which accounted 63.25% & 56.67% for MODH & SRH respectively. These results were very high when compared to studies done in Serbo (39.8%) and Assendabo (47.8%) health centers of Ethiopia (9) respectively, but a study done in Pakistan (8) showed that a very least number of prescriptions (10%) contained missing dosage form.

The results of the present study showed that more than 80% of the prescriptions in MODH and SRH contained drug information like route of drug administration, which was found to be better than the results reported in Karachi (74%) and Hyderabad (77.7%) of Pakistan (8,11). The presence of drug frequency in prescriptions ordered in MODH and SRH accounted for 84% was found to be less compared to the results reported in the Ayder referral hospital (99.2%) (10). Even a majority of prescriptions (88.6%) in Pakistan contained drug frequency (8), but more than the study done in Palestine (80%) (12) and in Serbo (79.3%) and almost same as in Assendabo (84.4%) health center of Ethiopia (9). Mentioning the duration of treatment in prescription orders in MODH (86.32%) and SRH (90%) was comparatively more to similar studies done in Karachi (55%) and Hyderabad (6.7%) of Pakistan (9,12), but low when compared to study done in Serbo

(95.2%) and Assendabo (94.7%) health centers of Ethiopia respectively (9,10).

In the present study, some prescriptions were found with illegible handwriting that accounted 10% in both hospital pharmacies. When compared to close study done in Pakistan (11) only in 6.2% of prescriptions name of drugs were not readable. Whereas, other similar studies done in Ethiopia showed higher illegible hand writing of prescription at Ayder Referral Hospital (18%), but less in Serbo (8%) and Assendabo (3.8%) Health Centers (9,10). According to a study reported by Shaughnessy AF and Nickel RO (1989) it was found that 21% of all prescriptions collected contained at least one prescription-writing error on 1814 prescriptions written by 20 residents (13).

According to WHO, it is recommended to write drugs' name using International Non Proprietary Names (INN) or generic names (3). Thus in the present study the prescribers' adherence to generic name Vs brand name in MODH accounted for 85.47% & 14.53%, respectively, and in SRH accounted for 96.67% & 3.33% respectively. These results were high when compared to study done in hospitals of Western Ethiopia, which demonstrated that 79.2% of the prescriptions were written by generic name (14). Even, in Serbo (64.3%) and Assendabo (61.2%) health centers, Ayder referral hospital (83%), Gondar teaching hospital (82.9%) of Ethiopia (9,10,15) it was reported to be less. Similarly, a study done in Nepal (22.57%) (11) and Bahrain (13.2%) (16) showed very less results.

CONCLUSION

The results from this study showed that there was relatively poor adherence of prescribers following the recommended basic principles of prescription orders writing in both hospital pharmacies. However, the results of SRH were found to be better than MODH. Based on this study there might be a need for continuing education of prescribers and adoption of better methods like computerized (electronic) prescribing to improve the quality of prescription order writing and promote the rational use of drugs.

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