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ASSESSMENT OF DISPENSING PRACTICE
AND QUALITY OF PHARMACEUTICAL
SERVICE IN VARIOUS DRUG RETAIL OUT
LET

PROCENA APOTEKARSKE PRAKSE I
KVALITET FARMACEUTSKE DELATNOSTI
NA RAZLIČITIM MESTIMA IZDAVANJA
LEKA

Correspondence to:

Fanta Gashe (Assistant professor)

Department of Pharmacy

Jimma University

Mobile: +251-910553477

Email: fantwark@gmail.com

Biru Erba, Wote Amelo, Gemedchu Zeleke, Fanta Gashe

Pharmaceutics Course Unit, Department of Pharmacy, College of Public Health And Medical Sciences, Jimma University, Ethiopia
Pharmacology Course Unit, Department of Pharmacy, College of Public Health And Medical Sciences, Jimma University, Ethiopia

Abstract

Key words

Dispensing practice, Drug retail outlet, dispensing errors, updating knowledge, drug information

Ključne reči

apotekarska praksa, drogerija, greške u izdavanju, proširivanje znanja, podaci o leku

Background: Dispensing is one of the elements of rational drug use. All the resources involved in patient care up to point of dispensing may be wasted if dispensing does not address the right patient receiving an effective form of the correct drug, appropriate packaging and with the correct dose and advice. Hence, the objective of this study was to assess the dispensing practice and pharmaceutical service in drug retail outlet.

Method: The study was conducted in 5 community pharmacies and 17 drug stores from January-February, 2014 in special Oromia zone surrounding Addis Ababa. A cross sectional study was conducted using semi structured questionnaire by interviewing the dispensers at working area. **Results:** The most common drug information given during dispensing practice was the frequency of administration (100%) followed by route of administration (94%), dose of the drugs (80%), drug interactions (37%), storage conditions (28%) and side effects (16%). Illegible prescriptions (75.5%) was the most regularly encountered errors on prescription followed by incomplete prescriptions (69.4%), wrong frequency of administration (47%), wrong dose (38.8%), and wrong duration (32.2%). From the total respondents about 39% of them updated themselves timely. Educational status of the dispensers was found to be significantly associated with whether they updated themselves timely or not ($P < 0.05$). **Conclusion:** Irrational dispensing practice like dispensing of poorly labeled drugs, lack of patient counseling and dispensing error were frequently occurred. In addition, only few of the dispensers updated themselves timely. Therefore, dispensers should be well trained on good dispensing practice to decrease dispensing errors.

INTRODUCTION

Dispensing refers to the process of preparing drugs and distributing them to their users with provision of appropriate information. It may be based on a prescription or an oral request of users (patients or care providers) depending on the type of drugs to be dispensed⁽¹⁾. Dispensing practice plays a major role in the provision of rational drug therapy. It begins with interpretation of prescriptions followed by preparation and labeling of medications; advice and counseling; handing over of medicine to patients^(2, 3).

Rational drug use is promoted by the collaborated efforts of prescribers, dispensers and drug consumers. Rational pre-

scribing ensures adherence to treatment and protects drug consumers from unnecessary drug adverse reactions. Rational dispensing on the other hand, promotes the safe, effective and economic use of drugs^(4, 1). Hence, rational prescribing and dispensing forms the corner stone of successful implementation of the rational use of drugs⁽⁵⁾.

Dispensing errors are any inconsistencies or deviations from the prescription order such as dispensing the incorrect drug, dose, dosage form; wrong quantity; incorrect, or inadequate labeling, confusing directions for medication use; incorrect or inappropriate preparation, packaging, or storage or medication prior to dispensing⁽⁶⁾. Irrational dispensing practice is common in developing countries⁽⁷⁾.

The quality of dispensing may be affected by the training and supervisor. The low status of dispenser can also affect the quality of dispensing practice since inadequate knowledge or skill fail to comply with police or procedure (7, 4). Illegible and incomplete medication orders are important factors that can increase risk for medication errors and patients' harm (8, 9).

In general the effectiveness of dispensing practice was affected by the way the drugs are dispensed and the types of information given to the patients during dispensing. Therefore, this study may find out the main errors encountered during dispensing practice, and identify major causes of dispensing error in the study area.

MATERIALS AND METHODS

Study area and Study period

The study was conducted in various drug retail outlet which were found in Addis Ababa surrounding Oromia zone. The study included a total of 22 drug retail outlet of which 17 were drug stores while 5 of them were community pharmacies. The study was conducted from January to February, 2014.

Study design

A cross-sectional study was carried out using semi structured questionnaire consisting of the general socio-demographic information, labeling practice of the dispensed drugs, errors encountered during dispensing process and other important variables. This study included dispensers who were working in various drug retail outlets (five community pharmacies and 17 drug stores).

Sampling Techniques

Convenience sampling technique was used and all who were available and willing to fill the questionnaire during the study period were included in the study.

Data collection methods

Data was collected by interviewing the dispensers using semi-structured questionnaires. To assure the quality of the data the following measure were taken. Properly designed and pretested questionnaires were used. Every day the collected data was reviewed and checked for completeness and consistency of response.

Data processing and analysis

Analysis was done using SPSS version 16 and excel computer software. P-value and chi-square test was used to evaluate statistical significance and p-value less than 0.05 was considered to be significant. Findings were presented by tables, figures and text.

Ethical consideration

A formal consent was obtained from Health Bureau to conduct the study. The name and identity of dispensers were excluded from the questionnaire for confidentiality and to get real information.

RESULTS

From the total respondents who were working in the drug retail outlet, the largest numbers of the respondents belonged to 25-34 age groups. Most of the participants were males (72%). The majority of the respondents were drugists by their profession followed by pharmacists (28%) and nurses (12%). More than half of the respondents (58%) had work experience (service year) less than 5 years. From a total of 57 respondents about 39% of them updated themselves. Educational status of the dispensers was significantly associated with whether they updated themselves timely or not ($P < 0.05$) (Table 1).

Table 1: The socio-demographics feature of dispensers in relation to their update drug information

Socio-demographic characteristics	Update them selves		P- Value
	Yes	No	
Age (years)			0.169
	<25	8 (42.1%)	
	25-34	11 (50%)	
	35-44	3 (27.3%)	
Sex	45-54	0	0.915
	Male	16 (39%)	
	Female	6(37.5%)	
Educational level			0.008
	Pharmacist	12 (75%)	
	Druggist	9 (31%)	
	Pharmacy technician	1(20%)	
Work experience	Nurses	1 (14.3%)	0.706
		6 (85.7%)	
	<5 years	13 (39.4%)	
	5-10	8 (42.1%)	
	10-15	1(25%)	
	15-20	0	
		2 (75%)	
		2 (100%)	

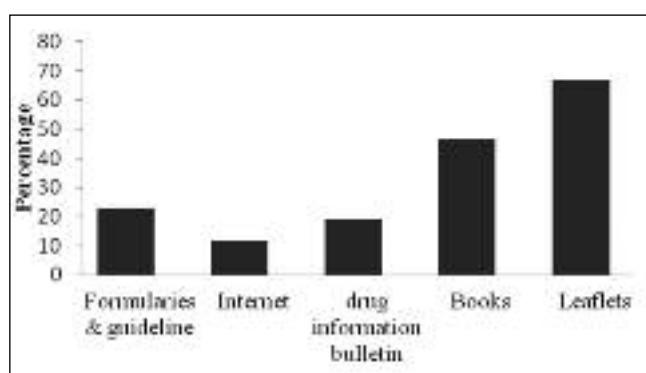


Figure 1: Frequency of sources of drug information of dispensers

The most common source of drug information for those who reported to update themselves were leaflets (67%) and books (46.5%). In addition, materials like formularies, guideline, bulletins, and internets were also used, but in less extent (Figure 1).

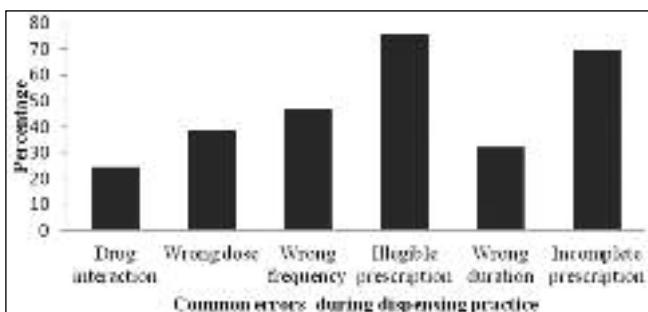


Figure 2: Type of errors commonly encountered on prescription during dispensing practice

The most common prescription errors encountered during dispensing practice were illegible prescriptions (75%), incomplete prescriptions (69%) and wrong frequency (47%) (Figure 2). Among measures taken for error minimization, about 63% of them reported that corrections were made by themselves while 57% respondents said that they did no dispense the drugs at all, and some others (22%) tried to correct the prescription errors by discussing with prescribers (Table 2).

Table 2: Strategy or system that the dispensers used for management of wrong prescription

Strategy	Frequency (%)
Not dispensing	28 (57)
Discuss within the prescriber	11 (22)
Make correction	31 (63)
Check for reference	8 (16)

Common drug information given verbally during dispensing for patients were instructions such as frequency of drug use (100%), route of administration (94%), and dose of drugs (80.7%). Some dispensers also provide other drug information such as side effects of the drugs, drug food interactions and storage conditions (Table 3). The frequently written information while labeling dispensed drugs were frequency of drug administration (89%), route of administrations(47%), name of drugs (38%), dose of drugs (36%), direction of drug use(23%) and duration of prescribed drugs (19%) (Table 3).

Table 3: Types of information given during dispensing practice

Information given orally	Frequency (%)	Labeling information	Frequency (%)
Side effect of the drug	9 (15.8)	Name of the patient	4 (11)
Storage condition	16 (28)	Name of the drug	14 (38)
Frequency of administration	57 (100)	Frequency of drug administration	32 (89)
Doses of drug	46 (80.7)	Dose of drug	13 (36)
Drug food interaction	21 (36.6)	Duration	7 (19)
Route of administration	54 (94)	Direction of drug use	8 (23)
Precaution	0	Precaution	6 (17)

The dispensing time for majority of dispensers (56%) were one minute while 31.57% and 12.23% of dispensers replied that their usual dispensing time were two and three minutes, respectively. The majority of dispensing errors made by dispensers during dispensing practice were wrong frequency of drug administration (56%), wrong strength (51%) and wrong drug (40%) (Table 4).

Table 4: Types of dispensing error made during dispensing practice

Error made during dispensing	Frequency (%)
Wrong drug	23 (40)
Wrong dosage forms	17 (29)
Wrong strength	29 (51)
Wrong duration	16 (28)
Double dispensing	11 (19)
Wrong labeling information	8 (14)
Wrong frequency	32 (56)

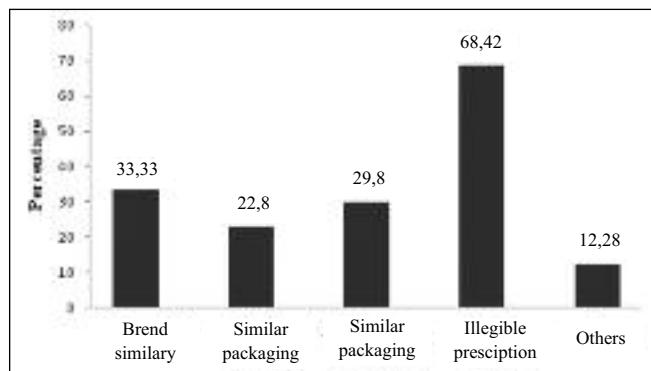


Figure 3: The main causes of dispensing error commonly encountered during dispensing practice

The main cause of dispensing error that most commonly encountered in dispensing process in community pharmacy and drug store were illegible prescription writing (68.42%) followed by brand name similarity (33.33%), medicine on wrong place (29.8%), package similarity (22.80%) (Figure 3).

DISCUSSION

Pharmacists are always the final link between the medication and the patient. Counseling is a key component of pharmaceutical care process. Drug dispensers should provide appropriate, understandable and relevant information to patient about their medication. Patient often, due to lack of information on medication usage fail to adhere to their medication. This leads to failure of achieving therapeutic goals and decrease quality of life (10).

Persons involved in drug dispensing have to make themselves up-to-date with drug information in order to provide this information for patients, other health professionals and to the general public. According to this finding about 39% of the dispensers responded that they always update their knowledge on drugs which is somewhat

better than the study conducted in south west Ethiopia in which 29.7% of the dispensers replied as they update their knowledge on drugs⁽³⁾. But, this value is still low which may be due to, in Ethiopia, up-to-date drug information is not accessible to the majority (80%) of drug dispensers⁽¹⁾. In the present study their main sources of drug information were inserted package leaflets (67%) and books (46%). This is not in accordance with WHO recommendations which do not recommend leaflets as source of drug information and promote use of drug information bulletins due to the fact that leaflets contain manipulated information about a particular drug as they are prepared by drug manufacturing companies and thus are subjected to bias⁽²⁾. High use of leaflets in this study may be due to lack of alternative information source.

In this study the most common drug information given during dispensing for patients were the frequency of administration (100%), route of administration (94%), and dose of the drug (80%). These values are similar with the finding of the study done in North West Ethiopia in which the most frequently told drug instructions were route (96.9%), dose (100%) and frequency of administration (98.4%)⁽³⁾. In the present study only (15.8%) dispensers responded as they tell the side effect of the drugs which is comparable to the study conducted in North west Ethiopian (18.8%)⁽³⁾ and other study done in Ghana (16.2%)⁽¹¹⁾. The possible reason for this low value could be the absence of separate counseling room, which creates better conditions to tell more information to patients.

In this study the average counseling time was 1.5 minutes which is shorter than the study conducted in Malawi in which consultation time was 2.3 minutes⁽¹²⁾, besides WHO recommends that pharmacist should spend at least 3 min in orienting each patient. The less consulting time in the study area might be due to the drug information commonly given are only frequency of administration and dose of the drug.

Illegible prescriptions result in a lower quality of health-care by loss of time and money, medication errors and patient harm. In this study most common error encountered on prescription were illegible prescriptions (75.5%), incomplete prescriptions (69.4%), wrong frequency of administration (47%), wrong dose (38.8%), wrong duration (32.2%) and drug interaction (24.5%).

The main functions of a label on a dispensed drug are to uniquely identify the contents of the container and to ensure that patients use the drugs appropriately. Therefore, each dispensed drug must be appropriately labeled to comply with legal and professional requirements; have clear and concise information about the use of the drug. It is common to see the dispensed drugs without a label, incomplete label, or illegible label in Ethiopian drug out let⁽¹⁾. In this study the information given on the label were frequencies of administration (89%), name of the drug (38%), doses of the drugs (36%), while duration and route of administration of the prescribed drugs were less labeling practice. When compared with the study conducted in Jimma University Specialized Hospital; patient name, generic name, strength, dosage, and quantity were written on labels which accounts

for 0%, 100%, 97%, 61%, and 42%, respectively⁽¹³⁾. In another studies done in Botswana; patient name (44%), generic name (73%), strength (50%), dosage (77%), and quantity (32%) were written on labels⁽¹⁴⁾ and in western Nepal 0.4%, 82.6% and 87% of labels had patient name, generic name and strength, respectively⁽¹⁵⁾.

In this study types of errors occurred during dispensing practice was wrong frequency(56%) wrong strength(51%), wrong drugs(40%) dosage form(29%), duration(28%) and double dispensing(19%). These are different from the study done in Pakistan on dispensing error self-reports which were wrong frequency(16%), wrong drug(13%) and wrong duration(9%)⁽⁸⁾. This might be due to the fact that most prescriptions they encounter were incomplete and illegible.

Pharmacists have an important role in providing drug information to minimize medication errors especially related to dose causing unnecessary morbidity and mortality in patients receiving drugs. Similar or confusing names was stated as the main contributing factor for dispensing errors by 41% of the present study respondents which is relatively higher than the study conducted in Scotland (24%)⁽¹⁶⁾. In the present study brand name similarity (33.3%) was also mentioned as one of the main cause of dispensing error.

CONCLUSION

Form the finding of the study it is possible to conclude that irrational dispensing practice like dispensing of poorly labeled drugs and lack of patient counseling were occurred in various community pharmacies and drug stores. In addition, illegible prescription was the most commonly encountered practice on prescription during dispensing. The main causes of dispensing error were illegible prescription and brand name similarity. Dispensers should council the patients, practice labeling during dispensing and not dispense illegible prescriptions to ensure that an effective form of the correct drug is given to the right patient in the prescribed dosage and quantity with clear instructions. Dispensers should also be trained about good dispensing practice to decrease dispensing errors.

CONFLICT OF INTEREST

There is no any a financial disclosure or conflicts of interest

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Sažetak

Jedan od elemenata u racionalnom korišćenju lekova je izdavanje. Svi resursi koji su uključeni u brigu o bolesniku do trenutka izdavanja leka, mogu biti beskorisni ukoliko bolesnik ne prima delotvorni oblik adekvatnog leka, odgovarajuće pakovanje i odgovarajuću preporučenu dozu. Cilj ovog rada bio je da proceni kvalitet izdavanja leka i farmaceutske usluge u apoteci.

Metod: Ispitivanje je izvršeno u 5 apotekarskih ustanova i 17 drogerija u periodu januar-februar 2014. Urađena je ukrštena studija preseka uz korišćenje upitnika i anketiranja izdavanja u radnom prostoru tokom navedenog perioda.

Rezultati: Najčešće korišćeni podaci o leku koji se daju prilikom izdavanja bili su učestalost uzimanja leka (100%), put primene (94%), doziranje leka (80%), interakcije lekova (37%), uslovi čuvanja (28%) i neželjeni efekti (16%). Nečitko napisani recepti (75,5%) su najčešći uzroci grešaka u propisivanju, zatim nekompletni recepti (69,4%), pogrešno propisana učestalost uzimanja leka (47%), pogrešna doza (38,8%) i pogrešno vreme trajanja terapije (32,2%). Od ukupnog broja ispitanika oko 39% je blagovremeno proširivalo znanje o lekovima. Kvalitet izdavanja lekova je značajno povezan sa stečenim znanjem o lekovima ($P < 0.05$).

Zaključak: Neracionalno izdavanje lekova u smislu lošeg obeležavanja lekova, nedovoljnog informisanja bolesnika i grešaka prilikom izdavanja su greške koje se neretko događaju. Osim toga samo neki od apotekara se informišu o lekovima blagovremeno. Zbog toga apotekar treba da poznaje dobru apotekarsku praksu da bi se smanjile greške u izdavanju.

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