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Assessment on the implementation of Hospital Reform Guideline with reference to Pharmacy service in Addis Ababa

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List of abbreviations/acronyms

AACAHO:- Addis Ababa City Administration Health Office

ADR: - Adverse Drug Reaction

ALERT: - All Africa Leprosy and TB Rehabilitation Training Center

APTS: - Auditable Pharmaceutical Transaction System

BPR:- Business Process Re- engineering

CCO:- Chief Clinical Officer

CEO:- Chief Executive Officer

DIS:- Drug Information Service

DTC Drug Therapeutic Committee

EHRIG:- Ethiopian Hospital Reform Implementation Guidelines

FMHACA:- Food Medicine and Health Care Administration and Control Authority

FMOH:- Federal Ministry of Health

HSDP:- Health Sector Development Plan

KPI Key Performance Indicator

MSH Management Science for Health

NGOs:- Non-Governmental Organizations

PFSA: - Pharmaceutical Fund Supply Agency

PI: - Principal Investigator

RHB: - Regional Health Bureau

SIAPS:-Strengthening Improved Access for Pharmaceutical Service

SOP Standard Operating Procedure

SWOT Strength, Weakness, Opportunity and Threat

TOR:- Term Of Reference

WHO: - World Health Organization

Abstract

Assessment on the implementation of Hospital Reform Guideline with reference to Pharmacy service in Addis Ababa

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Addis Ababa University, 2014

The Ethiopian hospital reform which is develop in 2010 is one of the important documents which established standardized, more patient oriented service in hospitals along with tools to monitor the performance. And one of the chapter in the document discussed minimum standards of hospital pharmaceutical service with its indicators. This study was performed to assess the implementation of Hospital Reform Guidelines in Addis Ababa with reference to Pharmacy service. The study employed a descriptive, cross sectional study design, using both quantitative and qualitative methods between August and November, 2013.As data collection technique the study used structured observation, in-depth interview and self-administered questionnaire. The quantitative data was entered and analyzed by a research data electronically capturing soft – ware called RedCap. Whereas, the qualitative data was analyzed thematically. Fifty percent of participating hospitals have quality offices over all do monitoring and evaluation. Most of this hospitals governed by FMOH. On the other hand, those hospitals under AACAHO do not have such office (except one hospital). Although FMOH and AACAHO hospitals follow different implementation processes, there is no big difference regarding the awareness level of pharmacy professionals. But there is a difference in the outcome of hospital performance. The awareness of pharmacy professionals about EHRIG was around 61% and the implementation of the 12 operational standards included in pharmacy chapter of EHRIG was found to be in range 33% – 83%. Regarding challenge, all hospitals face problems associated with motivation, and commitment of pharmacy professionals towards their job.

Key words: Ethiopian Hospital Reform Implementation Guideline

Background

Health care system

A health care system is the organization of people, institutions, and resources to deliver health care services to meet the health needs of target populations. The goals for health systems, according to the World Health Organization (WHO), are good health, responsiveness to the expectations of the population, and fair financial contribution. Progress towards them depends on how systems carry out four vital functions namely: provision of health care services, resource generation, financing, and stewardship. There is a wide variety of health care system around the world, with as many histories and organizational structures as there are nations (WHO, 2000).

Hospital is a medical treatment facility capable of providing inpatient care. It should be appropriately staffed and equipped to provide diagnostic and therapeutic services, as well as the necessary supporting services required to perform its assigned mission and functions (US Department of Defense, 2005).

As part of the hospital organization, the hospital pharmacy carries out its functions according to the philosophy and objectives of the hospital (Remington, 2005).

Over the past few years, there has been a trend for pharmacy practice to move away from its original focus on medicine supply towards a more inclusive focus on patient care. The role of the pharmacist has evolved from that of a compounder and supplier of pharmaceutical products towards that of a provider of services and information and ultimately that of a provider of patient care (Karin *et al*, 2006).

In Ethiopia the Federal Ministry of Health (FMOH) is the central body in charge of the health care system of the country. Each of the nine National Regional States

and the two city administrative has a Regional Heath Bureau (RHB), Zonal Heath Departments and District Health Offices (FMOH, 2010).

The pharmaceutical sector in Ethiopia is guided by a National Drug Policy (NDP) which was developed in 1993 G.C in line with the national health policy. To implement the policy, the Health Sector Development Program (HSDP) was developed in 1997/98, and a healthcare financing strategy in 1998. On the other hand the pharmaceutical sector is regulated by Food Medicine and Health Care Administration and Control Authority (FMHACA) (FMOH, 2010).

FMOH has developed Ethiopian Hospital Reform Implementation Guidelines (EHRIG) in 2010. Particularly chapter four of this guideline state, standards for the pharmaceutical services rendered by all public hospitals (FMOH, 2010).

The Ethiopian hospital reform is one of the important documents which established standardized, more patient oriented pharmaceutical service in hospitals along with tools to monitor the performance of each hospital in implementing the standards.

1.2. Statement of the problem

Inappropriate, ineffective and economically inefficient use of medicinal drugs occurs commonly in health care facilities worldwide. The costs of such irrational drug use are enormous in terms of both the scarce medical care resources and the adverse clinical consequences. WHO estimated that half of all drugs in the world are used irrationally (WHO, 2011) , in which severe consequences incurred including adverse drug reactions, drug resistance, protracted illness and even death(Dong *et al*., 2011).

A quarter of the world's population is concentrated in developing countries and has access to only a small proportion of the world's drug production. Health budgets in these countries are generally small, when compared to developed countries. Thirty to forty percent of the total health budget is spent on drugs (Dong et *al*., 2011). Due

to small amount of budget in the developing countries, there is shortage of essential drugs (WHO, 2011).

It is known that effective pharmaceutical service promotes the safe, rational and cost-effective use of drugs, thus maximizes health gain and minimizes risk to patients (WHO, 2010).

National standards should be specified and adhered to by practitioners. Specific standards of good pharmacy practice can be developed only within the framework of a national organization. These guidelines are recommended as a set of professional goals in the interest of the patients or customers (WHO, 1994; FIP, 1992)

There have been many standards and guidelines provided by many organizations internationally as well as nationally in order to improve pharmacy service. For instance in Ethiopia there were three successive HSDPs to improve the quality of the health sector of the country, the former DACA had developed different guidelines, directives and standard operating procedures (SOPs).

The standards and guidance set in chapter four of EHRIG are designed to align with and support hospital pharmaceutical services to meet the demands of different national programs. These national programs include Business Process Re-engineering (BPR); Pharmaceuticals Logistics Master Plan and Financial Reforms (FMOH, 2010).

Since EHRIG contains minimum standards for hospitals, FMOH expects those government hospitals to implement it. Assessment of health institutions with particular emphasis to pharmaceutical service is helpful to ensure that the institutions are in step or even ahead of changing dynamics within its competitive social environment. It helps on matching the goals, programs and capacities at the health sector to the social environment in which it operates.

On the other hand, hospitals report every month to FMOH using Health Management Information System Indicators (HMIS). The reporting format contains

only one indicator (availability of tracer drugs during the month) for the assessment of pharmacy service. However, EHRIG contains its own assessment tools and indicators to evaluate the implementation.

This study carried out to assess the performance as well as gaps towards the implementation of EHRIG for pharmacy service. It also assesses the awareness of pharmacy professionals towards the guideline. The study result will help the hospital managers, professionals, FMOH, Addis Ababa City Administration Health Office (AACAHO) and other responsible bodies to know the status of the implementation and design appropriate intervention mechanisms for future improvements.

Literature review

Since the study faced limitation on finding previous works on health reform particularly which focuses on pharmacy; the literature review focused on each standard of EHRIG in addition this study is the first which tried to find out the implementation of the reform in the scientific way.

2.1. Hospital Pharmacy

Hospital pharmacy is defined in simple terms as “the practice of pharmacy in hospital settings and includes the organizationally related facilities or services”. As part of the hospital organization, the hospital pharmacy carries out its functions according to the philosophy and objectives of the hospital (Remington, 2005).

It also may be defined as the department or division of hospital wherein the procurement, storage, compounding, manufacturing, packaging, controlling, assaying, dispensing, distribution and monitoring of medications through drug therapy management for hospitalized and ambulatory are performed by legally qualified, professionally competent pharmacist (US department of defence, 2005).

Hospital Pharmacy Services are designed to meet the primary needs of all customers. Pharmacy services include dispensing of pharmaceuticals in accordance with country regulations, appropriate inventory maintenance functions, drug monitoring, patient drug assessment functions, appropriate record keeping, drug information, education services, and performance improvement functions (Dargahi and Khosravi, 2010).

For decades, hospital pharmacists have contributed substantially to the overall advancement of pharmacy practice worldwide. Hospital pharmacy leaders and practitioners continue to make important contributions that elevate the entire

profession. However, as is the case throughout the profession of pharmacy, significant threats exist that may limit the pharmacist's role within organized health care delivery settings. Efforts aimed at developing and expanding the role of pharmacists in hospitals should be guided by information on the breadth and scope of current practice (Doloresco and Vermeulen, 2009).

Pharmacists in hospitals work closely with other health practitioners to meet the needs of the public. The various societal needs for pharmaceutical care require that pharmacies provide a wide array of organized services. The elements of a pharmacy program that are critical to overall successful performance in a hospital include: Leadership and Practice Management, Drug Information and Education, Optimizing Medication Therapy, Medication Distribution and Control, Facilities, Equipment, and Information Resources and Research (ASHP Guidelines, 2010).

2.2. Hospital Pharmacy standards

A practice standard is a statement that defines the performance expectations, structures, or processes that must be in place for an organization to provide safe and high quality care, treatment, and services. Health system pharmacists like other health care professionals, practice under a number of mandated standards (Zeller, 2006).

The organization of pharmaceutical operations should be carried out in a way to enhance the performance of practitioners and patient convenience and satisfaction. The pharmacy section in health institutions should first be organized into pharmacy store, outpatient, inpatient, and emergency pharmacies. The organization and work flow should be designed to minimize the wastage, theft, pilferage, and expiry of medicines. In addition organization of hospital pharmacy should consider both staff and physical layout of the building. Commonly hospital pharmacy service can be

categorized as outpatient, inpatient, emergency, clinical, drug information and so on based on the hospital need and specialization (MSH, 2011).

According to American Society of Health Pharmacist (ASHP), effective leadership and practice management skills are necessary for the delivery of pharmacy services in a manner consistent with the hospital's and patients' needs. Such leadership should foster continuous improvement in patient care outcomes. The management of pharmacy services should focus on the pharmacist's responsibilities as a patient care provider and leader of the pharmacy enterprise through the development of organizational structures that support that mission. Development of such structures will require communication and collaboration with other departments and services throughout the hospital, which every member of the pharmacy team should cultivate at every opportunity (ASHP, 2010).

Like other health care unit and professionals, pharmacy and pharmacy staff members operate under national and professional laws, regulations, policies and practices. In addition, there may be organizational guidelines to be followed. It is important that all hospital authorities are aware of the legal and regulatory framework that governs their activities and that they comply. Compliance with guidelines, laws and regulations is enhanced when a conducive environment is provided. Nevertheless availability of staff with appropriate skills and knowledge coupled with an adequate staffing level is paramount. With regard to pharmacy administration continuous quality improvement like Systems and processes for defining, monitoring, assessing and improving the quality of pharmacy services should be in place and implemented (Dargahi and Khosravi, 2010).

The Manitoba Pharmaceutical Association hospital standard states that a pharmacist who practice in a health care facility shall practice in accordance to a formulary established and approved by a the facility and the Formulary shall be specific to each institution. Additionally the hospital pharmacy should be well managed and pharmacy staffs should be motivated to serve the hospital's clients. It

should be also efficiently and effectively run in line with the vision and mission of the hospital and in compliance with applicable national laws and regulations. Similarly EHRIG also state the same (The Manitoba Pharmaceutical Association, 2004; FMOH, 2010)).

In order the hospital pharmacy perform well the pharmacy manager shall establish current written policies and procedures to provide pharmacy staff with clear direction and scope. Additionally it uses to limit their functions and responsibilities (WHO, 2011).

Pharmaceutical services are an essential component of hospital care. Effective pharmaceutical services promote the safe, rational, and cost- effective use of medicines, 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 medicines demand, ensuring that adequate supplies are available to deal with any emergencies that may arise. Rational medicines use is an essential component of the overall pharmaceutical management (FMOH EHRIG, 2010)).

The elements of pharmacy services that are critical to safe, effective, and cost-conscious medication use in a hospital include (1) practice management; (2) medication-use policy development; (3) optimizing medication therapy; (4) drug product procurement and inventory management; (5) preparing, packaging, and labelling medications; (6) medication delivery; (7) monitoring medication use; (8) evaluating the effectiveness of the medication-use system; and (9) research. Although the scope of pharmacy services will vary from site to site, depending upon the needs of patients and the hospital as well as the resources available, these core elements are inextricably linked to successful outcomes. Failure to provide any of these services may compromise the quality of patient care. (ASHP, 2010)

According to International Federation of Pharmacy (FIP) Good pharmacy practice involves four main groups of activities, namely:-activities associated with the promotion of good health, the avoidance of ill-health and the achievement of health objectives; activities associated with the supply and use of medicines and of items for the administration of medicines or for other aspects of treatment; activities associated with pharmaceutical care, including advice about and, where appropriate, the supply of a medicine or other treatment for symptoms of ailments that lend themselves to self-treatment; and activities associated with influencing the prescribing and use of medicines (*FIP, 1997)*.

The concept of clinical pharmacy practice or service gradually changed from time to time. It defined the duties and responsibilities of the hospital pharmacy, to Pharmacy Practice Model Initiative in 2010 that develop a consensus on optimal practice models to provide direct patient care(American College of Clinical Pharmacy, 2008).

According to SHPA Clinical pharmacy services must be supported by management to enable pharmacists to achieve Quality Use of Medicine (QUM). A pharmacy service should provide suitably trained and qualified pharmacists supported by appropriately supervised technicians to facilitate the most effective, efficient and economical use of medicines with the aim of optimizing patient care. Comprehensive and accountable clinical pharmacy services are an essential component of contemporary healthcare practice (SHPA, 2005).

The other hospital pharmacy service could be drug information service (DIS), that encompasses the activities of specially trained individuals to provide accurate, unbiased, factual information, primarily in response to patient-oriented problems occurred from the healthcare teams DIS is necessary to perform useful functions such as providing support for clinical pharmacy services, teaching undergraduate

and graduate pharmacy students, and performing reviews for pharmacy and therapeutics committees (Wongpoowarak, *et, al,* 2010)

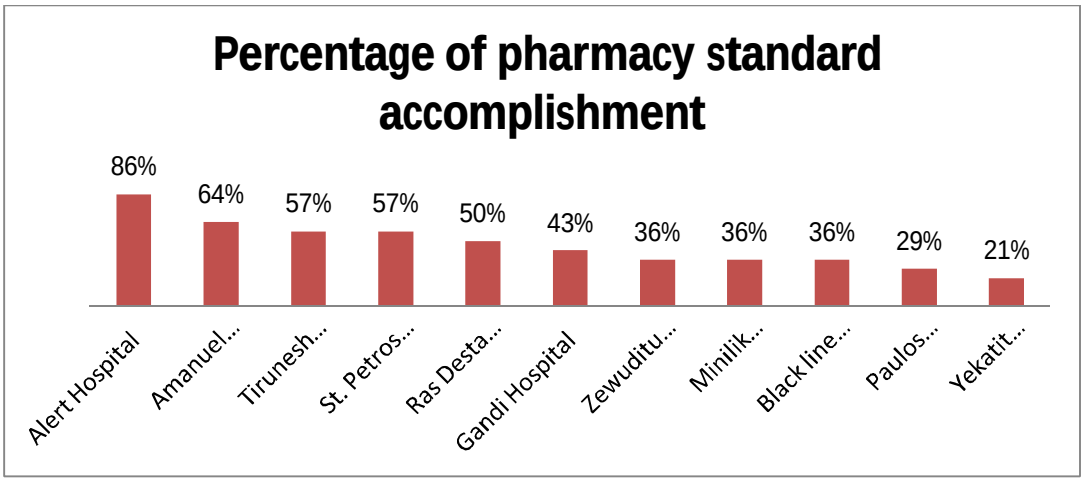
Patient's knowledge of medication use is not only of vital importance in the prevention of drug related problems, but also a major factor that influences treatment success and hence if provided, it offers an opportunity for one to attain a full health potential (Ssemaluulu and Adome, 2006).

Facility infrastructure, resources and facility systems all affect the provision of quality care. The structural features of health facilities contribute to clients' willingness to use healthcare services and enhance the work of the staff at the hospitals and Health Centres. Full availability of resources also increases the capacity of staff to adhere to recommended standards of practice for quality services. Qualified staffs are essential for the provision of quality health services (Quality Health Partners and Ghana Health Service, 2005).

Likewise EHRIG also summarizes minimum hospital standards as follows in the table below, in addition the document discusses each standard briefly with approaches how to implement it as well as with evaluation indicators.

2.3. Pharmacy services EHRIG standard implementation

Each of the hospitals is expected to implement the standards fully so as to provide quality pharmacy services. The hospitals' performance on the pharmacy standards are summarized in the figure below (Source FMOH, 2013).



Of the standards, internal and external pharmacy auditing, implementation of procedures for monitoring of priscription, development of formulary, and procurment policy are some of the areas where least accomplishments were observed. On the other hand, integration of pharmacy services and implementation of inventory management system are the areas where most hospitals are accomplished very well (FMOH, 2013).

Objective of the study

3.1. General objective

- ✓ To assess the implementation of EHRIG in Addis Ababa public hospitals with reference to pharmacy services.

3.2. Specific objectives

- ✓ To assess the awareness of pharmacy professionals working in the public hospitals towards EHRIG
- ✓ To assess the implementation of EHRIG operational standards for pharmacy services
- ✓ To identify challenges in implementing EHRIG operational standards for pharmacy services.

Methodology

4.1. Study Area and Setting

Addis Ababa is the capital and largest city of Ethiopia. It is located at the geographic centre of the nation and covers about 540 Km^2; of which 18.2 Km^2 is rural. According to the 2007 census the population of Addis Ababa is estimated to 3,147,000(CSA, 2008).

According to FMOH report for Ethiopian fiscal year 2003, Addis Ababa had 45 hospitals; of which 11 of them were public and the rest 34 hospitals were run by private investor'sornon-profit organizations. Out of 11 governmental hospitals, 6 were managed by Addis Ababa City Administration Health bureauand the other 5 were managed by the Federal Ministry of Health (FMOH, 2009).

The study was conducted in 10 hospital pharmacies. These include: - Zewditu Memorial hospital, Yekatit 12 hospital, Minilik-II hospital, Gandi Memorial Hospital and Ras Desta Memorial hospital from AACAHO, and ALERT hospital, Amanuel hospital, St Peter Hospital, St Paul hospital, and Black lion specialized hospital from the FMOH.

4.2. Study design

A descriptive cross-sectional survey on hospital pharmacies of public hospitals in Addis Ababa was conducted between June and November, 2013. Both quantitative and qualitative data were collected to complement each other. The quantitative data collection included self-administered questionnaire and check list while qualitative data collection technique used in depth interview

4.3. Study population.

All volunteer pharmacy professionals who were working in the selected hospital take part in the quantitative survey. Moreover, chief pharmacists; Chief Clinical Officers (CCOs), and Chief Executive Officers (CEOs) of all hospitals; who consent for the study, took part in the qualitative part of the study. For the in-depth interview all CEOs, CCOs and pharmacy heads were involved in order to complete information flow and need to include administrative part of the hospital who had directly involved in decision making, management process and implementation of EHRIG for the hospital pharmacy.

4.4. Sampling and sample size determination

A total of ninety five pharmacy professionals who were working in the selected public hospital during the study period were included as respondents. On the other hand observation checklist was made on all 10 hospitals.

A total of 30 in- depth interviews were conducted all CEOs, CCOs and pharmacy heads of visited hospitals.

4.5. Inclusion and Exclusion criteria

Inclusion criteria

- ✓ Public hospital administered by Federal Ministry of health or Addis Ababa city administration Health Bureau
- ✓ A public hospital that has been in service at least for three years.

Exclusion criteria

- ✓ If the hospital was in service for less than 3 years

Data collection and management

Five pharmacy students from Addis Ababa University (AAU) were recruited as data collectors for quantitative surveys. Data collectors were trained on the aim of the study, the study procedures, data collection instruments, and research ethics. Pre-testing of the instrument was not done but the tool was commented by senior staff at pharmacy school.

Structured observations were made through the use of EHRIG check lists and tools developed for this purpose (see Annex-I).

In addition, a self-administered questionnaire was used to assess the awareness and involvement of pharmacy professionals, who present at work at the time of data collection. The questionnaire, includes questions on socio-demographic characteristics of respondents, practice area and questions to assess awareness of respondents about the EHRIG (see Annex-II)

In depth interviews were conducted using semi structured interview guides. The principal investigator conducted the in-depth interviews. The purpose of the interview was to assess the implementation of EHRIG minimum standards for pharmacy services, andto explore EHRIG implementation challenges. Moreover, data was collected about the demographic characteristics and work experience of interview respondents. The interview was done using Amharic language. The duration of the interview was approximately thirty minutes and most of the interviews (92.6%) were tape recorded and transcribed. The interviews which were not recorded were documented by taking note.

4.7. Data quality assurance

The questionnaire and the checklist for the date collection was commented by staffs of Pharmacy schools well as Phd students in the department. All the data collectors

were given one day training about the study procedures prior to data collection. Regarding interview guide suggestion was give about questions to be in chronological order and it was corrected as commented.

4.8. Data entry and analysis

Data was entered and analysed by a research data electronically capturing software called RedCap.

The qualitative data was analysed using thematic analysis approach. The themes and categories were developed and analysed by the PI.

4.9. Ethical consideration

Approval of the research was obtained from the AAU-School of Pharmacy Research ethics committee, Addis Ababa City Administrative Health Office, AHRI-ALERT, Amanuel specialized hospital and St. Peter TB Specialized Hospital ethics review committees. Research support letter was written from the Department of Pharmaceutics and Social Pharmacy to study facilities. Permission was secured from all study facilities to conduct the study.

Participants received information on the purpose of the study, respondent selection procedures, and harms and benefits of the study. They were also assured about the confidentiality of the information obtained in the course of the study. And they were asked to participate in the study as well as they voluntarily sign the consent form.

Results

Finding from self-administered questionnaire

A. Socio–demographic characteristics

Ninety five pharmacy professionals working in 10 public hospitals participated in the study as respondents for the quantitative study; from these 89 returned and completed self-administered questionnaire making the response rate of 93.7%. The mean age of the survey respondents was 28.3 years (SD=4.08, range 20 to 50 years). Sixty four (71.9%) of the respondents were males, and the remaining 25 (28.1%) were females. Most of respondents 63(70.8%) reported their marital status as single. The majority of respondents 81(91%) were pharmacists, the remaining 8(9%) were either druggists or pharmacy technicians (Table 2)

Most of the respondents 60 (67.4%) were working as a dispenser, 13 (14.6%) were store managers, 4(4.5 %) were drug supply management officers, and 3(3.4%) were drug information service officers. The remaining 9(10.1%) were working on procurement position, inpatient pharmacy, and emergency pharmacy.

Table 2:- Socio- demographic characteristics of pharmacy professionals working in government hospitals of Addis Ababa, Ethiopia, November, 2013

Socio- demographic Profile		No (%)
Sex	Male	64(71.9%)
	Female	25(28.1%)
Age	20-29	68(76.4%
	30-39	20(22.5%)
	55	1 (1.1)
Marital Status	Single	63(70.8%)
	Married	26(29.2%)
Highest Educational level	Second degree	2(2.2%)
	First degree	79(88.2%)
	Diploma in pharmacy	8(9%)

B. Pharmacy professionals' awareness about EHRIG

More than two-third (61.8%) of the respondents reported that they have heard about EHRIG. Out of those who were aware of EHRIG,27(49%)had got information about EHRIG at pharmacy department meetings, the other respondents were informed about EHRIG at continuing education sessions, by reading materials posted to advertise the standard, at professional association meeting, or via public media.

As many as 40(63.5%) of respondents who had been practicing in hospitals administered by ministry of health were informed about EHRIG.On the other hand, respondents who were practicing in hospitals governed by the Addis Ababa City Administration 15(57.7%)were found to be aware of EHRIG(Figure 1).

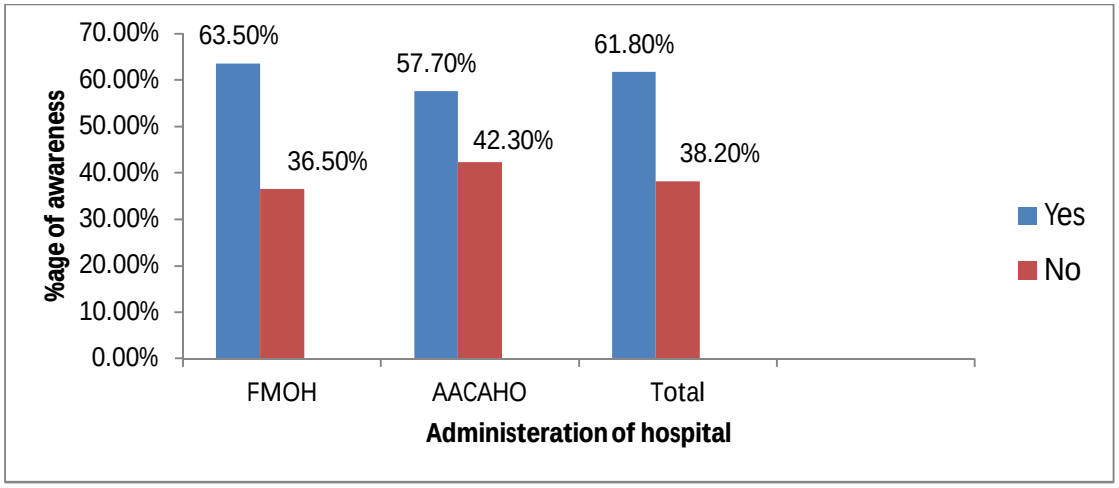


Figure 1:-Awareness of pharmacy professionals about EHRIG, Addis Ababa, November, 2013

Regarding respondents' participation in the implementation of EHRIG, most of them 73(82%) reported they did not have any participation in the implementation process.

C. Challenges for implementing EHRIG

Pharmacy professionals were asked about the challenges they have faced during implementation of the 12 operational standards included in pharmacy chapter of EHRIG. Accordingly, 45(51%) of the respondents reported that they faced challenges in implementing standard 1, 2, 3, 4, 6, 9 and 11 of EHRIG pharmacy operational standards, and the remaining 44(49%) reported challenges for implementing standard, 7, 8, 10 and 12 of the document (Table 3).

Table 2 Level of challenges faced by pharmacy professionals working in government hospitals in relation to implementing EHRIG pharmacy standards. Addis Ababa, November, 2013.

Pharmacy Standards mentioned on EHRIG	**Number of professionals or percentage**
	Those who face challenge towards the standard
	N (%)
The hospital has a Drug and Therapeutics Committee (DTC) which implements measures to promote the rational and cost-effective use of medicines.(standard 1)	58 (65.2%)
The hospital has outpatient, inpatient, emergency pharmacies and a central medical store each directed by a registered pharmacist.(standard 3)	52 (58.4%)
The hospital ensures that all types of drug transactions and patient-medication related information are properly recorded and documented. .(standard 4)	52 (58.4%)
The hospital has a Medicines Formulary listing all pharmaceuticals that can be used in the facility. The Formulary is reviewed and updated annually.(standard 2)	51 (57.3%)
The hospital provides access to drug information to both health care providers and patients in order to optimize drug use..(standard 6)	47 (57.8%)
The hospital has a paper-based or computer-based inventory management system to reduce the frequency of stock-outs, wastage, over supply and drug expiry. .(standard 9)	46 (51.7%)
The hospital ensures proper and safe disposal of pharmaceutical wastes and expired drugs.(standard 11)	45 (50.6%)
The hospital has Standard Operating Procedures (SOPs) for all compounding procedures carried out. .(standard 5)	44 (49.4%)
The hospital has policies and procedures for identifying and managing drug use problems, including: monitoring adverse drug reactions, prescription monitoring and drug utilization monitoring. .(standard 7)	40 (44.9%)
The hospital has a drug procurement policy approved by the DTC that describes methods of quantification, prioritization, drug selection, supplier selection and ordering of pharmaceutical supplies and is in line with national guidance. .(standard 8)	39 (43.8%)
The hospital has adequate personnel, equipment, premises and facilities required to store pharmaceutical supplies and carry out compounding, dispensing, and counselling services..(standard 12)	39 (43.8%)
The hospital conducts a physical inventory of all pharmaceuticals in the store and each dispensing unit at a minimum once a year..(standard 10)	32 (36%)

The challenges mentioned by respondents for all the 12 operational pharmacy standards were

- Lack of knowledge about the standard,
- Inadequate number of professional
- Lack of the professionals 'capacity
- Lack of training regarding the standards, and
- Work load.

Professionals turn over and shortage of finance were the challenges mentioned for eleven operational standards except for one standard which said ensuring proper and safe disposal of pharmaceutical wastes and for standard that said hospitals should have a drug procurement policy approved by the DTC respectively.

Lack of devotion from the concerned officials mentioned as challenge for standards that says "the hospital has a Drug and Therapeutics Committee (DTC)", "the hospital has a Medicines Formulary listing which is reviewed and updated annually", "the hospital has a drug procurement policy approved by the DTC" and for the hospital has adequate personnel, equipment, premises and facilities while unavailability of space were challenges for the standards that said "hospital has outpatient, inpatient, emergency pharmacies and a central medical store", "hospital should ensures that all types of drug transactions and patient-medication related information are properly recorded and documented", "hospital has Standard Operating Procedures (SOPs) for all compounding procedures carried out". And for the standards that said "hospital has adequate personnel, equipment, premises and facilities". On the other hand, lack of devotion from professionals was given as a challenge for nine standards except for standards like "The hospital has outpatient, inpatient, emergency pharmacies and a central medical store", "the hospital has Standard Operating Procedures (SOPs) for all compounding procedures carried out". And for the standards that said hospital should has adequate personnel, equipment, premises and facilities

The above reported challenges (lack of knowledge about the standard, lack of capacity of professionals, lack of devotion from professionals and lack of training regarding the standards) were grouped as challenges related to pharmacy professionals' awareness and the rest grouped as challenges related to administration of pharmacy services and presented in Figure 2.

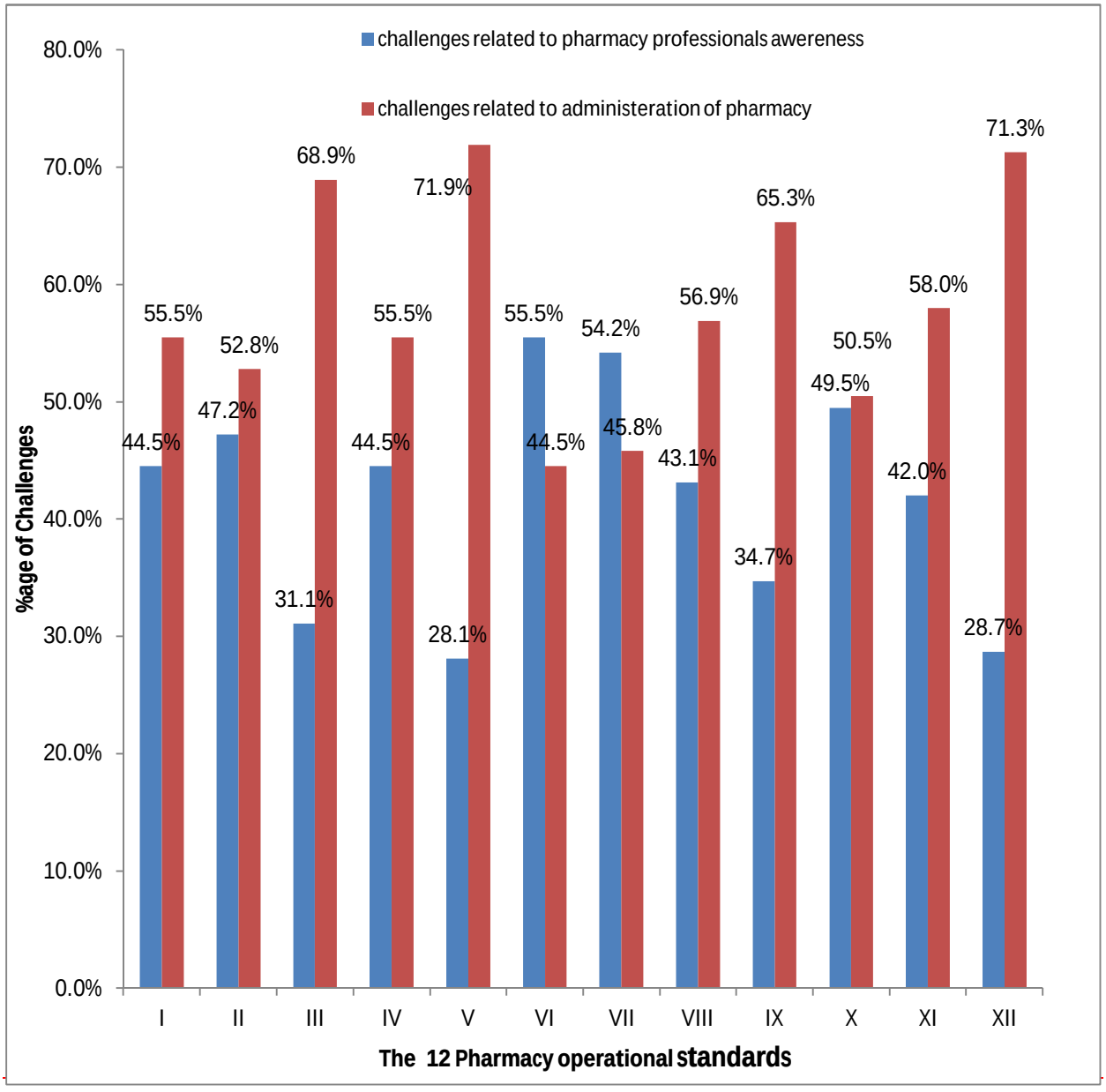


Figure 2:-Challenges related to pharmacy professionals based on category. Addis Ababa, November, 2013
Key: - Roman numbers I, II..... Represents pharmacy operational standard 1, pharmacy operational standard 2.....as mention on Annex V.

Findings from Checklist

Performance of hospital pharmacies according to EHRIG standards

All of the ten hospitals had drug and therapeutics committee, and 7 of the committees had terms of reference (TOR). About half of the established DTCs had annual action plan. According to the standard (EHRIG) for DTC to functional there should be meeting in two months and the meeting should be minted however nine of DTCs didn´t had a meeting in two months interval as recommended by EHRIG, therefore 9(90%) of the DTCs were non-functional and they didn't follow their action plans.. Furthermore 70% of DTCs didn´t have policy for providing and managing drug use problems, adverse drug events, prescription monitoring, drug utilization, and antimicrobial prescribing and use.

And yet all hospitals reported to have a DTC, as many as 70% of the hospitals didn´t have policies and procedures for identifying drug use problems. Additionally only four of the ten hospitals had drug procurement policy that contain procedure for selection, quantification, prioritization and purchasing for drug and medical supplies.

Eight of the hospitals didn´t have a hospital formulary at the time of the survey. Only two of the hospitals had formulary, and only one of the hospitals had updated formulary. On the other hand, all of the hospitals had updated drug list.

Regarding establishment of outpatient and inpatient pharmacies all the ten hospitals had those pharmacies. However, 80% of the inpatient pharmacies were directed by pharmacist. On the other hand, only four of the ten hospitals had emergency pharmacy. But all the ten hospitals had proper

documentation for drug transactions, patient medication related information, including drug receiving, issuing and dispensing records.

Though nine of the 10 hospitals had drug information services for health care providers and patients; three of the hospitals have standard operating procedures for all compounding carried out; of these only two had SOPs for dilution of disinfectants.

All of the hospitals had either paper based or computer based inventory management systems and conducted physical inventory of pharmaceuticals at least once a year. Additionally 30% of them conduct inventory when there is job rotation in the department. But only 2(20 %) of the hospital had proper and safe disposal procedures for pharmaceutical wastes and expired drugs.

Six of the ten hospitals reported having adequate offices for storage, dispensing, and counselling services. More than (50%) of the hospitals don't have wall and refrigerator thermometers. Moreover more than 50% of the hospitals didn´t have facilities and premises that are required for compounding as well as for small dilution. On the other hand eight of the hospitals had vouchers, sell tickets, bin card, stock card and shelves.

According to the above results hospitals performance was summarized based on each standards as Figure 3 and 4 shown below hospitals grouped according to governance either FMOH or AACAHO.

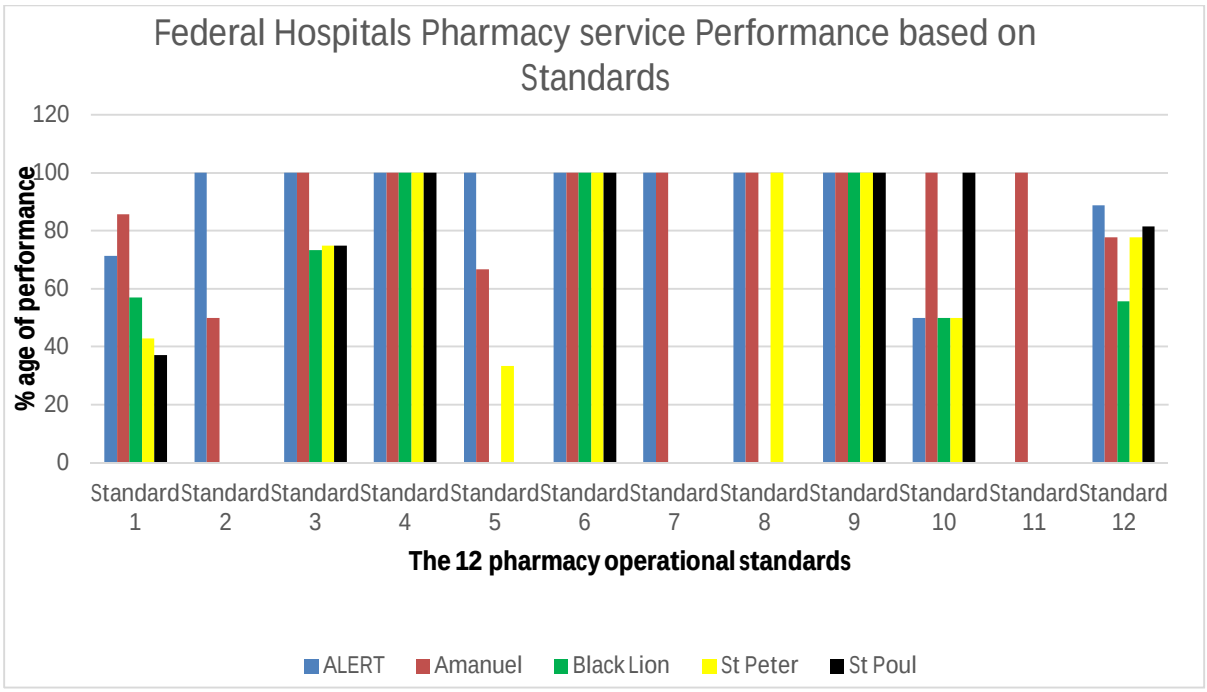


Figure3:-Federal Hospitals pharmacy service performance based on EHRIG operational standards, Addis Ababa, November, 2013.

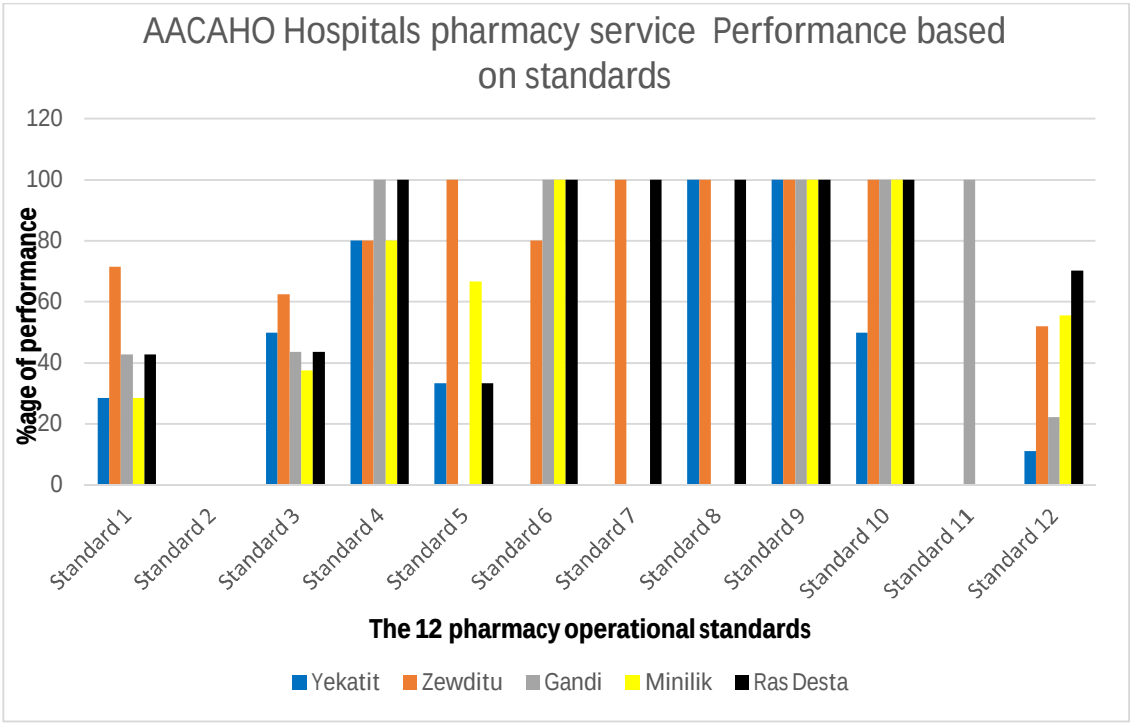


Figure 4:-AACAHO Hospitals pharmacy service performance based on EHRIG operational standards, Addis Ababa, November, 2013

Generally performance of hospital pharmacies according to the twelve pharmacy operational standards were presented as follows.

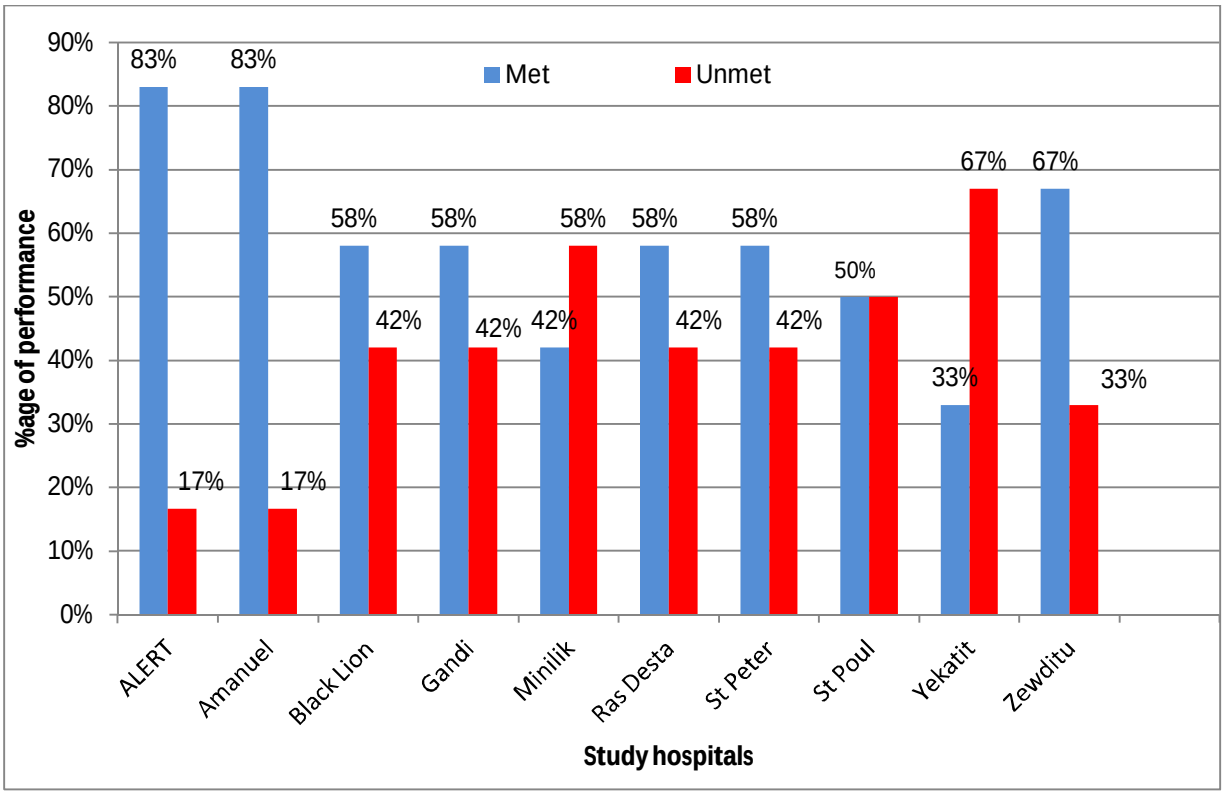


Figure 5:-Hospitals pharmacy service EHRIG implementation performance, Addis Ababa, November, 2013

Key-informant interview findings

An in-depth interview was done with the administrative body of hospitals including CEO, CCOs, and pharmacy heads. A total of 27 respondents were involved in the in-depth interviews. Three of the respondents were females. The mean age of participants were 35.2 years (SD=9.02). Participants of the interview had mean total work experience of 11.1 years (SD=8.7). The respondent's average number of years in their current job was 2.5 (SD =1.7), ranging from 1 to 6 years.

A. EHRIG Implementation process in the Hospital

According to respondents, half of the hospitals in the study used the same kind of EHRIG implementation process. These hospitals have quality office directed by the hospital CEO. The office has a minimum of three staffs who monitor and evaluate the standards using the guideline indicators and checklists. The quality office organizes scheduled meeting chaired by the CEO to assess the standards. The hospitals also report monthly the overall implementation.

The 3 hospitals do not have a Quality office but case team leaders. Management of the hospitals communicate the implementation of standards for the case team and departments. Each team leader reported what they achieved and the problems they encountered on the senior management meetings.

Other 2 hospitals which were different from the above two groups said that they are just in the introduction phase of the guideline. No responsible person is obliged to follow the implementation as well as the monitoring and evaluation of the guideline.

One respondent said:

> *"Regarding EHRIG what can I say there is no consistency in implementation , one time there was a movement then on the other time no one talks about it"*

B. Contribution of EHRIG

All respondent agreed that EHRIG is a standardized tool to assess their work. They also mentioned that the guideline is a system that brings standardized hospital service with patient satisfaction. In addition they agreed EHRIG allowed them to able them to give quality and patient centred services. As well as use their budgets efficiently since it standardised drug supply management and drug use in addition the guidelines had thirteen chapter as mentioned above and one of the chapter include is finance and asset which have linked budget and hospital service.

The respondents revealed that EHRIG standards increased the knowledge and competency of health professionals. One of them reported as follows:

> *"In earlier time we do our work traditionally but now we got standardized tool.**

Another respondent agreed by saying

> *"Now we know what our job is and what is expected from us. It gives us direction."*

C. Contribution of EHRIG for improvement in Hospital Pharmacy Services

The majority of informants reported that after the introduction of EHRIG, outpatient, inpatient and emergency pharmacy services become more organised and the hospitals launched drug information services. There were also hospitals that started clinical pharmacy services.

All respondents agreed that EHRIG standardized the pharmacy service. They revealed that before the introduction of EHRIG their job was done traditionally and measured based on individual performance. They said after introduction of EHRIG professionals do their job in standardized method, using standardized indicators, checklists, procedures, and protocols.

All informants also agreed that EHRIG allowed pharmacy professionals to practice their knowledge and skills, and enabled them to update and build their professional capacity.

All pharmacy heads said

"... normally EHRIG initiate us to implement what we know and learn at school. It is just like you use your knowledge practically. Additionally in earlier times we didn't do our job as expected from us"

In addition the entire respondent indicated that EHRIG allows them to use the limited resources effectively. For example a respondent said

"... It allows the country to use the health and medication budget as well as other resources *effectively and give quality service to the community."*

D. Challenges towards Implementation of EHRIG

The majority respondents mentioned that the major challenge in implementing EHRIG was lack of awareness. They indicated that only some of higher officials know about EHRIG, other staffs do not have adequate information about it.

Most of the respondent revealed the infrastructure of hospitals limits the outcome of EHRIG and do not allow them to work as per the standard. They agree that almost all hospitals were built long years ago and it is difficult to find out rooms as well as sufficient working space with the existing layout.

On the other hand, the majority of the respondents' believe that there is lack of motivation and commitment from hospital staffs including pharmacy professionals. Particularly at the beginning of the implementation process most hospital staffs were resistant to accept the guideline.

E. SWOT analysis

The in-depth interview includes questions to each interview participants (CEOs, CCOs and pharmacy heads of each hospitals) to mention the strength, weakness, opportunity and the threat for the hospitals. The majority of the respondents reported the major strength of their pharmacy and pharmacy professionals is team work. Additionally most of the hospital pharmacy got support from senior management of the hospital. One of the respondents supported this idea as follows

> *"... Anything that we propose to work will get support from the management the only thing what is expected from us is commitment."*

Some respondent also appreciated their hospital pharmacy on the basis of professionalism and willingness to serve the patient even if they faced lack of resources, facilities, premises as well as incentives and benefits.

All hospitals have a paper-based or computer-based inventory management system and proper documentation for drug transactions, including drug receiving and issuing. In addition to this, 80% of hospitals had updated hospital specific drug list.

As a weakness majority of the respondents mentioned that most of pharmacy professionals in pharmacy Department lack motivation, commitment and initiation for work.

Most (90%) of the hospitals don't have functional DTC, 80% of the them don't develop formulary manual. and 60% didn't established yet emergency pharmacy

Regarding opportunities, majority of the study participants revealed that they have got support from Federal Ministry of Health, Addis Ababa City Administration Health Office and other partners. The supports were in supervision, material as well as technical. The majority of the respondents reported that they have got material and technical support from MSH/SPSS and deliver project for pharmacy

services such as establishment of DTC, drug information service, and store (pharmacy warehouse) management.

The serious threat reported by all respondents is the shortage of medicine which is mainly the result of the long internal purchasing process and the problems like after winning tender suppliers could not supply the product or suppliers themselves became out of stock.

Discussion

The study:

- Provides a description of EHRIG implementation with respect to pharmacy service in Addis Ababa public hospitals.
- Describes public hospitals´ EHRIG implementation, monitoring and evaluation processes
- Assesses the awareness of pharmacy professionals about EHRIG and their challenges
- Assesses pharmacy service standards of EHRIG toward the implementation.

Development of national standards is important to perform and standardize the work according to specific situation of the country. National standards of good pharmacy service should be specified and adhered to by practitioners. Specific standards of good pharmacy practice can be developed only within the framework of a national organization. These guidelines are recommended as a set of professional goals in the interest of the patients or customers (WHO, 1994; FIP, 1992)FMOH expected hospitals to implement EHRIG standards to provide quality service.

The study used both quantitative and qualitative research methods. It also used different data collection methods to gather the required information for the study. The interview include decision makers of the hospital administration regarding pharmacy service. On the other hand the study used standardized tool which was prepared by the Federal Ministry of Health of Ethiopia.

A practice standard is a statement that defines the performance expectations, structures, or processes that must be in place for an organization to provide safe and high quality care, treatment, and services (Zeller, 2006). All key informants of

this study have agreed on the importance of EHRIG standards as well as its contribution to the quality service.

The present study found out that, the hospitals follow different implementation process. Fifty percent of participating hospitals have quality offices which is staffed accordingly. Those offices collects report, assess the performance and over all do monitoring and evaluation using checklist and indicators for each chapter of EHRIG. Most of the hospitals that have quality monitoring unit are governed by FMOH.

On the other hand, those hospitals under AACAHO do not have such office (except one hospital). But they follow the implementation of EHRIG at the management meeting.

Only one hospital has quality officer which means only one person do all the monitoring and evaluation process. One of the interview respondents expressed the challenges of quality monitoring as follows.

“Who is quality officer? Is he/she a nurse or other health professional? What is his/her educational level and what is the position in the human resource document?

This hospital follow different implementation process of the guideline shows there is no clear awareness by administrative bodies of hospitals about quality office and quality officer. But Chapter twelve of EHRIG stated that the quality office organization, establishment, role, how it is staffed, how it function, the monitoring & evaluation procedure as well as the checklists and indicators to be used during quality management.

38.2% of the pharmacy professionals did not know about EHRIG. And 82% of them did not participate in the implementation of EHRIG even if they perform day to day job. Most interviews indicate that there is a general lack of awareness and less involvement of professionals in the implementation of EHRIG.

Pharmacy chapter of EHRIG has twelve standards and each had two or more measuring indicators. Regarding the first standard (i.e., hospitals should have functional DTC), FMOH hospitals performs better than AACAHO hospitals. None of the study hospitals has fully functional DTC. Due to frequent professionals' turnover, high work load and lack of training about DTC there is less frequent meeting among DTC members of hospitals.

Development and approval of SOPs of ADR, SOPs for monitoring drug use, SOPs for drug procurement and preparation of medicine formulary are the duties of established hospital DTCs. But because of lack of functional DTC majority of hospitals couldn't perform the above standards. Therefore this shows that not having functional DTC by itself is a reason for other standards not to be enrolled.

The EHRIG stated that hospitals should have out patient, inpatient, emergency pharmacies and central medical store. The pharmacy section in health institutions should first be organized into pharmacy store, outpatient, inpatient, and emergency pharmacies (MSH, 2011). All the study hospitals had out patient, in patient and medical store. However, four of the study hospitals didn't established emergency pharmacy due to unavailability of space and lack of infrastructure.

Regarding documentation of ensuring drug transaction as well as having paper or computer based inventory management; all hospitals fully perform those standards. The technical support given to the hospitals by Deliver Project and MSH/SIAPS which is their major objective is to standardize pharmacy warehouse management, might help them to perform better in this standard than the other standards. This finding is also the same with the finding of FMOH assessment conducted in 2013 that showed integration of pharmacy service and the implementation of inventory management system are the areas where most hospitals accomplished very well.

Concerning waste medicine, only two hospitals carried out the task. Most interview respondents revealed that there are no incinerators at their hospitals. Two of the

hospitals mentioned that even if they sorted out drugs to be disposed they didn't get the necessary support from FMHACA and AACAHO.

Regarding the overall performance of pharmacy chapter, except Minilik and Yekatit other hospitals perform more than 50% of the standards. Additionally those hospitals who got a system of monitoring and evaluation at their hospital level perform better than who don't. Comparing the above result with the assessment done by FMOH (unpublished) shows with the exception of ALERT hospital the rest perform better in this study. This may be due to the fact that recently beginning of FMOH supervision and assessment, as well as follow up done by AACAHO. In addition it may be also due to Auditable Pharmaceutical Transaction and System (APTS) project of SIAPS which forces the hospital pharmacy service to have documentation system.

Concerning possible challenge of the implementation might be lacks of motivation and commitment among pharmacy professionals. This may be because lack of attention from the concerned bodies. In which those pharmacy department who got support from the management as well as had good communication with the management perform better than those who did not. It is important that all hospital authorities should be aware of the legal and regulatory framework that governs their activities. Compliance with guidelines, laws and regulations is enhanced when a conducive environment is provided. (Dargahi and Khosravi, 2010).

The other challenge is that reports to FMOH and AACAHO is concerned only about stock out of medicine for the other standards there was no mechanism of monitoring and reporting system about other EHRIG standards at the two governed bodies.

Regarding some standards this study finds out that hospital officials don't believe on the importance of the specific standards for their setting. For instance the need compounding of extemporaneous preparation is included in EHRIG but most of the

hospitals suggested that it is not important in their setting because their hospital did not have dermatology department.

Strength and limitation

Strength of the study

The study used both quantitative and qualitative research methods. It also used different data collection methods, (semi structured questionnaire, key informant interview, and observation using checklist). The interview include decision maker of the hospital administration regarding pharmacy service.

On the other hand the study used standardized tool which was prepared by the Federal Ministry of Health of Ethiopia.

Limitation of the study

Due to limited recourses on hospital reform the study couldn't compare its finding with other literatures. Comparison and discussion was done between the study hospitals based on its finding.

Conclusion

The awareness of pharmacy professionals about EHRIG was around 61% and 82% do not participate during implementation. In addition pharmacy professionals who were working in those hospitals governed by FMOH have more awareness about EHRIG than those working in the hospitals of AACAHO.

Implementation of the 12 operational standards included in pharmacy chapter of EHRIG was found to be in range 33% – 83%.

Regarding challenge, all hospitals face problems associated with motivation, and commitment of pharmacy professionals towards their job. Additionally, challenges like lack of capacity of professionals, lack of knowledge about the standard, lack of training, lack of devotion and work load were the major challenges for most of the EHRIG operational standards of pharmacy service.

Generally all hospital had begun to implement hospital reform guidelines besides they follow different direction or style to implement it and they had different performance level.

Recommendation

FMOH Medical service directorate

- ✓ The established pharmacy team should have regular supportive supervision schedule for hospitals on pharmacy service
- ✓ The team should develop KPI like performance report indicator and schedule monthly meeting for pharmacy service
- ✓ Should coordinate training on EHRIG for all professionals in the hospital as well as pharmacy service team should organize EHRIG awareness training for pharmacists

Addis Ababa City Administration Health Office

- ✓ The established pharmacy team should have regular supportive supervision schedule for hospitals on pharmacy service
- ✓ The team should adopt KPI like performance report indicator from the FMOH pharmacy team and schedule monthly meeting for pharmacy service
- ✓ Should coordinate training on EHRIG for all professionals in the hospital as well as pharmacy service team should organize EHRIG awareness training for pharmacists

Hospitals

- ✓ Should plan to work on unmet performance of EHRIG.
- ✓ Hospital management should work to solve the motivation, and commitment problems of their staffs.

- ✓ Hospital management should follow quality management process and monitoring & evaluation procedures mentioned on chapter twelve and thirteen of EHRIG respectively to monitor and evaluate implementation of EHRIG
- ✓ Hospitals should strength DTC to work on EHRIG standards. DTC have responsibility to achieve the standards on duties and responsibility.

Pharmacy department or case team

- ✓ Should develop way of monitoring and evaluation system of EHRIG standards performance,
- ✓ Should actively participate in the implementation process of EHRIG in the hospital.
- ✓ Pharmacy professionals should update themselves on the new standards and policies published by FMOH, AACAHO, FMHACA, PFSA and other concerned bodies.

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Annex I Check list to be used for the structured observation (Adopted and modified from EHRIG)

No	Items	Yes	No
Standard 1	**The hospital has a Drug and Therapeutics Committee (DTC) which implements measures to promote the rational and cost-effective use of medicines**.		
	• Does the hospital has establish DTC		
	• Does DTC has involved members or representative from all department		
	• Does it has TOR		
	• Does it has action plan for the current year		
	• Does it function according to as action plan for the current year		
	• Does it had a meeting for the last 2 month		
	• Does it has policy and providers for identifying and managing drug use problems ADR, prescription monitoring drug utilization antimicrobial prescribing and use		
Standard 2	• **The hospital has a Medicines Formulary listing all pharmaceuticals that can be used in the facility. The Formulary is reviewed and updated annually.**		
	• Does the hospital prepare formulary and shared with staff		
	• Does the formulary updated at least once a year		
Standard 3	**The hospital has outpatient, inpatient, emergency pharmacies and a central medical store each directed by a registered pharmacist.**		
	• Does the hospital has outpatient pharmacy directed by registered pharmacist		
	• Is there ART outpatient pharmacy		
	• Is there general outpatient pharmacy		
	• Is there pediatric outpatient pharmacy		
	• Is there other form of outpatient pharmacy		
	• Does the outpatient pharmacy dispensing involve the 6 steps of standardize dispensing step 1-6		

	• Does the hospital has inpatient pharmacy directed by registered pharmacist		
	• Is there inpatient for the all wards		
	• Is there patient cardex or document at the inpatient pharmacy		
	• Does the hospital provide drug information service		
	• Does the hospital has drug and medical supply store separately		
	• Is there chronic disease pharmacy		
	• Is there patient medication profile card		
	• Is there participation of pharmacists in all inpatient round		
	• Is there regular continuing education presentation		
Standard 4	**The hospital ensures that all types of drug transactions and patient-medication related information are properly recorded and documented.**		
	• Does the hospital has appropriate Recuing records		
	• Does the hospital has appropriate Issuing records		
	• Does the hospital has appropriate Dispensing records		
	• Does the pharmacy use IPLS from in each transaction		
	• Does the pharmacy has a DSM differ		
Standard 5	**The hospital has Standard Operating Procedures (SOPs) for all compounding procedures carried out.**		
	• Does the pharmacy has sops for ADR monitoring		
	• Does the pharmacy has sops for, compounding		
	• Does the pharmacy has sops for dispensary		
Standard 6	**The hospital provides access to drug information to both health care providers and patients in order to optimize drug use.**		
	• Does the drug information service office give its service to the health professional		
	• Does the drug information service office give its service to the patient		

	• Does it has form for collection of enquiry		
	• Does it has SOP		
	• Does it serve during working hour		
Standard 7	**The hospital has policies and procedures for identifying and managing drug use problems, including: monitoring adverse drug reactions, prescription monitoring and drug utilization monitoring.**		
Standard 8	**The hospital has a drug procurement policy approved by the DTC that describes methods of quantification, prioritization, drug selection, supplier selection and ordering of pharmaceutical supplies and is in line with national guidance.**		
	• Policy and procedure for Selection		
	• Policy and procedure for Quantification		
	• Policy and procedure for Prioritization		
	• Policy and procedure for Purchasing		
Standard 9	**The hospital has a paper-based or computer-based inventory management system to reduce the frequency of stock-outs, wastage, over supply and drug expiry.**		
Standard 10	**The hospital conducts a physical inventory of all pharmaceuticals in the store and each dispensing unit at a minimum once a year.**		
	• Is there pharmacy record for inventory		
	• Does the pharmacy register AMC MAX and stock for each drug on the bin card		
Standard 11	**The hospital ensures proper and safe disposal of pharmaceutical wastes and expired drugs.**		

Standard 12	**The hospital has adequate personnel, equipment, premises and facilities required to store pharmaceutical supplies and carry out compounding, dispensing, and counselling services.**		
	• Does the pharmacy had adequate offices		
	• Does the pharmacy established according to the regard area		
	• Does the pharmacy had adequate ✓ chair ✓ table ✓ calculator ✓ counting, trey ✓ spoons ✓ weighing scales ✓ spatula ✓ compounding room ✓ dispensing cup ✓ medicine bag ✓ refrigerator ✓ wall, thermometer ✓ refrigerator thermometer ✓ mortal and pestle ✓ flasks ✓ measuring cylinders		
	• Does the pharmacy had vouchers sells tickets, dispensary registers bin card, stock card, shelves appropriate ventilation		
	• Does the pharmacy had Pharmacy accountant		
	• Does the pharmacy had Stock and data clerks		
	• Does the pharmacy had Guards		
	• Does the pharmacy had STGS		
	• Does the pharmacy had Computer		
	• Does the pharmacy had Printer		
	• Does the hospital pharmacy had adequate personal with qualification		
	• Does the hospital pharmacy had cleaner and porters		

Annex II. Information sheet for interview of CEO, CCO and pharmacy head

Information Sheet

Hello, my name is Bethelehem Gulelat. I am MSC student in the school of Pharmacy, Addis Ababa University. The purpose of this study is to assess the implementation of Ethiopian Hospital Reform Implementation Guidelines (EHRIG) in public hospitals in Addis Ababa. This will be helpful in improving the implementation of standards of EHRIG with regard to pharmacy service and identify challenges towards it.

As you know within the Ethiopian Health Service, a number of reforms are currently taking place that affect hospital pharmaceutical services. The standards and guidance set in the chapter four of Ethiopian Hospital Reform Implementation Guidelines (EHRIG) are designed to align with and support hospital pharmaceutical services (an essential component of hospital care) to meet the demands of these national reform programs. However, the implementation of this standard is not yet assessed. Therefore, I am interested in assessing the implementation of EHRIG for the pharmacy service.

Procedures

If you agree to participate in my research, I will conduct an interview with you at a time and location of your choice. The interview will involve questions about *the title mentioned above.*. It would last about half an hour. With your permission, I will audiotape and take notes during the interview. The recording is to accurately record the information you provide, and will be used for transcription purposes only. If you choose not to be audio taped, I will take notes instead. If you agree to be audio taped but feel uncomfortable at any time during the interview, I can turn off the recorder at your request. Or if you don't wish to continue, you can stop the interview at any time. Your participation is completely voluntary. You can refuse to answer any questions and/or withdraw from the study at any time without a problem to you.

Benefits

There is no direct personal benefit to you from taking part in this study. It is hoped that the research will give input about the implementation of EHRIG standards and challenges towards it. This helps to design strategies for better implementation and help to improve the service that is given to the society.

Risks/Discomforts

Some of the research questions may make you uncomfortable. You are free to decline to answer any questions you don't wish to, or to stop the interview at any time.

Confidentiality

All your responses will remain strictly confidential, your name will not be recorded on the interview guide, and your responses will not be linked to your identity at any time. The results of this study will be presented collectively and no individual participants will be identified.

Annex III Consent Form for interview of CEO, CCO and pharmacy head

Consent Form

I have been informed of and understand the purpose and procedures of this study and the purpose and procedures of this interview/these interviews.

I understand that I am free to withdraw my consent and discontinue my participation in this interview at any time. I understand that I can choose to answer only the questions that I wish to answer.

I understand that the interview will be audio taped or digitally recorded and then transcribed.

I agree / not agree (circle one) to be audio taped.

By signing this consent form, you are indicating that you fully understand the above information and agree to participate in this study.

Participant's signature _____

Date: _____

Researcher's signature: _____

Date: _____

If you have any questions about this study, please contact principal investigator, Bethelehem Gulelat (Mobile: 0911-317020); e-mail: bellakonjo@gmail.comor Dr. Tefri Gedif

Annex IV Guide for key informant interview with CEO, CCO and pharmacy head

A. Questions to gather demographic and practice information of CEO, CCO and pharmacy head

Back ground of the informant

- Age in years……..
- Profession……..
- Highest level of education…….
- Total Work experience……..
- Current position in the hospital?.....
- Work experience in your current position of the hospital……..

B. Questions prepared for discusion

1. **Opening question:-** How do you assess the overall pharmacy service in this facility in general? **Probing what are the major problems**

2. Did your facility implement EHRGI guideline? (**Probing:- Regarding** Hospital Leadership and Governance, Patient Flow, Medical Record Management, Pharmacy Service, Laboratory Service, Nursing Care Standards, Infection Prevention, Facility Management, Medical Equipment Management, Financial and Asset Management, Human Resource Management, Quality Management)

3. If your answer is yes to one of the issue, can you tell me a bit more about the implementation process? (**Probing a: -** Is there quality office, tracer team organization, Meetings of follow up, reporting schedule etc...) If no, to **probing "a" Is there any other means for guiding the implementation**?

4. How do you see the contribution of EHRIG to improve the hospital services in your facility? (**Probing: -** On improving budget efficiency, service provision, Lessening bureaucracy etc...)

5. How do the hospital management assess the implementation of EHRIG standards for pharmacy? (monetary and evaluation) (probing Is there any support)

6. Have you tried to assess the implementation of EHRIG (monitoring and evaluation) in your pharmacy department? (Probing: - Frequency of assessment like how many times per year , is there performance evaluation like percentage?etc...)

7. How do you see the contribution of EHRIG to improve the pharmacy services in your facility? (**Probing: -** On improving budget efficiency, service provision, Lessening bureaucracy etc...)

8. How do you describe the overall achievement in terms of implementation or improving services be precise?
   Probing a: - Is there functional DTC, DIC and structural organization of pharmacy? If no, **Why**
   Probing b: -Is there updated formulary, SOPs, policy for drug procurement, policy to evaluate drug use (ADR and prescription monitoring? If no, **Why**
   Probing c: -Is there physical inventory, record of inventory management either paper or computer based, do the hospital ensures all types of drug transaction? If no, **Why**
   Probing c: -Is there safe disposal of pharmaceutical wastes and expired drugs do the hospital has adequate personnel, equipment, premises and facilities required to store pharmaceutical supplies and carry out compounding, dispensing, and counselling services? If no, **Why**

9. What do you think the major challenges of implementation pharmacy EHRIG? **(Probing:-** for example for not implemented standards in the above question)

10. What do you think the strength and weakness of the pharmacy department regarding implementation of EHRIG?

11. Do you think there are opportunities in implementing EHRIG? **(Probing:-** like support from other organizations,)

12. What do you recommend for proper implementation and sustain of the guideline?

13. Do you think that the guideline lacks anything?

14. Do you have anything to add?

Thank you for your time and cooperation!!!

Annex V list of standards for hospital pharmaceutical services for Ethiopia copied from EHRIG

Sr no.	Pharmaceutical standard
1	The hospital has a Drug and Therapeutics Committee (DTC) which implements measures to promote the rational and cost-effective use of medicines.
2	The hospital has a Medicines Formulary listing all pharmaceuticals that can be used in the facility. The Formulary is reviewed and updated annually.
3	The hospital has outpatient, inpatient, emergency pharmacies and a central medical store each directed by a registered pharmacist.
4	The hospital ensures that all types of drug transactions and patient-medication related information are properly recorded and documented.
5	The hospital has Standard Operating Procedures (SOPs) for all compounding procedures carried out.
6	The hospital provides access to drug information to both health care providers and patients in order to optimize drug use.
7	The hospital has policies and procedures for identifying and managing drug use problems, including: monitoring adverse drug reactions, prescription monitoring and drug utilization monitoring.
8	The hospital has a drug procurement policy approved by the DTC that describes methods of quantification, prioritization, drug selection, supplier selection and ordering of pharmaceutical supplies and is in line with national guidance.
9	The hospital has a paper-based or computer-based inventory management system to reduce the frequency of stock-outs, wastage, over supply and drug expiry.
10	The hospital conducts a physical inventory of all pharmaceuticals in the store and each dispensing unit at a minimum once a year.
11	The hospital ensures proper and safe disposal of pharmaceutical wastes and expired drugs.
12	The hospital has adequate personnel, equipment, premises and facilities required to store pharmaceutical supplies and carry out compounding, dispensing, and counselling services.

Annex VI Self-Administered Questionnaire for pharmacy professionals

Self-Administered Questionnaire

Pharmacy professionals' awareness about EHRIG and its implementation challenges.

AAU, School of Pharmacy

Hello, my name is Bethelehem Gulelat. I am MSC student in the school of Pharmacy, Addis Ababa University. The purpose of this study is to assess the implementation of EHRIG in public hospitals in Addis Ababa. This will be helpful in improving the implementation of standards of EHRIG with regard to pharmacy service and identify challenges towards it.

Your answers are valuable to the successful completion of the study. I would like to extend my gratitude for your cooperation in advance and kindly requested to give appropriate answer for each question. If an item is irrelevant, please leave the answer blank.

If you have any question or comment; please feel free to contact the principal investigator, Bethelehem Gulelat (Mobile: 0911-317020); e- mail: bellakonjo@gmail.com).

Part I: Questions on the socio-demographic Characteristics of Respondents

1. Age in years……
2. Sex ☐ Male ☐ Female
3. Marital status: ☐ Single ☐ Married ☐ Divorced/Separated ☐ Widowed
4. What is your highest education in pharmacy

   ☐ Diploma Degree ☐ MSC ☐

   Other please specify……
5. Total Work experience in years……
6. Work experience in the current position?(in years).....
7. Your current position?

Dispenser ☐ Store manager ☐ DSM Officer ☐

DIS Officer ☐ her please specify……

Part II: Questions on the awareness of pharmacy professionals about EHRIG

1. Have you heard about EHRIG? Yes ☐ ☐No

   If your answer is no to ≠1 skip to the question ≠3

2. If your answer to question number 1 is yes through what means of communication

   Through training ☐

   Through pharmacy department meeting ☐

   Through reading materials ☐

   Through posted materials ☐

   Through public Medias ☐

   Through association gatherings ☐

3. Did you participate in implementation of EHRIG?

   Yes ☐ No ☐

   If Yes to question #3please specify your task

   ……

   ……

Part III: Questions on challenges of pharmacy professionals towards EHRIG

1. Do you face any challenge towards implementation of EHRIG standards? In general all standards.

   Yes ☐ NO ☐

   Please specify the challenges. Choose among the given options. you can choose more than one options.

   ☐ Shortage of finance

   ☐ Lack of professionals

   ☐ Lack of capacity of professionals

   ☐ Lack of training regarding those standards

   ☐ Work load/ being engaged on other duty

   Other please specify……

2. Have you implemented the following standards? tick (√) on the answer

S.no.	Pharmaceutical standard	Code Categories	
		Yes	No
1	The hospital has a Drug and Therapeutics Committee (DTC) which implements measures to promote the rational and cost-effective use of medicines.	1	2
2	The hospital has a Medicines Formulary listing all pharmaceuticals that can be used in the facility. The Formulary is reviewed and updated annually.	1	2
3	The hospital has outpatient, inpatient, emergency pharmacies and a central medical store each directed by a registered pharmacist.	1	2
4	The hospital ensures that all types of drug transactions and patient-medication related information are properly recorded and documented.	1	2
5	The hospital has Standard Operating Procedures (SOPs) for all compounding procedures carried out.	1	2
6	The hospital provides access to drug information to both health care providers and patients in order to optimize drug use.	1	2
7	The hospital has policies and procedures for identifying and managing drug use problems, including: monitoring adverse drug reactions, prescription monitoring and drug utilization monitoring.	1	2
8	The hospital has a drug procurement policy approved by the DTC that describes methods of quantification, prioritization, drug selection, supplier selection and ordering of pharmaceutical supplies and is in line with national guidance.	1	2
9	The hospital has a paper-based or computer-based inventory management system to reduce the frequency of stock-outs, wastage, over supply and drug expiry.	1	2
10	The hospital conducts a physical inventory of all pharmaceuticals in the store and each dispensing unit at a minimum once a year.	1	2
11	The hospital ensures proper and safe disposal of pharmaceutical wastes and expired drugs.	1	2
12	The hospital has adequate personnel, equipment, premises and facilities required to store pharmaceutical supplies and carry out compounding, dispensing, and counseling services.	1	2

3. Below the table is prepared to assess challenges towards EHRIG standards. Please fill the table caewfully.

Type of Standard	**Do you face challenge to implement the standard? tick (√) on the answer**		**If "Yes" Please specify the challenges. Choose among the given options. You may choose more than one options.**
	Yes	**No**	
Standard I: The hospital has a Drug and Therapeutics Committee (DTC) which implements measures to promote the rational and cost-effective use of medicines.	1	2	☐ Lack of Knowledge about the standard ☐ Lack of professionals ☐ Lack of capacity of professionals ☐ Lack of devotion from professionals ☐ Lack of training regarding the standards ☐ Work load/ being engaged on other duty ☐ Professionals turn over ☐ Lack of devotion from the concerned bodies (CEO, CCO& others) ☐ Shortage of finance Other please specify……
Standard II:- The hospital has a Medicines Formulary listing all pharmaceuticals that can be used in the facility. The Formulary is reviewed and updated annually	1	2	☐ Lack of Knowledge about the standard ☐ Shortage of finance ☐ Lack of professionals ☐ Lack of capacity of professionals ☐ Lack of devotion from professionals ☐ Lack of training regarding the standards ☐ Work load/ being engaged on other duty ☐ Professionals turn over ☐ Lack of devotion from the concerned bodies (CEO, CCO &

			others) Other please specify……..
Standard III:-The hospital has outpatient, inpatient, emergency pharmacies and a central medical store each directed by a registered pharmacist	1	2	☐ Lack of Knowledge about the standard ☐ Unavailability of Space ☐ Unavailability of finance ☐ Lack of professionals ☐ Lack of capacity of professionals ☐ Lack of training regarding the standards ☐ Work load/ being engaged on other duty ☐ Professionals turn over Other please specify……..
Standard IV:-The hospital ensures that all types of drug transactions and patient-medication related information are properly recorded and documented.	1	2	☐ Lack of Knowledge about the standard ☐ Unavailability of Space ☐ Unavailability of finance ☐ Lack of professionals ☐ Lack of devotion from professionals ☐ Lack of capacity of professionals ☐ Lack of training regarding the standards ☐ Work load/ being engaged on other duty ☐ Professionals turn over Other please specify……..
Standard V:-The hospital has Standard Operating Procedures (SOPs) for all compounding	1	2	☐ Lack of Knowledge about the standard ☐ Unavailability of Space ☐ Unavailability of finance

procedures carried out.			☐ Lack of professionals ☐ Lack of capacity of professionals ☐ Lack of training regarding the standards ☐ Work load/ being engaged on other duty ☐ Professionals turn over ☐ Lack of reference materials and technical support Other please specify……..
Standard VI:- The hospital provides access to drug information to both health care providers and patients in order to optimize drug use.	1	2	☐ Lack of Knowledge about the standard ☐ Because of not established DTC ☐ Unavailability of finance ☐ Lack of professionals ☐ Lack of devoted professionals ☐ Lack of capacity of professionals ☐ Lack of training regarding the standards ☐ Work load/ being engaged on other duty ☐ Professionals turn over Other please specify……..
Standard VII:-The hospital has policies and procedures for identifying and managing drug use problems, including: monitoring adverse drug reactions, prescription monitoring and drug utilization monitoring	1	2	☐ Lack of Knowledge about the standard ☐ Because of not established DTC ☐ Unavailability of finance ☐ Lack of professionals ☐ Lack of devoted professionals ☐ Lack of capacity of professionals ☐ Lack of training regarding the standards ☐ Work load/ being engaged on other duty ☐ Professionals turn over

			Other please specify……
Standard VIII:-The hospital has a drug procurement policy approved by the DTC that describes methods of quantification, prioritization, drug selection, supplier selection and ordering of pharmaceutical supplies and is in line with national guidance.	1	2	☐ Lack of Knowledge about the standard ☐ Lack of devotion from the concerned bodies (CEO, CCO& others) ☐ Lack of professionals ☐ Lack of capacity of professionals ☐ Lack of training regarding the standards ☐ Work load/ being engaged on other duty ☐ Professionals turn over Other please specify……
Standard IX:-The hospital has a paper-based or computer-based inventory management system to reduce the frequency of stock-outs, wastage, over supply and drug expiry.	1	2	☐ Lack of knowledge about the standard ☐ Unavailability of finance ☐ Lack of professionals ☐ Lack of capacity of professionals ☐ Lack of devoted professionals ☐ Lack of training regarding the standards ☐ Work load/ being engaged on other duty ☐ Professionals turn over Other please specify……
Standard X:-The hospital conducts a physical inventory of all pharmaceuticals in the store and each dispensing unit at a minimum once a year.	1	2	☐ Lack of knowledge about the standard ☐ Unavailability of finance ☐ Lack of professionals ☐ Lack of devoted professionals ☐ Lack of capacity of professionals ☐ Lack of training regarding the standards ☐ Work load/ being engaged on other duty

			☐ Professionals turn over Other please specify……..
Standard XI:-The hospital ensures proper and safe disposal of pharmaceutical wastes and expired drugs.	1	2	☐ Lack of knowledge about the standard ☐ Unavailability of space ☐ Unavailability of finance ☐ Lack of professionals ☐ Lack of devoted professionals ☐ Lack of capacity of professionals ☐ Lack of training regarding the standards ☐ Work load/ being engaged on other duty ☐ Lack of support from respective external bodies (FMHACA &AACHAO) Other please specify……..
Standard XII:-The hospital has adequate personnel, equipment, premises and facilities required to store pharmaceutical supplies and carry out compounding, dispensing, and counselling services.	1	2	☐ Lack of knowledge about the standard ☐ Unavailability of Space ☐ Unavailability of finance ☐ Lack of professionals ☐ Lack of devoted professionals ☐ Lack of capacity of professionals ☐ Lack of training regarding the standards ☐ Work load/ being engaged on other duty ☐ Lack of devotion from the concerned bodies (CEO, CCO& others) ☐ Professionals turn over Other please specify……..