#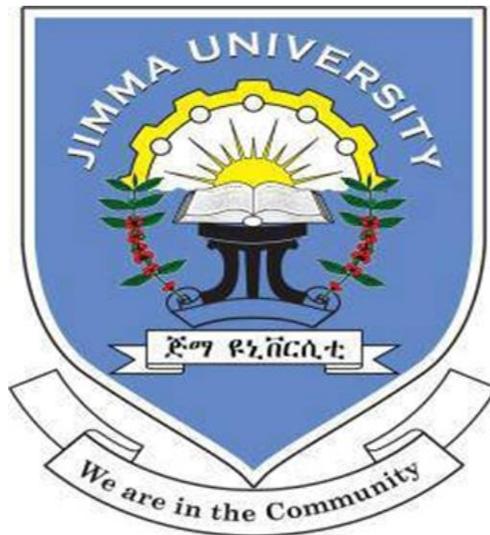 EVALUATION OF QUALITY OF AUDITABLE PHARMACEUTICAL TRANSACTION AND SERVICE (APTS) AT JIMMA MEDICAL CENTER (JMC), SOUTHWEST ETHIOPIA

Evaluation thesis Submitted to Jimma University, Institute of health, Public Health Faculty, Department of Health Economics, Management and Policy in Partial Fulfillment of the Requirements for the Degree of Master of Science in Health Monitoring and Evaluation.

By SEWNET ASRAT

Jimma, Ethiopia
November, 2019

EVALUATION OF QUALITY OF AUDITABLE PHARMACEUTICAL TRANSACTION AND SERVICE (APTS) AT JIMMA MEDICAL CENTER (JMC), SOUTHWEST ETHIOPIA

By: SEWNET ASRAT

Advisers: Mr. BINIYAM TADESSE (Bsc, Msc-HM&E)
Mr. FEYERA GEBISSA (Bpharm, MHA)

Jimma, Ethiopia
November, 2019

Acknowledgments

Abstract

Background: A pharmaceutical service is the corner stone for any meaningful health service. To my knowledge little is known about quality of Auditable Pharmaceutical Transactions and Services (APTS). Thus we aimed to evaluate APTS initiative implemented in Jimma medical center.

Objective: To evaluate the quality of auditable pharmaceutical transaction and services at Jimma Medical Center (JMC).

Methods: A facility based case study evaluation design was used to evaluate quality of APTS. The evaluation was focused on the process of the service and the approach was formative. Availability, compliance and client satisfaction were evaluated. Both qualitative and quantitative data collection methods were employed. Using structured questionnaire with 298 clients, the sample size was based on single population formula; document review, observational checklist and in-depth interview with four key informants were made. Descriptive analysis method was applied and the output presented by table, the qualitative data were analyzed manually using thematic analysis and results were triangulate with quantitative result and presented in narrative form. The qualitative data were analyzed using SPSS version 20. The indicators judged as per the matrix of analysis and judgment parameter.

Result: The quality of APTS in JMC was measured to be 66% which is good as per judgment parameter. Lack of APTS workflow due to shortage of pharmacist and the size of available dispensary rooms. In terms of dimensions availability of resources and compliance to standards were good with 55 % and 66 % respectively. However, client satisfaction on the service found to be 78 %. The proportion of clients satisfied with the quality of the service at the center was 76 %.

Conclusion: The overall quality of APTS at JMC was good. Hence program inputs; essential drugs, human resource and structural changes should consist with the guideline. The process of the service measured by compliance; dispensing time, labeling practice, documenting and reporting should be improved. According to judgment parameter correction should be given to achieve the required quality service.

Key words: Pharmaceutical services, transparency, EDs, APTS initiative.

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Acronyms

APTS	Auditable Pharmaceutical Transactions and Services
ARHB	Amhara Regional Health Bureau
DIC	Drug Information Center
DTC	Drug and Therapeutics Committee
EDs	Essential Drugs
EDL	Essential Drug List
EFY	Ethiopian Fiscal Year
EHRIG	Ethiopia Hospital Reform Implementation Guideline
EPSA	Ethiopia Pharmaceutical Supply Agency
FMOH	Federal Ministry of Health
IFRR	Internal Facility Report and Resupply Form
IPLS	Integrated Pharmaceutical Logistics System
JMC	Jimma Medical Centre
KI	Key Informant
LMIS	Logistics Management and Information System
M&E	Monitoring and Evaluation
OPD	Outpatient Department
SIAPS	Systems for Improved Access to Pharmaceuticals and Services
SOP	Standard Operating Procedures
SPS	Strengthening Pharmaceutical Systems
STG	Standard Treatment Guidelines
USAID	United States Agency for International Development
VEN	Vital, Essential, Nonessential
WHO	World Health Organization

Chapter 1: Introduction

1.1: Background

The provision of complete health care demands the availability of safe, effective and affordable drug and pharmaceutical supplies of the required quality, in adequate quantity at all times and guarantee their rational use. Essential medicines are one of the necessary inputs needed to improve and maintain health (1).

Access to essential medicines is considered as fundamental right for good health outcome, one-third of the world's population, however, with in up to 50% of population in the poorest parts of Africa and Asia lack access to essential medicines (2).

The pharmaceutical management system is systems that guarantee regular availability of the right drug, at the right quantities, quality and reasonable price, at the right time and that ensures proper use of drugs. It is the main strategy used to solve challenges related to pharmaceutical supplies worldwide (3).

In response to high burden of ill health and high rate of mortality due to poor access to health services and complex health system, the government of Ethiopian (GoE) had introduced various reforms within the health service system as part of the successive health sector development program (HSDP) and health sector transformation plan (HSTP). The HSDP was launched in 1996 and aligned to the wider frame works of plan for Accelerated Development to End Poverty and Millennium Development Goals. Currently, Ethiopia is implementing the health sector transformation plan (2015-2020) (4).

One of the pillars of development program and transformation plans is improving quality of pharmaceutical service. To support this program pharmaceutical supply chain management system was established and had been under implementation since 1998. But the system has been facing many challenges including lack of transparency and accountability, wastage and poor quality of service (5).

Later, as part of Ethiopia Hospital Reform Implementation Guideline (EHRIG), the government introduced the auditable pharmaceuticals and service (APTS) initiative in 2010 with the aim of

ensuring the uninterrupted supply of quality and cost-effective pharmaceuticals at all public hospitals, believed to transfers the service to transparent and auditable, and improves client satisfaction, ultimately to improve quality of pharmaceutical service (6).

The initiative was primarily implemented at Amhara region and then scaled up to other regions. At the end of 2017, 123 Hospitals all over the country and in Oromia regional state 25 facilities implemented the initiative; Jimma medical center (JMC) implemented this program in 2014 (7).

APTS is a package of interventions that have several benefits in improving access to pharmaceuticals and quality of services involves the following; efficient budget utilization through sock status analysis (SSA) and ABC/VEN reconciliation, informed decision-making, improve availability and affordability of medicines (8).

Evaluating the quality of the service in order to make improvements in the areas where gaps are seen and to strengthen the areas in which it is good at is crucial. Therefore, this evaluation tries to evaluate Quality of APTS in Jimma Medical Center (JMC).

1.2: Statement of the problem

One in seven of the global population does not have regular access to essential medicines. In some of the lowest-income countries in Africa and Asia, more than half of the population has no regular access (9, 10).

In Ethiopia, health services are limited and of poor quality and the country has extremely poor health status relative to other low-income countries. The low health status supported by; low utilization in public facilities including physical accessibility, economic (cost to patient), cultural problems (health seeking behavior) and poor quality of care (11).

A study conducted in Jimma Hospital showed that about 77% level of satisfaction decrease related to; lack of drug, poor information provision, long waiting time & poor cleanliness of facilities & about 70% of clients with prescription either get some or not at all (12).

Some hospitals picked to implement only particular components of APTS and therefore realized fewer benefits in terms of decreased stock-outs or wastage or better customer satisfaction (13).

The positive outcome and improvement significance have been proven by previous published studies, at facility level and the country as a whole (14, 15). But reports showed that, different facilities level of achievement on result areas of APTS are not the same (7).

APTS was designed to address numerous systemic pharmaceutical management difficulties that required interdependent solutions. Its achievement depends on some least structural, input, and process changes (16).

Effective APTS in the Jimma Medical Center (JMC) is much to be concerned. Thus for this study we assessed quality evaluation which focuses on input, process and immediate output of the APTS program was designed to identify and indicate future improvement solution on the area in the aim of enhance quality of the service.

1.3: Significance of the evaluation

For JMC

This evaluation is specifically designed to identify areas of the program in context of the organization that need improvement and to use the revealed result or findings from the evaluation, to evidence based future modification, planning and appropriate use of the existing resources for better achievement in different dimensions and then to optimum level of quality service at JMC.

For policy makers

The evaluation may give evidence on factors contributing to the successful or limited implementation of APTS and challenges for sustainability of the program by recommending the possible ways based the evaluation result.

For service user

This evaluation may contribute to clients by assisting the center quality of service, by indicating extent and reason for dissatisfaction, and in-sighting limitations and unfulfilled proven standards on the service, at the last maintaining/achieving high quality service as the client preference.

In addition, the study will also be a contribution to the increase of the general knowledge of the subject and will act as a reference for future researchers.

Chapter 2:   Description of APTS

Federal Ministry of Health (FMOH) is taking different reforms and initiatives to improve the quality and accessibility of health services. Among the reforms implemented EHRIGs is the major guideline which developed in 2010, including pharmaceutical services. Specifically to the pharmacy service, the guidelines focused on hospital governance, service quality, patient flow, record-keeping, pharmacy services, and human resources management (17).

The Pharmacy Chapter of EHRIG was designed to improve the provision of quality pharmaceutical services and institute transparency in pharmaceutical transactions in hospitals. To improve pharmacy services based on best practices and experience taken from different setting, developed a package of interventions in identified areas, with collaboration of USAID project Strengthening Pharmaceutical Systems (SPS), Amhara Regional Health Bureau (ARHB) and FMOH, called Auditable Pharmaceutical Transactions and Services (APTS). Debremarkos referral Hospital, were the first to take the initiatives and currently the program implemented all over the country. Various interventions tried to improve pharmaceutical service and use of medication, like integrated pharmaceuticals logistic system (IPLS), drug information center (DIC) and clinical pharmacy. APTS addresses gaps that were difficult by other interventions (16).

2.1: Program stakeholders

The participation of stakeholders in designing, planning and implementing of program evaluation study allows them to play a great role in monitoring and evaluation of the program activities and utilization of the evaluation. Each stakeholder has their own role with respect to the operation of the program and use of finding. In regard to this the evaluation study were identify during Evaluablity Assessment after discussion with key stakeholders and engage stakeholders based on the role; the evaluation user, affected by the program and service providers (18). The stakeholders were provided us information on the service performance, identified and prioritized the limitation area. Also participated on indicator development and assigning value for each indicators and dimensions. Table blow describes the evaluation stakeholders in their role in the program, role in the evaluation, interest or perspectives and their level of importance in the evaluation.

Table 1: APTS Program Stakeholder Assessment and Engagement Matrix, JMC, August 2018

Stakeholder	Role in the program	Role in the evaluation	Interest/ Perspective on Evaluation	Communication strategies	Level of importance H,M,L
FMOH	Planning, monitoring of program, Supportive supervision and allocating resource	Utilizing evaluation finding	Use evaluation findings for improvement enhancing access to quality service	Telephone	H
Oromia regional health bureau	Supportive supervision	Describing the program & evaluation question development	Use evaluation findings for improvement enhancing access to quality service	Face to face, Telephone	H
Jimma zone health office	Planning, monitoring of program, Supportive supervision	Program describing, Evaluation question development &	Use evaluation findings for improvement enhancing access to quality service	Face to face, Telephone	H
Jimma town health office	supportive supervision	Evaluation question development & Program describing	Identification of Strength and gaps in service quality	Face to face, Telephone	H
JMC	Implementer, organizing & mobilizing resources & supplies, monitoring Service provision	Program describing, Evaluation question development & focusing evaluation design, indicator selection & Data source	Utilizing the finding for improving service quality provision	Face to face, formal letter	H
Clients/ patients	Beneficiary, service user	Source of data	Improved Quality service access	Face to face(interview)	H

EPSA Jimma branch	pharmaceutical supply	Program describing, Indicator selection	Appropriate use of supply	Face to face, Telephone	H
FMHACA Jimma branch	Provide standard, Regulation & Supportive supervision	Program describing, Indicator selection	improved the quality services provision To the standard Service delivery	Face to face, Telephone	M
Pharmacy professionals	Service provider, program implementer	Program describing, Indicator selection, & Data source	Identify strength & limitation in service provision	Face to face, Telephone	H
Finance professionals	Service provider, program implementer	Program describing, Indicator selection, & Data source	Identify strength & limitation in service provision	Face to face, Telephone	H

Note:- stakeholder level of importance was rated based on:

Low – the stakeholder participate in the evaluation only a source of data.

Medium – the stakeholder participate in program description and indicator selection.

High – the stakeholder participate in development of evaluation question and judgment

parameter; stakeholder who utilizing the evaluation finding.

2.2: Expected program Goal and objectives

Program Goal

To contribute for the reduction of morbidity and mortality due to major disease in Jimma Medical Center 2019

Specific Objectives (4, 5)

➢ To reduce percentage of stock wasted due to expiry from 4.83% to 2% at JMC, the end of 2019.
➢ To increase reliable information generation from 86% to 100% at the end of 2019.
➢ To increase regular availability of essential drugs from 85.5% to 100% at the end of 2019.
➢ To improve customer satisfaction from 74 % to 90% on pharmacy services at the end of 2019.
➢ To improve proportion of patients with adequate information on dispensed drugs from 84.4% to 100% at the end of 2019.

2.3: Major strategies

APTS program supposed to attain aforementioned objectives through the following strategies.
➢ Utilizing prepared tools.
➢ Utilizing redesigned proven methodologies.
➢ Pharmacy renovation, reorganization to suit workflow.
➢ Physical inventory, auditing and workload analysis.
➢ Prescription evaluation, counseling and dispensing.

1. Utilizing tools that ensure transparency and accountability.
   • Receiving and issuing vouchers, sales tickets, dispensing registers, and daily summary and monthly reporting forms.

2. Methodologies for Efficient utilization of budgets.

- Establish effective medicines sales management system: price setting, daily sales summary as cash, credit and free, generating reliable information on product, finance and pharmaceutical service rendered, Bin ownership at dispensary to ensure accessibility of medicines and increase work efficiency, Facility specific drug list segregated as vital, essential and non-essential (VEN), ABC/VEN reconciliation, Consumption to stock, stock turnover and stock status analysis, Registering medicines and supplies with unique identifier codes.

3. Pharmacy renovation, reorganization, Equipment/Facilities and making suitable work flow.

- Reorganizing dispensaries, rearranging the workflow, Redefining roles of dispensers, accountants and cashiers.

4. Workload analysis and proper human resource deployment, performance evaluation and training.

- Deployment of proper number of pharmacists based on workload, Evaluation of performance based on quantity, quality and transparency of services rendered.

5. Regular physical inventory and auditing to ensure transparency and accountability.
6. Prescription evaluation & medicines use counseling to attain proper use of medicines.

- Training of professionals on dispensing steps, patients handling and counseling to increase patients knowledge on prescribed medicines' use to improve adherence.

2.4: Program activities and resources

Input: The input components of the program are; human resource, infrastructure health facilities premise, budget, basic equipment's, tools, guidelines, reporting and recording formats, drug, and information system.

Activities: Training, receiving, evaluating/billing, auditing and inventory, updating stock cards, premise rearrangement, requesting, issuing, dispensing, counseling, labeling, workload analysis and workforce deployment, resupplying EDs, service recording and reporting.

Outputs: Number of trained and deployed staff, number of finance and service report, proportion of prescribed drug dispensed, stock turnover rate, average dispensing time, proportion of adequately labeled drug package, number of clients with information and number of patient served.

Outcome: Improved quality service, effective workforce, improved knowledge and adherence to dosage, improved client satisfaction, quality data/ information, improved budget utilization, improved accountability and transparency, and increased availability of drug

Impact: Decrease morbidity and mortality due to major diseases. Improved health status.

2.5: Program logic model

Problem: lack of transparency in pharmaceutical transactions, poor service quality, stock outs of EDs, Patient dissatisfaction and poor knowledge of medicines use at pharmacy service delivery point leading to poor treatment outcomes (5).

Goal: To contribute for decrease morbidity and mortality due to major diseases.

Input	Activi	output	Outco	Impac
Human resours	Training	Trained professionals	Effective workeforce	Reduction in morbidity & mortality due to major
Finansial resours	Deploing workfore acording to role	Deployed workforce	Proper use of drugs	
Infrastruct	Client counseling	Client counseled	Increased satisfactio	
Basic equpments & APTS tools	Dispensing	Clients provided EDs	Improved Service quality	
Guidelines & Reference documnts	Resupplyin EDs	Available EDs	Improved budget utilization	Improved health status
Essensial drugs	Renovating dispensary	Renovated dispensary	Improved quality of data & information use	
Recording, reporting & inventory control	Recording & reporting	Complete recorded & timely reported		
	Audit & inventory	Inventory document		

Figure 1: logic model for evaluation of APTS quality at Jimma medical center in 2019.

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2.6: Stage of program development

Federal ministry of health of Ethiopia (FMOH) in collaboration with regional health bureaus and MSH/SIAPS launched APTS initiative in 2010, In June 2012, the Amhara regional government enacted legislation to enforce the implementation of APTS at all hospitals and health centers in the region, Based on result achievement observed on the first program implementer Debre Marcos Hospital January 2011. The federal government and all 11 regions and city administrations have enacted APTS legal framework, in 2012 in Dire Dawa, in 2014 in SNNPR, in 2015 in Oromia and Tigray. At the end of 2017, 123 health facilities across almost all regions, federal hospitals and city administrations in the country had implemented APTS. From available health facilities in Oromia regional state 25 facilities implement the initiative.

In 2014, JMC implemented the initiative after concerned government body approved federal APTS regulations, based on evaluablity assessment finding and considering duration of the initiative being implemented at the center, Together with the engaged stakeholders it is concluded and agreed upon the program is evaluable or fit for quality evaluation since it has necessary information that is required for evaluation.

Chapter 3: Literature Review

Federal Ministry of Health (FMOH) is taking different reforms and initiatives to improve the quality and accessibility of health services. Among the reforms implemented EHRIGs is the major guideline which developed in 2010, including pharmaceutical services. Specifically to the pharmacy service, the guidelines focused on hospital governance, service quality, patient flow, record-keeping, pharmacy services, and human resources management (17).

The Pharmacy Chapter of EHRIG was designed to improve the provision of quality pharmaceutical services and institute transparency in pharmaceutical transactions in hospitals. To improve pharmacy services based on best practices and experience taken from different setting, developed a package of interventions in identified areas, with collaboration of USAID project Strengthening Pharmaceutical Systems (SPS), SIAPS, Amhara Regional Health Bureau (ARHB) and FMOH, called Auditable Pharmaceutical Transactions and Services (APTS). Debremarkos referral Hospital, were the first to take the initiatives and currently the program implemented all over the country. Various interventions tried to improve pharmaceutical service and use of medication, like (IPLS), Drug therapeutics committee (DTC), Drug Information Center (DIC) and clinical pharmacy. APTS addresses gaps that were difficult by other interventions (16).

According to a survey report on 2017 which evaluates status of APTS implementation by using selected APTS result areas (efficient budget utilization, reliable information and patient satisfaction) as a measurement tool, reveals that through regular pharmaceutical stock status analysis and ABC- VEN reconciliation APTS implementing facilities are expected to proactively determine stock movement status and tack action on over and under-stocked items which reduce expiry and stock out of pharmaceuticals, at Felege hiwet and Debremarkos hospital scored more than 90%, the previous institutes were effectively utilizing their pharmaceutical budget compared to JMC which scored 26%.

According to Donabedian, Quality is the application of medical science and technology in approach that maximizes its benefits to health without in the same way increasing its risks. The health care quality as the degree of quality is, the extent to which the care provided is expected to achieve the most favorable balance of risks and benefits, health care services increase the possibility of desired health outcomes and are consistent with current professional knowledge.

Based on this definition, quality of health care is required to be measured at three levels, these are; the structure, process and outcome (19).

Availability of inputs

Measuring the availability of EDs at health facilities is one of the core components of the assessment of readiness of facilities to deliver quality services. The health facility assessments, however, employ a wide variety of tools and approaches to measure availability of EDs. For example, rapid assessments employ the reported availability by respondents without verification as a measurement of availability of EDs, while in-depth facility assessment methods validate the reported response by observing the medicines, verifying the expiration dates and collecting further data on stock-out over an extended period. As a result, medicine availability estimates may vary across definitions, and need to be interpreted with careful consideration of the methods used (20).

Researches done in Sub-Saharan countries showed that availability of EDs has been improved, but still far from the WHO recommended target of 100% (20). In Ghana, the availability of key EDs selected for the country in public health facilities was 80%; and length of stock out duration 29.9 days (21). In Tanzania, Uganda and Kenya, all of them East African countries, the availability of key EDs was 88.9%, 45.7% and 82.6%, respectively (2).Though the availability of EDs seems high in the health facilities of Tanzania, the same facilities also presented a considerable number of stock out days. Some medicines were out of stock for 4 months with the median number of stock-out 135.6 (9). In Uganda, the length of stock-out duration in public health facility pharmacy was 72.9 days (20). A cross sectional study conducted in health centers of Western Ethiopia showed that only 55.6% of the assessed drugs were available (21).

The choice of essential medicines depends on many factors, such as the pattern of prevalent diseases, treatment facilities, the training and experience of available personnel, financial resources, and environmental factor (10).

WHO recommends the selection of drugs to be based on a list of common conditions and the choice of treatments for the prevalent diseases. In other words, EDL should constitute the drugs included in the standard treatment guidelines for a particular level of health care. EDL simplifies

systems of procurement by guiding the procurement and supply of medicines in the public sector. Moreover, it leads to better supply of drugs, to more rational prescribing, and consequently to lower costs, to better quality of care, and to better health outcomes (22).

Effective procurement is an important step in pharmaceutical logistics system. An effective procurement process seeks to ensure the availability of the right pharmaceuticals, in the right quantities, at reasonable prices, and recognized standards of quality (23). It is dependent on the routine availability of logistics data (e.g., rate of consumption and stock levels) and the capacity to select products and to forecast and quantify needs (1). In Tanzania, only 25% of the health facilities surveyed conducted quantification on annual bases, and majority of them did not provide training on quantification to the staff (20).

Compliance

A well-organized pharmaceutical logistics system ensures the continuous availability of all pharmaceuticals that are required for patient care. At the same time, an effective pharmaceutical logistics system should be able to respond to sudden increases in drug demand, ensuring that adequate supplies are available to deal with any emergencies that arise (24).

According to the WHO countries with weak governance within the medicines chain are more susceptible to being exploited by corruption as they lack appropriate medicines regulation, enforcement mechanisms and conflict of interest management. It is calculated that 10 to 25% of public procurement spending (including on pharmaceuticals) is lost to corrupt practices which can have a negative impact on the health of the population (1). In study conducted in Sudan no records available about inventory control at the pharmacy level (10). In Ghana there is no proper stock management in health facilities as revealed by absence of stock control tools such as stock card in 60 % of the surveyed health facilities (25).

Pharmaceutical logistics data are collected, processed, and reported through LMIS, increasing the likelihood of an adequate supply of EDs, an effective LMIS may be manual or computerized collecting essential data about stock status and consumption. It ensures accountability, a reduction in supply imbalances (stock outs and overstocks), and efficient, cost-effective pharmaceutical logistics. Because a pharmaceutical logistics system cannot function effectively

without timely, accurate LMIS data, the LMIS is an essential tool. It provides personnel responsible for pharmaceutical logistics with the information they need to react or, more important the information they need to anticipate demand (3). To be effective, LIMS should be equipped with adequate trained staff, forms, equipment's, and facilities. However, some studies showed that there is a problem in this regard (26). Another study done in Tanzania showed that often neither minimum nor maximum levels were defined (27).

To provide clients with high-quality products, each facility must have safe, protected and well organized storage areas that will prevent damage. A study conducted in Ethiopia, by using 11 standard criteria of storage condition of health facilities slightly more than half of the studied facilities' met acceptable storage condition (80 percent of the criteria or more) (28).

Concerning patients care indicator, a 1993 WHO standardized core patient care indicators to evaluate the trends of drug use in health care sating (hospital, dispensary), indicators degree the performance of dispensers in key areas concerning rational drug use and assess dispensing and patient use of medicines based on clinical encounters at healthcare facilities for their illness; Indicators include, average dispensing time, proportion of prescribed medicine actually dispensed, package labeled and proportion of clients who know how to take the correct dosage. The recommended value of WHO for this indicators, the average dispensing time (>180 s), proportion of medicine actually dispensed, labeled and patient knowledge are all ideally 100% (29, 30).

According to a recent assessment made in 17 Federal and Addis Ababa city administration government hospitals, the availability of key medicines at the dispensaries of these hospitals at time of visit ranged from 33.3% to 100%. Dispensing practices were found to be in a shape that needs huge improvement. For example, the average counseling time was 43 seconds, labeling of medicines was suboptimal, and only 50% of the patients interviewed knew how to take their medicines properly. The wastage rates of medication in eight hospitals included in the study were 5.1%. Patient satisfaction with pharmacy services was rated at 74% (5).

Satisfaction

Satisfaction of clients for service can reflect their preferences and expectation, and the realities of the service; it can also serve as an essential measurement to evaluate quality of service. Various factors of clients indicated to influence the satisfaction such as health status, income, availability of prescribed drugs, and experience of the client for health facility (11).

The study conducted at two public hospitals in Eastern Ethiopia, shows that more than half of participants dissatisfied for availability of prescribed drugs, regarding satisfaction determinants, marital divorce, lake of quality system and clients perceived insufficient knowledge of dispenser significantly associate with satisfaction (p-value< 0.05) (15).

A finding from study conducted at public hospital in Gamo Gofa, Southern Ethiopia, showed that participants from general hospitals responds higher scores for general setting of the dispensary area, however for affordability of medicine gives lower score (31).

The study conducted at Hiwot Fana Specialized University Hospital (HFSUH) Hareri, Ethiopia, showed that from the participants more than half dissatisfied on availability of prescribed pharmaceuticals and less than half satisfied on overall service (32).

Conceptual Framework

The conceptual framework below has been derived from Donabedians' quality model, different literatures and the program log frame (19). They are factors in dimensions contributing for level of client satisfaction status on the service that were used to evaluate the quality of the service in this evaluation study.
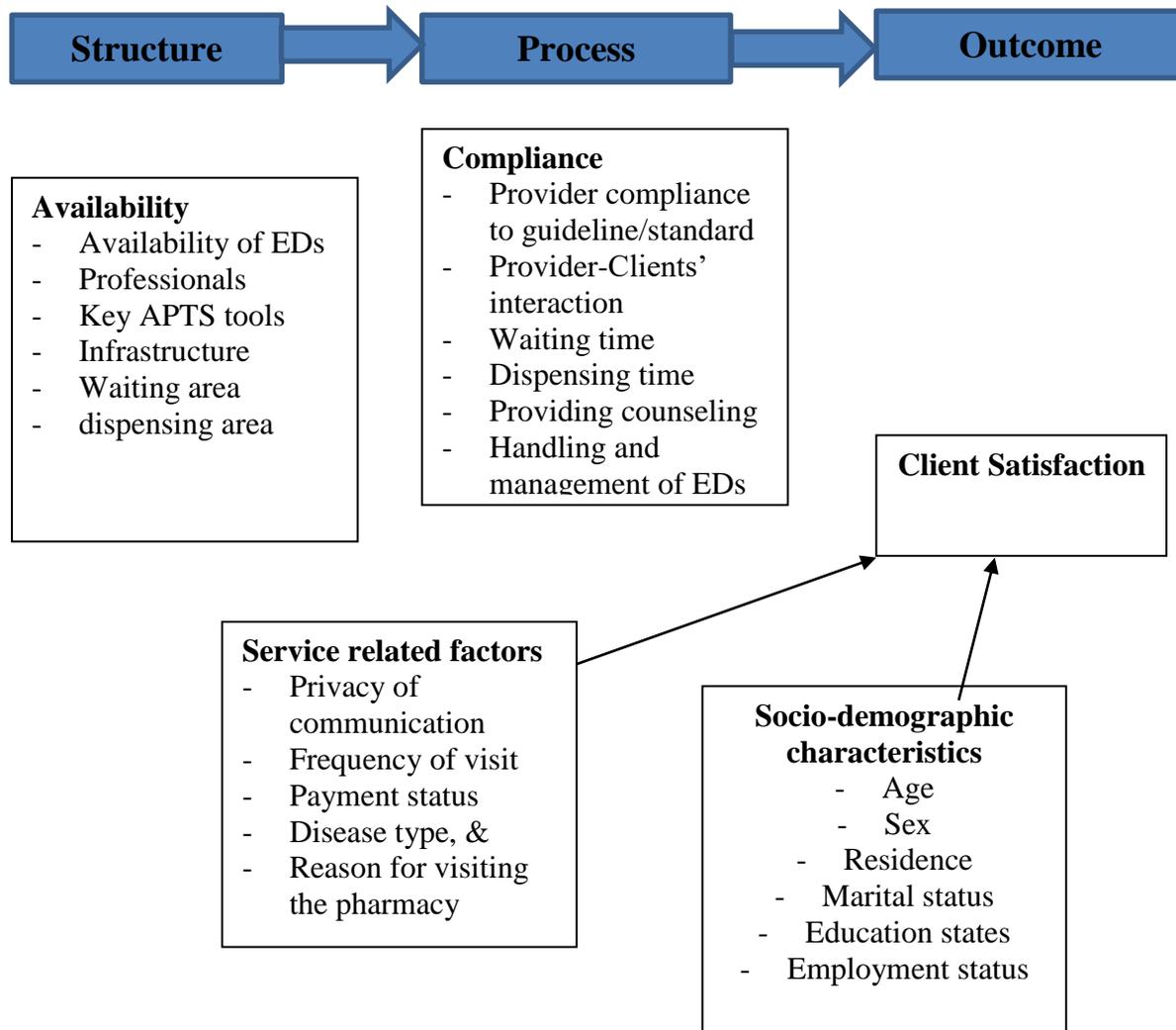
Figure 2: Conceptual framework for evaluation quality of APTS at JMC 2019 (Adopted from Avedis Donabedian, 2003 edition)

Chapter 4: Evaluation Questions and Objectives

4.1: Evaluation questions

1. Are the required program resources available to implement APTS program? If not why? If yes how?

2. Do health care providers congruent to national APTS guideline in implementation of program? If not why? If yes how?

3. Are the clients satisfied with the quality of APTS provided to them?

4. What are determinants of client satisfaction on service provided

4.2: Evaluation objectives

General objective of the evaluation

To evaluate quality of APTS at Jimma medical center (JMC), Southwest Ethiopia, 2019.

Specific objectives of the evaluation

1. To Evaluate the availability of required resources for APTS program at JMC
2. To Evaluate the compliance of professionals with the standard guidelines
3. To determine the level of client satisfaction on APTS provided.
4. To Identify determinants of client satisfaction with pharmacy service at JMC.

Chapter 5: Evaluation Methods

5.1: Study area and evaluation period

The Evaluability assessment was conducted from November 5-9/2018. The Evaluation was conducted from March 2019 to April 2019 at Jimma medical center (JMC), one of the Ethiopia university hospitals which are found in Jimma city, located in Oromia Regional State, southwest Ethiopia 350km from the capital city Addis Abeba. It serves as referral for fifteen million populations of south west Ethiopians (Oromia, SNNP, Gambela regional stats) also including neighbor country South Sudan. The Hospital was selected as a case because it is one of the largest public hospitals with variety of service, number of client/user and professional mix. Further, the accessibility plus connivance in data collection and the program evaluated was implemented only in this hospital in the town, added to the choice of the Institute as a case. This Hospital is referral, teaching and academic research hospital with 800-bed facility, 450 outpatient capacities per day and 15000 inpatient serving capacity per year. Due to large service, capacities there are many pharmaceuticals and its transaction, high pharmacy budget and number of pharmacy service client/user a feature of the hospital (33).

Jimma medical center (JMC) pharmacy unit organized with basic pharmacy service, this are; merged outpatient and chronic pharmacy, emergency pharmacy, inpatient pharmacy, pediatric pharmacy, antiretroviral therapy, psychiatric pharmacy, maternity and genecology pharmacy; and also specialized pharmacy services like clinical care pharmacy service, drug information center are the components. From these service delivery units the major dispensary outlets which are used to evaluate quality of APTS at JMC in present evaluation was; OPD dispensary outlet (which also serve as chronic pharmacy), emergency dispensary outlet, inpatient dispensary outlet and pediatric dispensary outlet are the major and focus outlets.

5.2: Evaluation focus and approach

The evaluation focus and approach are process (implementation) evaluation in a formative approach. The evaluation focused on the program inputs, activity, and immediate outcome of quality of implementation in JMC context. Also the internal dynamics and actual operation of the program in specified situation or context. The approach employed is formative, which focused

on improvement of the program implementation and beater progress towards desired outcome and quality service.

5.3: Evaluation design

Facility based case study design, with both qualitative and quantitative data and method of data collection selected for the evaluating quality of APTS at JMC. The reason for choosing a case study design was that, this evaluation intended to get extensive description of the program status by exploring the implementation of the program under evaluation at JMC context. APTS, which is being implemented in selected government hospitals; and it will be expanded to all health facilities based on lessons from the implemented hospitals.

Evaluation dimensions

The evaluation used three dimensions (Availability, Compliance, and Accommodation) to evaluate quality of APTS program.

➢ **Availability:** has to do with the presence and adequacy of resources; professionals, infrastructure, basic equipment's, tools, drugs, documenting and reporting formats required for the services(19).

➢ **Compliance**: mainly focuses on the existence and application of procedures and standards of the service according to the guideline and the way of pharmaceutical care delivery. This evaluation looked at how the protocol is adhered to during the provision of services(19).

➢ **Satisfaction**: it is the clients' level of satisfaction on received service because of service outcome that is attributed to APTS initiative quality (19).

5.4: Indicators and Variables

Dependent variable:
 ✚ Client Satisfaction

Independent variables:
 ✚ Socio-Demographic factors:
 ✚ Age,
 ✚ Sex,

- Marital status,
- Educational level,
- Employment status and
- Place of residence.

❖ **External factor**
- Privacy of communication,
- Disease type,
- Reason for visiting the pharmacy (for whom the drug prescribed).
- Frequency of visit and
- Payment status.

Indicators

Availability dimension

1. Average score of APTS standard dispensing area and counter criteria meet by dispensary outlet (5criteria).
2. Average percentage availability of basic equipment's at dispensary.
3. Average percentage availability of key APTS tools.
4. Average number of available human power at major dispensary outlet for APTS.
5. Number of dispensary unit with a cashier only manages daily pharmaceutical transaction.
6. Availability of fully dedicated pharmacy unit accountant. Number of available pharmacy unit accountant.
7. Number of dispensary with adequate pharmacist.
8. Number of dispensary with adequate cashier.
9. Availability of Adequate number of pharmacy unit accountant.
10. Percentage of pharmacist trained in APTS at dispensary.
11. Percentage of cashier trained in APTS at dispensary.
12. Number of trained accountant at dispensary.
13. Average number of available reference manual at dispensary outlet. Aggregate of three indicators.
    - Availability of Formulary manual at service delivery unit.
    - Availability of Standard Treatment Guideline (STG) at service delivery unit.
    - Availability of Essential Drug List at service delivery unit.

14. Proportion of available key essential drugs at the hospital.

15. Proportion of prescribed drug dispensed to patients.

16. Proportion of essential medicine stocked according to plan.

17. Average stock-out duration of key EDs over the past 6 month (days).

18. Proportion of available expired Key EDs in the hospital at the time of visit from (n=32).

19. Number of available forecasting document which analyze medicine SSA, ABC, VEN, ABC\VEN reconciliation document.

Compliance dimension

1. Number of dispensary outlets workflow organized as APTS recommendation at JMC (Evaluator » Biller » Casher » Counselor (Entrance and Exit))

2. Average scores of storage criteria for conservation and handling of EDs meet by major dispensary outlets (9 criteria).

3. Number of score for storage, conservation and handling criteria of EDs met by JMC medical store Number of criteria meets by medical store of the storage condition (14 criteria).

4. Number of dispensary cashier manages only pharmaceutical transaction.

5. Number of pharmacy unit accountant fully engaged in performing full list of activity of the position.

6. Number of major dispensary outlet assigned Bin card owner at JMC.

7. Average percentage of key EDs with Bin card at JMC major dispensary outlet.

8. Average percentage of Bin cards with accurate Bin card balance between quantities of medicines recorded on Bin card and actual physical count at JMC major dispensing outlet from randomly selected bin cards.

9. Number of produced monthly service report form from dispensary.

10. Number of produced IFRR format from dispensary over the past 6 month.

11. Percentage of complete IFRR format produced from dispensary.

12. Proportion of produced RRF format from medical store to EPSA over the past 6 month.

13. Proportion of complete RRF format reported from medical store.

14. Proportion of adequately labeled dispensed medicine package.

15. Proportion of clients who were informed how to take the drug/supply.

16. Average dispensing time at dispensary.

Satisfaction

1. Satisfaction with accessibility of the pharmacy location.
2. Satisfaction with overall cleanliness and comfort of the pharmacy waiting area.
3. Satisfaction with convenience of the dispensing area and counter for service provision.
4. Satisfaction with clarity of information received instructions on how to use a drug.
5. Satisfaction with information received about the proper storage of medication.
6. Satisfaction with information received gives about result expected from pharmacotherapy.
7. Satisfaction with promptness of processing prescribed medicines /waiting time to get prescribed medicine/supply.
8. Satisfaction with availability of prescribed drugs.
9. Satisfaction with privacy (auditory) of conversations with the pharmacist.
10. Satisfaction with amount of time /dispensing time the pharmacy professional spends with.
11. Satisfaction with courtesy of providers during service provision.
12. Satisfaction with affordability of cost of medicines in the pharmacy.
13. Satisfaction with amount of time spends waiting for prescription to be filled /the total time taken to get the service.

Operational definition

APTS standard dispensing area and counter: The dispensing areas/premises dispensaries of a hospital that has entrance door, Presence of patient waiting area, prescription evaluation and billing counter (with height 0.75cm for sitting service, 1.10 meter for standing service), for cashiers cubicle and dispensing cubicle, and exit door in the opposite side of entrance, sufficient number of dispensing counters.

Key Essential Drugs (EDs): Selected thirty two essential drugs.

Key APTS tools: Selected eight tools that are required for the implementation of the imitative.

Expired key EDs available: If products that are above date of expiry available from list of key EDs.

Client counseled: clients are considered that they were informed how to take the drug if they advised at least all 5 basic WHO drug use indicators (the dose, route of administration, frequency, duration and storage) during dispensing (30).

Patient Satisfaction: patients are considered that they are satisfied if they answer either agree or strongly agree for the Likert scale questions and that should be re-coded in to new different variables.

Accessibility of the location of dispensary: If clients are considered that they are easily access with a distance, appropriate place and sign of location of the dispensary.

Overall cleanness: If clients are considered that overall dispensary area and the floor clean free from dust.

Accurate stock card: If the physical count of a medicine at the time of visit equals with closing balance on stock card of the medicine.

Internal Facility Report and Resupply Form (IFRRF) available: Recently used internal facility report and requisition form available at pharmacy dispensing units.

IFRR complete: If the column under consumption record, Loss/adjustments and ending balance recorded of recently used IFRR filled for every item of products listed.

Requests and Resupply Form (RRF) available: Recently used internal facility report and requisition form available at the hospital.

RRF complete: If the recently used RRF available at the hospital had the three essential data elements columns that are: consumption record, Loss/adjustments and ending balance recorded considered as complete.

Proper inventory level: Essential medicines available at time of visit at the hospital and their total physical usable stock on hand for each medicine found to be used for the period of between 2 and 4 month.

Overstocked medicines: Essential medicines available at time of visit the hospital with inventory level greater than 4 month of usable stock.

Under stocked medicines: Essential medicines available at time of visit the hospital with inventory level less than 2 month of usable stock.

ABC/VEN reconciliation: Once a VEN analysis is done, a comparison should be made between the ABC and VEN analyses to identify whether there is relatively high expenditure on low-priority drugs. In particular, effort should be made to delete any 'N' drugs that are in the high cost/high consumption category A of the ABC analysis.

5.5: Populations and sampling

5.5.1: Source population

All clients who visit pharmacy service, the professionals working in the hospital, APTS documents (bin card, stock card, seals ticket, prescription paper, medication record book etc.), and dispensing unit are the source population of the evaluation.

5.5.2: Study population

Pharmacy and finance staffs who work in hospital pharmacy unit, selected clients/patients who visit major dispensaries, APTS documents, records, monthly reports, bin/stock cards, selected 32 essential drugs. The center CEO, finance head, internal auditor and pharmacy unit head

5.5.3: Study units and sampling units

The study units of the evaluation are JMC, key informants, service user/ client, pharmacy and finance professional staffs, document and reports.

Sampling unit of the evaluation: primary sampling unit: Major dispensaries, secondary sampling unit selected pharmacy service users, the center CEO, finance head, internal auditor and pharmacy unit head.

Unit of analysis: primary unit of analysis, service Clients: secondary unit of analysis, service providers: tertiary unit of analysis, APTS program in JMC.

5.5.4: Sample size

For exit interview: The sample size is determined by using single population proportion formula, Available figure from previous study on proportion of patient satisfaction which was found to be 74% (5), study was probed to identify the yield of estimated sample size, Based on

this assumption by fixing the level of confidence at 95% and the margin of error at 5%, the sample size was determined by the formula:

$$n = (Z\alpha/2)2 \times P(1-P)/d2$$

Where: n = the size of the sample,

$Z_{\alpha/2}$ = standard score for 95% confidence level,

$d2$= margin of error of 0.05,

p= proportion in the population estimated to have particular characteristics. In this case, Prevalence/ proportion of patient satisfaction =74%=p=0.74, q=1-p; q=0.26 Therefore: n= $(1.96)2*(0.74*0.26)/ (0.05)2$= 301and adding 10% nonresponse rate gave a total of 331 clients.

For observation: observing 100 dispensing episodes and 100 dispensed drug package. Based on the WHO guideline and FMOH pharmaceutical chapter transformation guideline, pharmaceutical care evaluations for assessing patient care indicators in pharmaceutical service of healthcare settings, at least 100 patient encounters for departments of a single facility (29).

For document review: All APTS related document and reports of the past six month, bin cared of selected essential drugs, 20 randomly selected bin cards and physical inventory of respective EDs (28).

For resource inventory checklist: Availability of resources based on the list indicators staff, (infrastructure, essential equipment's and tools).

For in-depth interview: four key informant in-depth interviews with; the CEO, head of pharmacy, Finance head and internal auditor of the hospital.

5.5.5: Sampling procedure/technique

For Exit interview: The total sample was proportionally allocated based on the average number of prescriptions per month in major dispensaries, The sampling techniques used to select client was simple random sampling technique, the first respondent selected by this strategy and the remand clients interviewed consecutively until sample size attained.

Diagrammatically representation of sampling procedure was as follow
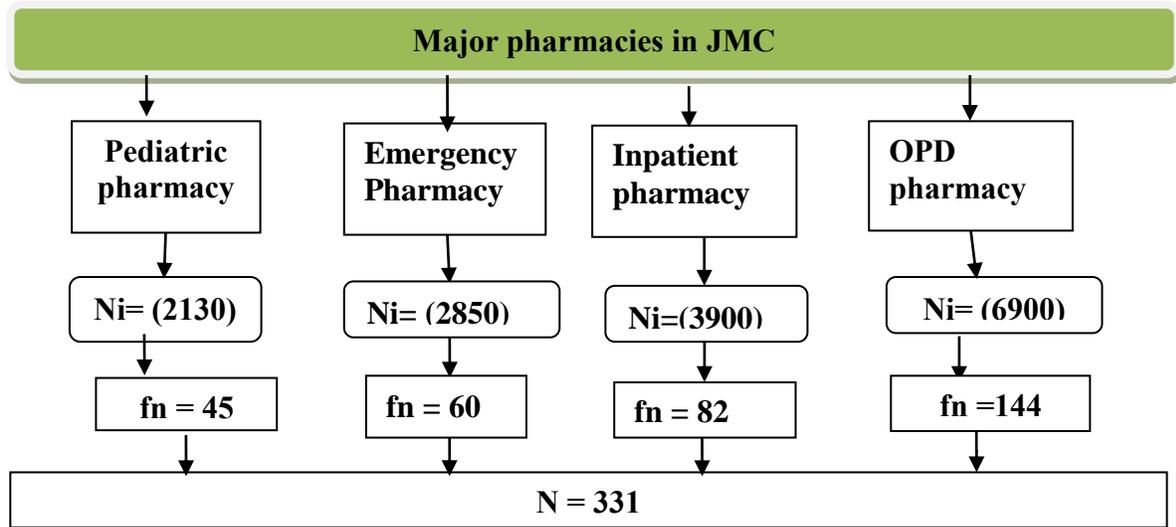
Figure 3: The schematic representation of the sampling procedure for exit interview which was conducted for the evaluation of APTS quality in JMC, 2019 GC

In-depth interview: Non probability, purposive sampling was used to select key informants for in depth interview purposely from the organization, criteria are those individuals who have abundant knowledge, understanding and insight on the subject and phenomenon (program and organization) this are the CEO, head of pharmacy, finance head and internal auditor of the hospital.

Observation: Observation of pharmacy service provider to client interaction and professionals' adherence to APTS recommendation and good dispensing practice at the dispensary at all dispensary on the working day to identify the service quality, there were 25 observations at each dispensary.

Document review: assessment of all APTS related facility records and available documents of the past six month (RRF, IFRF, bin and stock cards) were employed for document review.

5.5.6: Inclusion and exclusion criteria

Inclusion criteria
 ➢ JMC clients who receive pharmacy service at major dispensary with-in the evaluation data collection time frame, with age equal or greater than eighteen.
 ➢ The past six month APTS documents.

➢ Key informants who are in the position for more than six month.

Exclusion criteria

➢ Patients who are very sick and unable to give information.

5.6: Data Collection

5.6.1: Development of data collection tools

The data collection tools adopted from Teferi et al.,(14). And checklist document reviews have been prepared by considering the guideline.

Both qualitative and quantitative data collection tools were applied /used in the evolution. The quantitative data was collected by data collector on principal evaluator evaluation and monitoring, data collection activities are:

Tools for quantitative: satisfaction level of the client was assessed by using structured questionnaire (annex 1), Practice level of service provider (counseling and counseling time) and availability of resources, document format and equipment also assessed by using a check list, structured questioner and observation (annex2,3,4). Translation of questionnaires and checklists from English to local language are not needed because all staff participants understand the language and for service user, the collectors were multilingual used to interview at the point.

➢ Exit interview, by using structured questioner which was conducted at the point of exit after clients use pharmacy service.

➢ Observation, data was gathered through direct observation of services, products, and records. The client counseling time, dispensing time was measured based on the time the dispenser spent providing drug information to the patient, start timing and record the time a dispenser started talking to a patient and stop timing and record the time at patient left the counter., observation of pharmacy service provider to client interaction, infrastructural assessment and workflow at major dispensary outlet of the center, and professionals' adherence to APTS recommendation and good dispensing standards at the dispensary.

➢ A checklist to assess infrastructure, basic equipment's, The availability of key EDs and, availability of EDs was measured based on actual observation of products on the shelf at

the time of the assessment availability and expiry of key or essential medicines, availability of reference manual, essential drug list, standard treatment guidelines (STG), bin card, seal ticket, voucher/models.

➢ Review of Documents: A review of APTS and finance related document and records, human resources, procurement, and stock records that are available were reviewed to gather information on relevant indicators. Dispensed drug register, review of vouchers, medicines sales reports, requisition forms, and bin and stock cards. The accuracy of recorded document measured by gathered information recorded on the stock/bin card and the results of an actual physical count at the shelf. The actual count to the record value then compeer/ matched to judge accuracy, mismatched in-between documented as a discrepant bin card.

Tools for qualitative: an open ended interview guide was used to assess the perception, and expertise judgment of JMC KI on APTS, its implementation, resource and pharmacy service and pharmacy management system (annex5,6).

The qualitative assessment was collected by principal evaluator and it focused on APTS program and program implementation at JMC context; Structure, Process and outcome; and any limitation and strength of the program as all, applied data collection activities were:

➢ Key informant (KI) interview**:** Staff in key positions at JMC, CEO of the hospital, hospital pharmacy head, finance head, and internal auditor.

5.6.2: Data collectors

Two data collectors was assigned for quantitative data collection other than KI interview, criteria for engaging based on personal commitment, competency, language, pharmacist in profession, and individual with work experience on data collection and pharmacy service. Two professionals was employed as a freelancer, a one day data collection training was provided on the data collection tool and guide (observation checklists, exit interview), on research ethics and ethical issues. The data collectors mainly involved in the collection of quantitative data. KI interview and other collection method of the qualitative data were collected by primary evaluator for fullness and analysis purpose of the data. Evaluator also engage in monitoring and supervision, follow up and overall coordination of data collection process for quality of data and facilitation.

5.6.3: Data collection field work

The availability of resources was assessed by direct observation and interviewing the pharmacy professionals working at dispensary and store, by observing their availability using a checklist, by performing a physical inventory and reviewing the bin cards for the past one year to assess the drugs actual and historical availability respectively. Regarding to availability of required professional mix, as per the guideline a combination of human power required to staff a single dispensary outlet as per SoP of the guideline; pharmacy professionals; evaluator/biller, counseling pharmacist and processer; finance professionals; accountants and cashier adjacent to evaluator/biller; and supportive human power; security personnel and cleaner. Regarding availability of key APTS tools specific to pharmacy store; tools that are required for implementation of the program this are; new model 19, new model 22, RDF format and computer, physical availability were assessed at medical store.

The compliance of the activities to national protocols and guidelines was assessed by checking and reviewing reports and documents the past six months preceding the evaluation using a checklist. Physical count and review of bin cards was performed using a checklist to assess accuracy of documenting correspond with written value on bin card; observation of the store and dispensary using a checklist adopted from national manuals and standards; bi-monthly reporting and requisition forms was reviewed.

Direct observation: the observation was conducted while the pharmacist dispense and providing medication use counseling. Firstly the observer was take consent from each dispensary. Dispensing time during the dispensing process also assessed. Observations were conducted at all major dispensary outlets as WHO and FMOH pharmacy chapter recommended sample, 100 observation sample size for a study conducted at single facility. The sample distributed as per the dispensaries monthly service. At each dispensary respective number of dispensing episode the counting of the time started at starting delivering of the information by dispenser ends at the client lives the counter.

Client satisfaction were assessed by interviewing clients who were using service at major pharmacy on their perceived satisfaction on 13 satisfaction parameters on the service such as

convenience of dispensing area, professional respect and competency in providing information, waiting time, privacy of communication , availability and affordability of EDs.

Interviewer administer questionnaire: it was conducted through the average number of prescription per monthly in dispensary was proportionately allocated to the total sample size. Key informant interview: These findings were crosschecked by interviewing four key informants. Data collection was conducted by using in-depth interview guide and their consent was taken by the interviewer. Prepare rough notes of interviews and Made audio record. Immediately after session type the notes soon, prepare memo, listen to the audio tape then fully transcribe the passage, label and registered data.

5.7: Data management and analysis

5.7.1: Data cleaning and entry

The data was checked manually for completeness and consistency, and coded. Any incomplete, inconsistent or invalid data was discarded and/or corrected according to the original data. Incorrect data matched to original document and correction masseur was taken.
Qualitative data that were collected by in-depth interview, manually transcription, translated and coding were done and categorized under specific theme.

5.7.2: Data analysis

The data was analyzed using SPSS version 20, frequency, mean, and percentage was used to describe the data. The analysis is descriptive analysis that generated frequency, minimum and maximum values and calculating mean and percentage of the indicators as per the matrix of analysis and judgment. The result of the analysis for each objective are organized, summarized, and presented by using tables.

LOE= Total # of Patients served in dispensary/ (Total number of dispensers)
Adequate human resource is deployed in each pharmacy services units (based on workload analysis: number of prescriptions)
- For dispensaries, 1000 prescription (or 1500 counseling episodes) per pharmacists per month.
- For chronic pharmacies, 30 prescriptions per day per pharmacist.
- For accountants practical experience showed that 5000 patients per month.

- For cashers the number of patient served by one cashier at dispensary is up to 500 per day

Stock status of the key EDs was assessed according to IPLS seated minimum and maximum value on 4 inventory management indicators this are proportion of EDs over stocked (if available EDs above the maximum stock with inventory level > than 4 month of useable stock), proportion of EDs under stocked (if available EDs is below the minimum stock with number < than 2 month of usable stock), proportion of EDs stocked according to plan (if the stock falls between the minimum and the maximum 2-4 month useable stock) and proportion of EDs stock out (if not available at all) at medical store.

To measure client's satisfaction five point Likert scale was used (1= dissatisfaction (P), 2= moderately satisfied (F), 3= neutral (E), 4 = moderately satisfied (G), and 5 = satisfied (VG)) after validating consistency and completeness the data were entered to SPSS version 20 and analyzed. Percentage and mean was calculated then statistical relations and difference were tested using regression. Binary and multiple logistic regressions, P-value of less than 0.05 was taken as level of significance.

For the qualitative: An in-depth interview data were transcribed in to text format, translated and analyzed manually using thematic analysis with respective dimensions and results presented in narrative form and triangulation was made to quantitative result.

The final interpretation of result was based on evaluation weights and statistical analysis result of the evaluation.

5.8: Matrix of analysis and judgment

Based on the discussion with stakeholders and after review of program documents the criteria and judgment parameter was prepared and used to judge the quality of APTS at JMC. The weight of dimensions and the respective indicators were given depending on their level of relevance to the program. Dimensions were weighted by the stakeholders.

5.9: Ethical Issues

Prior to the evaluation an official ethical clearance letter was request made by evaluator and obtain from the ethical review board of Jimma University institute of Health, public health and medical science graduate programs research ethical review committee office to conduct the

evaluation at Jimma medical center, also a permission letter from Jimma medical center was obtain prior to conduct data collection and during data collection information about the evaluation and confidentiality of the respond was discuss for every study participant by collectors, informed verbal consent were obtained from study participants,.

5.10: Evaluation dissemination plan

The final evaluation report was presented to advisers and relevant comments were taken. After the approval of the evaluation thesis and finding, hard and soft copies of the document were disseminated and communicated to JMC (as it is help them to identify their area of strength and weakness and use it for their performance improvement), Institute of health science and department of health, Management and Policy, Jimma university library, and Publication of the findings of the evaluation on a journal will also be considered.

Chapter 6:   Results

A total of 298 clients at 90% respondent rate were interviewed during exit interview after the client used major dispensary outlets. The following results are organized in respective indicator dimensions in subsections;   starting from the structural aspect in subsection like availability of infrastructure, human resource, reference and forecasting manuals; Process aspect in compliance dimension organized in subsection as workflow, logistic management practice, transaction recording, reporting and dispensing practice; lastly outcome aspect in accommodation dimension in subsections socio-demographic characteristics, client level of satisfaction and determinants of client satisfaction. The findings stated separately below.

6.1: Availability of APTS inputs/resources

6.1.1: Infrastructure, equipment's and tools

The assessment indicated that of the major dispensaries in JMC, only OPD dispensing outlet meets more than 80% of APTS dispensing area and counter standard. From those structural changes none fulfilled criteria at were presence of cashier cubicle (except OPD dispensary) and dispensing windows with cubicle. Overall 70% APTS dispensing area/premises and counter standard was fulfilled.

A 30 years old respondent said that "*...the structure foundation of pharmacy outlet was lost after the center transferred to the new building recently, because current new building does not have pharmacy rooms with consideration of APTS standards*"

Regarding to availability of basic equipment's, the evaluation finding showed that out of 12 basic equipment's only 58% of equipment's were available. Even though, all major dispensaries were with sufficient shelves and computer, lack room thermometer, lockable cabinet and telephone (Table 6).

Table 2: Availability of dispensary basic equipment's and tools at JMC, 2019

Basic equipment	Availability at Dispensaries				Available
	OPD	Emergency	Inpatient	Pediatric	Number (%)
Sufficient shelves	Yes	Yes	Yes	Yes	4(100%)
Tablet counting tray	Yes	Yes	Yes	Yes	4(100%)
Spoon	Yes	Yes	Yes	Yes	4(100%)
Refrigerator	Yes	Yes	Yes	No	3(75%)
Thermometer	No	No	No	No	0(0%)
Lockable cabinet	No	No	No	No	0(0%)
Calculator	Yes	Yes	Yes	Yes	4(100%)
Computer	Yes	Yes	Yes	Yes	4(100%)
Internet services	No	Yes	No	No	1(25%)
Sink with running water	No	No	No	No	0(0%)
Continuous electricity with power backup	Yes	Yes	Yes	Yes	4(100%)
Telephones	No	No	No	No	0(0%)
Average %= 58.4%	7(58%)	8(66.7%)	7(58%)	6(50%)	58%

Regarding to key APTS tools at dispensary, tools that are required for the implementation of the initiative this are; sales tickets, prescription registration book, labeling sticker, labeling parker, monthly finance reporting format, monthly service reporting format and IFRR format physical availability were assessed at all dispensaries. The evaluation finding indicated that without any availability difference only 5(62.5%) tools were available at all dispensaries. Although, all major dispensaries were with Bin card and prescription registration book, lack labeling sticker and parker. On average 60 % of tools available at the center during data collection pared (Table 3). All four required tools were available in the center medical store at the time of data collection.

Table 3: Average percentage availability of APTS tools at JMC pharmacy unit, 2019

List of Tools	Availability at Dispensaries				Available
	OPD	Emergency	Inpatient	Pediatric	# (%)
Bin card	Yes	Yes	Yes	Yes	4(100%)
Prescription registration book	Yes	Yes	Yes	Yes	4(100%)
Labeling sticker	No	No	No	No	0(0%)
Labeling parker	No	No	No	No	0(0%)
Cash sales tickets	Yes	Yes	Yes	Yes	4(100%)
Monthly finance reporting format	No	No	No	No	0(0%)
Monthly service reporting format	Yes	Yes	Yes	Yes	4(100%)
IFRR format	Yes	Yes	Yes	Yes	4(100%)
Average % = 62.5%	5(62.5%)	5(62.5%)	5(62.5%)	5(62.5%)	62%

6.1.2: Human resource for APTS

Human resources availability was assessed at each dispensary outlet. The evaluation finding showed that averagely 67 % of human resources needed were available. There was availability difference observed between dispensaries; at OPD/chronic (5), at emergency (4), at pediatric (3), at inpatient (4). Even though, all major dispensaries were with prescription evaluator/biller lack security personnel (Table 5). As the evaluation result showed all major dispensaries had cashier personal, collects pharmaceuticals payment for specific dispensary. Assigned cashier at OPD/chronic, emergency, and inpatient were available adjacent to the evaluator/biller inside the dispensary. But a cashier who assigned at pediatric pharmacy physical availability was not adjacent to the evaluator/biller.

A 55 year respondent said that "… *the center diploid 5 cashiers at each dispensaries*, *client flow at pediatric dispensing unit is less than other units so that one cashier appointed for manage pharmaceutical finance transactions and card payment to clinical service of pediatric unit, both at a time by using two standard voucher types* ".

Regarding to availability of dedicated accountants, the evaluation result indicated that two accountants were allocated for managing financial transactions for pharmaceutical service

transaction at the center. A 55 year respondent said that *"......the center deployed two accountants for pharmaceutical financial transaction made at all dispensaries but not specific to a dispensary unit, the accountants manage daily financial transaction generated from all dispensaries by respective cashier. Shortages of accountant in the center constrain to allocate the professionals as per the requirements; because of availability of competent payment for accountants outside, there is frequent professionals attrition which challenge continues availability of this professional in the center."*

Table 4: Availability of Human Resource for APTS at JMC, 2019

Availability of professional	List of dispensaries				#
	OPD/chronic	Emergency	Inpatient	Pediatric	(%)
Biller/evaluator	Yes	Yes	Yes	Yes	4 100%
Counselor	Yes	Yes	Yes	Yes	4 100%
Processor	Yes	No	No	No	1 25%
Cashier adjacent to biller	Yes	Yes	Yes	No	3 75%
Guard	No	No	No	No	0 0%
Cleaner	Yes	Yes	Yes	Yes	4 100%
	5	4	4	3	16
Average % = 67 %	83.33%	66.66%	66.66%	50%	67 %

Adequacy of available professionals

Regarding to adequacy of available professionals the evaluation study indicated that, according to average monthly level of effort (LOE) analysis; generally, 75% of dispensaries were with adequate number of pharmacists; inadequate number of pharmacists was deployed at OPD/chronic dispensary outlet, (Table 6).

These findings were supported by a 36 years old key informant said that "*...to deploy adequate human power and professionals mix at dispensaries as APTS recommendation insufficient number of pharmacy professionals present in the hospital relation to available unites, types of pharmaceutical care service and number of clients served in the hospital*".

Regarding financial professionals, the evaluation finding showed that the number of available cashier, only pediatric dispensary was with adequate according LOE analysis result. Concerning adequacy of accountant (Table 5), the evaluation influenced to calculate the LOE analysis based on aggregate number of prescription at all listed dispensary to the available number of dedicated pharmacy accountants which is two, accordingly the LOE result showed that available accountants at the center were adequate.

Table 5: Percentage of major dispensaries with adequate staffs for APTS at JMC, 2019

No	List of Dispensary outlet	# of cashier	# of pharmacist	# of prescriptions per month	Average monthly level of effort (LOE)	LOE cashier
1	OPD/chronic	5	7	6900	986	1380
2	Emergency	5	4	3900	975	780
3	Inpatient	5	3	2850	950	570
4	Pediatric	5	3	2130	710	426
LOE= Total # of Patients served in dispensary/ (Total number of dispensers)						

Availability of Trained professionals

Regarding to availability of trained professionals the evaluation finding indicated that from a pharmacist working at major dispensaries, only six (35.3%) pharmacist have been taken APTS training from the total providers, at OPD/chronic 3(42.8%) from 7, at inpatient 1(33.3%) from 3, at pediatric 0 from 3, at emergency 2(50%) from 4. None of cashiers and accountants had any type of training related to APTS since the last one year. This finding is supported by result from key informant interviewed. A 40 years respondent said that "....*the center failed to provide training for professionals because there is a shortage of training quota given for the facility against number of available professional, and available trainings also not consider available profession types. There is a plan to train some-of providers working at dispensaries from all professional type in the next year*".

6.1.3: Availability of Reference manuals and Forecasting documents

The finding indicates that none of dispensary outlets had standard reference manual at the time of data collection. This finding supported by a qualitative study result, A 36 year respondent said that *"...the hospital pharmacy did not have this documents to distribute for dispensaries, because this updated documents not delivered to the center, however there is DIC unite available at the center."*

Regarding to availability of documents for forecasting which analyzed EDs based on SSA, ABC, VEN, ABC\VEN reconciliation at the time of the data collection were absent.

A 40 years old respondent said that, *"…the center did not prepare these documents, STG, EDL and forecasting documents manly developed by drug therapeutic commute (DIC), the absence of functional DIC unit in the center are the reason .... On recently made regular meeting the management commutes were agreed and take the initiatives to restructure the commute also the activity started. Currently the center uses a consumption method from the standard forecasting methods and ABC based classified medicines prepared by EPSA Jimma branch to resupply the needed EDs"*.

6.1.4: Stock status and Availability of key EDs

Availability of key essential drugs and Proportion of prescribed drug dispensed to patient

The evaluation finding showed that from expected 32 key EDs to be available, 24(75%) of key EDs were available in the hospital at the time of data collection.

Regarding to proportion of prescribed drug dispensed to patient, the finding of this study showed that from a total of 567 prescribed pharmaceuticals only 362 pharmaceuticals (64%) were dispensed to the clients.

A 39 years respondent said that *"…the supply agency repeatedly fells to provide the actual demand of the center and to resupply from private whole sealers the process and bureaucracy takes long time, because of this two main reason aggravated by some prescriptions come with brand name of drugs instead of generic names affects the center."*

A 40 years old respondent said that *"....medication were frequently stock out in dispensaries this can be because of improper stock management, also there is communication gap between*

prescriber and dispensers, communication have significant role in medication prescription and delivery of prescribed medicines in a facility, this gap can filled by developing facility based standard treatment guideline, currently the center lack this guideline.”

Stock status of key EDs at the center

The assessment result indicated that, out of total key EDs (n=32), the proportion of EDs stocked according to plan were only 4(12.5%), proportion of EDs under stocked were 7(21.87%), proportion of EDs over stocked was 14(43.75%) and proportion of EDs stock out was 7(21.87%) (Table3).

Table 6: Stock status of key EDs at JMC, 2019

List of EDs	Stock on hand (single unit)	Average monthly consumption (AMC)	Stock Status
Amoxicillin 250mg/500mg cap/tab	10300	666	Os
Amoxicillin 125mg/5ml syrup/suspension	561	143	Sap
Ceftriaxone 500mg/ 1g inj	7130	1957	Sap
Ciprofloxacin 500mg caps/tab	23700	2200	Os
Sulphamethoxazole + Trimethoprim 200mg + 40mg in 5ml	140	106	Os
Arthmeter + Lunfanthrine	24480	480	Os
Mebendazole oral suspension,100mg/5ml	0	86	Us
Metronidazole 250mg cap/tab	20000	3333	Os
Atenolol 50mg tab	21200	3140	Os
Enalapril 5/10mg tab	0	11200	So
Hydrochlorothiazide 25mg tab	39750	5083	Os
Metformin 500mg tab	47333	12680	Sap
Simvastatin 20mg tab	0	2460	So
Diazepam 5mg tab	236600	2000	Os
Amitriptyline 25mg tab	30700	30866	Us
Fluoxetine 20mg cap	53600	5333	Os
Phenobarbitone 100mg tab	29000	33333	Us

Haloperidol tab	77000	3400	Os
Omeprazole 20mg cap	0	9523	So
Salbutamol inhalers	390	286	Us
Oral rehydration salts (ORS)/zinc	2400	670	Os
Diclofenac Sodium 50mg tab	7500	4533	Us
Paracetamol 120mg/5ml	0	150	So
Sodium chloride 0.9% (normal saline)	675	2613	Us
Oxytocin 10 IU	1800	566	Sap
Magnesium sulphate inj.	0	550	So
Ferrous sulphate + folic acid tab	0	2250	So
Oral contraceptives tab	0	63	So
EFV/3TC/ TDF tab combination	119370	47300	Os
RHZE tab	308	784	Us
Vitamin K 10 IU	1650	260	Os
Tetracycline eye ointment	1970	276	Os

Note: stocked according to plain (SAP), under stocked (US), over stocked (OS), stock-out (SO)

Average stock-out duration of key EDs over the past 6 month

The average stock-out duration of the key EDs in the center was 71.65 days. Fourteen key EDs were constantly available during the past 6 month in the center. Key EDs that were out of stock for more than 5 months includes; Atenolol, metformin, salbutamol inhaler, Enalapril, Diclofenac tab, and ferrous sulphate + folic acid tab (Table 8).

A 39 years old man said that "……*a major reason for stock outs of EDs in the center are the absence of consistent supply, lack of supplier that can answer effectively to the demand of the center for medicines*".

Availability of expired Key EDs

The observation and document review of the evaluation result showed that at the center, 9 (45%) key EDs were expired from listed 32 type of medication at the data collection time. From documented available expired EDs includes; Amoxicillin (2100 capsule), Oral contraceptive (298 three cycle packet) and EFV/3TC/ TDF tab (53940 tab) (Table 8). Concerning to monitory

value of available expired drug, in aggregate was 414,030.36 Birr; this means 2.15% monitory value of the past 8 month key EDs transaction in the center (Table 8).

A 39 year respondent said that "*....absence of regular monitoring and poor product management practice of respective professionals gives for this observed result, there is also other external factor aggravate the situation is some products with near shelve life are received from supplier.*"

A 40 years old respondent said that "*…...the center did not follow proven strategy for reduction of product expiry like donation, exchanging with other facility, together with ineffective stock management observed by lack of adherence to scientific stock movement method FIFO and LIFO.*"

Table 7: Average stock out duration and Proportion of available expired Key EDs; Quantity and Monitory value of the loss at JMC, 2019

List of EDs	Average stock out duration	Transaction (monitory value in Birr)	Availability of Expired		Monitory value
			Available	Quantity	
Amoxicillin 500mg cap	0	3125.6	Yes	2100	420
Amoxicillin 125mg/5ml syrup/suspension	162	17390	No	0	
Ceftriaxone 500mg/ 1g inj	108	147178.35	No	0	
Ciprofloxacin 500mg tab	0	11564	Yes	480	134.4
Sulphamethoxazole + Trimethoprim 200mg + 40mg in 5ml	0	8645	Yes	37	323.75
Arthmeter + Lunfanthrine	0	51825.6	Yes	3780	6932.04
Mebendazole oral suspension,100mg/5ml	30	4123.7	Yes	17	116.45
Metronidazole 250mg cap	0	10826.048	Yes	1280	298.24
Atenolol 50mg tab	167	8377.51	No	0	
Enalapril 5/10mg tab	180	12096	Yes	790	426.6
Hydrochlorothiazide 25mg tab	0	43825.63	No	0	
Metformin 500mg tab	160	46494.33	No	0	

Simvastatin 20mg tab	94	554.4	Yes	1340	375.2
Diazepam 5/10mg tab	0	9346.2	No	0	
Amitriptyline 25mg tab	0	158140.12	No	0	
Fluoxetine 20mg cap	0	57758.4	Yes	335	804
Phenobarbitone 100mg tab	105	46002.48	Yes	4200	1079.40
Haloperidol 1/2mg tab	0	137544	No		
Omeprazole 20mg cap	66	1104.66	No		
Salbutamol inhalers	102	59675	No	0	
Oral rehydration salts (ORS)/zinc	138	9543.12	Yes	117	238.68
Diclofenac Sodium 50mg tab	160	7500.82	No	0	
Paracetamol syrup 120mg/5ml	108	5794.8	No	0	
Sodium chloride 0.9% (normal saline)	69	262399.3	No	0	
Oxytocin 10 IU	0	23793.28	No	0	
Magnesium sulphate inj.	96	72336	No	0	
Ferrous sulphate + folic acid tab	180	810	No	0	
Oral contraceptives tab	180	1200.78	Yes	298	2839.94
EFV/3TC/ TDF tab combination	0	17,830,520.23	Yes	53940	399102.06
RHZE tab	0	113643	No	0	
Vitamin K 10 IU	28	61737.6	No	0	
Tetracycline eye ointment	0	15667.5	No	0	
	Average 71 days	19,240,543.46 Birr = 2.15%			414,030.36

Overall availability of resources or inputs in JMC is 55 %, judged as fair according to pre setted judgment parameter.

Table 8: Analysis and judgment matrix for evaluation availability of resources for APTS at JMC, 2019

Indicator	Expected in	Wight	Result		Rating parameter individual	Judgment parameter
			Score	Finding (%)		
1. Average score of APTS standard dispensing area and counter criteria met by dispensary outlet (5criteria).	20 For all (N=4)	7	4.9	70		70-84% Good
2. Average percentage of available basic equipment's at dispensary. 12	48 For all (N=4) 100%	7	4.1	58		55-69% Fair
3. Average number of available key APTS tools at dispensary. 8	32 For all (N=4) 100%	5	3.1	62		55-69% Fair
4. Number of available key APTS tools at medical store.	4 100%	5	5	100		>85% V. Good
5. Average number availability of human power at dispensary outlet for APTS.	24 100%	8	5.4	67		55-69% Fair
6. Availability of pharmacy unit dedicated accountant	2	4	4	100		>85% V. Good
7. Number of dispensary with adequate pharmacy professional.	4	6	4.5	75	100%=v. good 75%= good 50%= fair 25%= poor	70-84% Good
8. Number of dispensary with adequate cashier.	4	3	20.75	25		>85% V. Good
9. Availability of adequate pharmacy unit dedicated accountant.	2	3	3	100		>85% V. Good
10. Percentage of pharmacist trained in APTS at dispensary.	17 100%	4	1.4	35		< 55% Poor

11. Percentage of cashier trained in APTS at dispensary.	20 100%	3	0	0		< 55% Poor
12. Number of trained accountant at the center.	2	3	0	0	2=>85% 1= good 0=poor	< 55% Poor
13. Average number availability of reference manual at dispensary outlet. Aggregate of three indicators. Availability of Formulary, Availability of STG & Availability of EDL at service delivery.	12	4	0	0		< 55% Poor
14. Proportion of available key EDs at the hospital.	32 100%	8	6	75		70-84% Good
15. Proportion of prescribed drug dispensed to patients.	100	9	5.76	64		55-69% Fair
16. Percentage of EDs stocked according to plan.	100 according to plan	6	0.75	12.5	>85%=>85% = 70-84% =55- 69% <55%=<55%	< 55% Poor
17. Average stock-out duration of key EDs over the past 6 month (days).	<30	6	4.3	72	<30days= >85% 30-60days =70-85% , 61-90days =55-69% >90days= <55%	55-69% Fair
18. Percentage of monitory value of available expired Key EDs in the hospital.	<2%	3	2.49	83	<2%=>85% 2-4%=70-84% 4-6%=55-69% <6%=<55%	70-84% Good
19. Number of available forecasting documents analyze medicine; SSA, ABC, VEN & ABC\VEN reconciliation document.	4	6	0	0		< 55% Poor
Availability total = 55%		**100**	**55**			**55-69% Fair**

6.2: Compliance to APTS standard

6.2.1: Workflow and professional practice at dispensary

Number of major dispensary outlets workflow organized as APTS recommended

The assessment indicates only in one major dispensary outlet workflow organized as APTS standard and recommendation (Evaluator » Biller » Casher » Counselor (Entrance and Exit)) from all major dispensing outlets only OPD dispensing outlet, it is recommended as client enter to the pharmacy by entrance door, prescription evaluation then billing by evaluator then collecting money or paying to adjacent casher then dispensing and counseling by counseling pharmacist, at the end the client exit through exit door.

A 40 year old key informant said that *"... inadequate human resource of the center constrains the facility not to follow recommended workflow arrangement, because this workflow required many professionals to allocate on specific positions, also the dispensary rooms are not such with sufficient space for this type of workflow arrangement. "*

Maintaining acceptable storage and handling of drugs at dispensaries and medical store

The evaluation reveals for storage and handling of drug against the 9 criteria, the average scores of criteria met by major dispensary outlets was 92 %. The study shows that majority of dispensaries scores 100% of this criteria, except that one of the major dispensaries stored expired EDs with usable products in dispensary at the time of data collection; this result to unmet the 1st acceptable storage and handling standard or criteria (Table 5).

Over all this was judge as great achievement based one pre seated judgment parameter.

Table 9: Average score of major dispensaries for dispensary area criteria at JMC, 2019

No	Description	Major dispensaries at JMC (n=4)	
		Ye s	%
1	Damaged and expired products are not available with usable products in the dispensary.	1	75
2	Drugs are stored in a dry, well-ventilated dispensary and windows that can be opened.	4	100

3	Cleanliness (absences of dirt and dust, rodents or insects in the dispensary).	4	100
4	The dispensing area is secured with a lock and key that protects against theft but is accessible during normal working hours; access is limited to authorized personnel.	4	100
5	Medicines are not stored directly on the floor	4	100
6	The drugs arranged in shelves/ cabinets using one of scientific arrangement methods	4	100
7	Direct sunlight is prevented from entering the dispensary (e.g. by means of painted window panes or blinds).	4	100
8	Drugs are stored separately from insecticides, flammable products, and chemicals.	4	100
9	Dispensary is protected from water penetration or free from moisture (e.g. leaking of ceiling, drains, taps)	4	100
Average score = 92			

Maintaining Acceptable storage condition at medical store

Storage condition observation was made at medical store for products that are ready to be issued or distributed to dispensaries, present evaluation indicated that JMC medical store were met majority 12(80%) of criteria from 14 standard storage criteria, unfulfilled criteria was 'products are stored at the appropriate temperature according to product temperature specifications' this criteria evaluated because of un-functionality of cold chain, and fair safety equipment were absent in the store room at the time data collection.

A 40 years respondent regarding on unfulfilled criteria said that "……*the cooled room was available before but because of mal functionality and to repair higher than the capacity of available biomedical professionals in the center it goes to out of service for months*".

Table 10: Score of medical store for storage criteria at JMC, 2019

No	Description	Status	
		Yes	**No**
1	Products that are ready for distribution are arranged so that identification labels and expiry dates and/or manufacturing dates are visible.	Yes	
2	Products are stored and organized in a manner accessible for first-to-expire, first-out (FEFO) counting and general management.	Yes	
3	Cartons and products are in good condition, not crushed and wet due to mishandling.	Yes	
4	The center makes it a practice to separate damaged and/or expired products from usable products and removes them from inventory.	Yes	
5	Products are protected from direct sunlight.	Yes	
6	Cartons and products are protected from water and humidity.	Yes	
7	Storage area is visually free from harmful insects and rodents.	Yes	
8	Storage area is secured with a lock and key, but is accessible during normal working hours; access is limited to authorized personnel.	Yes	
9	Products are stored at the appropriate temperature according to product temperature specifications.		No
10	Roof is maintained in good condition to avoid water penetration.	Yes	
11	Storeroom is maintained in good condition (clean, all trash removed, sturdy shelves, organized boxes).	Yes	
12	The current space and organization is sufficient for existing products and reasonable expansion	Yes	
13	Fire safety equipment is available and accessible		No
14	Products are stored separately from insecticides and chemicals.	Yes	
	Total score = 86 %		

Financial professionals practice

Regarding dedication of dispensary cashier, the finding showed. Assigned cashiers at OPD/chronic, emergency, inpatient were dedicated on managing transaction for their specific

outlets. But a cashier who assigned at pediatric pharmacy was responsible to manage dual financial transactions (daily pharmaceuticals transactions plus client's payment for card).

A 55 year respondent said that "… *the center diploid 5 cashiers at each dispensaries*, *client flow at pediatric dispensing unit is less than other units so that one cashier appointed for manage pharmaceutical finance transactions and card payment to clinical service of pediatric unit, both at a time by using two standard voucher types.*"

Regarding pharmacy unit dedicated accountants fully engaged in performing full list of activity of the position; dedicated accountants expected to execute as the guideline; financial transaction management, daily reconciliation and conducting monthly financial report. The evaluation result indicated that two accountants were allocated for managing financial transactions at the center for pharmaceutical service transaction; from available dedicated accountants none of them fully execute required activity. Even though, both of them implement financial transaction management, drops daily reconciliation and conducting bimonthly financial report. A 55 year respondent said that "*……there is a shortage of accountants in the center to perform all listed work as per the requirements; because of unattractive payment of the center for the position there is high deportation rat from work this makes challenge to continue availability of this professional in the center.*"

6.2.2: Logistic management practice

Inventory controlling and stock movement card utilization

The evaluation study reveals that all major dispensaries utilize bine cards. During observation no ED found without bin card .regarding to accuracy of bin card documentation, there is a discrepancy between quantity written on bin card and physical inventory quantity of randomly selected ED at all major dispensing outlet out from randomly selected 5 bin cards reviewed. % of accurate Bin card 3(80%) at OPD, 3(80%) at emergency, 4(90%) at inpatient, 4(90%) at pediatric, overall 70% of randomly selected were accurate at the center in average.

Monthly financial and service reporting

As the finding of the assessment showed there is irregularity of monthly service reporting in the center, among expected 6 report documents expected to be generate from each dispensaries, In the last six month only 62% of reports were reported from this dispensaries.

Documenting and reporting of IFRR and RRF format

Present study assesses the utilization and completeness of logistic management reports by reviewing the past 6 month reporting period used and available documents. Regarding to IFFR documents of the major dispensaries and RRF document of the medical store, the evaluation result showed that from expected 64 IFRR reports within 6month from major dispensaries only 41(64%) were available at the time of data collection. Regarding to completeness, from available 41 IFRR formats only 63% were completed (Table 12).

A 38 year old man respondent said that "…*irregularity of reporting are common with in the center, this occurred because the dispensaries reports IFRR reporting and requesting format when new supply arrives to medical store, so that the schedule might not followed and expected number of formats was not available, also the professionals lack to complete required information generated from dispensaries.*"

Regarding RRF the evaluation result showed all expected number of formats were reported or sent to EPSA as per the guide, also all 3 reported formats were complete, the facility achievement in both indicator value; regarding RRF is 100% (Table 12). This result may be observed due to the facility use HCMIS as stock card makes easy for referring stock status of EDs and reporting.

Table 11: Logistic management system, documenting and reporting at JMC, 2019

Indicators	OPD	Emergency	Inpatient	Pediatric	Average %
Logistics Records					
Assigned Bin owner	Yes	Yes	Yes	Yes	100
% EDs with Bin card	ALL	ALL	ALL	ALL	100
Logistics Reports					
Number of IFRR reported	From expected 16 = 11	From expected 16 = 12	From expected 16 = 9	From expected 16 = 9	64%
# of complete IFRR	From reported 11 = 6	From reported 12 = 7	From reported 9 = 7	From reported 9 = 6	63%
Service report	4	4	4	3	62%

IFRR: Internal facility and requisition form

6.2.3: Dispensing practice

Average dispensing time

At dispensary OPD/chronic was 82.4 second, pediatric was 81.6 second, inpatient was 42.7 and emergency was 26.1 second. The evaluation study showed that average dispensing time was 58 second.

Percentage of dispensed medicines completely/adequately labeled

The evaluation indicates that from 100 drug packages that were randomly selected as per WHO and FMOH, from major dispensaries drugs actually dispensed and received by clients, only 12% of them had complete labeled information on the ED packages.

Percentage of clients who were informed how to use medication/supply

The study indicated that from 100 dispensing episodes at major dispensary, providers during dispensing 5 basic WHO drug use information (the dose, route of administration, frequency, duration and storage) should delivered to the client. Overall 67 % of client was informed how to take the drug.

Table 12: Analysis and judgment matrix of compliance of professionals at JMC, 2019

Indicator	expected	Wight	Result		Rating Parameter individual	Judgment parameter
			score	Finding %		
1. Number of dispensary outlets workflow organized as APTS standard. (Evaluator » Biller » Casher » Counselor (Entrance and Exit))	4	8	2	25	100 v. good 75 good 50 fair 25 poor	< 55% Poor
2. Average score for acceptable storage and handling of drugs at dispensary outlets (9 criteria).	9	8	7.3	92		>85% V. Good
3. Number of standard meets by medical store of storage condition Score (14 criteria).	14	8	6.8	86		>85% V. Good
4. Number of dispensary cashier manages only pharmaceutical transaction.	4	5	3.7	75	100 v. good 75 good 50 fair 25 poor	70– 84% Good
5. Number of pharmacy unit	2	6	0	0	100 v. good	< 55%

Indicator					Criteria	Rating
accountant fully engaged in performing full list of activity of the position.					50 good 0 poor	Poor
6. Number of dispensary outlet assigned bin owners at JMC.	4	3	3	100	100 v. good 75 good 50 fair 25 poor	>85% V. Good
7. Average number of selected key EDs with Bin cards at dispensary outlet.	20	3	3	100		>85% V. Good
8. Average number of Bin cards with accurate Bin card balance between quantities of medicines recorded on bin card and actual physical count at dispensary outlet.	20	6	4.2	70		70– 84% Good
9. Average number of produced monthly service report form from dispensary.	24	5	3	60		55– 69% Fair
10. Average number of produced IFRR format from dispensary outlet over the past 6 month.	64	5	3.2	64		55– 69% Fair
11. Average number of complete IFRR format produced from dispensary.	41	5	3.1	63		55– 69% Fair
12. Number of produced RRF format from medical store to EPSA over the past 6 month.	3	5	5	100		>85% V. Good
13. Number of complete RRF format reported from medical store.	3	5	5	100		>85% V. Good
14. Proportion of adequately labeled dispensed medicine package at dispensary.	100	8	1	12		< 55% Poor
15. Proportion of clients who were informed how to take the drug/supply.	100	10	6.7	67		55– 69% Fair
16. Average dispensing time at dispensary.	>180 s	10	4.5	82%	>140s=>85% 100-140s = 70-84% 60-99s=55 69% <60s = <55%	55– 69% Fair
Compliance total= 66 %		**100**	**66**			**55– 69% Fair**

6.3: Satisfaction

6.3.1: Socio-demographic characteristic of respondents

The mean age score was 34.83, 53.7% of the respondents were male, 54% of respondents uses Afan Oromo as primary language and 53.8% of respondents religion were Muslim. With regarding to marital status 63.4% were married and 36.45% respondent were unemployed (Table 14).

The level of client satisfaction as measured by composite score of 13 items, the evaluation assessment indicated that 76.5% of the respondents were satisfied. From all respondents specifically to availability of prescribed medicines in the pharmacy 33.8%, to information received about results can expect from pharmacotherapy 26.5%, to privacy of conversations with the pharmacist 25.5%, to promptness of processing prescription medicines 25.2%, to pharmacy professional instructions about how to take the medication 24.85%, to amount of time pharmacy professional spends for dispersing 24.8%, to information received about proper storage of mediation 23.5%, to the fairness of the cost of drug 22.8% clients were not satisfied (Table 17).

Table 13: Socio-demographic characteristics of the respondent at JMC, 2019

Variable		Frequency
Age	18-28	79 (26 %)
	29-39	132 (44 %)
	40-50	56 (19 %)
	>50	31 (10 %)
Gender	Male	160 (54 %)
	Female	138 (46 %)
Marital status	Single	80 (27 %)
	Married	189 (63 %)
	Divorced	15 (5 %)
	Widowed	14 (5 %)
Religion	Islam	158 (53 %)
	Orthodox Christian	94 (31%)
	Protestant	34 (11 %)

	Catholic	12 (4 %)
Place of residence	Urban	144 (48 %)
	Rural	154 (52 %)
Primary language	Afan Oromo	162 (54 %)
	Amharic	128 (43 %)
	Other	8 (3 %)
Educational status	Illiterate	152 (51 %)
	Primary	56 (19 %)
	Secondary	35 (12 %)
	Certificate and above	55 (18 %)
Employment status	Employed	108 (36 %)
	Farmer	85 (28 %)
	Merchant	42 (14 %)
	Unemployed	63 (21 %)
Type of visit	New visit	106 (36 %)
	Repeat visit	192 (64 %)
To get medicines for	Self	144 (48 %)
	friend/family	154 (52 %)
Type of disease	Chronic	93 (31 %)
	Non chronic	205 (69 %)
Type of payment	Cash	163 (55 %)
	Free	135 (45 %)

The parameter used to assess level of satisfaction were dispensary area, professional level of information delivery, courtesy and respect, privacy of communication, availability of medication, dispensing process and waiting time.

Table 16: **Respondents satisfaction level at JMC dispensaries, 2019**

Satisfaction item	Poor	Fair	Good	v. good	Excellent
Satisfaction with accessibility of the pharmacy	-	3(1.0%)	54(18.1%)	173(58.1%)	68(22.8%)
Satisfaction with overall cleanliness and comfort of the pharmacy waiting area	-	1(0.3%)	65(21.8%)	154(51.6%)	78(26.2%)
Satisfaction with amount of time spend waiting for prescription to be filled	1(0.3%)	21(7.0%)	40(13.4%)	152(51.0%)	84(28.2%)
Satisfaction with convenience of the dispensing area and counter for service provision	-	13(4.4%)	42(17.4%)	163(51.3%)	85(28.5%)
Satisfaction with clarity of the pharmacy professional's instructions about how to take the medication	-	7(2.3%)	67(22.5%)	143(48.0%)	81(27.2%)
Satisfaction with information received about proper storage of medication	-	7(2.3%)	63(21.1%)	140(47.0)	88(29.5%)
Satisfaction with information received about results can expect from pharmacotherapy	-	25(8.4%)	54(18.1%)	177(59.4%)	42(14.1%)
Satisfaction with promptness of processing prescription medicines	-	33(11.1%)	42(14.1%)	129(43.3%)	94(31.5%)
Satisfaction with availability of prescribed drugs in the pharmacy	1(0.3%)	35(11.7)	65(22%)	126(42.2%)	71(23.8%)
Satisfaction with privacy of conversations with the pharmacist	-	22(7.4%)	54(18.1%)	176(59.1%)	46(15.4%)
Satisfaction with amount of time pharmacy professional spends with	-	29(9.7%)	45(15.1%)	122(40.9%)	102(34.2%)
Satisfaction with courtesy and respect shown by the pharmacy staff	-	6(2.0%)	42(14.5%)	178(56.4%)	72(24.1%)
Satisfaction with fairness of cost of medicines in the pharmacy	-	11(3.7%)	57(19%)	179(60.3%)	51(17%)

Satisfaction level of client dichotomized, the dissatisfaction was defined by a score of ≤ 3 on 1-5 Likert scale on specific parameter, above this demarcation defend as satisfied to the parameter and the service they get (Table15).

Table 14: Dichotomized clients satisfaction at JMC dispensaries, 2019

No	Satisfaction items	Satisfaction category	
		Satisfied # (%)	Not Satisfied # (%)
1.	Satisfaction with accessibility of the pharmacy	241(81 %)	57(19 %)
2.	Satisfaction with overall cleanliness and comfort of the pharmacy waiting area	232(78 %)	66(22 %)
3.	Satisfaction with amount of time spend waiting for prescription to be filled	236(79 %)	62(21 %)
4.	Satisfaction with convenience of the dispensing area and counter for service provision	238(80 %)	60(20 %)
5.	Satisfaction with clarity of the pharmacy professional's instructions about how to take the medication	224(75 %)	74(25 %)
6.	Satisfaction with information received about proper storage of mediation	228(77 %)	70(23 %)
7.	Satisfaction with information received about results can expect from pharmacotherapy	214(72 %)	79(28 %)
8.	Satisfaction with promptness of processing prescription medicines	223(75 %)	75(25 %)
9.	Satisfaction with availability of prescribed medicines in the pharmacy	197(66 %)	101(34 %)
10.	Satisfaction with privacy of conversations with the pharmacist	222(74 %)	76(26 %)
11.	Satisfaction with amount of time pharmacy professional spends with you	224(75 %)	74(25 %)
12.	Satisfaction with courtesy and respect shown by the pharmacy staff	250(84 %)	48(16 %)
13.	Satisfaction with fairness of cost of medicines in the pharmacy	230(77 %)	68(23 %)
	Overall client satisfaction	228(76.5%)	70(23.5%)

6.3.2: Clients' satisfaction determinants

Bivariate analysis of independent variables of socio-demographic characteristics like sex, place of residence, educational status, employment status, type of disease, payment status, for whom medication prescribed, type of visit, and marital status were significantly associated with overall satisfaction. To control the effect of a confounder, a multiple logistic regression was done for variables with p-value < 0.25 (Table 16).

In multiple logistic analysis payment status, disease type, for whom medication prescribed and education statuses of client are significantly associated with satisfaction level. Client those who were get the medication for themselves 50% less likely satisfied than of clients who were get for family or friends (AOR= 0.500 CL; 0.278-0.898) (p<0.05), clients those who were visit the pharmacy because of chronic disease 60.9% less likely satisfied than clients who were visit the pharmacy by other disease type (AOR= 0.391CL; 0.210-0.729) (p<0.05), clients those who were type of payment was cash 69.6% less likely satisfied than of being free (AOR= 0.307CL; 0.164-0.576) (p<0.05), clients who were education level was primary(1-8) 60.8% less likely satisfied than of with certificate and above (AOR= 0.392CL; 0.155-0.987) (p<0.05) (Table 15).

Table 15: Determinants of client satisfaction logistic regression analysis

Characteristics/ Variables	Satisfaction		Unadjusted OR (95%CI)	Adjusted OR (95%CI)	P-value
	Satisfied N (%)	Not satisfied N (%)			
Age					
18-28	56(70.88%)	23(29.11%)	0.847		
29-39	23(74.19%)	8(25.81%)	1.003		
40-50	98(74.24%)	34(25.76%)	3.548		
>50	51(91.07%)	5(8.03%)	1	1	
Gender					
Male	113(76.62%)	47(73.38%)	0.481		
Female	115(83.33%)	23(24.67%)	1	1	
Marital status					

Single	84(75.67%)	27(74.33%)	1.750		
Marred	128(79.01%)	34(80.09%)	2.118		
Divorced/widowed	16(64%)	9(36%)	1	1	
Place of residence					
Urban	103(85.12%)	18(24.88%)	2.380		
Rural	125(70.62%)	52(29.38%)	1	1	
Education status					
Illiterate	35(62.5%)	21(37.5%)	0.984	1.162	0.726
Primary	24(68.57%)	11(31.43%)	**0.370**	**0.392(0.155-0.987)**	**0.047**
Seconder	124(81.57%)	28(18.43%)	0.485	0.595	0.327
Certificate &above	45(81.82%)	10(18.18%)	1		
Employment status					
Employed	59(80.82%)	14(19.18%)	1.643		
Farmer	73(75.25%)	24(24.75%)	1.186		
Merchant	37(80.43%)	9(19.57%)	1.603		
Unemployed	59(71.95%)	23(28.05%)	1	1	1
Frequency of visit					
New visit	74(69.8%)	32(30.2%)	0.571	0.579(0.322-1.042)	0.068
Repeat visit	154(80.21%)	38(19.79%)	1	1	1
Reason for visiting To get drug for					
Self	102(70.83%)	42(29.17%)	**0.540**	**0.500(0.278-0.898)**	**0.020**
Friends/family	126(81.82%)	28(18.18%)	1	1	1
Disease type					
Chronic	64(68.82%)	29(31.18%)	**0.552**	**0.391(0.210-0.729)**	**0.003**
Non chronic	164(80%)	41(20%)	1	1	1
Payment status					
Cash	112(68.71%)	51(31.29%)	**0.360**	**0.307(0.164-0.576)**	**0.000**
Free	116(85.92%)	19(24.08%)	1	1	
N.B: Variable at P-value <0.05 in multiple logistic analysis shows predictor for satisfaction and 1 shows reference group					

Overall analysis and judgment matrix of satisfaction

Table 16: Matrix of judgment and analysis of satisfaction, JMC, ETHIOPIA, 2019

Indicator	expected	Wight	Result		Rating Parameter individual	Judgment parameter
			Score	Finding %		
1. Satisfaction with accessibility of the pharmacy location	90%	7	5.8	81		70-84% Good
2. Satisfaction with overall cleanliness and comfort of the pharmacy waiting area	90%	7	5.5	78		70-84% Good
3. Satisfaction with convenience of the dispensing area and counter for service provision	90%	7	5.6	80		70-84% Good
4. Satisfaction with clarity of information received instructions on how to use a drug	90%	8	6	75		70-84% Good
5. Satisfaction with information received about the proper storage of medication	90%	8	6.1	76		70-84% Good
6. Satisfaction with information received gives about result expected from pharmacotherapy	90%	8	5.8	72		70-84% Good
7. Satisfaction with promptness of processing prescribed medicines /waiting time to get prescribed medicine/supply	90%	7	5.3	75		70-84% Good
8. Satisfaction with availability of prescribed drugs	90%	8	6.9	66		55-69% Fair
9. Satisfaction with privacy of conversations with the pharmacist	90%	8	6	75		70-84% Good
10. Satisfaction with amount of time /dispensing time the pharmacy professional spends with	90%	8	6	75		70-84% Good
11. Satisfaction with respect of providers during service provision	90%	8	6.7	84		70-84% Good
12. Satisfaction with fairness of cost of medicines in the pharmacy	90%	8	6.2	77		70-84% Good
13. Satisfaction with amount of time spend waiting for prescription to be filled /the total time taken to get the service	90%	8	6.3	79		70-84% Good
Satisfaction total =78%		**100**	**78**			**70-84% Good**

Based on the weight given for each dimensions of the evaluation, the overall quality of the pharmacy service at the center was 66 % this indicates that further improvement needed as shown in table below.

Table 17: Overall judgment matrix of quality of APTS at JMC, 2019

Dimension	Number of indicator	Value given	Percentage achieved	Quality level judgmental criteria
Availability	19	30	55	>85% Very Good 70 – 84% Good 55 – 69% Fair < 55% Poor
Compliance	16	40	66	>85% Very Good 70 – 84% Good 55 – 69% Fair < 55% Poor
Satisfaction	13	30	78	>85% Very Good 70 – 84% God 55 – 69% Fair < 55% Poor
Total score		**100**	**66**	**>85% Very Good** **70 – 84% Good** **55 – 69% Fair** **< 55% Poor**

Chapter 7:   Discussion

The present evaluation study revealed quality of APTS and challenges at JMC the finding indicates that by availability of resources for APTS at the center was 55%, by compliance of the professionals to the standard implementation guideline was 66% and by accommodation dimension was 78%. Overall the quality of APTS at JMC judged fair according to judgment parameter. However, the program needs improvement.

Availability of APTS inputs/resources

Of the assessed dispensing units (OPD, in-patient, emergency and pediatrics' dispensaries) only the OPD dispensary unit meets 80% of APTS dispensing area requirements. The other units far away from requirements. These unfulfilled infrastructural components result in impair workflow and aggravates lack of privacy. Per recommendation of guidelines and 2017 pharmacy service transformation impair optimum service quality and client satisfaction (17).

Regarding to availability of basic equipment's, the evaluation finding showed that only 58% of equipment's were available. Even though, all major dispensaries were with sufficient shelves and computer lacks room thermometer, lockable cabinet and telephone. Present study Comparable to study conducted at Gondar university hospital; both had dispensing with appropriate lighting. But, none of had a private counseling room and fire extinguisher. Only two had a refrigerator with thermometer while only one had a toilet (34). This implies imbalance in cold chain management with different departments (units) .This may influence the quality of pharmaceutical products.

Regarding to key APTS tools: sales tickets, prescription registration book, labeling sticker, labeling parker, monthly finance reporting format, monthly service reporting format and IFRR format physical availability were assessed at all dispensaries. The evaluation finding indicated that 62% of tools available at the center during study. This finding may affect adequate information provision to client.

One way of ensuring quality service in pharmacy care is availability of updated standard reference manuals at dispensary outlets for quick referencing. All major dispensary outlets not equipped with these reference manuals. This finding contradict with the FMOH pharmacy

chapter guideline WHO recommendation (30). The finding also contradict study conducted Eastern Ethiopia indicates that all of the hospitals equipped and used national drug list, formulary and standard treatment guidelines (35). This may be due a center separate drug information center.

Regarding to availability of documents for forecasting which analyzed EDs based on SSA, ABC, VEN, ABC\VEN reconciliation at the time of the data collection were absent. This finding contradicts the guideline (17). Preparing these documents may improves a capacity to calculate own current and future needs in accordance with local epidemiology and consumption pattern, insures regular availability of essential drugs in a facility, which leads to increased level of client satisfaction and quality of service.

The evaluation finding showed that average percentage of human resource (professional mix as the SoP of APTS) and pharmacy professionals was 66 % and 75% respectively. This finding inconsistent with the guideline and less than outcome study conducted on 2016 (14, 17). This may be because present evaluation studies measure four major dispensaries within a facility rather measuring only one dispensary outlet as the outcome study. Deploying human power professionals improves so as attain the target in decreasing waiting time increases, dispensing time increase, knowledge of the client proper utilization of the medication, and high satisfaction.

The assessment revealed that, 24(75%) of key EDs were available in the center, 64% prescribed drug were actually dispensed to whom with the prescription at dispensary outlet, from a total of 567 prescribed pharmaceuticals, both finding are lesser than WHO (30),which targets insuring regular 100% availability, and 100% actual dispensing. this finding lower than a study finding at eastern Ethiopia (75.77%) HFSUH (69.27%) (35), Also a 2017 study at eastern Ethiopia, (86%) (36). Availability of prescribed drug manly affected by regular availability of drugs, utilization of STG and prescribing by generic name a study at eastern Ethiopia shows that HFSUH (85.04%) 14.96% of persecution was prescribed by brand name (35). Regular availability of EDs in health delivering setting is major factor for quality of pharmaceutical care. If there is long-lasting stock out of pharmaceuticals, ultimately affects, the client/patient confidence/trust on the healthcare system in long run erodes; meanwhile they go to find alternative like private retail outlets to purchase drugs at expensive pharmaceutical cost.

According to IPLS of Ethiopia inventory levels of essential medicine at hospitals has been set with a minimum 2 month of stock and a maximum 4 month of stock, inventory level of each medicine at hand, out of the usable range (AMC), greater than 4 month considered as to be overstocked and less than 2 month stock assumed to be under stocked. Both under stocked and overstocked conditions are characteristic of poor inventory management practice in the supply chain (28). Present evaluation indicated that the proportion of EDs stocked according to plan was only 4(12.5%). This finding comparable with a study conducted at Gondar, 15% in proper stock level, 12% in critical level, and 73% in overstock level (1).

The average stock-out duration of the key EDs in the past 6 months at the center was 74.1days with 28 minimum and 180 maximum days of stock-out duration. Fourteen of key EDs were constantly available during the past 6 months. The key EDs that were out of stock for more than 5 months include ceftriaxone injection, atenolol, metformin, salbutamol inhaler, sodium chloride 0.9%, Enalapril 5mg, Atenolol and ferrous sulphate + folic acid tab. This finding was good achievement than a study conducted at northern Ruanda, average stock-outs duration 10.5 months (22).

As per the guideline and HSTP availability and stock status of key EDs, this finding was low achievement by the center, even if there was different factors limits performance of any health facility regarding availability and stock status of EDs (22). Mainly implies that the result caused due to an inability of the center to forecast the requirement for essential drugs in quantity and type. This finding shows that the clients may be exposed to extra pharmaceutical charge by private pharmacies where profit of margin higher as 100% (35). Unquestionably this fact influence client satisfaction, trust on the service and quality of pharmaceutical care which expected from the center.

Compliance to APTS standard

Based on visual inspection of major dispensary feature, the evaluation showed that the center major dispensaries meet almost all of these 9 criteria of storage and handling condition of the pharmaceuticals, 92 % average score. However, at one dispensary outlet there were expired EDs stored with usable products in dispensary at the time of data collection. This was better achievement by the study setting. However, storing expired drugs separately from usable products after quantifying and recording insures no chance of reaching to the clients accidentally, which in fact puts a client's health at risk. Concerning storage condition of medical store for products that are ready to be issued or distributed to dispensaries. Findings of present evaluation indicated 12 score achieved from 14 standard storage criteria by medical store, the unfulfilled criteria were products are not stored at the appropriate temperature according to product temperature specifications because of absence of functional cold chain at the time of data collection. This is a crucial factor in maintaining the quality of medicines which need cold temperature. This implies that a product which recurred cold chain for storage, inappropriately stored (reduce shelve life and quality of the drug), stored at dispensaries (inappropriate usage) and limited amount of stock (frequent out of stock), which ultimately affect quality of service and client satisfaction.

Regarding dispensary outlet dedicated cashier and dedicated pharmacy unit accountant fully engaged in performing full list of activity of the possession, the finding shows that, assigned cashiers at OPD/chronic, emergency, inpatient dispensary were dedicated on managing transaction for their specific outlets as per the guideline (17). But a cashier who assigned at pediatric dispensary outlet was responsible to manage dual financial transactions external for pharmaceutical transaction (daily pharmaceuticals transactions plus client's payment for card) inconsistent to 'dispensary outlet dedication'. Also, Dedicated accountants expected to execute list of jobs as per the guideline; financial transaction management, daily reconciliation and conducting monthly financial report. From available dedicated accountants none of them fully execute required activity. Even though, both of them implement financial transaction management, drops daily reconciliation and conducting bimonthly financial report. both pharmacy unit accountant were only execute managing financial transaction by withdrawing 'daily and bimonthly reconciliation of available products with the recorded transaction in the

dispensaries' and conducting financial report from the job list. This finding contradict the SOP of the APTS guideline (6), this implies that the center failed to institutionalize a component that makes the pharmaceutical transaction transparent and auditable as per the APTS guideline (17), regular reconciliation of products and regular financial reports are one of the strategy followed to make pharmaceutical transaction transparent and auditable. Availability of regularly produced quality data enhances transparency eventually there will be informed or evidence based decision in a facility. Eventually leads to increase availability of drugs, client level of satisfaction and high quality service in a facility.

Bin card is fundamental logistic record that captures essential inventory data. As per the APTS guideline and FMOH pharmacy chapter utilization and assigning owner of this document is required in the dispensary; Consistent and accurate use of this document is essential for inventory management (28). One of the indicators for poor logistic management practice in health facility is a discrepancy between bin card record balance and physical count of pharmaceuticals. Present evaluation showed that there were no differences between major dispensaries; all utilize bin card, assigned owner and all available drugs had bin card. However, averagely only 70% of randomly selected bin cards were accurate, the rate of accuracy of bin cards was not uniform, higher at OPD/chronic dispensary; this may indicate that for remaining 30% of the EDs available in the center certain amount are lost and/ or damaged, or not regularly updated after dispensing. This could be due to high client load and poor recording practice. This finding implies that there is poor logistic management practice, which can lead to poor forecasting, stock out of drugs, high loss or wastage ether by expiry or damage and gives poor quality of service provision eventually affects level of client satisfaction.

To facilitate correct and consistent reporting and resupply within the facility and between facility and dissimilar agency or supplier in the drug supply chain like EPSA, IFRR and RRF are recommended standard report format. According to IPLS dispensary outlets must report their request for resupply the needed EDs to the medical store according to their schedule (every two weeks) using IFRR, also the medical store manager should report the consumption and request of the EDs to EPSA for resupply the EDs by procurement, RDF or borrow every two month by using RRF format (17, 28). Plus the information on the format should be complete. Present study assesses the utilization of these formats by reviewing the past 6 month reporting period used and

available IFFR documents of the major dispensary outlets and RRF document of the medical store of the center.

The assessment indicated that on average 41 (64%) IFRR documents reported from expected 64 total numbers by major dispensary outlets. However, from this utilized formats at the center a bit more than sixteen were complete. Regarding to RRF the evaluation result showed that all expected number of formats were reported or sent to EPSA as per the guideline, also all 3 formats excluding emergency orders was complete, the facility achievement in both indicator value regarding RRF is 100% this result may be observed because the facility use LMIS as stock card, makes easy for referring stock status of EDs and reporting. The guideline stated that in the aim of standardizing resupply for dispensaries and a hospital a schedule of two times per month every two weak seated and 2 month, respectively. Proper following the schedule decrease load on the store and supply agency, which in-turn decrease process of loading and lied time, On time resupplying and increase product availability, decrease stock-out duration and frequency.

The finding of the evaluation showed that there was irregularity in producing monthly service reports in the center, from expected bimonthly 6 report documents expected from major dispensary outlets, at each there is only 15 documents reported, it implies that the center lack service reporting culture that are essential for making pharmaceutical management efficient and a quality data for informed decision in the center. Lack of informed decision in pharmaceutical care; manifested by ineffective forecasting, ineffective human power deployment…etc. which in-turn affects quality of service.

Medication package labeling is one of the core indicators of good dispensing practice, adequate labeling ultimately required for sustainability of patient awareness about the treatment a patient takes and therefore enhance treatment adherence of the patient (30). Present evaluation finding showed that, only 12% of dispensed drugs were adequately labeled. The result inconsistent the guideline and WHO recommendation (100%) (30). Also lower than a study at southwest Ethiopia (70%) (31), and study at Eastern Ethiopia, (64.0 %) (36). But in line with a study at BULEHORA hospital (12.3%) (37) and a study at Eastern Ethiopia 2017, (11%) (38). This could due to lack of labeling sticker, parker and client over load at the center. Proper treatment adherence by client not ensured even if there are adequate provisions of information with

effective dispensing time; not secure sustainability of delivered information with clients. Aforementioned issues necessitate complete labeling of drug information on dispensed medication package, so as to ensure good medication outcome on patients.

Concerning average dispensing time of the finding shows 58 second, were used by professionals for provision of relevant drugs' information to clients, it is short than WHO standard (>180s) (29). this finding higher than a study conducted 2013 at the center before the implementation of APTS (22.5 second) (39). Comparable with a study at Eastern Ethiopia, (59.6 second) (38). The duration of dispensing time ultimately affects the level of understanding of patients towards the course of treatment. The shorter the dispensing time the lesser the patient knowledge on following the dosage regimen as well (29). Shorter dispensing time may affect the adequacy of information delivered to the client and sustainability of delivered information inquisitions. The potential reasons for this result are aforementioned inadequacy of pharmacist, overcrowding because of lack of proper workflow, structural difficulties indicated at the center. Hence, the ultimate goal of pharmaceutical care is ensuring proper utilization of drugs by patient and delivering quality service the center should consider the fact.

One of quality measurement regarding dispenser compliance is clients who have dispensing counseling about received medicine information, this are; route of administration, dose, frequency duration, storage and precaution (side effect and drug interaction with drug or and foods) (30). The evaluation study indicated that 67% of clients were provided adequate information. Even if other factors are present for knowledge of the clients about drug (40), as dispensers are the last health care provider who contact the clients before taking their medications, adherence to good dispensing practice; provision of adequate drug information with adequate or effective dispensing time and complete labeling practice should be adhered by the dispenser as the recommendation to increase and enhance knowledge and proper utilization of the drug by the client (41). In this regard adherence of the professionals to proper information delivery, with appropriate/effective dispensing time and providing complete written instruction are a must to positively influence knowledge, adherence to therapeutic regimen and a good therapeutic outcome. Many factors can influence this fact, however mainly by improving aforementioned dispenser practices significantly can impact expected outcome in expected beater

position; high level of satisfaction; better health outcome; increased trust on public health service and fundamentally high level of service quality.

Satisfaction

The level of client satisfaction as measured by composite score of 13 items, slightly over ¾ th of the clients were satisfied. This finding is less than the guideline (100%), but higher than a study conducted at Mizan-Tepi University Teaching Hospital (52.6%), Wolaita sodo (52.6) and Hiwet Fana specialized hospital (6.5% very satisfied & 38.1% satisfied), (44.9% neutral & 10.5% very dissatisfied) (32, 42, 43).

The highest score of client satisfaction was for respect shown by provider and dispensary area. However, significant proportion of clients were not satisfied specifically; 33.8% to availability of prescribed medication, 25.5% to privacy of communication, 26.5%, 24.85%, 23.5% and 24.8% to the information delivered by professionals about result of pharmacotherapy, about how to take the medication, about proper storage of medication and to amount of time spends for dispensing respectively.

This finding similar with a study conducted at HFSUH and FHPH result, very satisfied with the respect the service provider gave (32.2%), with duration of waiting time for service (21.0%), and with the time given for filling prescription (19.7%), also very dissatisfied with the availability of prescribed drugs (11.4%) and privacy in dispensing area (4.7%). The respect of dispensers toward their clients and availability of prescribed drugs factors with the maximum and minimum score of satisfactions respectively (15). A study conducted at Hiwet Fana specialized hospital to availability of drug (11.5% very satisfied & 35.3% satisfied), (26.9% neutral, 10.2% dissatisfied & 16.1% very dissatisfied) (32). Present evaluation higher than study conducted at Saudi hospital, the highest satisfaction rate to courtesy and respect shown by the pharmacy staff (56.8%), to convenience of pharmacy location (52.5%), and pharmacist competency in explaining drug use instructions (50.8%) (44). This difference might be due to cultural and expectation difference of the source population.

This indicates in a country as ours with a low income and providing client centered health service, regular availability of prescribed drugs, concern reduce economic burden and time for searching are expected to provide quality service which meets client expectation and satisfaction.

Regarding satisfaction determinants, the evaluation study measure factors related with satisfaction level for the pharmacy services at the center, result indicated associations of few socio-demographic and external factors to outcome variable (satisfaction on service) of the study setting, the factors discussed separately.

By this evaluation, Clients those who reason visit dispensary were to get medication for themselves 50% less likely satisfied than of clients who were to get for family or friends (p<0.020), clients who visit dispensary to get medication for themselves lesser satisfied than of client visit the dispensary to get medication for their friends or family, This might be due to the fact that even if patients satisfy by service they get for their illness, the condition or severity of the pain critically affects level of satisfaction to different aspect of the service they received; absence of prescribed medication and lack compliance to dispensing workflow, over crowd-ness at dispensing counter, promptness of processing/filling prescribed medication, and long waiting time.

Clients' those who were reason visit the pharmacy because of chronic disease 60.9% less likely satisfied than clients who were visit the pharmacy by other disease type (p<0.05), this finding in line with a published study clients' satisfaction associated with reason for seeking service (p=0.05) (43). This could be due to regular/frequent visit of such groups of clients because they take medication for long period, makes them expect or high expectation on the level of service quality.

Clients those who were type of payment was cash 69.6% less likely satisfied than of being free (p<0.05), the payment status of clients at dispensary significantly associate with satisfaction, service charge in health system is a factor of client negative perception (43). Paying clients have lesser satisfaction than free clients; this could due to higher expectation to received service by service charge, and these clients may face unexpected expenditure from pocket. Health insurance is one of the main financing mechanisms that use to reduce catastrophic out-of-pocket health expenditure (3). To reduce this type of expenditure special attention should be given to strengthening and increasing coverage of community health insurance.

Clients' who were education level primary(1-8) 60.8% less likely satisfied than of with certificate and above (p<0.05) this finding in line with published study, clients' satisfaction

significantly associated with educational level (p<0.05) (43). Clients with education level were primary found less satisfied than of clients with certificate and above, this could be due to level of understanding of instructions and information ether written or delivered by words increased with increased level of education. According to a published study misunderstanding of dosage regimen and instructions significantly associates with educational level (45). Even if, attitude and knowledge of dispenser affect good dispensing and competency of dispensing practice, in present evaluation study setting showed that low dispensing time and inadequate dispensers influence in-depth and appropriate delivery of information for group of clients as their level, which in turn affect satisfaction and service quality.

Limitation

1. The response might be influenced by social desirability bias because study subjects might face difficulty in responding to dissatisfaction or actual filling within facility in the presence of data collectors. But data collection was done in a brief explanation about the aim and purpose of the evaluation confidentiality by non-staff pharmacist to reduce the bias.

2. During observation of provider dispensing practice, the data might affect by hawthorn effect because providers behave differently in presence of observer and mask the true trained. in order to minimize this, we drop the first five observations for observer bias minimization. Besides the above shortcomings, the study generated important data that can be used as an input for improvement.

Chapter 8: Conclusion and Recommendation

Conclusion

This evaluation study reveals that the overall availability of resource for the service documented as 55 % of the required resources as per APTS guideline and national standard, this judged as fair according to agreed judgment parameter. The compliance level of professionals to the guideline recorded as 66 % this also judged as fair, regarding client satisfaction achieved appreciating value 78 % it judged as good as per the sated judgment parameter. Over all the evaluation revealed suboptimal quality of service at 66 % total value this judges as quality of APTS at JMC was fair as per the judgment parameter which indicates that it required urgent improvement at the center to attend the proven quality service by implementing APTS. The center has concern in proper implementation (full component) of the initiative; improve service delivering premises and process; regular availability of prescribed medication, workforce deployment and development; to provide quality pharmaceutical service for clients.

Recommendation

Based on the evaluation finding the following recommendation were made to different stakeholders

1. To the center, minimum requirements for good dispensing practice should be made available in adequate quantities for pharmacy service by taking administrative actions, regular monitoring of the service, Providing training to dispensers specifically on client counseling and good dispensing practice; restructuring the dispensary outlets as per the standard; deploying adequate number of professionals and dedicated pharmacy unit finance professionals with full responsibility as per the guideline; considering reporting culture and adequate APTS support should be provided for transaction and service monitoring; regular patient care indicator survey and client satisfaction survey for continues quality improvement. Improve functionality of drug therapeutic commute and drug information service.

2. To FMOH; regular education and training should be given to the professionals, APTS support should be given for transaction and service monitoring.

3. For a researcher; the utilization of clients on public facilities, the fact that outcome APTS resulted on the country health system might need in-depth study.

Chapter 9: Meta-evaluation

Ensuring the quality of the evaluation is important to increase its acceptance and utility. And this was done by self and stakeholder assessment through Meta evaluation standards (Table 18).

9.1: Utility

Utility standard of this evaluation was reached by insuring the fulfillment of the practical information need of the intended users of the evaluation. Accordingly, a criterion as bases for judgment for the analysis was set in discussion with stakeholders and so, findings were judge based on the sated protocol. In addition a clear plan on report writing and dissemination of the findings are identified and maintained.

9.2: Propriety

Regarding this issue, the evaluation was conducted legally after approval later obtunds from Jimma university ethically commute and approval from JMC, and with due regard for the welfare of those involved/participate in the evaluation, as well as those affected by its results. Thus, stakeholders involved in the study were treated with respect and fairness, also this evaluation so important because of availability essential drug was a problem in the country and quality pharmacy service is community and government concern.

9.3: Feasibility

These standards are intended to ensure that an evaluation to be realistic, prudent, diplomatic, and economical. This includes the practicality of the evaluation procedure in economic terms. Regarding this issue, the program matured enough for implementation evaluation based on EA finding, have reporting and documentation procedure which makes it feasible to document analysis, in this study there is no extravagant expenditure was occur. The budget taken to undertake the study was used efficiently according to the plan.

9.4: Accuracy

To maintain the accuracy standards; detail description of the program and its level of implementation was set during discussion with relevant stakeholders and review of appropriate document. Data for the evaluation were collected by trained data collectors and the principal investigator adopts pre-used questionnaire. This evaluation is free from any interest by investigator also stakeholders, internal and external validity were maintain by using appropriate

measure, it was accurate enough in its evaluation study design except the design limitation, This ensures that the evaluation produce reliable and convey technically adequate information about the features that determine quality of the service and worth or merit of APTS program in selected dimensions.

Table 18: Meta-evaluation stakeholder assessment result for Evaluation of quality of APTS at JMC, 2019

Standard	Score	Parameter
Utility	(total **score=16**): 26 (93%) - 28 Excellent, 19 (68%) – 25 Very Good, **14 (50%) - 18 Good,** 7 (25%) - 13 Fair, 0 (0%) - 6 Poor	**Good**
Feasibility	(total **score=9)**: 11 (93%) - 12 Excellent, **8 (68%) - 10 Very Good** 6 (50%) - 7 Good, 3 (25%) - 5 Fair , 0 (0%) - 2 Poor	**Very good**
Propriety	(total **score=23):** 30 (93%) - 32 Excellent, **22 (68%) - 29 Very Good,** 16 (50%) - 21 Good, 8 (25%) - 15 Fair, 0 (0%) - 7 Poor	**Very good**
Accuracy	(total **score=32):** 45 (93%) - 48 Excellent, 33 (68%) - 44 Very Good, **24 (50%) - 32 Good ,** 12 (25%) - 13 Fair, 0 (0%) - 11 Poor	**Good**

Chapter 10:   Reference

1.   Fentie M, Addisie Fenta FM, Oumer H, Belay S, Sebhat Y, Atinafu T, et al. Availability of Essential Medicines and Inventory Management Practice in Primary Public Health Facilities of Gondar Town, North West Ethiopia. Journal of Pharma Sci Tech. 2015;4:54-6.
2.   Choi Y, Ametepi P. Comparison of medicine availability measurements at health facilities: evidence from Service Provision Assessment surveys in five sub-Saharan African countries. BMC health services research. 2013;13(1):266.
3.   Rauscher BKEaM. Pharmaceutical Management Considerations for Expanded Coverage of Essential Health Services and Financial Protection Programs. 2017.
4.   Health FMo. Health Sector Transformation Plan (2015/16-2019/20). Federal Ministry of Health Addis Ababa (Ethiopia); 2015.
5.   H. Tadeg EE, E. Geremew, A. Adinew. Auditable Pharmaceutical Transactions and Services (APTS): Findings of the Baseline Assessment at Federal , Addis Ababa , and Teaching Hospitals. Submitted to the US Agency for International Development by the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program. 2014(Arlington, VA: Management Sciences for Health.).
6.   Health MSf. Auditable pharmacy Transactions and Services, Training Course submitted to the U.S. Agency for International Development by the Systems for Improved Access to Pharmaceuticals and Services. Addis Ababa, Management Science for Health. 2012
7.   health fmo. improving the performance of the health system: a foundation for universal health coverage. 2017.
8.   SIAPS. Ethiopia End of Project Report. Submitted to the US Agency for International Development by the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program. . Arlington, VA: Management Sciences for Health. 2017.
9.   Adzimah ED, Awuah-Gyawu M, Aikins I, Duah PA. an assessment of health commodities management practices in health care delivery; a supply chain perspective. the case of selected hospitals in ashanti region-ghana. European Journal of Business and Social Sciences. 2014;3(8):78-103.
10.   Ewen M, Zweekhorst M, Regeer B, Laing R. Baseline assessment of WHO's target for both availability and affordability of essential medicines to treat non-communicable diseases. PloS one. 2017;12(2):e0171284.
11.   Eshetu E, Gedif T, UN-ECA AA. Quality of pharmaceutical care in government hospitals of Addis Ababa, Ethiopia. Addis Ababa: Department of Pharmaceutics and Social Pharmacy, Addis Ababa University. 2010.
12.   Assefa F, Mosse A. Assessment of clients' satisfaction with health service deliveries at Jimma University specialized hospital. Ethiopian journal of health sciences. 2011;21(2):101-10.
13.   Walkowiak H HT, Putter S.J. . Strengthening Governance in Pharmaceutical Systems: A Compendium of Country Case Studies. Submitted to the US Agency for International Development by the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program. Arlington, VA: Management Sciences for Health.
. 2018. .
14.   Teferi Gedif Fenta DT, Bethelhem Gulelat, Tamrat Assefa. . Outcomes of Auditable Pharmaceutical Transactions and Services (APTS) Implementation. 2016(: Assessment Report. Submitted to the Federal Ministry of Health (FMOH), Ethiopian Pharmaceutical Association

(EPA), and Systems for Improved Access to Pharmaceuticals and Services (SIAPS). Addis Ababa: FMOH, EPA, and SIAPS.).

15.	Edessa D, Nigussie S. The extent and reasons for dissatisfaction from outpatients provided with pharmacy services at two public hospitals in eastern Ethiopia. Frontiers in pharmacology. 2018;9:1132.

16.	SIAPS. Transforming Pharmaceutical Services in Ethiopia through Auditable Pharmaceutical Transactions and Services. 2017.

17.	Ayalew A FB, Mahlet T., Getachew A., Yaregal B., etal. ethiopian hospital services transformation guidelines. 2017;1.0.

18.	Milstein B, Wetterhall SF. Framework for program evaluation in public health. 1999.

19.	A. D. An introduction to quality assurance in health care. First edition Bashshur R, editor. new work, USA: Oxford university press. 2003.

20.	Kagashe GA, Makenya FB, Buma D. Medicines Wastage at a Tertiary Hospital in Dar Es Salaam Tanzania. Journal of Applied Pharmaceutical Science. 2014;4(6):98-102.

21.	Masters SH, Burstein R, DeCenso B, Moore K, Haakenstad A, Ikilezi G, et al. Pharmaceutical availability across levels of care: evidence from facility surveys in Ghana, Kenya, and Uganda. PloS one. 2014;9(12):e114762.

22.	Nditunze L, Makuza S, Amoroso CL, Odhiambo J, Ntakirutimana E, Cedro L, et al. Assessment of essential medicines stock-outs at health centers in Burera District in Northern Rwanda. Rwanda Journal. 2015;2(1):85-8.

23.	Michaud J, Kates J, Oum S. Corruption and global health: Summary of a policy roundtable. Oakland: Kaiser Family Foundation. 2015.

24.	Lewis M. Governance and corruption in public health care systems. Center for Global Development working paper. 2006(78).

25.	Escribano-Ferrer B, Cluzeau F, Cutler D, Akufo C, Chalkidou K. Quality of health care in Ghana: mapping of interventions and the way forward. Ghana medical journal. 2016;50(4):238-47.

26.	Dr. Jayshree J. Upadhye. Patient satisfaction of outpatient department at ESIS hospital, Nagpur, India. International Journal of Research in Medical Sciences. 2019.

27.	Konduri N, Aboagye-Nyame F, Mabirizi D, Hoppenworth K, Kibria MG, Doumbia S, et al. Digital health technologies to support access to medicines and pharmaceutical services in the achievement of sustainable development goals. Digital health. 2018;4:2055207618771407.

28.	Shewarega A, Paul Dowling, Welelaw Necho, Sami Tewfik, and Yared Yiegezu (PFSA). Ethiopia: National Survey of the Integrated Pharmaceutical Logistics System. Arlington, Va.: USAID | DELIVER PROJECT, Task Order 4, and Pharmaceuticals Fund and Supply Agency (PFSA). 2015.

29.	Organization WH. How to investigate drug use in health facilities: selected drug use indicators. Geneva: World Health Organization, 1993.

30.	Organization WH. WHO operational package for assessing, monitoring and evaluating country pharmaceutical situations: guide for coordinators and data collectors. Geneva: World Health Organization, 2007.

31.	Mesfin AA. Assessment of Auditable Pharmaceutical Transactions at Public Hospitals in Gamo Gofa, Southern Ethiopia, a Comparative cross-sectional study, July 2017. BioRxiv. 2018:378000.

32.   Yohanes Reta ET, Dusit Bekri, Kerima Adem and Getachew Bekele. Assessment of patient satisfaction with auditable Pharmaceutical transaction and services (APTS) at Hiwot fana specialized university hospital in the Harari region, ethiopia
2017.

33.   Jimma University. Jimma institute of health . ju.edu.et[online] 12, 2018.[cited : 12,20, 2018] www.ju.edu.et/jih/.

34.   Surur AS TF, Girmay G, Moges E, Tesfa M, Abraha M. . Assessment of the structural and process aspects of pharmaceutical care at
a university hospital in Ethiopia. J Pharm Bioall Sci 2015;7:97-102.

35.   Sisay M, Mengistu G, Molla B, Amare F, Gabriel T. Evaluation of rational drug use based on World Health Organization core drug use indicators in selected public hospitals of eastern Ethiopia: a cross sectional study. BMC health services research. 2017;17(1):161.

36.   Bilal AI, Osman ED, Mulugeta A. Assessment of medicines use pattern using World Health Organization's prescribing, patient care and health facility indicators in selected health facilities in eastern Ethiopia. BMC health services research. 2016;16(1):144.

37.   Mariam AH, Raghavendra Y, Bobasa EM. Evaluating rational drug use with the help of World Health Organization's core indicators in Bule Hora Hospital, Southern Ethiopia. encounters. 2015;7(8):11.

38.   Sisay M, Abdela J, Kano Z, Araya M, Chemdi M, Fiseha A. Drug prescribing and dispensing practices in tertiary care hospital of eastern ethiopia: evaluation with world health organization core prescribing and patient care indicators. Clinical & Experimental Pharmacology. 2017;7(03):2161-1459.1000238.

39.   Etefa W, Teshale C, Hawaze S. Assessment of dispensing practice in South West Ethiopia: the case of Jimma university specialized Hospital. Int J Pharm. 2013;3(4):668-74.

40.   Hirko N, Edessa D. Factors influencing the exit knowledge of patients for dispensed drugs at outpatient pharmacy of Hiwot Fana Specialized University Hospital, eastern ethiopia. Patient preference and adherence. 2017;11:205.

41.   Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. American journal of hospital pharmacy. 1990;47(3):533-43.

42.   Sagaro GG, Yalew AW, Koyira MM. Patients' satisfaction and associated factors among outpatient Department at Wolaita Sodo University Teaching Hospital, Southern Ethiopia: a cross sectional study. Sci J Clin Med. 2015;4(5):109-16.

43.   Kefale AT, Atsebah GH, Mega TA. Clients' perception and satisfaction toward service provided by pharmacy professionals at a teaching hospital in Ethiopia. Integrated pharmacy research & practice. 2016;5:85.

44.   Mahmoud AAE. Patients' perspectives on the quality of pharmaceutical services in Saudi hospitals. Int J Res Pharm Sci. 2016;6(3):36-40.

45.   Terefe A, Chanie T. Assessment of patients misunderstanding of dosage regimen instructions among adolescent and adult outpatients in ethiopia: the case of a primary hospital. Int J Pharm Sci Res. 2014;5:446-53.

Annex 1

Jimma University

Institute of health, Public Health Faculty

Department of Health Economics, Management and Policy

Health Monitoring and Evaluation Unit

Informed Consent form

Dear Sir/Madam,

Hello. My name is Sewnet Asrat a post graduate student in health monitoring and evaluation at Jimma University. I would like to ask you a few questions regarding your attitudes and feelings about the service provided by the outpatient pharmacy of this hospital. The questionnaire would take 15-20 minutes of your time. The purpose of this study is to assess the quality of pharmaceutical services provided in this hospital. This will be helpful in improving the quality of the health services in general and the pharmaceutical services in particular. Your participation is completely voluntary. All your responses will remain strictly confidential: The hospital staff will not have access to your responses, your name will not be recorded, and your responses will not be linked to your identity at any time.

Signature _____

Signature of client _____

Date of Visit_____

Questionnaire code number_____

Enumerator Guided Questionnaire for Patients to Assess Their Knowledge on the Medicines They Took and Satisfaction with Pharmacy Services

Section I: Background characteristics of respondents

No	Question/item	Response
1	Gender	1.Male 2.Female
2	How old are you?	……….years
3	Marital status	1. Single 3. Divorced 2. Married 4. Widowed
4	Religion	1. Orthodox Christian 4. Protestant 2. Islam 5.Other(specify)_____ 3. Catholic
5	Place of residence	1. Urban 2. Rural
6	Language	1. Oromifa 2. Amharic 3. Other -----------------
7	Educational states	1. Unable to read and write 5. Certificate/diploma 2. Abel to read and write 6. Degree/above 3. Primary school (Gr 1-8) 4. Secondary school (Gr 9-12)
8	Employment status	1. Government employee 5. Merchant 2. Privet company employee 6. Retired 3. Farmer 7. Not working 4. Housewife 8. Other (specify) _____
9	Status /types of visit	1. New visit 2. Repeat visit
10	What is your reason for your visit to the hospital pharmacy?	To get medicines for 1. Self 2. friend/family
11	Is your visit because of chronic disease? (hint: DM, hypertension, asthma, psychosis)	1. Yes 2. No
12	Did you get the medicine with?	1. Cash 3. Free 2. Credit

13 . **# Drugs Prescribed**_____

   # Drugs actually provided _____

Section II: Questions on respondent's satisfaction with pharmaceutical services

Mark ratings by encircling scores provided by patients corresponding to the items

Excellent (E) = 5; Very Good (VG) = 4; Good (G) = 3; Fair (F) = 2; Poor (P) =1

No	Items	E	VG	G	F	P
Dispensing area						
1.	The location of the pharmacy is easily accessible.	5	4	3	2	1
2.	The overall cleanliness and comfort of the pharmacy waiting area	5	4	3	2	1
3.	Convenience of the dispensing area and counter for service provision	5	4	3	2	1
Dispensing process						
4.	The clarity of the pharmacy professional's instructions about how to take your medication	5	4	3	2	1
5.	The information the pharmacist gives you about the proper storage of your medication	5	4	3	2	1
6.	The information the pharmacist gives you about the results you can expect from your pharmacotherapy	5	4	3	2	1
7.	The promptness of processing prescription medicines	5	4	3	2	1
8.	availability of medicines that are prescribed to you in the pharmacy	5	4	3	2	1
Privacy						
9.	The privacy of your conversations with the pharmacist	5	4	3	2	1
Assistance to patients						
10	The amount of time the pharmacy professional spends with you	5	4	3	2	1
11	The courtesy and respect shown to you by the pharmacy staff	5	4	3	2	1
Others						
12	The fairness of cost of medicines in the pharmacy	5	4	3	2	1
13	The amount of time you spend waiting for your prescription to be filled	5	4	3	2	1

OBSERVATION CHECKLIST

1. Availability, expiry status and Duration of stock-outs for key medicines in the hospital during day of visit

No.	Medicine Name	Availability At the time of visit		Expired medicine	Stock-out duration (in days) - at store	
		Dispensary Yes=1 No=0	Store Yes=1 No=0	Yes=1 No=0	Past 3 months	Remark
1.	Amoxicillin 250mg/500mg cap/tab					
2.	Amoxicillin 125mg/5ml syrup/suspension					
3.	Ceftriaxone 500mg/ 1g inj					
4.	Ciprofloxacin 500mg caps/tab					
5.	Sulphamethoxazole + Trimethoprim 200mg + 40mg in 5ml					
6.	Arthmeter + Lunfanthrine					
7.	Mebendazole oral suspension,100mg/5ml					
8.	Metronidazole 250mg cap/tab					
9.	Atenolol 50mg tab					
10	Enalapril 5/10mg tab					
11	Hydrochlorothiazide 25mg tab					
12	Metformin 500mg tab					
13	Simvastatin 20mg tab					
14	Diazepam 5mg tab					
15	Amitriptyline 25mg tab					
16	Fluoxetine 20mg cap					
17	Phenobarbitone 100mg tab					
18	Haloperidol tab					
19	Omeprazole 20mg cap					
20	Salbutamol inhalers					
21	Oral rehydration salts (ORS)/zinc					
22	Diclofenac Sodium 50mg tab					
23	Paracetamol 120mg/5ml					
24	Sodium chloride 0.9% (normal saline)					
25	Oxytocin 10 IU					
26	Magnesium sulphate inj.					
27	Ferrous sulphate + folic acid tab					
28	Oral contraceptives tab					
29	EFV/3TC/ TDF tab combination					

30	RHZE tab						
31	Vitamin K 10 IU						
32	Tetracycline eye ointment						

Stock status and expiry status of the key medicines in the store during day of visit

List of EDs	Stock on hand	AMC	Stock Status 1. SAP 2. US 3. OS 4. SO	Average stock out duration	Expiry status	Quantity	Monitory value (Procured price* quantity)
Amoxicillin 250mg/500mg cap/tab							
Amoxicillin 125mg/5ml syrup/suspension							
Ceftriaxone 500mg/ 1g inj							
Ciprofloxacin 500mg caps/tab							
Sulphamethoxazole + Trimethoprim 200mg + 40mg in 5ml							
Arthmeter + Lunfanthrine							
Mebendazole oral suspension,100mg/5ml							
Metronidazole 250mg cap/tab							
Atenolol 50mg tab							
Enalapril 5/10mg tab							
Hydrochlorothiazide 25mg tab							
Metformin 500mg tab							
Simvastatin 20mg tab							
Diazepam 5mg tab							
Amitriptyline 25mg tab							
Fluoxetine 20mg cap							
Phenobarbitone 100mg tab							
Haloperidol tab							

Omeprazole 20mg cap							
Salbutamol inhalers							
Oral rehydration salts (ORS)/zinc							
Diclofenac Sodium 50mg tab							
Paracetamol 120mg/5ml							
Sodium chloride 0.9% (normal saline)							
Oxytocin 10 IU							
Magnesium sulphate inj.							
Ferrous sulphate + folic acid tab							
Oral contraceptives tab							
EFV/3TC/ TDF tab combination							
RHZE tab							
Vitamin K 10 IU							
Tetracycline eye ointment							

2. Availability of basic equipment and APTS tools

Tools/Resources	Yes	No	Total
New model 19			
New model 22			
RRF format			
IFRR format			
Bin card			
Cash sales tickets			
Sufficient shelves			
Prescription registration book			
Labeling stickers			
Labeling parker			
Tablet counting tray			

Spoon			
Calculator			
Scissors			
Refrigerator			
Thermometer			
Lockable cabinet			
Internet services			
Sink with running water			
Continuous electricity with power backup			
Telephones			
Computer			
STGs			
EDl			
Formulary manual			
Monthly finance reporting format			
Monthly service reporting format			
Total score			

3. Stock Records

	Number of dispensary unit in JMC		
	Ye s	No	Total
Does the pharmacy produce a monthly service report? (Check availability of the recent report.)			
Does the pharmacy produce a monthly financial report? (Check availability of the recent report.)			
Does the pharmacy produce a daily summary service report? (Check availability of the recent report.)			
Does the hospital use bin cards?			

If yes, are bin cards updated by product?			
Are the stock balances recorded on bin cards accurate? (Randomly select a product, count, and check with record.)			
Is the hospital utilizing Internal Facility Report and Resupply Form (IFRR) reports in major dispensing units? (See recently completed and submitted IFRR report.)			

4. Appropriateness of structural changes for APTS implementation

Variables	Yes	No
Presence of patient waiting area		
Dispensing area has entry and exit doors		
Windows with convenient counters (with height 0.75cm for sitting service, 1.10 meter for standing service)		
Sufficient number of dispensing counters		
Secured patient privacy		
Secured from theft		

5. Human resources for APTS implementation at dispensary of the hospital

Category	Yes	No
Presence of biller/evaluator with dedicated counter for Rx evaluation		
Cashiers adjacent to biller		
Pharmacy accountant dedicated to pharmacy section		
Presence of processor		
Presence of counseling pharmacist		
Presence of guard		

6. Observation of Dispensing

Dispenser provided information about the medication
Instruction: Write 1 if 'Yes' and 0 if 'No' in the chart

s. no	List of medicines information expected to provide for the client						
	Name	Dose	Route	Frequency	Duration	Storage	Precaution (SE, DI,etc.)
1							
2							
3							
4							

Adequacy of labeling of medicine packages

No	Patient name	Drug name	Strength	Dose	Duration	Frequency	Direction for use
1							
2							
3							

Dispensing Time

Instruction: Fill in the time in seconds (total time measured from the time the counselor starts advising the patient until he/she ends)

Pt. No	Time (in Seconds)		Total time spent with patient (b – a)	Pt. No	Time (in Seconds)		Total time spent with patient (b – a)
	Started(a)	Ended (b)			Started(a)	Ended(b)	
1							
2							
3							
4							
5							

7. Storage condition observation

Items 1–14 should be assessed for products that are ready to be issued or distributed to clients. Based on visual inspection of the store room; note any relevant observations in the comments.

To qualify as "yes," all products and cartons must meet the criteria for each item

No.	Description	Yes	No	Comments
1	Products that are ready for distribution are arranged so that identification labels and expiry dates and/or manufacturing dates are visible.			
2	Products are stored and organized in a manner accessible for first-to-expire, first-out (FEFO) counting and general management.			
3	Cartons and products are in good condition			
4	The facility makes it a practice to separate damaged and/or expired products from usable products and removes them from inventory.			
5	Products are protected from direct sunlight.			
6	Cartons and products are protected from water and humidity.			
7	Storage area is visually free from harmful insects and rodents.			
8	Storage area is secured with a lock and key, but is accessible during normal working hours; access is limited to authorized personnel.			
9	Products are stored at the appropriate temperature according to product temperature specifications.			
10	Roof is maintained in good condition to avoid sunlight and water penetration.			
11	Storeroom is maintained in good condition (clean, all trash removed, sturdy shelves, organized boxes).			
12	The current space and organization is sufficient for existing products and reasonable expansion			
13	Fire safety equipment is available and accessible			

14	Products are stored separately from insecticides and chemicals.				
	Total score				

8. Dispensary area observation

visual inspection of the dispensing area; note any relevant observations in the comments column.
To qualify for a Yes response, all products must meet the criteria for each item

N o.	Description	Number of dispensary unit in JMC (n=4)			Comme nts
		Ye s	N o	Total	
1	Damaged and expired products are not available with usable products in the dispensary.				
2	Drugs are stored in a dry, well-ventilated dispensary and windows that can be opened.				
3	Cleanliness (absences of dirt and dust, rodents or insects in the dispensary).				
4	The dispensing area is secured with a lock and key that protects against theft but is accessible during normal working hours; access is limited to authorized personnel.				
5	Medicines are not stored directly on the floor				
6	The drugs arranged in shelves/ cabinets using one of scientific arrangement methods				
7	Direct sunlight is prevented from entering the dispensary (e.g. by means of painted window panes or blinds).				
8	Drugs are stored separately from insecticides, flammable products, and chemicals.				
9	Dispensary is protected from water penetration or free from moisture (e.g. leaking of ceiling, drains, taps)				
	Average score of dispensary unit=				

11. LMIS

1	Do you have a Stock Card/Bin card to manage pharmaceuticals?	1. Yes 2. No	
2	Does the Stock Card contain the following categories?		
	A. Stock on hand	1. Yes 2. No	
	B. Quantities dispensed	1. Yes 2. No	
	C. Loss/adjustments	1. Yes 2. No	
3	Has the Stock Card been used during the last transaction day?	1. Yes 2. No	
	Any comment………		
4	Do you have a Daily Activity Register (DAR) to manage health products? (A computerized or hard copy daily activity is possible) **See latest?**	1. Yes 2. No **If no go……Q.no7**	
5	**Does the Daily Activity Register contain the following categories**?		
	D. Stock on hand	1. Yes 2. No	
	E. Quantities dispensed	1. Yes 2. No	
	F. Loss/adjustments	1. Yes 2. No	
	Other logistic record…….specify		
6	Has the Daily Activity Register been used during the last 30 days or to the last transaction?	1. Yes 2. No	
	Comment		
7	Do you have a Summary Consumption Data Report and Request form (IFRR&RRF) to manage health products? **See availability and latest document**	1. Yes 2. No	
8	**Does the summary consumption data report and request (IFRR&RRF) for medicines contain the following categories?**		
	A. Stock on hand	1. Yes 2. No	
	B. quantities dispensed	1. Yes 2. No	

	C. Loss/adjustment	1. Yes 2. No
	D. Quantity requested	1. Yes 2. No
9	Has the IFRR&RRF been used during the last 30 days or to the last transaction?	1. Yes 2. No
10	**How often are these Summary Consumption Data Report and Request reports sent to the higher level?** ==observe and count available document==	
	A. Weekly	
	B. Monthly	
	C. Every Two Months	
	D. Quarterly	
11	**When was the last time you sent a summary consumption data report and requested for products?**	
	Notes/Comments:	
12	How many emergency orders form have you placed in the last 3 months?	
13	Who determines this facility's re-supply quantities? (multiple answer is possible)	
14	How the facility its resupplying quantities determined? ==Forecasting method==	Formula(specify)_____ Other means(specify)
	Notes/comments	

System/workflow in the dispensaries required for APTS as per implementation guideline

No.	System/process	Status	
		Yes	**No**
1.	Shelf coding systems for bin locations at dispensaries initiated		

2.	Bin locations at dispensaries are divided to pharmacists		
3.	Cashiers are located in the dispensaries adjacent to the biller		
5.	The dispensing room secures privacy of patients		
6.	The dispensing room is secured from theft		
8.	The dispensing room has a patient waiting area		
9.	The room has entry and exit doors		
10.	Presence of evaluator/biller (with dedicated counter for Rx evaluation)		
11.	Presence of processor		
12.	Presence of counseling pharmacists		
13.	Sufficient number of dispensing counters (observe patient crowdedness)		
14.	Convenient counter windows for patient-professional interaction (height x width) (1.10 m x1m) barriers on both sides to keep privacy of patients and open to communication with pharmacists		

Annex 3

Jimma University

Institute of health, Public Health Faculty

Department of Health Economics, Management and Policy

Health Monitoring and Evaluation Unit

A Guide for Interview with the Head of the Pharmacy Department of the Hospital

Dear Sir/Madam,

Hello. My name is SEWNET ASRAT a post graduate student in health monitoring and evaluation at Jimma University. I would like to ask you a few questions regarding your attitudes and feelings about the service provided by the outpatient pharmacy of this hospital.

A Guide for Interview with the Head of the Pharmacy Department of the Hospital

No	Question	Response
	Profile of the respondent	
1	Gender and Age	1. Male 2. Female
2	Qualification (check all that apply)	1.C/pharmacy 2.BPharm 3.MPharm 4.Other(s) (specify)_____
3	How many years of experience do you have working in the field of pharmacy?	_____ years
4	How long have you worked at your current position?	_____ years
5	Have you taken in-service trainings that were helpful for your managerial activities?	1.Yes 2.No
6	Does the hospital have a written job description for professionals working in the pharmacy?	1.Yes 2.No
	Human resources profile of the pharmacy department	
7	How many of the following supporting staff is working under your department? (number)	Cashiers _____ Data clerks/stock card clerks____ Pharmacy accountants_____ Porters_____ Janitors/cleaners_____ Security guards_____
	Pharmaceutical transactions and services of the hospital	

	Which of the following services are provided in the pharmacy department?		
		Presence of separate setup	
		yes	no
8	Outpatient pharmacy		
	Inpatient pharmacy		
	ART pharmacy		
	Emergency pharmacy		
	Pharmacy store		
	Chronic care pharmacy		
	Pharmacy compounding		
	DSM office		
	Drug information center		
	Other (specify) _____		

No	Question	Response
9	Have you ever taken training on Auditable Pharmacy Transaction and Services (APTS)?	Yes No
10	Was baseline assessment done in your hospital prior to implementation of APTS? (check document)	Yes No DK
11	If yes, what were the major problems identified?	

	Probe: Ask about human resources, infrastructure, workflow, auditability, and transparency of pharmaceutical transactions.	
12	Were there human resource gaps?	1.Yes 2. No
13	If yes, has there been hiring of pharmacy professionals?	1.Yes 2.No
14	Number of newly hired pharmacy professionals	Pharmacists ____ Pharmacy technicians
15	Number of newly hired other support staffs	Cashiers _____ Data/stock card clerk____ Pharmacy accountants___ Porters_____ Janitors/cleaners_____ Security/guards_____
16	Do you think the current human resources in your department are sufficient for APTS implementation?	Yes No
17	If no, which category/ies of personnel need to be added?	Pharmacist Yes No Cashers Yes No Stock card clerks Yes No Accountants Yes No Porters Yes No Cleaners Yes No Guards Yes No
18	Do you think attrition of pharmacy professionals is a problem in your hospital?	Yes No
19	If yes, what do you think are the most probable reasons (in order of importance)? First _____ Second _____ Third _____	Probe: Ask about workload, shift system, lack of incentives, inadequate salary, lack of policy on indemnity shared responsibility.
20	Has workload analysis of pharmacy professionals working in the hospital ever been performed? (check document)	Yes No
21	If yes, for which category	OPD Yes No Inpatient Yes No ART Yes No Chronic care Yes No Emergency Yes No DSM Yes No Clinical Yes No DIS Yes No Store Yes No
22	If yes, what mechanism was followed in the analysis? (check all that apply) No. of counseling patients No. of beds (for clinical)	

	No. of stores No. of other units (DIS, Compounding etc.)	
23	Have new forms like cash sales tickets, registers, new types of model 19 and 22 been introduced?	Yes No
24	If yes, has their introduction improved traceability of products?	Yes No
25	Do you conduct a patient care indicator survey (using WHO indicators) at least once a year?	Yes
26	Do you conduct a regular patient satisfaction survey? (quarterly)	Yes
27	Has APTS been used for performance evaluation of staff?	Yes
28	Do you conduct regular assessment of key medicine availability? (quarterly)	Yes
29	Is there indemnity insurance/protection for professionals involved in the APTS implementation?	Yes No
If No, What is the reason for not initiating a protection policy? What problems do you encounter due to the absence of this policy?		
30	Do you undertake APTS implementation and outcome monitoring and evaluation?	Yes
31	If yes, how often? Monthly Q	
32	Do you report the monitoring and evaluation results to the management of the hospital? Yes No	
33	Is there supervision by the health bureau on the state of the implementation of APTS?	Yes
34	Is there a mechanism for reporting the status of APTS implementation to the health bureau?	Yes No
35	If yes, which mechanism is used? • Report and feedback • Review meeting and share best experience and challenges	Yes No Yes No
36	Do you regularly receive feedback on your hospital's APTS reports from the health bureau?	Yes No
37	What were the achievements recorded by the implementing APTS in your hospital?	
38	What are the challenges the department faced in the implementation of APTS? What are the limitations of the system APTS?	
39	What is your opinion of the overall implementation of APTS in your hospital?	Progressing well to full implementation Successfully implemented
40	If there is anything you would like to add, your comments are welcome.	

Guide for Interview with Auditor of the Hospital on Auditing Pharmaceutical Services

1. Background characteristics of the respondents

- Position _____
- Age_____
- Total years of work experience_____
- Total years of work experience at current positions_____

2. Have you received training on APTS? If yes, can you please tell me the objectives of APTS?
_____
_____

3. Do you conduct auditing of pharmaceutical transaction in your hospital? Yes No (if no, why?) Probe: Ask about financial audits, service audits, and sample audits.

_____
_____

4. How do you evaluate the availability of organized and complete information on all forms of pharmaceutical transactions while you undertake auditing?
_____
_____

Probe: Ask about vouchers (model 19, model 22, and model 20), cash/credit sales tickets, financial reports, physical inventory counts, and updated bin cards and stock cards.
_____
_____

was auditing of the hospital pharmacy conducted last year? Yes   No

5. Has any discrepancy been discovered? Yes   No (if no, why ?)

6. If yes, what type of discrepancy was discovered?
_____
_____

7. If yes, has any action taken as result of the last discrepancy? Yes   No

8. Anything you want to add?

_____
_____

Guide for Interview with Finance Head of the Hospital on Pharmacy Budget Utilization and Transparent and Accountable Transactions

1. Background characteristics of the respondent

- Position_____
- Age_____
- Total years of work experience_____
- Total years of work experience at current position_____

2. Have you received training on APTS? If yes, can you please tell me the objectives of APTS?

3. How do you plan, manage, and control accounting functions of your hospital pharmacy?

_____
_____

4. Which body provides the forms/tools (model 19/1, model 22/1, cash sales tickets, and others) used for APTS implementation? Probe: Ask about the appropriateness of vouchers and sales tickets for gathering the necessary information.

_____
_____

5. How do you ensure that the pharmacy transaction is up-to-date?
Probe: Ask about preparation of accurate monthly reports of pharmaceutical transactions and timely delivery of reports to concerned authorities.

_____
_____
_____

6. How do you see pharmacy budget allocation and utilization in your hospital?

_____
_____

7. Are there challenges in terms of financing and accounting functions?

_____
_____

8. What do you recommend to solve the current challenges (if any) of pharmacy financial transactions?

_____
_____

9. Anything you want to add?

_____
_____

GUIDE FOR INTERVIEW WITH FINANCE HEAD OF THE HOSPITAL ON PHARMACY BUDGET UTILIZATION AND TRANSPARENT AND ACCOUNTABLE TRANSACTIONS

1. Background characteristics of the respondent

- Position_____
- Age _____
- Total years of work experience_____
- Total years of work experience at current position_____

2. How do you plan, manage, and control accounting functions of your hospital pharmacy?

_____

_____

3. Which body provides the forms/tools (model 19/1, model 22/1, cash sales tickets, and others) used for APTS implementation? Probe: Ask about the appropriateness of vouchers and sales tickets for gathering the necessary information.

_____

_____

4. How do you ensure that the pharmacy transaction is up-to-date?

Probe: Ask about preparation of accurate monthly reports of pharmaceutical transactions and timely delivery of reports to concerned authorities.

_____

_____

_____

5. How do you see pharmacy budget allocation and utilization in your hospital?

_____

_____

6. What are the challenges in terms of financing and accounting functions?

_____

7. What do you recommend to solve the current challenges (if any) of pharmacy financial transactions?

_____

_____

8. Anything you want to add?

_____

_____

Table 19: Information matrix on the dimension for evaluation of quality of APTS at JMC, 2019

Evaluation q	Dimension	Indicator	Source of data	Data collection method	Data collection tools
1. Are the required resources available to implement APTS program? If not why?	Availability	20. Average score of APTS standard dispensing area and counter criteria met by dispensary outlet (5criteria).	dispensary	Interview, observation	Interview, observation checklist
		21. Average percentage availability of basic equipment's at dispensary.	dispensary	Interview, observation	Interview, observation checklist
		22. Average percentage availability of key APTS tools at dispensary.	dispensary	Interview, observation	Interview, observation checklist
		23. Percentage availability of key APTS tools at medical store.	medical store	Interview, observation	Interview, observation checklist
		24. Average number of available human power at dispensary outlet for APTS.	dispensary	Interview, observation	Interview, observation checklist
		25. Availability of pharmacy unit dedicated accountant	JMC	Interview, observation	Interview, observation checklist
		26. Number of dispensary with adequate pharmacy professional.	dispensary	Interview, observation	Interview, observation checklist
		27. Number of dispensary with adequate cashier.	dispensary	Interview, observation	Interview, observation checklist
		28. Availability of adequate pharmacy unit dedicated accountant.	JMC	Interview, observation	Interview, observation checklist
		29. Average percentage of trained pharmacist at dispensary.	dispensary	Interview, observation	Interview, observation checklist
		30. Average percentage of trained cashier at dispensary.	dispensary	Interview, observation	Interview, observation checklist
		31. Number of trained accountant at the center.	JMC	Interview, observation	Interview, observation checklist
		32. Average number of available reference manual at dispensary outlet. Aggregate of three	dispensary	Interview, observation	Interview, observation

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		indicators. Formulary, STG & EDL at service delivery.			checklist
		33. Proportion of available key EDs at the hospital.	Dispensary Medical store	Interview, observation	Interview, observation checklist
		34. Proportion of prescribed drug dispensed to patients.	client	Exit interview	Exit interview questioner
		35. Stock status of key EDs in pharmacy store aggregate of three indicators. - % of EDs stocked according to plan. - % of EDs under-stocked. - % of EDs over-stocked.	Medical store	Interview, observation	Interview, observation checklist
		36. Average stock-out duration of key EDs over the past 6 month (days).	Stock card	Observation Document review	Interview, observation checklist
		37. Percentage of monitory value of available expired Key EDs in the hospital.	Medical store	Interview, observation	Interview, observation checklist
		38. Percentage availability of forecasting documents which analyze medicine SSA, ABC, VEN, ABC\VEN reconciliation document.	JMC	Interview, observation	Interview, observation checklist
2. Do health care providers congruent to national APTS guideline in implementation of program? If not why?	Compliance	17. Proportion of dispensary outlets workflow organized as APTS recommendation at JMC (Evaluator » Biller » Casher » Counselor (Entrance and Exit))	dispensary	Interview, observation	Interview, observation checklist
		18. Average score for acceptable storage and handling of drugs at dispensary outlets (9 criteria).	Medical store	Interview, observation	Interview, observation checklist
		19. Score of storage criteria for conservation and handling of EDs met by JMC medical store (14 criteria).	Dispensary	Interview, observation	Interview, observation checklist
		20. Proportion of dispensary with fully dedicated cashier manages only pharmaceutical transaction.	Dispensary	Interview, observation	Interview, observation checklist
		21. Number of pharmacy unit dedicated accountant fully engaged in performing full list	JMC	Interview, observation	Interview, observation

		of activity of the position.			checklist
		22. Proportion of dispensary outlet with assigned bin owners at JMC.	Dispensary	Interview, observation	Interview, observation checklist
		23. Average percentage of selected key EDs with Bin cards at dispensary outlet.	Bin cards & drugs on the shelves	observation	observation checklist
		24. Average percentage of Bin cards with accurate Bin card balance between quantities of medicines recorded on bin card and actual physical count at dispensary outlet.	Bin cards & drugs on the shelves	observation	observation checklist
		25. Average percentage of produced monthly service report form from dispensary.	Report format	observation	observation checklist
		26. Average percentage of produced IFRR format from dispensary outlet over the past 6 month.	IFRR format	Observation Document review	observation checklist
		27. Average percentage of complete IFRR format produced from dispensary.	IFRR format	Observation Document review	observation checklist
		28. Proportion of produced RRF format from medical store to EPSA over the past 6 month.	RRF format	Observation Document review	observation checklist
		29. Proportion of complete RRF format reported from medical store.	RRF format	Observation Document review	observation checklist
		30. Proportion of adequately labeled dispensed medicine package at dispensary.	Medication package	observation, Interview	Interview, observation checklist
		31. Proportion of clients with adequate information on dispensed/received drug.	Dispensary	observation	observation checklist
		32. Average dispensing time at dispensary.	Dispensary	observation	observation checklist

3. Are the clients satisfied with the quality of service provided to them?	Satisfaction	14. Satisfaction with accessibility of the pharmacy location	Client	Exit interview	Exit interview questioner
		15. Satisfaction with overall cleanliness and comfort of the pharmacy waiting area	Client	Exit interview	Exit interview questioner
		16. Satisfaction with convenience of the dispensing area and counter for service provision	Client	Exit interview	Exit interview questioner
		17. Satisfaction with clarity of information received instructions on how to use a drug	Client	Exit interview	Exit interview questioner
		18. Satisfaction with information received about the proper storage of medication	Client	Exit interview	Exit interview questioner
		19. Satisfaction with information received gives about result expected from pharmacotherapy	Client	Exit interview	Exit interview questioner
		20. Satisfaction with promptness of processing prescribed medicines /waiting time to get prescribed medicine/supply	Client	Exit interview	Exit interview questioner
		21. Satisfaction with availability of prescribed drugs	Client	Exit interview	Exit interview questioner
		22. Satisfaction with privacy of conversations with the pharmacist	Client	Exit interview	Exit interview questioner
		23. Satisfaction with amount of time /dispensing time the pharmacy professional spends with	Client	Exit interview	Exit interview questioner
		24. Satisfaction with respect of providers during service provision	Client	Exit interview	Exit interview questioner
		25. Satisfaction with fairness of cost of medicines in the pharmacy	Client	Exit interview	Exit interview questioner
		26. Satisfaction with amount of time spend waiting for prescription to be filled /the total time taken to get the service	Client	Exit interview	Exit interview questioner

Table 20: Relevance matrix of indicators used for evaluation of quality of APTS at JMC, 2019

Indicators	Dimensions		
	Availability	Compliance	Satisfaction
Average score of APTS standard dispensing area and counter criteria met by dispensary outlet (5criteria).	RRR	RR	RR
Average percentage availability of basic equipment's at dispensary.	RRR	RR	RR
Average percentage availability of key APTS tools at dispensary.	RRR	RR	R
Percentage availability of key APTS tools at medical store.	RRR	RR	R
Average number of available human power at dispensary outlet for APTS.	RRR	RR	RR
Availability of pharmacy unit dedicated accountant	RRR	RR	R
Proportion of dispensary with adequate pharmacy professional.	RRR	RR	RR
Proportion of dispensary with adequate cashier.	RRR	RR	RR
Availability of adequate pharmacy unit dedicated accountant.	RRR	RR	RR
Average percentage of trained pharmacist at dispensary.	RRR	RR	RR
Average percentage of trained cashier at dispensary.	RRR	RR	RR
Number of trained accountant at the center.	RRR	RR	RR
Average percentage availability of reference manual at dispensary outlet. Aggregate of three indicators. Formulary, STG & EDL at service delivery	RRR	RR	R
Proportion of available key EDs at the hospital.	RRR	R	RR
Proportion of prescribed drug dispensed to patients.	RRR	N	RRR
Stock status of key EDs in pharmacy store aggregate of three indicators.	RRR	RR	R
Average stock-out duration of key EDs over the past 6 month (days).	RRR	RR	R
Percentage of monitory value of available expired Key EDs in the hospital.	RRR	RR	N
Percentage availability of forecasting documents which analyze medicine SSA, ABC, VEN, ABC\VEN reconciliation document.	RRR	RR	N
Proportion of dispensary outlets workflow organized as APTS recommendation at JMC (Evaluator » Biller » Casher » Counselor (Entrance and Exit))	R	RRR	R
Average score for acceptable storage and handling of drugs at dispensary outlets (9 criteria).	R	RRR	R
Score of storage criteria for conservation and handling of EDs met by JMC medical store (14 criteria).	R	RRR	R
Proportion of dispensary with fully dedicated cashier manages only pharmaceutical transaction.	R	RRR	R
Number of pharmacy unit dedicated accountant fully engaged in performing full list of activity of the position.	R	RRR	R

Proportion of dispensary outlet with assigned bin owners at JMC.	R	RRR	R
Average percentage of selected key EDs with Bin cards at dispensary outlet.	R	RRR	R
Average percentage of Bin cards with accurate Bin card balance between quantities of medicines recorded on bin card and actual physical count at dispensary outlet.	R	RRR	R
Average percentage of produced monthly service report form from dispensary.	R	RRR	N
Average percentage of produced IFRR format from dispensary outlet over the past 6 month.	R	RRR	N
Average percentage of complete IFRR format produced from dispensary.	R	RRR	N
Proportion of produced RRF format from medical store to EPSA over the past 6 month.	R	RRR	N
Proportion of complete RRF format reported from medical store.	N	RRR	N
Proportion of adequately labeled dispensed medicine package at dispensary.	N	RRR	RR
Proportion of clients who informed how to take medication	N	RRR	RR
Average dispensing time at dispensary.	N	RRR	RRR
Satisfaction with accessibility of the pharmacy location	N	N	RRR
Satisfaction with overall cleanliness and comfort of the pharmacy waiting area	N	R	RRR
Satisfaction with convenience of the dispensing area and counter for service provision	N	N	RRR
Satisfaction with clarity of information received instructions on how to use a drug	N	RR	RRR
Satisfaction with information received about the proper storage of medication	N	RR	RRR
Satisfaction with information received gives about result expected from pharmacotherapy	N	RR	RRR
Satisfaction with promptness of processing prescribed medicines /waiting time to get prescribed medicine/supply	N	RR	RRR
Satisfaction with availability of prescribed drugs	N	RR	RRR
Satisfaction with privacy of conversations with the pharmacist	R	RR	RRR
Satisfaction with amount of time /dispensing time the pharmacy professional spends with	N	R	RRR
Satisfaction with respect of providers during service provision	N	R	RRR
Satisfaction with fairness of cost of medicines in the pharmacy	N	NA	RRR
Satisfaction with amount of time spend waiting for prescription to be filled /the total time taken to get the service	N	RR	RRR

The relevance matrix shows the degree of relevance indicators

"RRR" - very relevant, "RR" - is relevant, "R" - poorly relevant, "N" - not relevant

Table 21: Definition of indicators for evaluation of quality of APTS at JMC, 2019

Dimension	Indicators	Numerator	Denominator
Availability	Average score of APTS standard dispensing area and counter criteria met by dispensary outlet (5criteria).	Sum # of meet criteria by each dispensary	Total # of major dispensary
	Average percentage of available essential equipment's at dispensary.	Sum of available equipment at each major dispensary	Total # of major dispensary
	Number of available essential APTS tools at dispensary. 8	Sum of available key APTS tools at each major dispensary	Total # of major dispensary
	Number of available essential APTS tools at medical store. 4		
	Average number availability of human power at dispensary outlet for APTS.	Sum of available availability of human power at each major dispensary	Total # of major dispensary
	Number of dispensary with adequate pharmacy professional.		
	Number of dispensary with adequate cashier.		
	Availability of adequate pharmacy unit dedicated accountant.		
	Number of trained pharmacist at dispensary.	Sum of trained professionals	Total # of available professional
	Number of trained cashier at dispensary.		
	Number of trained accountant at the center.		
	Average number availability of reference manual at dispensary outlet. Aggregate of three indicators. Formulary at service delivery. STG at service delivery. EDL at service delivery.		
	Proportion of available key EDs at the hospital.	Sum of available key EDs	Total # of selected key EDs
	Proportion of prescribed drug dispensed to patients.	Sum of actually provided drugs to the client	Total # of prescribed drugs
	Percentage of monitory value of available expired Key EDs in the hospital.	Sum of monitory value of available expired key EDs	Total monitory value of the

			past 8 month stocked key EDs in the center
	% of EDs stocked according to plan.	Number of EDs stocked according to plan.	Total # of key EDs
	Number of available forecasting documents which analyze medicine SSA, ABC, VEN, ABC\VEN reconciliation document.		
Compliance	Number of dispensary outlets workflow organized as APTS standard (Evaluator » Biller » Casher » Counselor (Entrance and Exit))	Number of dispensary outlets workflow organized as APTS standard	Total # of dispensary
	Average score for acceptable storage and handling of drugs at dispensary outlets (9 criteria).	Sum of score for acceptable storage and handling of drugs at dispensary outlets	Total # of dispensary
	Score of storage criteria for conservation and handling of EDs met by JMC medical store (14 criteria).		
	Number of dispensary with cashier manages only pharmaceutical transaction.	Number of dispensary with cashier manages only pharmaceutical transaction	Total # of dispensary
	Number of pharmacy unit accountant fully engaged in performing full list of activity of the position.	Number of pharmacy unit accountant fully engaged in performing full list of activity of the position	Total # of pharmacy unit accountant
	Number of dispensary outlet with assigned bin owners.	Number of dispensary outlet with assigned bin owners	Total # of dispensary
	Average number of key EDs with Bin cards at dispensary outlet.	number of key EDs with Bin cards	Total # of observation
	Average number of Bin cards with accurate Bin card balance between quantities of medicines recorded on bin card and actual physical count at dispensary outlet.	Number of Bin cards with accurate Bin card balance	Total # of bin cards reviewed
	Number of produced monthly service report form from dispensary.	Number of reported document	Total # of expected reports
	Number of produced IFRR format		

	from dispensary outlet over the past 6 month.		
	Average number of complete IFRR format produced from dispensary.		
	Number of produced RRF format from medical store to EPSA over the past 6 month.		
	Proportion of complete RRF format reported from medical store.	Number of complete RRF format reported	# of available RRF format
	Proportion of adequately labeled dispensed medicine package.	Number of adequately labeled dispensed medicine package	Total # of package observed during observation session
	Proportion of clients who were informed how to take the drug/supply.	Number of dispensary who deliver information on how to take the drug/supply.	Total # of provider observed during observation session
Satisfaction	Satisfaction with accessibility of the dispensary	Number of client satisfied on the accessibility of the dispensary	Number of clients interviewed
	Satisfaction with overall cleanliness of the dispensary waiting area	Number of client satisfied on overall cleanliness of the dispensary waiting area	Number of clients interviewed
	Satisfaction with amount of time spend waiting for prescription to be filled	Number of client satisfied on the amount of time spend waiting for prescription to be filled	Number of clients interviewed
	Satisfaction with convenience of the dispensing area and counter for service provision	Number of client satisfied on the convenience of the dispensing area and counter for service provision	Number of clients interviewed
	Satisfaction with clarity of the pharmacy professional's instructions about how to take the medication	Number of client satisfied on the clarity of the pharmacy professional's instructions about how to take the medication	Number of clients interviewed
	Satisfaction with information received about proper storage of	Number of client satisfied on the information	Number of clients

	medication	received about proper storage of medication	interviewed
	Satisfaction with information received about results can expect from pharmacotherapy	Number of client satisfied on the information received about results can expect from pharmacotherapy	Number of clients interviewed
	Satisfaction with promptness of processing prescription medicines	Number of client satisfied on the promptness of processing prescription medicines	Number of clients interviewed
	Satisfaction with availability of prescribed drugs in the pharmacy	Number of client satisfied on the availability of prescribed drugs in the pharmacy	Number of clients interviewed
	Satisfaction with privacy of conversations with the pharmacist	Number of client satisfied on the privacy of conversations with the pharmacist	Number of clients interviewed
	Satisfaction with amount of time pharmacy professional spends with	Number of client satisfied on the amount of time pharmacy professional spends with	Number of clients interviewed
	Satisfaction with courtesy shown by the pharmacy staff	Number of client satisfied on the courtesy shown by the pharmacy staff	Number of clients interviewed
	Satisfaction with affordability of medicines in the pharmacy	Number of client satisfied on the affordability of medicines in the pharmacy	Number of clients interviewed