International Journal of Pharmacy Teaching & Practices 2014, Vol.5, Issue 2, 960-966.

Assessment of the Quality of Pharmaceutical Service in Jimma Zone, Oromia Regional State, South West Ethiopia

Chalachew Teshale*, Jemal Hussein, Seid Mussa
Department of Pharmacy, College of Public health and Medical Science, Jimma University

Research Article

Please cite this paper as: Chalachew Teshale*, Jemal Hussein, Seid Mussa, Assessment of the Quality of Pharmaceutical Service in Jimma Zone, Oromia Regional State, South West Ethiopia. IJPTP, 2014, 5(2), 960-966.

Corresponding Author:

Chalachew Teshale
Jimma University
Email: chaleph@gmail.com
Tell: +251913667532

Abstract

Introduction: Ineffective pharmaceutical service adversely affects the health of an individual and final the community at large. It is also the major causes of morbidity and mortality.
Methods: A comparative retrospective and prospective facility based cross-sectional study were conducted between April and November, 2012 at randomly selected 10 health facilities found in Jimma zone. Core, complementary, and modified drug and patient care indicators developed by World health organization (WHO) covering all aspects of pharmaceutical services were used to assess the existing situation. Patient records review, observation of patient-personnel encounters and patient interviews were used to collect the data.
Results: In this study, the average number of drugs per prescription was 2.3.Most of the prescription (72.8%) was found to be legible. The percentage of prescription containing injections and antibiotics are found to be 12.8% and 34.8%, respectively. Only 5.6% of the patient had knowledge about the potential side effects of their medications. None of the patients had adequate knowledge about their medications. Only 92.9% of the prescribed drugs are dispensed to the patients. The average dispensing time for the patients is found to be 6.74 seconds. Most of the patients with diarrhea (90.8%) are managed by antibiotics despite of the local guideline recommendations. In general, irrational drug use is common practice in Jimma Zone

Keywords: *Rational drug use, pharmaceutical services and jimma zone*

Introduction

Medically inappropriate, ineffective, and economically inefficient use of pharmaceuticals is commonly observed in the health care system throughout the world especially in the developing countries. However, various forms of inappropriate prescribing often remain unnoticed by those who are involved in health sector decision making or delivery of health services. This problem will usually come to the attention of health decision makers or managers when there is an acute shortage of pharmaceutical budget and action for cost efficiency is required (1-8).

Inappropriate pharmaceutical services may lead to ineffective & unsafe treatment, exacerbation or prolongation of illness, distress & harm to patient, increase the cost of treatment. Irrational use of drugs adversely affects the health care of an individual and the community at large (7).

The pharmaceutical service practiced in Ethiopia is not different from the world situation. Although appreciable efforts have been done by drug regulatory authorities and professional associations, still there are indications that the irrational use of drugs is common in Ethiopia. Irrational prescribing and dispensing practices and inappropriate patient uses are also not uncommon in Ethiopia (9-12, 15, 17).

The study done in Brazil, shows only 18.7% of the patients fully understood the prescription, 56.3% could read it, 61.2% of the prescribed drugs were actually dispensed, and mean duration of pharmaceutical dispensing was 53.2 seconds. Each visit lasted on average 9.4 minutes. Only 85.3% and 60.6% of drugs were on the local essential drug list (EDL) respectively. Only 83.2% essential drugs were in stock. The mean number of drugs per prescription was 2.3, 85.3% of prescribed drugs were on the EDL, 73.2% were prescribed using the generic denomination, 26.4% included antibiotics and 7.5% were injectables (14).

Prescribing multiple drugs per prescription, ,shorter dispensing time , overuse of injection, shorter dispensing time, low adherence to local standard treatments guidelines in many African countries like

Kenya, Malawi, Nigeria, Tanzania and Uganda (19 -21 and 22).

The drug use situation in Ethiopia is not yet different from other countries. Low availability of key essential drugs in health facilities (only 70% available), longer stock out days(99.2 days) ,excess use of antibiotics, 58%; overuse of injections, 23%; poor drug knowledge of patients ;absence of Standard Treatment Guidelines (STG), poor adherence of STG in managing disease are the major problems (11).

Pharmaceutical services are an essential component of health care. Effective pharmaceutical services promote the safe, rational and cost-effective use of drugs thus maximizing health gain and minimizing risk to patients. A well-organized pharmaceutical service ensures the continuous availability of all pharmaceuticals that are required for patient care. At the same time, an effective pharmaceutical service should be able to respond to sudden increases in drug demand, ensuring that adequate supplies are available to deal with any emergencies that arise (23).

The first stage of understanding drug use problem is measuring the existing pharmaceutical practices. This study generally aimed to assess the quality of pharmaceutical services problem in jimma zone.

Material and Method

Study area and period

The study was conducted in selected health care facilities of Jimma zone from Dec. 10, 2011 to Jan. 31, 2012. Jimma zone is one of the 17 zones of Oromia Regional state that is located in the south western part of Ethiopia, 346 km away from the Addis Ababa, capital of Ethiopia. The zone is divided into 17 district and one city administration. It has a total land area of 15,568.58sq kilometer. The total population of the zone in 2010 projected from 2007 census is 2,732,791

There are 7 non-government organizations, one specialized referral hospital, one district hospital, 65 health centers, 75 clinics, 469 health posts, 26 private drug stores, 45 private drug venders, and 1480 health professionals in the study area. The health coverage of the zone in 2002 Fiscal year is 72%, according to the zonal health office.

Study design

A facility based cross-sectional study design involving document (Patient case notes, Prescriptions, stock and bin cards) review, observation and exit interview were conducted.

Sample size and sampling technique

Multistage sampling was used in this study. From the available 65 health centers in Jimma zone, 10 health centers were included in the study (24). These health facilities were sampled randomly using the lottery method. For the purpose of exit interview, 60 patients were interviewed to assess patient's knowledge about their medicine and also the labeling patterns of dispensed medications in each selected health center. Only patients greater than 18 years old were requested for exit interview. Patients with chronic disease like tuberculosis, diabetes etc was not included in the study.

For the purpose of document review, 60 prescriptions and 60 patient case notes were taken from each health center as per WHO recommendation which was sampled using systematic random sampling methods (16). Other documents like stock card, bin card and other pharmacy records were reviewed accordingly.

Data collection Instruments

Standard data collection formats to extract general information about the health facilities, semi structured questionnaire and checklist were used to collect relevant data.

Data collection methods

Document review, patient exit interview and direct observation were used to collect data. Data on existing infrastructure and key processes in each component of the pharmacy practice were collected using a modified form of WHO's validated standard semi structured questionnaire, observational checklist, and data abstraction format.

Core, complementary, and modified WHO drug and patient care indicators covering drug use and good pharmacy practice (GPP) was used to assess the existing situation. Patient records, observation of patient-personnel encounters and patient interviews were used to collect the data.

Technical staff recruitment and training

The data was collected by 10 trained druggists/pharmacists who can speak the local language, Afan Oromo. Four trained supervisors were assigned to monitor of the data collection process. The 4 supervisors were pharmacists from Jimma university pharmacy department. The overall activity of data collection was coordinated by the principal investigators during the data collection period. The data collectors were given theoretical and practical training for three days on how to approach participants, how to sample and take records and observational assessment. In addition, they were acquainted with issues of consent and confidentiality. For ease of communication and data collection, data collectors involved in interviewing and clerking of patients were chosen such that they have good understanding of the local language (Oromifa) spoken in Jimma zone or Oromia regional state. All the investigators were involved in the training process. Pre-test was also conducted to evaluate the performance of the data collectors and to make necessary adjustments on the modified WHO drug and patient care indicators.

Data analysis

Data collected from all health centers using the standard data collection forms were coded, checked for accuracy, consistency, omissions and

irregularities. It then entered into Epi info for cleaning and transported into SPSS for Windows version 16 for data analysis.

Ethical considerations

This study was conducted after ethically cleared by Jimma University's College of Public Health and Medical Sciences Ethical Review Board. In addition, permission was obtained from the respective Health Institutions to work in the setup. Individuals participating in the study were informed about the purpose, benefits and the potential risks of the study. Those professionals who are interviewed were requested for oral consent. Name and other identifiers of those patients and professionals interviewed were not recorded on the questionnaires. The filled documents were kept in secured cabinet of the principal investigator office to ensure confidentiality.

Results

General information's in the health facilities

In this study a total of 10 health centers were included. In all health facilities studied there is no physician but 21 health officers, 76 nurses, 4 pharmacists and 13 druggists are available. The average number of outpatients per day was found to be 83 patients. The estimated annual drug expenditure in health facilities were also 153,386 Ethiopian birr, ETB. Standard prescriptions were available only in 60% of the health centers.

Prescribing patterns in the health facilities

A total of 600 prescriptions were analyzed to describe the patterns of prescription. As it is clearly indicated in the table below, the average number of drugs per prescription was 2.3. The percentage of prescription containing injections and antibiotics are found to be 12.8% and 34.8%, respectively as indicated in table 1.

Table 1. Prescribing patterns in primary health care facilities in Jimma zone

Prescribing indicator	frequency
Number of drugs per prescription	2.3
Percentage of drugs prescribed by generic names	81.5%
Percentage of Injection prescribed	12.8%
Percentage of Antibiotics prescribed	34.8%
Number of drugs prescribed from the EDL	52.8%
Percentage of prescriptions according to the standard	56.5%

In this study the highest amount of prescription contained two drugs (44.8%) followed by three drugs (34.1%). Overall, 85.7% of the prescription contained two and more drugs as mentioned in table 2.Based on the legibility score, most of the prescription (72.8%) are legible(can be read with help of any other person)

Table 2. The number of drugs per prescription in primary health care facilities in Jimma zone

Number of drugs per prescription, n=600	%,
One drug	14.3
Two drugs	44.8
Three drugs	34.1
Four drugs	5.7
Five drugs	5

Table 3. Literacy status of the patients in primary health care facilities in Jimma zone

Literacy status, n=460	Percent
Illiterate	50.5
Literate	49.5
Read and write	28
Elementary education	50
Secondary education	15.5
Higher education	6.5

Patients care indicators

A total of 460 patients were interviewed in this study. Most of the patients (51.1%) interviewed are females. The mean age of the patients is 29.1 years and 50.5% of the patients are illiterates (table 3)

Regarding the patient knowledge, most of the patients (83.6%) knew about the dosage regimen or when to take the drugs. But, only 5.6% of the patient had knowledge about the potential side effects of their medications (table 4).

Table 4. Patient knowledge parameters in primary health care facilities in Jimma zone

Knowledge parameter, n=460	Percent
Know when to take drug	83.6
Know how to keep drugs	73.5
Know how to take drugs	72
Know indication	37
Know duration of treatment	34.4
Know the side effects of the drugs	5.6

Medications prescribed or dispensed to the patients are expected to have some basic written information on the medicines in order to supplement spoken information during prescription or dispensing. In this study, it is only 32% of the medications contain written information on how to take the drugs but only 0.8% of the medication had written information about name of the patients (table 5).

Only 92.9% of the prescribed drugs are dispensed to the patients. Relatively higher number essential drugs (95.4%) are available in the study area. The average dispensing time for the patients is found to

be 6.74 seconds. None of the patients had adequate knowledge about their medications (table 6)

Table 5. Labeling parameters in primary health care facilities in Jimma zone

Labeling parameters, n=460	Percent
Instruction how to take drugs	32
Strength of the drugs	13
Name of the drugs	7.1
Quantity of drugs dispensed	5.6
Name of the patients	0.8

Table 6. Summary of patient care indicators in primary health care facilities in Jimma zone

Indicator	Percent
Percentage of drugs availability	92.9
Percentage of essential drugs availability	95.4
Average dispensing time	49.1seconds
Average counseling time	6.74 minutes
Percentage of drugs adequately labeled	0%
Percentage of patients with adequate knowledge	0%

Adherence to Standard Treatment Guideline (STG)

Most of the patients with diarrhea (90.8%) are managed by antibiotics but only 16.5% of the patients were treated with oral rehydration salts. Nearly all (99%) of patients with acute respiratory tract infections (ARTIs) were treated with antibiotics (table 7).

Table 7. Treatment Practices in primary health care facilities in Jimma zone

	Indicators	**Percent**
Treatment of diarrhea (watery, non bloody) in children	Percentage of ORS use	16.5
	Percentage of antibiotic use	90.8
	Percentage of anti-diarrhea and/or antispasmodic drugs use	0
Treatment of Non- pneumon	Percentage of antibiotic use	99
Treatment of mild/moderate pneumonia	Percentage of use of any one of the first line antibiotics.	74.1
	Percentage of use of more than one antibiotic	3.7

Health Facility indicators

Assessment of storage condition based on the WHO parameters used indicated that, 50% of the health facilities had moderate storage condition to store pharmaceuticals. Whereas the other 50 % of the storage conditions in the health facilities are adequate.

It is found that all health centres' had at least on standard treatment guidelines. Prescribers can only treat patients in a rational way if they have access so standard treatment Guideline. But, in the studied facilities, none of them found to have adequate amounts of standard treatment Guideline. In all health facilities the latest edition of STG is not available.

Discussion and Conclusion

The quality of pharmaceutical services can be ensured if and only if there is adequate number of health professional (prescribers and dispensers) with the required qualification. But, in this study there are limited numbers of health professionals, no physician and very few health officers and pharmacists are available in the area. Physicians are not expected to be available in the primary health facilities according the current health care system of Ethiopia, but the number of other health professionals should be increased as possible so as to improve the quality of the pharmaceutical service provided.

In addition to the above problems, the quality of services can be hampered by limited amount of drug budget that can affect the availability of drugs in the health facilities where they are needed.

The first step in improving rational prescribing in health care system is to avail standardized the prescription. In this study only 60% of the health facilities found to have standard prescription. Standard prescription should be also available in adequate quantities so as to encourage rational prescribing practice of the prescribers.

Prescribing multiple drugs per prescription is frequently observed in clinical practice. In this study the number of drugs per prescription found to be 2.3 which is the same with the study done in Brazil, 2.3(14) but higher than the study done in Ethiopia, 1.9(11) and lower than the study done in Kenya, 2.8(19). The majority of the prescriptions in this study contained more than two drugs. This should be discouraged as it can expose the patients to unnecessary medical costs and adverse drug events.

Drugs should be prescribed by their generic names for cost effective prescribing and ease of communication between health professionals. 81.5% of the drugs in this study are prescribed by their generic names. The figure found here is very high compared to the study found in Kenya, 46.9% (19); North West Ethiopia, 75 %(12) and Brazil, 73.2% (14). Generic prescribing should be further encouraged as it is the best way to ensure accessibility of drugs to the patients especially in developing countries where shortage of drug is a major problem.

Over use of injection because of patient pressure or poor attitude of health professionals, may lead to severe consequences if erroneously prescribed or administered. In this study, 12.8% of the

prescription contains injections. This is less than the national injection using rate in Ethiopia which was 23% by 2003 (11). Potential consequences such as anaphylactic shock, tissue necrosis, or infections due to poor asepsis must be carefully considered before prescribing injections. So, the drugs should be used this way only in case of emergency or when the benefit outweighs the risks.

Antibiotics resistance is an emerging problem which is mainly due to over use. The present study indicated high percentages of prescription with antibiotics, 34.8% but less than the study done in Ethiopia,58%(11) ,North West Ethiopa,60%(12),78% in Kenya(20) but higher than brazil, 26.4% (14). The higher use of antibiotics could indicate the unjustified use of antibiotics as it is observed in case of Acute Respiratory tract infections, where nearly all the patients are treated with antibiotics even though for most of the cases the causes are assumed to be virus.

Prescribers are also encouraged to prescribed drugs from essential drugs when possible since they are prepared to be accessible and affordable to most of the community. It is only 52.8% of the drugs are prescribed from essential drugs which is less than Kenya, 95% (19).

Prescription is an important transaction between prescribers and dispensers. But, for the proper communication between them, it should be written in readable way. In these study it is only 78.3% the prescription are legible (can be read without the help of any other person).

Drugs are frequently mentioned as one of the vital components of health care system. In order to provide adequate services for the patients, adequate number of drugs should be available. But in these study, it is only 92.9% of the prescribed drugs are available in the study area. This is a bit higher than the study done in Brazil, 61.2% (14) and 89% in North West Ethiopia (11). Drug availability should be improved since it directly affects patient's treatment outcomes.

Ensuring availability of all the required drugs at least essential drugs in certain facilities is a pre requisite to improve rational use of drugs. In this study, 95.4% of essential drugs are available in the study area which is higher than Brazil, 83.2% (14). This needs to be encouraged

Patients should know at least the basic information about their medication for maximizing safety and efficacy of medicines. But, none of the patients knew all the required information about drugs in the study area. Majority of the patients, 83.6% knew when to take the drugs than other parameters about the medication. 73.5% of the patients recalled when to keep the medications. Relatively lower number of patients, 5.6% knew about side effects of the drugs.

Dispensed medications are required to have the basic written information. Instruction how to take drugs was written on 32% on the dispensed medication. Quantity of drugs dispensed and name of the patients were the least common parameters written patients medications. But, all these things should be written properly especially to increase medication adherence and decrease medication errors.

WHO recommends that pharmacists should spend at least 3 minutes in orienting each patient. The average dispensing time, is the time that the dispenser spends explaining to the patient the drug regimen, side-effects, precautions and other important information regarding the drug. Therefore, the duration of dispensing time which is 49.1 seconds found in the present study is inadequate for proper pharmaceutical orientation. Such inadequacy was also reported in other literature in Brazil, 53.2 seconds (14),

The average amount of time a prescriber at the facilities spent with a patient before either writing a prescription or referring the patient to the doctor, hospital or laboratory was 6.74 minutes. Consequently, a longer dispensing time corresponds to a better explanation about the disease and also the better the treatment outcomes. Similarly, shorter periods of consultation were reported in Brazil (9.4 minutes) and Nigeria (6.3 minutes) (14).

Standard treatment Guidelines for Diagnosis and Treatment of Common Conditions are available in Ethiopia at different health care system level. But, many prescribers in the study area did not prescribe a drug for common disease like diarrhea, acute respiratory tract infection and pneumonia in accordance with the guidelines.

Accordingly, 90.5% of diarrhea patients are treated by antibiotics though STG indicated ORS as first line drugs for management of diarrhea patients. Only 9.5 % of diarrheal cases are treated with ORS which is less than the study done in Kenya, 25% and Ethiopia, 82%(11,20). Similarly, nearly all patients with acute respiratory tract infection are treated with antibiotics even though the major causes are frequently mentioned as virus. Substantial amount of patients with pneumonia (22.2%) are not treated with first line antibiotics. The major reason for these could be poor distribution of standard treatment Guideline in the health facility. Inadequacies of STGs are mentioned in all health facilities included in the study. But, it should be known that, the existence of standard treatment guidelines is not in itself an effective tool in influencing prescribers' behavior. Awareness creation on prescribers' on how to properly use STGs might be crucial. The advantages of prescribing in accordance with STG needs to be highlighted to improve adherence.

In general, higher number of drugs per prescription, overuse of antibiotics and injections, lack of drug availability, too short dispensing time and poor labeling practice are found to be a problem. Patients also demonstrated lack of adequate knowledge regarding their medicine. None of the patients had adequate knowledge about their medications. The authors recommend appropriate actions to be taken by all stakeholders in the area to optimize treatment outcomes.

Acknowledgement

The authors are grateful for Jimma University, research and publication office for funding this study.

References

1. Magari, R. Assessing Shelf Life Using Real-Time and Accelerated Conditions: Although Accelerated Tests are Needed, Real – Time Tests are the Ultimate Proof. *BioPharm Int*. [Internet]. 2003. Available from: http://www.biopharminternational.com/biopharm/article/articleDetail.jsp?id=76722
2. Unnikrishnan, C. Improper Storage at Retail Stores Reduces Drug Potency Study. [Internet]. 2007. Available from: http://www.livemint.com/2008/08/11002419/Improper-storage-at-retail-sto.html?d=1
3. Mastroianni, P., Lucchetta, R., Sarra Jdos R., Galduroz, J. Household Storage and Use of Medications in a Population Served by the Family Health Strategy in Brazil. *Rev Panam Salud Publica*. 2011; (5):358-64.
4. Ganguly, S. The Importance of Proper Storage of Drugs Illustrated by the
Example of the Latest SSRI Drug. [Internet]. 2007. Available from: http://ezinearticles.com/?expert=Sabyasachi_Ganguly
5. Gitanjali, B, Vimalavathini, R. Effect of Temperature on the Potency and Pharmacological Action of Insulin. *Indian J Med Res*. 2009. pp. 166 - 169
6. Food and Drug Administration (FDA). [Internet]. 2013. Available from: www.fda.gov/drugs/drugsafety.ucm248746.htm
7. Tourinho, F., Bucaretchi, F., Stephan, C., Cordeiro, R. Home Medicine
Chests and their Relationship with Self-Medication in Children and Adolescents.
Jornal de Pediatria. 2008;84(5):416-422
8. Jassim, A. In-Home Drug Storage and Self-Medication with Antimicrobial
Drugs in Basrah, Iraq. *Oman Med J*. 2010.;25, 79-87
9. Chowdhury,N., Islam, M.R., Hasan,M., Rouf, M. Prevalence of Self-medication of antibiotics among people in Bangladesh. *IJPTP*, 2013; 4(1),504-510
10. Hardon, A., Hodgkin, C. Fresle, D. How to Investigate the Use of Medicines by Consumers. World Health Organization and University of Amsterdam. [Internet]. 2004. Available from: http://www.who.int/medicines/publications/WHO_PSM_PAR_2007.2.pdf
11. Patel, P. Solanki, D., Patel, N. A Qualitative Study on Self-Medication Practices in Urban Settings of Jamnagar, Gujarat. *Int J Res Med*.2013; 2(3);38-41.
12. International Pharmaceutical Federation (FIP). The statement of principle self – care including self – medication: The professional role of the pharmacist. [Internet]. 1996. Available from: http://www.fip.org/www/uploads/database_file.php?id=204&table_id=
13. Agaceta,C., Diano, G., Lintag, P.M., Loquias, M. Current Practices and Perceptions on Pharmaceutical Care of Hospital Pharmacists in Metro Manila. *IJPTP*, 2013; 4(4), 821-825
14. Khier,N, Hajj, MS, Wilbut, K, Kaissi, R, Yousif, A. An exploratory study on
medications in Qatar homes. *Drug, Healthcare and Patient Safety*. 2011:3 99 – 106. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3264424/

AUTHORS' CONTRIBUTIONS

Authors contributed equally to all aspects of the study.

PEER REVIEW

Not commissioned; externally peer reviewed.

CONFLICTS OF INTEREST

The authors declare that they have no competing interests.