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Analysis of Dispensing Practices at Community Pharmacy Settings in Ambo Town, West Shewa, Ethiopia

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Abstract

Background: Irrational dispensing practices are like a severe deep rooted problem in Ethiopia rather than the other developing countries. However, unlike hospital pharmacies, dispensing practices in the community pharmacy had received little attention, and thus not well studied. The purpose of the present study therefore is to generate valuable data on dispensing practices available at the later settings in one of the largest town in Ethiopia; Ambo town.

Methods: Cross sectional study was conducted in 15 community pharmacy settings including 255 clients from April to June 2014. Dispensing practices were evaluated using WHO standards. Data was analysed using SPSS Version 20.0.

Results: Out of 18 dispensers working at these settings, only 3(17%) were pharmacists and the rest 5(27.8 %) were not professionally qualified (without having any college diploma or university degree). The average dispensing time obtained was 60 seconds. From the total of 225 clients visiting these settings, only 17 (7.6%) of them were found to be knowledgeable about drugs dispensed to them. Regarding adequacy of labelling, generic name, strength, dosage, and quantity of drugs were written on only 11.1%, 11.1%, 29.8% and 11.6% of the labels respectively. For most of the clients (90%), drugs were dispensed without checking patients' identity like age. While for 6.7% wrong strength, 12% incorrect frequency and 24.4% incorrect total quantity were dispensed. Dispensing spoon was the only dispensing aid available at all settings. None of them were found to check the temperature of the refrigerator regularly and maintained within acceptable range.

Conclusion: Generally, dispensing practices found at these pharmacy settings mostly were not standard. The issues worth considering and addressing are involvement of non-pharmacy professionals in dispensing, very short dispensing time, poor clients' knowledge, poor labelling of medications, significant number of dispensing errors and unavailability of essential dispensing-aids. So there is a need for urgent managerial and educational intervention to improve dispensing practices in the country and in the study area particularly.

Keywords: Dispensing practice; Community pharmacy settings; Dispensing error; Dispensing aids`

Introduction

Community pharmacy is expected to provide support for patients to improve adherence to prescribed medicines, and to help doctors rationalize their prescription [1]. Traditionally, the pharmacists primary responsibility has been the correct dispensing of drugs and maintain the pharmaceutical quality of the drugs dispensed. Nowadays, their role has increased to involve advising the physician and other health professionals about drug therapy, counselling patients about drugs and monitoring drug use. Due to shortage of pharmacists in Ethiopia, however, nurses and health assistants are involved in rendering some of the pharmaceutical services, particularly the dispensing of drugs informally [2].

Because of this and related reasons, irrational dispensing practices like any other developing country are not uncommon in Ethiopia. The dispensing of prescription-only drugs at partial doses and even without prescription is common. Moreover, poor labelling of the dispensed items, lack of patient counselling, incomplete compiling and charging patients unreasonably high prices for the dispensed items are other practices that reflect an irrational dispensing. The availability of smuggled and counterfeit drugs worsens the situation and complicates the issue of rational use of drugs in Ethiopia [3].

According to assessment of the pharmaceutical sector in Ethiopia in 2006; it was observed that on average, only 19.95% of medicines dispensed to patients in health facilities were adequately labelled. Only 12.18% of the respondents understood how to take their medicines. The national average dispensing time was 78.69 seconds, excluding the time needed for payment, which is not adequate. Only 40% dispensers use written labels [2,3]. Similarly, the study conducted on assessment of the dispensing practices of drug retail outlets in selected towns, North West Ethiopia, showed that the average dispensing time was 1.86 minutes while the provision of written information was about 66 % [4].

Other study conducted on assessment of dispensing practice in south west Ethiopia: the case of Jimma University specialized hospital show the mean labelling score was 2.5 and mean dispensing time was 22.5 seconds. Mean knowledge score was 2.8 and 69% of patients had adequate knowledge. Correct dosage was recalled by 79% of the patients. These together with unavailability of essential drugs and dispensing aids reflect discrepancies in the quality of care in the country [5].

In general, dispensing practice in hospitals pharmacies both nationally and internationally are well studied and described in medical literature. However other equally important area which is dispensing practice in the community pharmacy settings had been given little attention, and thus was not well studied. This study is, therefore, aimed at assessing dispensing practice in the later scenario in terms of the following parameters. These include determining percentage of dispensed drugs adequately labelled, patient knowledge, and prevalence of dispensing error, average dispensing time, availability of dispensing aids and condition of the dispensing environment in the community pharmacy settings.

Method and Materials

Study Area and Period

The study was conducted between April to June 2014 in Ambo Town of West Shewa Zone, Oromia Regional State, Ethiopia. The town has total population of 64,423 among which 31,567, are males and 32,856 are females with mixed nationalities. It is located about 126km to the west of Addis Ababa; the capital of Ethiopia. There are different health facilities in the town which include one general hospital, two health centres, 15 community pharmacy settings and several private clinics.

Study Design

A cross sectional study design was employed to 15 (Fifteen) community pharmacy settings in the town.

Study Population

The population of this study was all community pharmacy settings in Ambo town and clients who visited these pharmacy settings during the study period and who are also volunteered to participate. To detail the study, clients who are more than 15 years old and had no major disability like deafness, and blindness were selected. However, clients who were dispensed with contraceptives, supplements and those who had serious mental problems were excluded.

Sample Size Determination and Sampling Technique

Since all the pharmacy settings volunteered to participate, we included all of them in this study. However the numbers of clients were determined by allocating 15 clients to each pharmacy settings. A total of 225 clients were assessed. We had taken clients until the required quota allotted to each pharmacy settings had been filled.

Operational definitions

Percentage of Drugs Adequately Labelled: is defined as a percentage of labels which contains name, strength, dosage, duration and quantity of the drug dispensed.

Knowledgeable: Patients who answered all the knowledge questions correctly. Otherwise they are considered to be Not- Knowledgeable.

Dispensing Error: Error occurred during dispensing in pharmacy setting, such as not checking patient age, not dispensing correct drug, correct frequency, and correct total quantity.

Average Dispensing Time: The purpose is to measure the time that pharmacist or pharmacy technician spend with the patients during dispensing drugs in the pharmacy. Paying &Waiting time is not included.

Data Collection Instrument and Procedures

To collect data on dispensing error and dispensing time, we observed the practice of the dispensers while they are on their normal activity and using stop watch, time spent on each client was recorded. To assess the patient knowledge and labelling practice, we conducted exit interview using structured questionnaires and observed each labels for its adequacy. Finally, dispensing aids and conditions of dispensing environment was evaluated against check list developed for the purpose of this study which was adopted from WHO standards for dispensing. Data collection was made by three year five clinical pharmacy students up on strict supervision of principal investigator.

Data Processing, Analysis and Presentation

The collected data were entered, cleaned and analysed using the Statistical Package for the Social Sciences (SPSS) version 20.0 software. Descriptive statistics like mean, frequency and percentages were determined. Then the findings were presented using tables and figures.

Ethical consideration

Ethical approval was obtained from the ethics review committee of School of Pharmacy, Ambo University. Verbal consent was sought form the participants before engaging then in the study. They were also assured about confidentiality of the information obtained in the course of the study by not using any sort of personal identifiers.

Results

Socio-demographic characteristics of clients and dispensers participated in the study

A total of 225 clients were included in the study. Out of the clients included in the study 115(51.1%) were females. The majority (49.8%) were in the age group of >31 years and only 21.8% of the clients had attended higher education. This is shown on table 1 below.

Considering the socio-demographic characteristics of dispensers [Table 1], out of a total of 18 dispensers 10 (56%) were males. Half of them (50%) were in the age group of 31-40 years. Regarding their qualification, 16.7% pharmacist and surprisingly 27.8% not professionally qualified.

Variables	Category	Frequency (%)
Sex of clients	Male	110(48.9%)
	Female	115(59.1%)
	Total	225(100%)

Age group (in years) of clients	<20	37(16.4%)
	21-30	76(33.8%)
	>31	112(49.8%)
	Total	225(100%)
Educational status clients	Can't read and write	69(30.7%)
	Elementary school	71(31.5%)
	Secondary school	36(16.0%)
	Higher Education	49(21.8%)
	Total	225(100%)
	Male	10(55.6%)
Sex of dispenser	Female	8(44.4%)
	Total	18(100%)
Age group (in year) of dispenser	<30	6(33.3%)
	31-40	9(50%)
	>41	3(16.7%)
	Total	18(100%)
Qualification of dispenser	Pharmacist	3(16.7%)
	Druggist	4(22.2%)
	Pharmacy Technician	4(22.2%)
	Nurse	2(11.1%)
	Non-professional	5(27.8%)
	Total	18(100%)
Non-professional: Those individuals involved in dispensing of drugs to clients without having any college diploma or university degree.		

Table 1: Socio-demographic characteristics of clients and dispensers at community pharmacy settings in Ambo Town, April-June 2014.

Dispensing practices at community pharmacy settings

Labelling Practices

Adequate labelling of medication dispensing is one of the important parameters identified by world health organization (WHO). Labelling in this regards had been assessed using five variables depicted on figure 1. In this study, therefore, generic name, strength, dosage, and quantity of drugs were written on 11.1%, 11.1%, 29.8% and 11.6% of the labels respectively. Patient name was not written on any of the labels. [Figure-1]

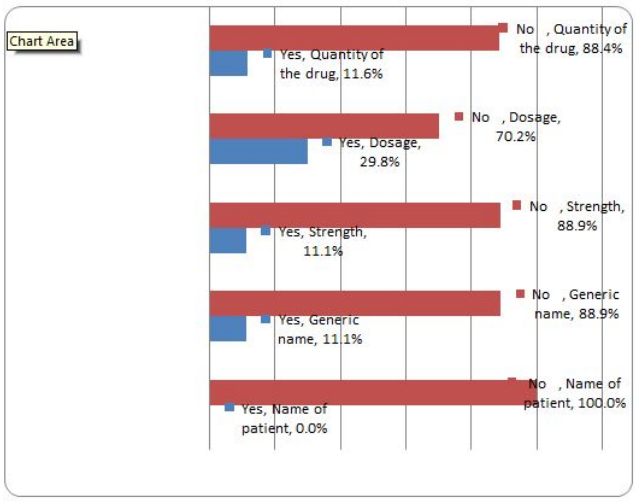

Figure 1: Labelling parameters at community pharmacy settings in Ambo town, April-June 2014.

Dispensing Error

Among 225 clients observed, we discovered that for more 90% of them drugs were dispensed without checking patient's identity like age. None of the wrong drug was dispensed for any one of the clients during the study period. However, for 6.7% wrong strength, 12% incorrect frequency and 24.4% incorrect total quantity was dispensed [Table-2].

Parameters	Frequency (%)		Ideal value
	Yes	No	
Dispensing without checking patients' identity (Eg. Age)	205(91.1%)	20(8.9%)	0%
Wrong drug dispensed	0(0%)	225(100%)	0%
Wrong strength dispensed	15(6.7%)	210(93.3%)	0%
Incorrect frequency dispensed	27(12%)	198(88%)	0%
Incorrect total quantity dispensed	55(24.4%)	170(75.6%)	0%

Table 2: Dispensing error obtained at community pharmacy settings in Ambo Town, April-June 2014.

Patient Knowledge and dispensing time

Generally, only17 (7.6%) of the clients were found to be knowledgeable about drugs dispensed to them. Specifically, percentage of clients who know the reason for their prescription, duration of treatment, frequency of dosage, and name of the dispensed drug was 40.4%, 38.2%, 66.2%, and 21.8% respectively [Figure 2].

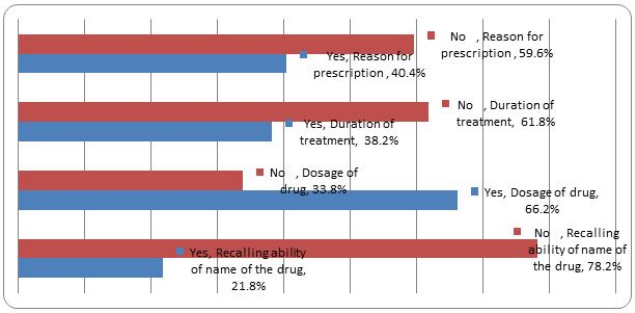

Figure 2: Patient knowledge obtained at Community Pharmacy Settings in Ambo Town, April-June 2014.

Average dispensing time for 15 pharmacy setting which contains 15 patients in each pharmacy setting was listed down in table 4 below. Overall, the average dispensing time was 1(one) minutes. (Table-4)

Name of pharmacy setting	Average dispensing time(mint)
PS1	2
PS2	1.05
PS3	1.19
PS4	1
PS5	0.97
PS6	1.01
PS7	1.49
PS8	1.03
PS9	1.05
PS10	0.92
PS11	1.02
PS12	1.42
PS13	0.93
PS14	1.14
PS15	1.14
Total =15	Total =17.36/15=1 minutes

Table 3: Dispensing time (min) obtained at Community Pharmacy Settings in Ambo Town, April-June 2014.

PS: Pharmacy Setting

Dispensing Aids

Only dispensing spoon were available in all pharmacy settings and other remaining dispensing aids were not present during the study period [Table 4].

Items	Frequency (%)		Ideal value
	Yes	No	
Dispensing spoon	15(100%)	0(0%)	100%
Spatula	0(0%)	15(100%)	100%
Mortar and pestle	0(0%)	15(100%)	100%
Balance	0(0%)	15(100%)	100%
Triangular tablet counters	0(0%)	15(100%)	100%
Capsule counter,	0(0%)	15(100%)	100%
Pan weighing scale	0(0%)	15(100%)	100%
Measuring cylinder	0(0%)	15(100%)	100%

Table 4: Availability of Pharmacy Dispensing Aids at Community Pharmacy Settings in Ambo Town, April-June 2014.

Conditions of Dispensing Environment

None of the community pharmacy settings evaluated regularly checked the temperature of their refrigerator regularly & maintained the acceptable range. All of them fulfilled the desire criteria to maintain the dispensing environment ideal [Table 5].

Criteria	Frequency (%)		Ideal Value
	Yes	No	
Does the area appear clean & tidy?	15(100%)	0(0%)	100%
Is the refrigerator clean & tidy?	15(100%)		100%
Is their nonmedical items found in the refrigerator?	0(0%)	15(100%)	0%
Is the temperature of the refrigerator checked regularly& maintained with acceptable range?	0(0%)	15(100%)	100%
Does any stock containers have incorrect or inadequate labelling	0(0%)	15(100%)	0%
Are pre-packaged medicines clearly labelled?	15(100%)	15(100%)	100%

Table 5: Conditions of Dispensing Environment evaluated at Community Pharmacy Settings in Ambo Town, April-June 2014.

Discussion

This study focused on assessing dispensing practices in community settings in ambo town in Ethiopia. The study generated valuable findings which are discussed in relation to international and national data.

In this study patient name, generic name, strength, dosage, and quantity of drugs were written on 0%, 11.1%, 11.1%, 29.8% and 11.6% of labels respectively. This is similar to the study conducted in south west Ethiopia in which the patient name was not written on any of the label. However, generic name (100%), strength (97%), dosage (61%), and quantity (42%) were written on labels of south west Ethiopia study which is very much higher than ours [5].

In general, our study indicated that labelling is not adequate which is in line with the previously reported National data [2]. Studies in Gondar University teaching referral hospital, India, and Nigeria showed that adequate labelling criteria met was 8.47%, 38.35% and 37.6% respectively [10,11,12]. These results have shown deviation from the ideal value of 100% which is recommended by WHO. Dispensing drugs without label or labelling drug without full information could increase the chance of drug toxicity, and therapeutic failure. Therefore, it needs immediate response by regulatory body to equip the community pharmacy settings with the envelope and enforce practitioners to put label on each and every dispensed drug to patients.

One of the important parameters assessed to evaluate dispensing practices at these community pharmacy settings was dispensing error. Dispensing without checking clients' identity like age, wrong strength, incorrect frequency, and wrong quantity were dispensed to 91.1%, 6.7%, 12%, and 24.4% of the clients respectively. Study done in Texas showed somewhat comparable result in that wrong quantity, wrong drug, wrong strength, and wrong dosage form were dispensed to 7%, 6%, 6% and 1% of the clients respectively. Unlike this study, however, no wrong drug was dispensed in our study. Appropriate drug dispensing is the most crucial part in prescription processing and hence it is the heart of any disease state management. In contrast, error occurred during dispensing can cause many problem on patient including but not limited to adverse drug reactions (ADRs), inappropriate cost and therapeutic failure leading to worsening of disease under treatment and finally death could result. Therefore, it needs close supervision of responsible body.

As per WHO standards, the average dispensing time should be > 5 minutes. However, this was found to be 1(one) minutes in our study. When compared to other studies this figure is by far the lowest. For instance, study conducted in North Ethiopia showed 4.30 minutes [7] and the one conducted in India showed 3.1 minutes [10]. These results generally indicated that there is global problem regarding the time spent to dispensing medicines at community pharmacy settings. In Ethiopian scenario, this could be because of the fact that community pharmacy settings are more of business oriented and rush to accommodate more patients rather than applying the standard principles of dispensing. Beside this, study showed that lack of adequate knowledge on drugs and up-to-date drug information was major factor that prevent dispensers from not taking time to counsel patients [9]. This in turn could lead to lack of time for prescription processing, labelling medications, and counselling the patient which might make the time to be somewhat shorter.

When knowledge of the clients about drugs dispensed to them was assessed, we observed only 17(7.6%) of them were knowledgeable. This low proportion is similar what had been reported by previous studies nationally and internationally [2-6]. In our study, 66.2% of patients were able to repeat the correct dosage schedule of the drugs they had received and it was less when compared studies conducted in south west Ethiopia 79%[5, 6] and higher than study done in Sudan 37.2%[10]. Again in this study, reason for prescription was recalled in 40.4% of the clients. The name of the drug was recalled only by 21.8% of the clients. Duration of treatment was recalled in 38.2% of the drugs dispensed. However, the study done in south west Ethiopia showed that reason for prescription 76%, recalled name of the drug 39%, duration of treatment 89 % [5].

This could be a cumulative effect of inadequate labelling, very short dispensing time, low educational status of the clients and dispensing drugs by non-qualified professionals (neither pharmacy professionals nor qualified personnel). In this study, about 28% of the dispensers working in community pharmacy settings were neither pharmacy professionals nor persons with any sorts of qualification.

Dispensing by nursing professionals was also observed. Studies conducted north Ethiopia also indicated similar findings [4, 9]. If this situation continues there will be significant economic and life loss in the future in Ethiopia secondary to irrational use medicines. Therefore, the government of Ethiopia as well as its citizens should join hand in fighting such malpractices to optimize the health of its people.

The major limitation of this study however is that the findings were restricted to only dispensers in community pharmacies of only one town. The findings would have been more meaningful if the study was carried out in more than one town. However, this work, with its limitation has paramount importance in ensuring rational dispensing of medicines at community pharmacy settings in the study area, Ethiopia and world at large if urgent and appropriate measure is taken.

Conclusion

From the study, it is observed that the provision of drug-related information especially labelling of the dispensed medications was not satisfactory in all pharmacy settings. Moreover, very short time spent for dispensing medications for the patient and poor patient knowledge about their medication is a very big havoc in this study. There is also significantly high medication dispensing errors identified in this study. However, all settings surveyed has standard quality dispensing environment and poor storage conditions for refrigeration of drugs as temperature is not being regularly checked. Hence, there is a need for strict regular supervision by regulatory bodies at all levels and provision of on job training for professionals working at these pharmacy settings are recommended for the improvement of dispensing practices and application of code of Ethics.

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