ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

LOGISTICS AND SUPPLY CHAIN MANAGEMENT UNIT

ASSESSMENT OF INTEGRATED PHARMACEUTICAL LOGISTICS SYSTEM IMPLEMENTATION AND ITS ASSOCIATED CHALLENGES IN OROMIA: THE CASE OF SELECTED HEALTH FACILITIES IN GUJI ZONES

By

ADANE SHIFERAW

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF ART DEGREE IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT

ADVISOR

TARIKU JEBANA, PhD

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Addis Ababa, Ethiopia

DECLARATION

I, Adane Shiferaw declare that, this paper prepared for the partial fulfillment of the requirements for MA in Logistics and Supply Chain Management entitled "**Assessment of integrated pharmaceutical logistics system implementation and its associated challenges in Oromia: the case of selected health facilities in guji zones" is prepared with my own** effort. This thesis is my original work and has not been presented for a Degree in any other University and I have made it independently with the close advice and guidance of my advisor.

Adane Shiferaw

Signature ——————

Date ——————

CERTIFICATION

This is to certify that Ato Adane Shieraw has carried out this thesis work on the topic entitled "**Assessment of integrated pharmaceutical logistics system implementation and its associated challenges in Oromia: the case of selected health facilities in guji zones**" under my supervision. This work is original in nature and it is sufficient for submission for the partial fulfillment for the award of MA in Logistics and Supply Chain Management.

Tariku Jebana (PhD)

Signature ———————

Date ———————

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LOGISTICS AND SUPPLY CHAIN MANAGEMENT UNIT

(MA PROGRAM)

This is to certify that the thesis prepared by Adane Shiferaw entitled "**Assessment of integrated pharmaceutical logistics system implementation and its associated challenges in Oromia: the case of selected health facilities in guji zones",** which is submitted in partial fulfillments of the requirements for the degree of Masters in Logistics and Supply Chain Management complies with the regulation of the university and meet the accepted standard with respect to originality and quality.

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LIST OF ACRONYMS ANDABBREVIATIONS

ART: Anti-Retroviral Treatment

DUs: Dispensing Units

EMs: Essential Medicines

FMOH: Federal Ministry of Health of Ethiopia

HPMRR: Health Post Monthly Report and Request

IFRR: Internal Facility Report and Request

IPLS: Integrated Pharmaceuticals Logistics System

LIAT: Logistics Indicators Assessment Tool,

LMIC: Low- and Middle-Income Countries

MCH: Maternal and Child Health

MSH: Management Sciences for Health

OPD: Out Patient Department

PFSA: Pharmaceuticals Fund and Supply Agency

RDF: Revolving Drug Fund

RHBs: Regional Health Bureaus

RHZE: [Combination of four drugs – rifampicin /isoniazid/pyrazinamide/ethambutol

RRF: Report and Requisition Form

SCMS: Supply Chain Management Systems

SOPs: Standard Operating Procedures

TB: Tuberculosis

TOTs: Through Trainings-of-Trainers

UNHCR: United Nations High Commissioner for Refuges

WHO: World Health Organization

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Abstract

Pharmaceuticals play a crucial role in the prevention and control of diseases. Medicines are part of the link between the patient and health care services. The provision of complete health care necessitates the availability of safe, effective and affordable drugs and related supplies of the required quality, in adequate quantity at all times. Thus, these pharmaceuticals need to be managed properly. Over the last decade, supply chains in low- and middle-income countries have faced enormous challenges in ensuring the effective and sufficient provision of health commodities. The objective of the study is to assess the Integrated Pharmaceutical Logistic System implementation and identify key challenges that hinder the performance of Integrated Pharmaceutical Logistic System implementation in selected health facilities in Guji Zones. The study critically examines the implementation and its associated challenges on the implementation of the key aspects of Integrated Pharmaceutical Logistic System like availability and utilization of logistic recording and reporting formats, training of professionals for the implementation of Integrated Pharmaceutical Logistic System, product availability, storage facilities and inventory management system in the health facilities. Facility based study is employed involving both quantitative and qualitative research methods. Quantitative data is collected using observational checklist and structured, pretested questionnaire. The Logistics Indicators Assessment Tool, which is a standardized quantitative data collection tool developed by the DELIVER project (observational checklist), which has also been modified to Ethiopian context is used to monitor product availability in the selected health facilities. The qualitative part is obtained by using face-to-face interview with key selected informants (chief pharmacy personnel). The collected data is coded and entered into and analyzed using Statistical package for social science software version 21.0 for windows.

Key Words: *Logistic Recording and Reporting System in IPLS, Order Fill Rate, Product Availability, Storage Condition and Inventory Management System*

CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

Pharmaceuticals play a crucial role in the prevention and control of diseases. Medicines are part of the link between the patient and health care services. The provision of complete health care necessitates the availability of safe, effective and affordable drugs and related supplies of the required quality, in adequate quantity at all times. In developing countries, pharmaceuticals constitute up to 40 percent of the health care budget (UNHCR, 2006). Thus, these pharmaceuticals need to be managed properly. Over the last decade, supply chains in low- and middle-income countries (LMIC) have faced enormous challenges in ensuring the effective and sufficient provision of health commodities. Poor medicine management obstructs access to medicines; results in wastage and health hazard. Consequently, their availability or absence will have a huge impact on health care system. The issue of medicine is not the responsibility of only health workers. It has political, economic and social dimensions (MSH, 1997).

Most health system strengthening interventions but ignore interconnections between systems components. In particular, complex relationships between medicines and health financing, human resources, health information and service delivery are not given sufficient consideration. As a consequence, populations' access to medicines (ATM) is addressed mainly through fragmented, often vertical approaches usually focusing on supply, unrelated to the wider issue of access to health services and interventions (Bigdeli, *et al.*, 2013).The Federal Ministry of Health of Ethiopia (FMOH) has been working to ensure an efficient and high-performing healthcare supply chain system that is accessible, equitable, and affordable for all Ethiopians. In the past years, significant progress has been made although various challenges remain including an inadequate supply of quality and affordable essential pharmaceuticals, poor storage conditions and weak stock management resulting in high levels of waste and stock outs (PFSA, 2014).

To address these challenges, the FMOH initiated a comprehensive supply chain strategic planning process, emphasizing integration of all products into one supply chain. In late 2006, the Pharmaceutical Logistics Master Plan (PLMP) was approved by the Ministry (Shewarega, *et al.*, 2007); and the Pharmaceuticals Fund and Supply Agency (PFSA) was established by proclamation in 2007 (Drug fund and Pharmaceuticals Supply Establishment Proclamation, 2007).

The Agency is mandated to "avail affordable and quality pharmaceuticals sustainably to all public health facilities and ensure their rational use". So as to execute its mandate in the area of pharmaceuticals supply in an efficient and effective manner, integrated pharmaceuticals logistics system (IPLS) was developed and it is under implementation currently (PFSA, 2014).

IPLS is the term applied to the single pharmaceuticals reporting and distribution system based on the overall mandate and scope of the PFSA. It aims to ensure that patients always get pharmaceuticals they need. To be successful, the system must fulfill the six rights of supply chain management by ensuring the right products, in the right quantity, of the right quality, at the right place, at the right time and for the right cost. IPLS at facility level includes the basic logistics functions: logistics management information system, inventory control system, and storage of pharmaceuticals (Shewarega, *et al.*, 2007).

To execute this mandate, PFSA developed and began implementing the Integrated Pharmaceuticals Logistics System (IPLS) in 2009. Prior to the inception of IPLS, various health programs including, family planning, HIV, tuberculosis and malaria-used their own vertical logistics systems to deliver medicines (Yiegezu, 2014). While individual programs helped in the short term, gaps remained and these vertical systems were not sustainable. With the introduction of IPLS, PFSA worked to establish an integrated health commodity supply chain that would include all health program commodities, and would connect all levels with accurate and timely data for decision making (Shewarega, 2007).

To prepare health facilities for implementation of the IPLS, PFSA-in collaboration with partners: developed a standard training curriculum for the new process. Through trainings-of-trainers (TOTs), 200 technical staff from PFSA, Regional Health Bureaus (RHBs), and other logistics partners learned how to deliver the IPLS training; to-date, nearly 10,000 health professionals, from all nine regions and two city administrations, have been trained by PFSA and its partners. To reinforce the training, supportive supervision visits were conducted to health facilities; essential reference materials, including standard operating procedures (SOPs) and standard recording and reporting forms were printed and distributed. In addition, in the past three years, PFSA jointly with the USAID/DELIVER PROJECT upgraded 409 health facility stores with standardized shelves and warehouse equipment, while Supply Chain Management Systems (SCMS) supported PFSA with racking and equipment for 10 newly constructed warehouses.

IPLS is now implemented in most of the public health facilities in Ethiopia (Shewarega, et al., 2007; PFSA, 2014). Routine monitoring reports show that IPLS is improving information recording and reporting, storage and distribution systems, as well as the availability of essential commodities at SDPs. However, the IPLS has not had an official, representative survey to assess the progress made to this point. Therefore, PFSA with financial and technical support from the USAID |DELIVER PROJECT, conducted a survey to measure system performance at public-sector health facilities—hospitals, health centers, and health posts. The findings from the survey help to provide information on the level of the IPLS implementation; it will help determine future priorities and future direction.

1.2 Statement of the Problem

The provision of complete health care necessitates the availability of safe, effective and affordable drugs and related supplies of the required quality, in adequate quantity at all times. Despite this fact, in the past, the pharmaceutical supply chain management system of the country had several problems including non-availability, un-affordability, poor storage and stock management and irrational use. To solve these problems in public health facilities, Pharmaceuticals Fund and Supply Agency (PFSA) was established in 2007 by Proclamation No. 553/2007 based on the Pharmaceuticals Logistics Master Plan (PLMP). The Agency is mandated to avail affordable and quality pharmaceuticals sustainably to all public health facilities and ensure their rational use. So as to execute its mandate in the area of pharmaceuticals supply in an efficient and effective manner, integrated pharmaceuticals logistics system (IPLS) has been developed and implemented since 2010 (PFSA, 2014).

IPLS is the term applied to the single pharmaceuticals reporting and distribution system based on the overall mandate and scope of the PFSA. It aims to ensure that patients always get pharmaceuticals they need. To be successful, the system must fulfill the six rights of supply chain management by ensuring the right products, in the right quantity, of the right quality, at the right place, at the right time and for the right cost. The IPLS integrates the management of essential pharmaceuticals including the following pharmaceuticals that were used to be managed vertically: HIV/AIDS, Malaria, TB and Leprosy, EPI, MCH and purchased essential drugs. It is the primary mechanism through which all public health facilities obtain essential and vital pharmaceuticals.

Products included on the National pharmaceuticals procurement List (NPPL) are supplied and managed through the IPLS (PFSA, 2014).

One of the first concrete steps to move the integrated system from concept to detailed implementation step was the development of the Standard Operating Procedures (SOP) Manual for health facilities of Ethiopia. The manual is intended to simplify and standardize the work required for the logistics management of pharmaceuticals used in public health facilities. It also serves as a reference for and service providers in facilities supplied by PFSA and for the administrative units that provide management and supervisory support. The manual guides the staff in the completion of the following tasks: recording and reporting on stock levels and usage of pharmaceuticals, ordering pharmaceuticals from PFSA, receiving and storing pharmaceuticals issuing pharmaceuticals between and within facilities and maintaining adequate amount of pharmaceuticals (PFSA, 2014).

Program pharmaceuticals are ordered every two months by hospitals and health centers and delivered by PFSA to these facilities directly or indirectly. Direct delivery sites are facilities that receive program pharmaceuticals directly from PFSA hubs whereas non-direct delivery sites are health centers that receive products from PFSA hubs through Woreda Health Offices. Health posts report to health centers monthly and collect pharmaceuticals from those health centers; the health centers use the data in the Health Post report to calculate consumption and re-supply quantities.

IPLS implementation requires collaborative efforts of different officials and professionals working at all levels of the Ministry's system (PFSA, 2014).

In the past few years, a significant progress has been made in the implementation of IPLS in the Ethiopia. This has resulted in improving information recording and reporting, storage and distribution systems, as well as the availability of essential commodities at service delivery points, in the central areas of the country. In the faces of various challenges, the level of impact on the peripheral areas of the country is poorly recognized, which still remain to be addressed.

The national survey on the implementation of the IPLS has shown that further research has not been conducted in the implementation of the IPLS and its associated challenges in health facilities (Shewarega, *et al.*, 2015). Particularly, at the remote areas of region's health facilities, there is poor implementation of integrated pharmaceutical logistic management system and there is no study done to assess the challenges in the implementation of pharmaceutical logistic management system (PFSA, 2015) This study seeks to determine if there is any gap between the way the IPLS is designed to implement and how it actually implement in health facilities.

Moreover, it tries to identify if the problems with the design of the system, its actual implementation (operation), and its use by the intended decision makers. Subsequently, practical solutions will be proposed based on the findings for future improvement

1.3. Research Questions

The research Questions of this study are;

- What are the current features and the degree of IPLS implementation in the health facilities?
- What are the major challenges associated with IPLS implementation in the health facilities?
- What can be improved at health facility level to better implementation of IPLS?

1.4. Objectives of the Study

1.4.1. General Objective

The general objective of the study is to assess IPLS implementation and its associated challenges to measure the system performance at health facilities. The study also assessed the availability of selected essential pharmaceuticals.

1.4.2. Specific Objectives

The specific objectives of this study are;

- To assess the level of availability of trained personnel in IPLS in the health facilities
- To assess availability of important facility services and infrastructures
- To assess recording and reporting practices on stock level and usage of pharmaceuticals
- To assess the procedures of ordering and receiving pharmaceuticals from PFSA.
- To assess the storage condition of the health facilities.
- To assess the procedures of issuing pharmaceuticals between and within the health facilities.
- Identify key issues and challenges in IPLS implementation to help determine the next steps needed for logistics system improvements.

1.5. Significance of the Study

An efficient implementation of IPLS require improving information recording and reporting, storage and distribution systems as well as the availability of essential commodities at service delivery points.

Inconsideration of this fact in the past few years, a significant progress has been made in the implementation of IPLS in the Ethiopia. But still there are challenges in the implementation of IPLS in health facilities in Ethiopia.

The study will contribute valuable information to improve IPLS implementation at health facilities through identifying the key challenges that hinder the implementation of IPLS. The study result will be helpful for health facilities, PFSA Federal ministry of Health, and Woreda and regional health offices, health policy makers, healthcare providers, donors and all stakeholders involved in the implementation of IPLS to effectively plan and manage the implementation of IPLS in health facilities. The result of the study will be useful for PFSA management for implementing corrective measures which improves IPLS implementation. There are limited numbers of studies done on this area, so this study will be useful for academicians to further studies on the area. The research will also bring directions for further investigators.

1.6. Scope of the Study

This study focused on assessing the level, the ways and potential challenges in the implementation of IPLS at on the public health facilities in Guji Zones, which makes it overall generalization on the implementation of IPLS in public health facilities in Ethiopia. The report of the study centered on paper based recording and reporting system. Appropriate data is collected from the study sites during one month of field work. The study did not include PFSA hubs due to time constraints but the study put final recommendations based on the findings on aspects that should be improved for better implementation of IPLS at health facility level, at PFSA and, at federal, regional, zonal and Woreda health bureaus.

1.7. Limitation of the Study

IPLS implementation requires collaborative efforts of different officials and professionals working at all levels of the Ministry's system which comprise federal ministry of health (FMOH), PFSA, regional and Zonal Health Bureaus, Woreda health offices and health facilities.

Integrated pharmaceutical logistic system implementation is affected by those all responsible stake holders working at all levels of the Ministry's system mentioned above. However time & resource limitation did not make this feasible and for the reason the study concerns on Integrated pharmaceutical logistic system implementation at health facilities.

Despite these limitations, the validity of the findings emanating from this study is very important to improve the implementation of integrated pharmaceutical logistic system through the collaborative efforts of all responsible stake holders.

1.8. Operational Definitions of Concepts and Terms

Integrated pharmaceuticals logistics system (IPLS): IPLS is the term applied to the single pharmaceuticals reporting and distribution system based on the overall mandate and scope of the PFSA. It aims to ensure that patients always get pharmaceuticals they need.

IPLS implementation: IPLS implementation is the level or the degree of utilizing standardize operating manual to the work required for the realization of IPLS.

Challenges: Challenges meaning that Hindrances or barriers.

1.9. Organization of the Study

This study is organized in five chapters. The first chapter deals with the introduction part of the paper encompassing background of the study, statement of the problem, objectives of the study and other relevant issues. The second chapter focuses on relevant literature review. In this chapter a review the relevant literatures in relation to the topic under discussion is made. The third chapter deals with research Methodology; that is, the research design, approaches used throughout the data collection and methods of data analysis processes are discussed. The fourth chapter presents the overall findings of the study which prevails about the level of implementation of IPLS in the supply chain activities in the health facilities in the study area, the ways of IPLS implementation brought about the desired improvements in pharmaceuticals supply in the health facilities in the study area and identifying the key challenges in IPLS implementation in the health facilities in the study area. Finally, chapter five incorporates summary, conclusion and recommendation part of the study.

CHAPTER TWO
REVIEW OF RELATED LITERATURE

This chapter explores literature, written by different authors on concepts and implementation of IPLS and associated challenges in the implementation, and it reviews standard operating manual (SOP) in order to establish and provide answers to the research questions

2.1. Theoretical Literature Review

2.1.1. The Concepts of Pharmaceutical Logistic System

Supply chain integration is a performance-improving approach that develops seamless linkages between the actors, health facility levels, and functions within a supply chain to optimize customer service. It is the effective and efficient road to maximizing customer service index. The objectives of supply chain integration are to improve efficiency and reduce redundancy while also enhancing product availability. Supply chain integration strives to better connect demand with supply, which can both enhance customer service and lower costs. Well-functioning (integrated) supply chains are characterized by clarity of roles and responsibilities, agility, streamlined processes, visibility of information, trust and collaboration, and alignment of objectives (USAID/DELIVER PROJECT, 2011)

According to the Council of Supply Chain Management Professionals (CSCMP) "Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement…and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies" (CSCMP, 2016).

Logistics is the process of planning, implementing, and controlling procedures for the efficient and effective transportation and storage of goods including services, and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements" (USAID/DELIVER PROJECT, Task Order 1. 2011).

Pharmaceutical logistics system typically includes a number of activities such as selection, forecasting, procurement, inventory management, and serving customers that supports the six rights; the *right* goods in the *right* quantities and in the *right* condition delivered to the *right* place at the *right* time and at the *right* cost (John Snow /DELIVER, 2004).

The logistics information is the motor that drives the pharmaceutical logistics. Information has to be gathered and analyzed about each activity in the cycle to coordinate subsequent actions.

Thus, there is a need to manage the information system for other activities of the logistics to function properly. Logistics management information system (LMIS) is the collection, processing and utilization of logistics information for pharmaceutical supply decision making (PFSA, 2015).

2.1.2. The Integrated Pharmaceutical Logistic System (IPLS); Concepts and Implementation

PFSA is responsible for the procurement and distribution of pharmaceuticals for the public sector. To successfully achieve its main objective, which is to ensure that patients get pharmaceuticals that they need, PFSA designed and implemented the Integrated Pharmaceuticals Logistics System (IPLS). IPLS is the term applied to the single pharmaceuticals reporting and distribution system based on the overall mandate and scope of PFSA (PFSA, 2014).

The IPLS is the primary mechanism through which all public health facilities obtain products that are included on the National Pharmaceuticals Procurement List (NPPL). The list includes essential pharmaceuticals including the following that used to be managed vertically: HIV/AIDS, Malaria, TB and Leprosy, EPI, MCH (PFSA, 2014).

The IPLS defines the reporting and re-supply schedules. Accordingly, healths facilities (hospitals and health centers) are expected to complete the Report and Requisition Form (RRF) every two months for program pharmaceuticals, the data of which will be used to determine re-supply quantity. To help maintain adequate stock levels, the maximum months of stock, minimum months of stock and an emergency order point have been established for each health facility in the system. For Revolving Drug Fund (RDF) pharmaceuticals, health centers and hospitals will complete the RRF as per the facilities review period which can be every two month, every quarter or every six months and collect products from affiliated PFSA branches (PFSA, 2014).

The 'Standard Operating Procedures (SOP) Manual for the Integrated Pharmaceuticals Logistics System in Health Facilities of Ethiopia' defines the roles and responsibilities of the relevant stakeholders that are involved in the supply chain (PFSA, 2014). .

The system also lists out the basic logistics data that are required to make logistics decisions with the accompanying definitions and data sources. All the relevant recording and reporting forms are also included with detailed instructions for use (PFSA, 2014).

The Standard operating manual is intended to simplify and standardize the work required for the logistics management of pharmaceuticals used in public health facilities. It also serves as a reference for and service providers in facilities supplied by PFSA and for the administrative units that provide management and supervisory support. The manual guides the staff in the completion of the following tasks:

- ✓ Recording and reporting on stock levels and usage of pharmaceuticals.
- ✓ Ordering pharmaceuticals from PFSA
- ✓ Receiving and storing pharmaceuticals
- ✓ Issuing pharmaceuticals between and within facilities
- ✓ Maintaining adequate amount of pharmaceuticals

Program pharmaceuticals are ordered every two months by hospitals and health centers and delivered by PFSA to these facilities directly or indirectly. Direct delivery sites are facilities that receive program pharmaceuticals directly from PFSA hubs whereas non-direct delivery sites are health centers that receive products from PFSA hubs through Woreda Health Offices. Health posts report to health centers monthly and collect pharmaceuticals from those health centers; the health centers use the data in the Health Post report to calculate consumption and re-supply quantities.

For revolving drug fund (RDF) pharmaceuticals, health centers and hospitals will complete RRF as per the facilities review period which can be every two month, every quarter or every six months and collect products from affiliated PFSA branch (PFSA, 2014).

IPLS implementation requires collaborative efforts of different officials and professionals working at all levels of the Ministry's system (PFSA, 2014). Which include; federal ministry of health, PFSA, regional health bureaus, Zonal health bureaus, Woreda health offices, hospitals, health centers and health posts. IPLS at facility level includes the following basic components; logistic management information system, inventory control system, storage of pharmaceuticals and recording system (PFSA, 2014).

2.2. Empirical Literature Review

2.2.1. Studies on the Implementation Status of IPLS

A research conducted in Papua, New Guinea medical supply system opportunities and challenges to meet the Millennium development goals have revealed different reasons. It was found that Interviewees articulated a good working knowledge of many of the standard operating procedures (SOPs) required for medical supply management but often actively chose not to follow them in practice where this lead to estimation or guessing as the preferred method of determining orders (Brown and Gilbert, 2014). Furthermore, amplifying to the above issue was the observed practice of excluding the contents of emergency medical supply kits when ordering, which led to the existence of stock outs and wastage, particularly in health centers and provincial hospitals.

An assessment on pharmaceuticals logistics in South Sudan have revealed that the LMIS is weak at all levels of the health facilities and does not capture all essential logistics data. The finding have showed that the percentages of the assessed health facilities having forms were 39%, facilities who accurately filled those forms were found 27% and facilities having staff trained in filling out and using the forms was found to be 17%.

The survey done on the Integrated Pharmaceutical Logistics System of Ethiopia had showed that the IPLS has already brought significant improvements to the supply chain in Ethiopia, although much more remains to be done. The survey by Shewarega, (2007) provided valuable insight into the status of IPLS, including access to essential medicines, and the use of the LMIS formats and storage conditions. The survey result indicated that the availability of blank recording and reporting formats bin cards, Internal Facility Report and Resupply Form (IFRR), and Report and Requisition Form (RRF) is high at hospitals (above 90 percent), but declines farther down the supply chain (close to 80 percent at health centers and 40 percent at health posts).

A study in 43 health facilities in Addis Ababa, (PFSA, 2014) on assessment of laboratory logistics management information system practice for HIV/AIDS and tuberculosis laboratory commodities in selected public health facilities found that, there exists a well-designed logistics system for laboratory commodities with trained pharmacy personnel, distributed standard LMIS formats and established inventory control procedures. However, majority of laboratory professionals were not trained in LMIS.

Majority of the facilities (60.5%) were stocked out for at least one ART monitoring and TB laboratory reagents and the highest stock out rate was for blood chemistry reagents.

Expired ART monitoring laboratory commodities were found in 25 (73.5%) of facilities. Fifty percent (50%) of the assessed hospitals and 54% of health centers were currently using stock/bin cards for all HIV/AIDS and TB laboratory commodities in main pharmacy store, among these only 25% and 20.8% of them were updated with accurate information matching with the physical count done at the time of visit for hospitals and health centers respectively. From a total of 114 professionals involved in laboratory commodity management, 71 (62.3%) were trained in logistics management information system (integrated pharmaceutical logistics system or Ethiopian laboratory logistics system). of these, 67 (58.8%) were pharmacy professions and 4 (3.5%) were laboratory professionals (Desale, 2013).

The assessment of the integrated logistics management information system in Malawi (2013) found that the reporting rate from service delivery points was only 58 percent of health facilities reported their LMIS data for the month, which is Poor LMIS reporting rates compared to a state of acceptable performance (targeting a 90 percent or better reporting rate) and to provide a solid foundation for supply planning.

2.2.2. Challenges on IPLS Implementation

Logistic management information system (LMIS) is an important tool in inventory management, therefore accurate record keeping is essential. To be effective in the supply chain activities, LMIS should be equipped with adequate trained staff, forms, equipments, and facilities. However, some studies showed that there is a problem in this regard. A study in four public hospitals of Dar es Salaam, Tanzania reported 8% and 72% recorded balance that was less and greater than the physical count (Kagashe and Massawe, 2012). It was further noted that the inventory control system is not clearly understood by all health care workers which resulted for un-standardized method of calculating resupply quantities for health facilities. Tanzania, Wastage of expired medicines and overstocking of near-expired medicines was more common than stock outs (24). The same study result also demonstrated that SOP trained health personnel's had a stronger understanding of and ability to implement supply chain practices than those not trained. The main impediment to the success of this program was found to be a low roll-out of the training due to a lack of funds for training and follow up. Moreover, personnel retention was also cited regularly as a challenge to maintaining best practices around medical supply management, with staff who receive

SOP training frequently moving to other facilities, thus losing the medical supply management capacity in the original facility and not implementing their training in the new facility (Brown and Gilbert, 2014). The authors indicated that logistics skill level was poor and inventories were not well managed. The major contributing factors for stock out in their hospitals were luck of funds and poor logistics skills. Another report by the Tanzanian Ministry of Health and Social Welfare (MOHSW) showed that stock management practices in the country were weak. In addition, it was shown that the bottlenecks throughout the pharmaceutical supply chain management system are lack of facility-level data to decision makers at higher levels, irregular ordering cycles, delivery delays, wastage and expiry, and stock outs (MOHSW, 2008). On the basis of the assessment of pharmaceuticals logistics in South Sudan, the majority of the surveyed health facilities lack stock cards for controlling inventory where the assessment has shown that only 45% of the facilities visited had reported having stock-keeping records (bin cards, stock registers, and inventory control cards). Furthermore, 27% of stores, health facilities, and pharmacies assessed had experienced stock-out in the last three months prior to the assessment visit. The findings of this assessment had also indicated that many personnel in pharmaceutical management positions lack training that would enable them to better perform their responsibilities (Mochache *et al*., 2011).

A study in 43 health facilities in Addis Ababa reveal, discrepancies in level of utilization of bin cards were observed at the level of facility and product types for example low data accuracy of bin cards for most of the products assessed. The identified constraints that undermine the LMIS and, therefore, the performance of the entire supply chain were problems in the funding and supply of commodities, limited human resources (HR) for supply chain management (HR for SCM), insufficient transportation resources and storage space, and meager support for information communication technology (ICT) at the district- and facility level (Christopher, et al., 2013).

2.3. Identified Literature Gap

The study aimed to assess the major challenges in the implementation of IPLS in health facilities in Guji Zones, southern Oromia; Ethiopia. This study not only examines the overall implementation of IPLS in the health facilities but also critically examine the implementation of IPLS in various dispensing units of each facility.

Besides of assessing the availability and utilization of logistic records and reports formats, the study assesses the level of utilizing and updating logistic records and reports formats for certain pharmaceuticals and in some dispensing units of the health facilities through physical observation and check list formats.

On the same manner, the study assess product availability, stock out rate not only from the main stores but also from dispensing units of the health facility, order fill rate and storage conditions are also assessed through different data collection approaches. The way of implementation of IPLS at health post level is different from hospitals and health centers, but the study also assess the way of IPLS implementation at the health post level. So as this study is inclusive.

2.4. Conceptual Framework

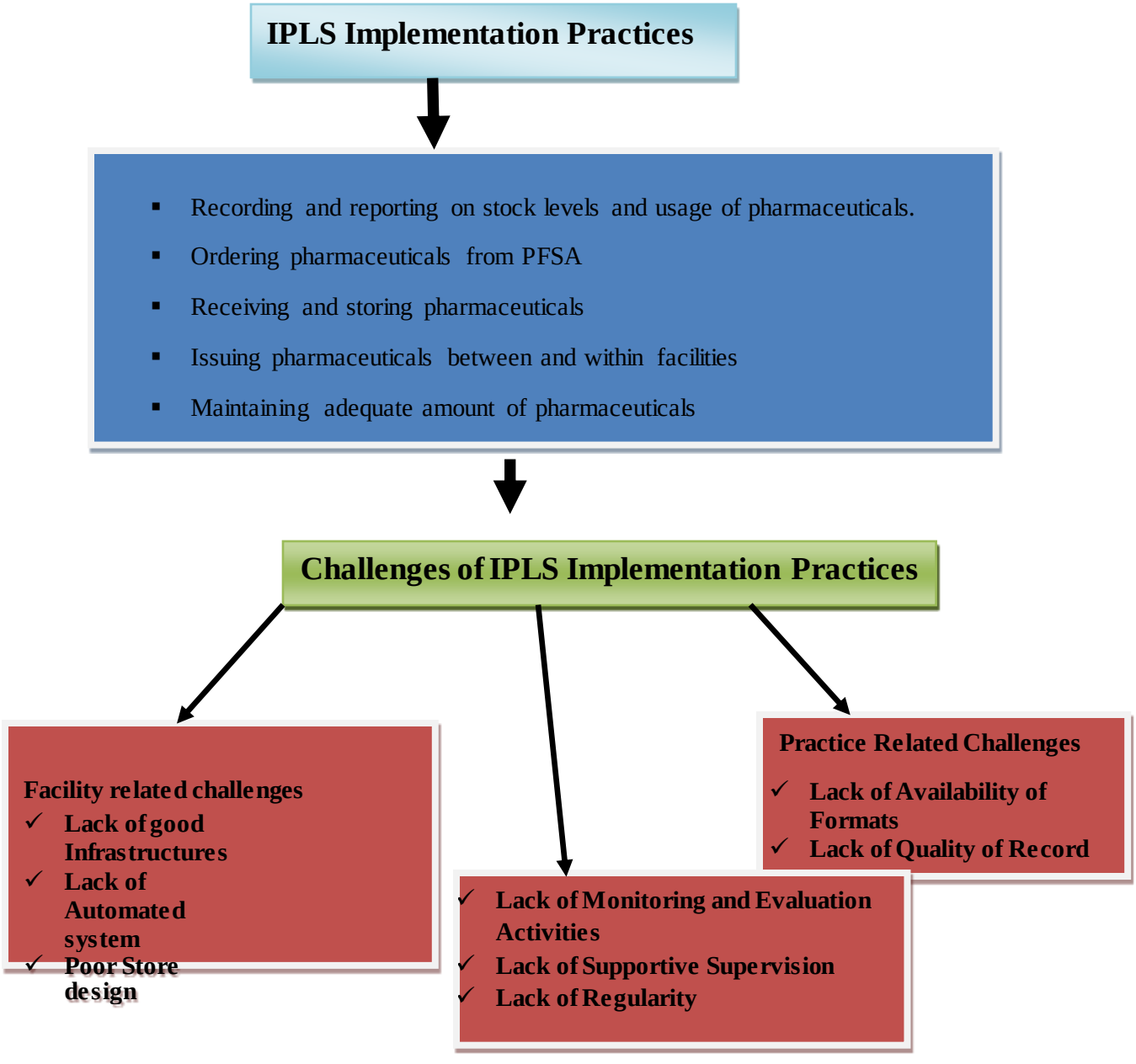


Figure 1: Conceptual Framework Showing IPLS implementation practices and Challenges of IPLS Implementation

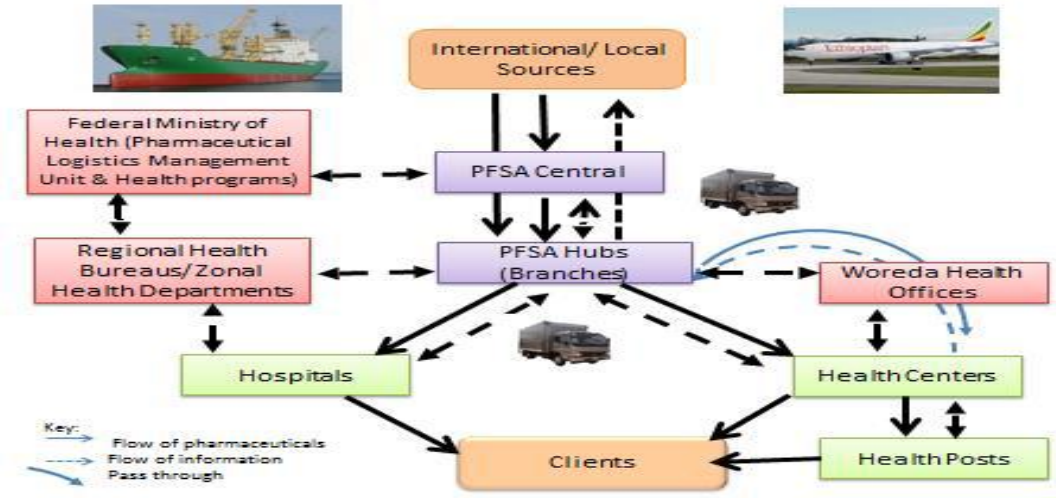


Figure 2: Flow of Pharmaceuticals and Information in the Integrated Pharmaceutical Logistics System (IPLS)

Logistics information is collected and reported monthly by health posts and every other month by health centers and hospitals on logistics management information system (LMIS) forms. (PFSA, 2014)

- ✓ For direct delivery facilities a combined report and requisition form is completed by health centers and hospitals and sent to PFSA Hubs for requisition processing; the health centre order includes the pharmaceuticals requirements of the health posts. For non-direct delivery facilities a combined report and requisition form is completed by health centers and sent to PFSA branches through Woreda Health Offices.
- ✓ A copy of the health centre report and order and a copy of each health post report are sent to the Woreda Health Office for management and supervision purposes; a copy of the hospital report and order is sent to the Regional Health Bureau for management and supervision purposes.

The overall information system also includes a mechanism for providing feedback to lower level facilities from upper level facilities. In the feedback reports, facilities will be able to see how they are performing compared to other facilities in their area and will be able to facilitate stock transfer. For instance, the Woreda or PFSA Hub may provide a short report to all of the health centers showing the stock status of priority products (vital pharmaceuticals), number of stock outs, reporting rate, and consumptions trend in the different health centers. The Woreda or PFSA might also provide specific reports to health centers pointing out errors in their reports (PFSA, 2014).

CHAPTER THREE

METHODOLOGIES OF THE STUDY

3.1. Study Area and Period

The study was conducted in selected health facilities of in the two zones (Guji and West Guji), Southern Oromia, Oromia regional state from may 1 to June 31, 2018.

Guji is one of the zones of the Oromia regional state, Ethiopia. Guji is bordered on the south by Borena, on the west by the Southern Nations, Nationalities and Peoples and Peoples region, on the north by the Ganale Dorya River. The administrative center is Nagelle town. It is located at a distance of 610 km from the capital Addis Ababa. Its astronomical location is 50 06´ 23" North latitude and 400 40´ 25" East longitude). Currently, it is divided into two zones; Guji zone and West Guji zone. There are 4 hospitals, 104 health center and 406 health posts in the two zones. IPLS is implemented in three phases in 213 health facilities. IPLS phase I implementation includes 9 hospitals and 59 health center (ART & ART lab monitoring site), IPLS phase II includes 37 health centers (PMTCT site) and IPLS Phase III includes 108 health centers (non-PMTCT & non-ART site).

3.2. Research Design

This study is a non-experimental and cross-sectional assessment employing both quantitative and qualitative (structured interviews) methods of data collection at a certain time period from May 01 to June 31, 2018. So as the research design method is mixed approach both quantitative and qualitative. The combination of both methods helps the researcher to gain a full picture and deeper understanding of the investigated phenomenon by linking complementary findings to each other. Yin (2009, p. 64) states that a mixed research approach can enable the researcher to address either broader or more complicated research questions. In mixed research approach quantitative results are expressed in numerical and quantifiable terms, while qualitative results are expressed verbally in order to create an understanding of relationships or complex interactions.

3.3. Study Population

In the two zones (Guji and West Guji) from a total of 514 health facilities, IPLS is implemented in 213 health facilities.

For this study, the study population is those selected health facilities from 514 health facilities that implemented IPLS.

3.4. Source of Data

All professionals in charge of pharmaceutical supply service in the selected health facilities for the study would be the primary source of data to measure the implementation of IPLS in the selected health facilities through quantitative data collection method. There are a total of 140 professionals in 46 selected health facilities who are directly responsible for the implementation of IPLS. Also IPLS recording forms and reporting is reviewed by the researcher. Staff's who are responsible for IPLS design and implementation is also assessed by the researcher for the sake of having qualitative data.

3.5. Research Variables

The research variables of this study are classified as independent and dependent variables. Independent variables are variables which are manipulated or controlled or changed. Whereas dependent variables are the outcome variables and are the variables for which we calculate statistics. The variable which changes on account of independent variable is known as dependent variable.

The independent variables of this study are; profession and work experience of IPLS personnel, IPLS recording and reporting formats, pharmaceuticals and pharmaceutical store. Whereas the dependent variables of this study are; the level of availability of well trained and well experienced IPLS personnel, the level of availability of blank IPLS recording and reporting formats, the level of utilization, updating and accuracy of IPLS recording and reporting formats, stock out rate of pharmaceuticals, stock status of pharmaceuticals, order fill rate of pharmaceuticals and the level of availability of acceptable storage condition.

3.6. Sample Size Determination and Sampling Techniques

The sample size required for the study is determined using Open Epi software version 3.03 (Dean et al., 2015). Considering the total population size (for finite population correction factor) of health facilities to be 514 (4 hospitals, 104 health centers and 406 health posts), the confidence level is set to 90%, with margin of error 10% and, assuming that the proportion of facilities implementing IPLS in the area to be 41.44%, with the design effect of 1.2, the sample size required for this assessment is 39 (2 hospitals and 37 health centers). The estimation formula for the sample size is indicated below.

$$Sample\ size\ n = \frac{Np(1-p)}{\left(\frac{d^2}{Z^2_{1-\alpha/2}} * (N-1) + P * (1-P)\right)}$$

The number of facilities is proportionally allocated for hospitals and health centers as displayed below. In addition, although IPLS considers health posts one of the dispensing units of the resupplying health centers, they have some unique characteristics.

Thus, by multiplying the DEFF in the above formula, the sample size is adjusted and 7 health posts (one in five of the sampled health centers) also include in the sample. The final sample is estimated to be 46. The final adjustment formula of the sample size is indicated below

$$Sample\ size\ n = \frac{(DEFF * Np(1-p)}{\left(\frac{d^2}{Z^2_{1-\alpha/2}} * (N-1) + P * (1-P)\right)}$$

Where

$DEFF = Design\ Effect\ (for\ cluster\ surveys)$

$N = Population\ Size\ (\ for\ finite\ population\ correction\ factor)$

$d = Confidence\ Limits\ (Margin\ of\ Error)$

$p = \%frequency\ of\ outcome\ factor\ (Proportion\ of\ facilities\ implementing\ IPLS)$

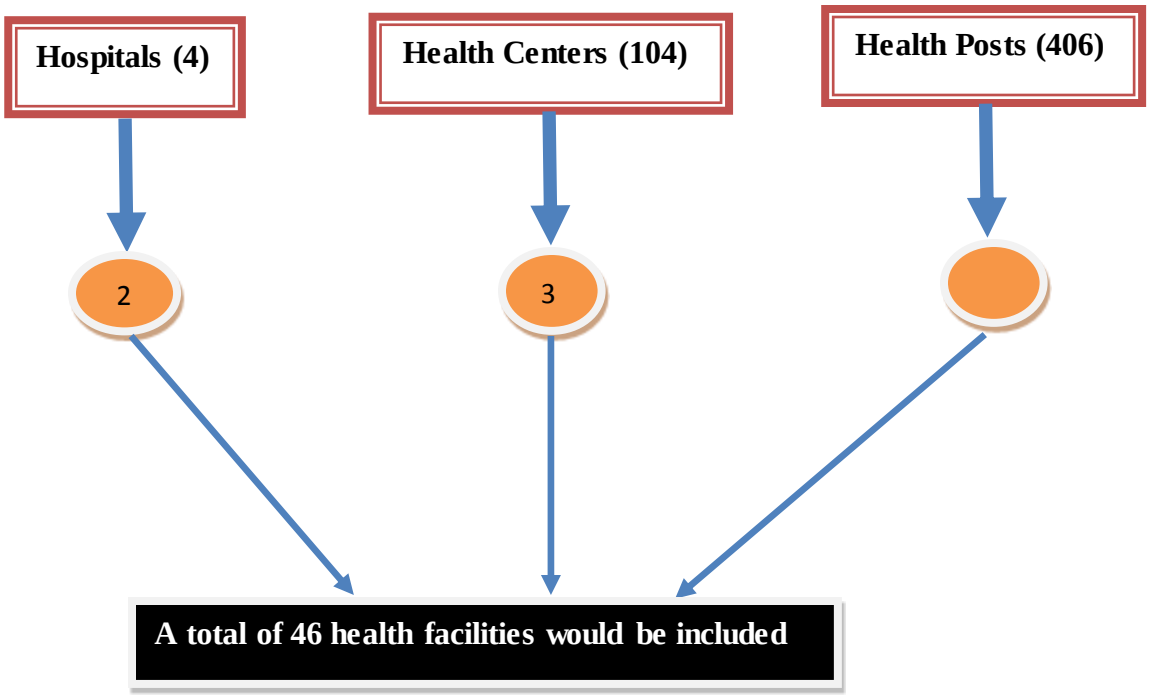


Figure 3: Sampling Scheme for facilities in the study Area

The sampling procedure adopted in this study is the probability sampling method, which provides each member of the target group with equal non-zero probability for being selected in the sample. The complete list of facilities, hospitals, health centers and health posts from the zonal health office is used as a sampling frame.

Hospitals and health centers is first stratified according to their IPLS implementation phase. The health facilities are allocated proportionally. Then, simple random sampling technique is applied to select health facilities, hospitals and health centers. Health posts are also selected using a simple random sampling method.

In order to select the number of respondents, the researcher adopted purposive sampling techniques because the respondents are chosen on the basis of their relation in the implementation of IPLS, work experience years and educational qualification. From a total of 12 professionals who are responsible for the implementation of IPLS in hospitals, 6 respondents are chosen from the two hospitals having 3 respondents each on the basis of work experience and educational qualification. From a total of 121 professionals who are responsible for the implementation of IPLS in health centers 74 respondents are chosen from the 37 health centers having 2 each and. From a total of 7 professionals who are responsible for the implementation of IPLS in health posts, 7 respondents are chosen from 7 health posts having one each. The total numbers of respondents for this study are 87.

3.7. Data Collection Instruments

Quantitative data is collected using observational checklist and structured, pretested questionnaire. The Logistics Indicators Assessment Tool (LIAT), which is a standardized quantitative data collection tool developed by the DELIVER project (observational checklist) (Shewarega, et al., 2007), that assesses health commodity logistics system performance and commodity availability at health facilities. The data collected using LIAT are used to calculate the following core logistics indicators: accuracy of logistics data for inventory management, percentage of facilities that receive the quantity of products ordered, percentage of facilities that maintain acceptable storage conditions, percentage of facilities whose stock levels ensure near-term product availability (stock status) and percentage of facilities that experienced a stock out at any point during a given period or at the time of the visit. In addition to these indicators, the data collected using LIAT are also used to calculate additional related indicators, such as duration of stock outs, reasons for stock outs, and more. The observational checklist LIAT has been modified to the Ethiopian context is used to collect the information from selected health facilities.

3.8. Data Analysis

The collected data is coded and entered into and analyzed using SPSS software version 21.0 for windows. Descriptive statistics (frequencies, Arithmetic Means, standard deviation and percentages is run to analyze the data. The qualitative data is transformed into categories related to the topics that is discussed and coded on paper individually in order to identify themes and patterns for thematic analysis

3.9. Ethical consideration

The study is conducted after ethical clearance is granted from ethical review committee of the college, Addis Ababa University. Approval to conduct the study is also obtained from zonal health bureau and respective responsible bodies of the studied health care units. The facilities are explained about the aims and purpose for conducting the study and how the survey is contribute. After that informed verbal consent is obtained from individual facility official prior to participation in the study. During the investigation, all records is kept confidential (except for those involved in the study) such that each facility and key informant is identified only by a code. Otherwise, the name of respondents and other identifier is not written in the questionnaire.

CHAPTER FOUR
RESULTS, DISCUSSIONS AND INTERPRETATION

4.1. Introduction

This chapter focuses with the presentation, analysis and interpretation of data on the basis of information gathered through questionnaire. Questionnaires were distributed to 87 respondents, purposively selected from 46 health facilities (2 hospitals, 37 health centers and 7 health posts).

4.1.1. Questioners Response Rate

The total questionnaires distributed were 87 for staffs which are purposely selected from 46 health facilities by the researcher and a total of 79 questionnaires were properly filled and returned representing a response rate of 90.80%.

Table 4.1: Response Rate of the Respondents

Response Rate	Number of Respondents	Percent
Responded	79	90.80
Not Responded	8	9.20
Total	87	100

4.2. Profile of the Respondents

In this section demographic information of the respondents is described using frequency distribution as presented in the table 4.2.

Table 4.2: Demographic Profile of the Respondents

Sr.No	Variables	Categories	Frequency	Percentage
1	Sex	Male	53	67.09%
		Female	26	32.91%
		Total	79	100%

2	**Educational Status**	Diploma	41	51.90%
		First Degree	26	32.91%
		Others	12	15.19
		Total	79	100%
3	**Work Experience in years**	Less than 2 years	5	6.33%
		2-4	10	12.66%
		5-7	19	24.05%
		8-10	24	30.38%
		Above 10 years	21	26.58%
		Total	79	100%
4	**Professions**	Pharmacists	59	74.68%
		Health officers	5	6.33%
		Nurses	3	3.80%
		Others	12	15.19%
		Total	79	100%

Source (Survey, 2018)

i. Gender Composition of Respondent

From a total of 79 respondents, 53 are male which is 67.09% of the total respondents and 26 respondents are female which is 32.91% of the total respondents

ii. Educational Level of Respondents

As shown in the table 4.2 the level of education of the respondents show that 32.91% are first Degree holders, while 51.90%, who are the majority, are Diploma holders and 15.19% are others. This shows that the respondents are educated and could understand and respond to the questionnaire.

iii. Work Experience of the Respondents

As it summarized in table 4.2, 30.38% of the respondents have 8-10 years of work experience, 26.58% of the respondents have above 10 years work experience and 24.05 % of the respondents

Have 5-7 years work experience, 12.66% of the respondents have 2-4 years of work experience and 6.33% of the respondents have less than 2years of work experience. Generally, they have enough experience in the facilities. Accordingly, they are appreciating the essential of the study.

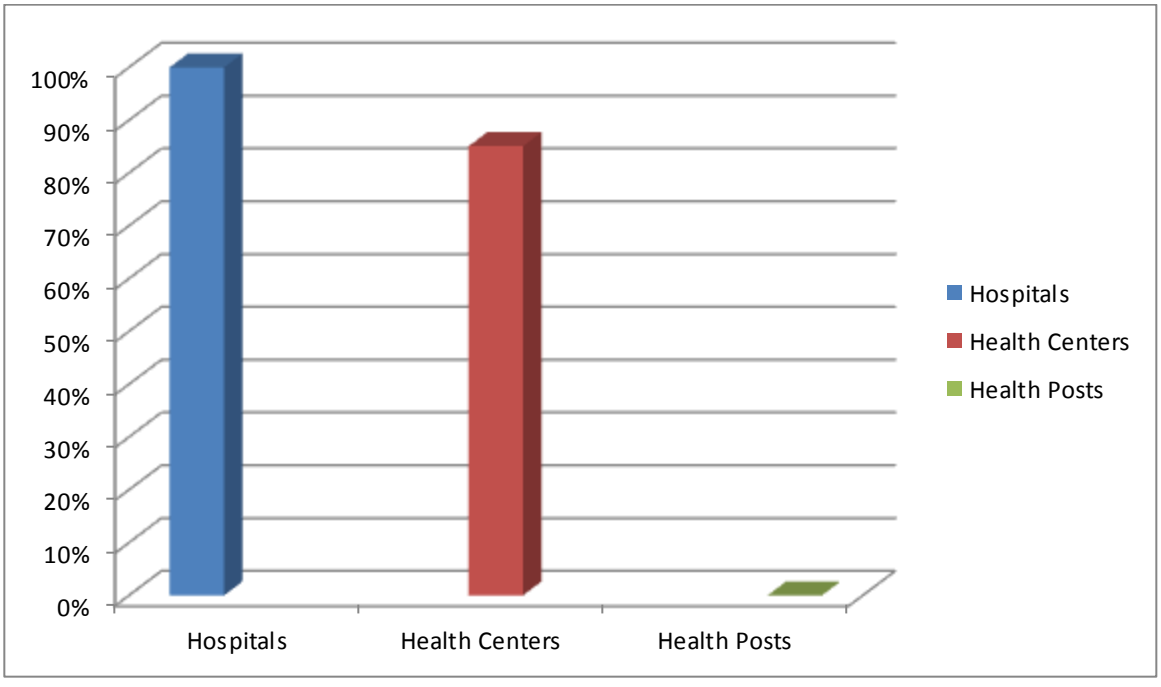
iv. Profession of the Respondents

As shown in table 4.2, the of respondents' professions is relevant for the study. From the total respondents; 74.68% are Pharmacists, 6.33% are Health officers, 3.80% are nurses, and 15.19% are others like health extensions.

4.3. Training of Responsible Staffs in IPLS in the Health Facilities

IPLS training is personnel related issue in which health facility professionals are trained on IPLS before the implementation of the system. Figure 4 below shows the percentage of responsible staff members who are trained in IPLS by facility Type.

Figure 4: Percentage of Responsible Staff Members Trained in IPLS by Facility Type



Source (Field Research, 2018)

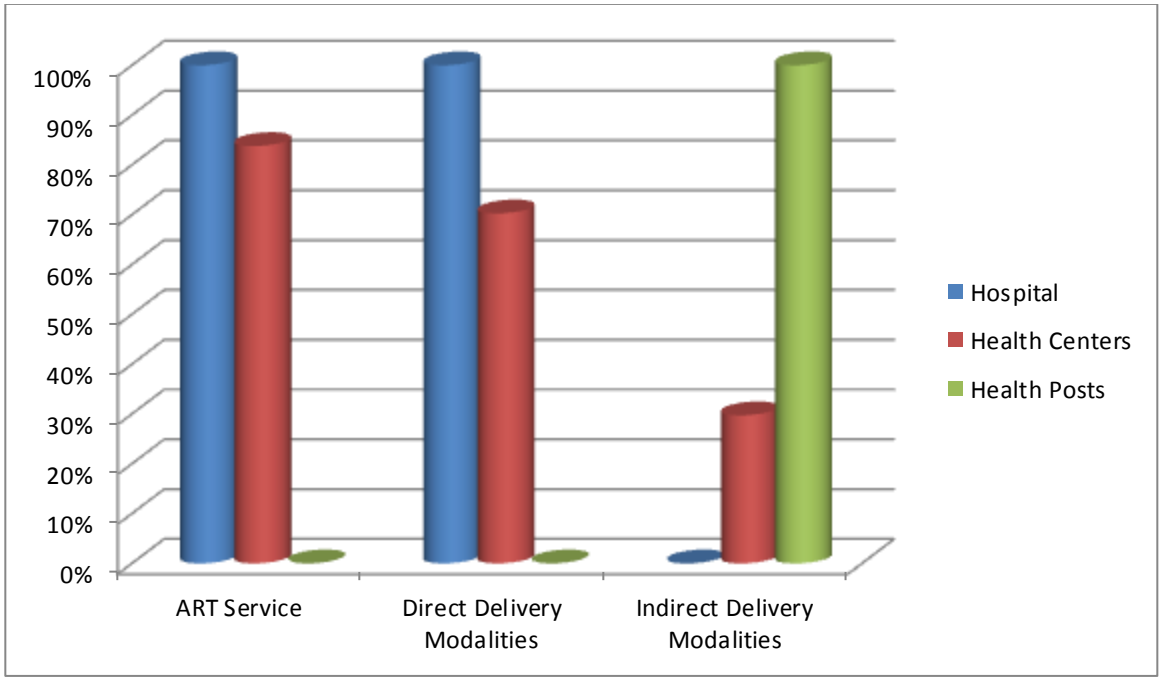
According figure 4, 100% (6 respondents) who are responsible for the implementation of IPLS in the two hospitals are trained in IPLS. With regard to health centers, from the visited health centers 74 staff members, who received the questionnaires, only 67 staffs members filled and return the questionnaires. Among these staffs only 85.07% (57 staffs) are trained in IPLS.

In the health post the implementations of IPLS is somewhat different but from seven staff members 6 staff members filled and return the questionnaires and all of them are not trained in IPLS. These findings show that, while the training coverage is very good in hospitals and health center there is still a gap that needs to be filled; this is even more important considering lack of well trained pharmacy personnel's in health centers and also lack of IPLS trained staffs in health posts. This study also assessed, continuous and planned IPLS orientation and supportive supervision is not conducted in health facilities by the hub based team (composed of professionals from PFSA, RHB/ZHD/WoHO, and partners)

4.4. Facility Service and Infrastructure

Figure 5 below shows percentage of health facilities that Give ART (anti retro viral therapy) service and the type of delivering modalities of commodities used by the health facilities by facility type.

Figure 5: Percentage of health facilities that Give ART Service and the Type of Delivering Modalities of Commodities Used by the Health Facilities by Facility Type



Source (Field Research, 2018)

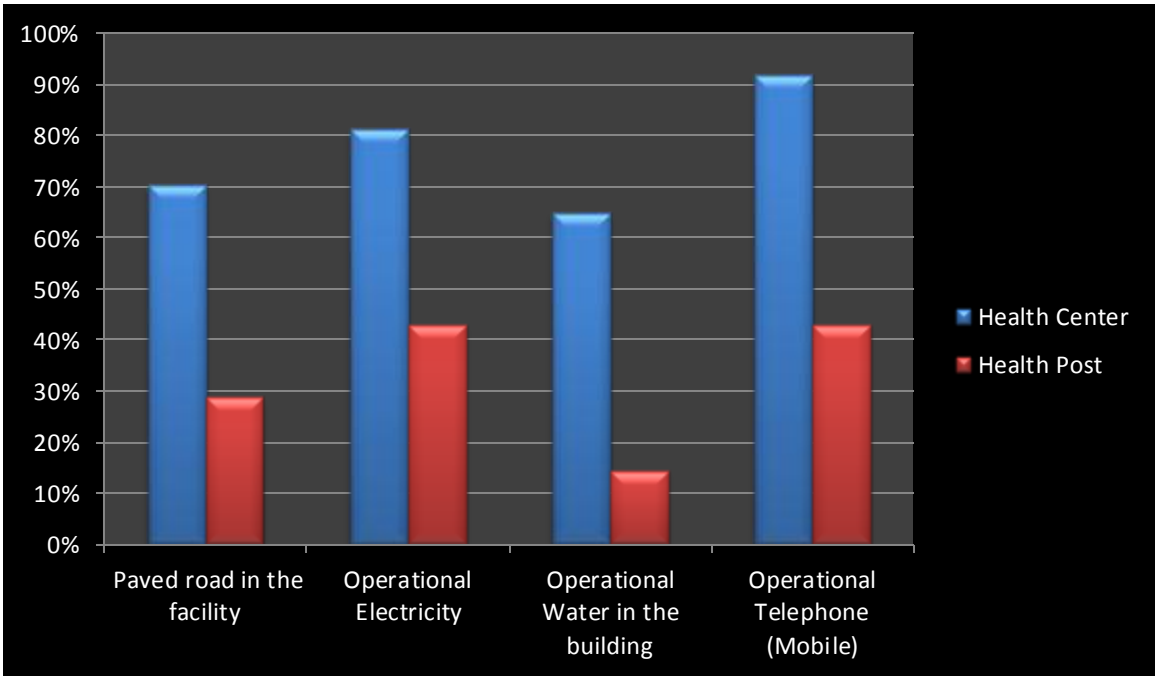
Figure 5 shows that the two hospitals which have been assessed for this study give ART (anti retro viral therapy) which comprises 100% level of implementation and from the 37 health centers which have assessed for this study, 31 health centers give ART facility which comprise 83.78% level of implementation and 6 health centers do not give ART facility which comprise 16.22%.

All seven health posts which have been assessed for this study do not give ART facility which comprises 0% level of implementation.

The finding of the survey reflects, the two hospitals delivered commodities directly from PFSA and 70.27% (26 health centers) delivered commodities directly from PFSA where as 29.73% (11 health centers) delivered commodities from zonal and woreda health bureaus in which PFSA delivers to them which is known to be indirect delivery modalities. All 7 health posts delivered commodities from supplying health centers.

The other important finding of this study is availability of facilities. The two hospital which has been surveyed for this study relatively have complete facilities like paved road, operational electricity, operational water in the building and operational telephone. The percentage composition of availabilities of the above facilities in health centers and in health posts is illustrated by the following figure.

Figure 6: Availability of Infrastructures in Health centers and Health posts



Source (Field Research, 2018)

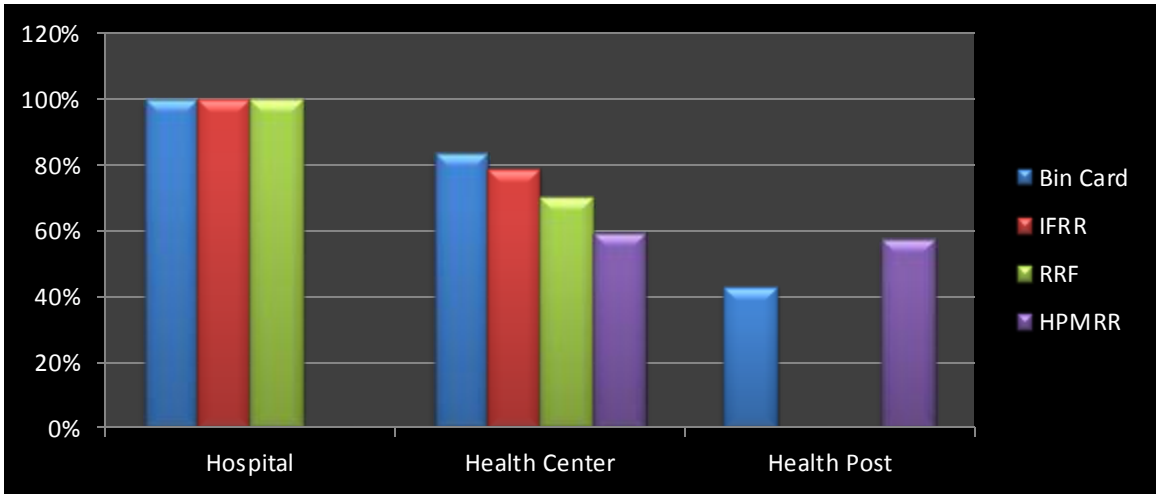
The above figure shows 70.28% (26 health centers) have paved road facility and 28.57% (2 health posts) have paved road facility. And also 81.08%, 64.86% and 91.89% of health centers have operational electricity, operational water and operational telephone (Mobile) respectively. 42.85%, 14.29% and 42.86% of health posts have operational electricity, operational water and operational telephone (Mobile) respectively.

4.5. IPLS Implementation

4.5.1. Availability of Logistic Record and Report Formats in the Health Facilities

Various records (such as bin card) and reports (RRF, IFRR and HPMRR) are used in IPLS for recording and reporting of various logistics data sets. Assessment of the availability and level of utilization of such formats by product and facility types is conducted. In addition, evaluation of the level of completeness and accuracy of such records and reports is also made.

Figure 7: Availability of Records and Reports Formats in the Three Health Facilities, June, 2018



Source (Field Research, 2018)

Based on figure 7, in the two assessed hospitals blank bin cards, IFFR and RRF are available which comprise 100% level of availability. Whereas blank bin cards are available in 31 health centers from 37 health centers which have been surveyed by the researcher and this comprise 83.78% level of availability. Blank bin cards are available only in 3 health posts from 7 health posts which have been surveyed by the researcher, which comprise 42.86% level of availability. IFRR and RRF are available in 29 and 26 health centers which comprise 78.38% and 70.27% level of availabilities respectively. IFRR and RRF are not available in all of the 7 health posts which have been surveyed by the researcher but HPMRR are available in 4 health posts which comprise 57.1% level of availability. The following figure shows the availability of records and reports form in the three health facilities. In 22 health centers HPMRR are available comprise 59.46%.

Based on my observational study, study also shows that the two hospitals and the 26 health centers use RRF to report their consumption and to request the resupply quantity every two months to PFSA send the report to woreda health offices. During the day of visit the researcher assessed 11 health centers use plain paper to report their consumption and to request the resupply quantity every two months to their respective woreda health office.

Also the finding of the survey shows 4 health posts use HPMRR to report their consumption to the resupply health centers and 3 health posts use plain paper to report their consumption to neighboring health posts and via to resupply health centers. For hospitals the PFSA determine the facilities re-supply quantities, for health centers, woreda health offices and the PFSA determine the facilities re-supply quantities and for health posts the resupply health centers determine the facilities re-supply quantities.

4.5.2. Utilization of Logistic Record and Report Formats in the Health Facilities

In this section the researcher presents the degree of utilizing logistic record and report formats in those health Facilities in which logistic record and report formats are available. The finding of this study shows that blank bin cards are available in the 2 hospitals, in 31 health centers and in 3 health posts. IFRR formats are available in the 2 hospitals and in 29 health centers. RRF formats are available in the 2 hospitals and in 26 health centers. HPRMRR formats are found in 22 health centers and in 4 health posts.

Utilization of Bin cards

In this sub section the researcher try to explore the major findings on percentage of facilities that used bin cards for the accessed certain pharmaceuticals and try to assessed percentage of facilities that update bin cards that were used before within the previous 30 days.

Table 4.3: Percentage of Facilities Bin Cards are used and Updated by Product and Facility Types, January 2014

No	Pharmaceuticals	Hospitals		Health Centers		Health Posts	
		Used	Updated	Used	Updated	Used	Updated
1	Amoxicillin 500mg 250 mg Capsule	100	100	77.42	87.5	Not Avail	Not Avail
2	Ceftriaxone 1gm /500 mg injection	100	100	83.87	76.92	Not	Not
3	Co-trimoxazole 480mg / 960mg of 1000	100	100	90.32	92.86	33.33	100
4	Oral Rehydration Salt (ORS)	100	100	58.06	44.44	66.67	100
5	TDF+3TC+EFV	100	100	87.1	59.26	Not	Not
6	AZT+3TC+NVP	100	100	67.74	90.48	Not	Not
7	RHZE	100	100	64.52	80.0	Not	Not
Average		100	100	75.56	75.92	50	100

Source (Survey, 2018)

Table 4.3 shows percentage of facilities that use the available blank bin cards to capture inventory of certain pharmaceuticals and percentage of facilities that update bin cards. The result of the finding shows the two hospitals which have been surveyed for this study 100% of utilizing blank bin cards to record the inventory of pharmaceuticals and 100% of efficiency in updating the bin cards. With regard to the health centers for instance 77.42% of health centers utilize bin card to capture the inventory for Amoxicillin 500mg /250 mg Capsule and from those 87.5% of health centers are updated the bin cards used for Amoxicillin 500mg /250 mg Capsule. In general the degree of utilization of available blank bin cards for the inventory of pharmaceuticals at the hospitals is 100% and the degree of updating those bin cards at the hospitals is 100%. In general on average the degree of utilization of available blank bin cards for the inventory of pharmaceuticals at health centers is 75.56 % and on average the degree of updating those bin cards at health centers is 75.92%. The degree of utilization of available blank bin cards for the inventory of pharmaceuticals at health posts is 50% and the degree of updating those bin cards at health posts is 100%.

The assessment, beside testing the utilization and updating of bin cards, is also assess the accuracy of the bin card balance with the physical count for each of the selected products on the day of visit.

The following figure shows percentage of facilities with accurate records for selected pharmaceuticals. The percentage is computed for health facilities that utilize bin cards for the management of certain pharmaceuticals.

Table 4.4: Percentage of Facilities with Accurate bin card record for certain pharmaceuticals

No	Pharmaceuticals	Percentage of Facilities that has Accurate bin card record		
		Hospitals	Health Centers	Health Posts
1	Amoxicillin Capsule	50	66.67	Not Avail
2	Ceftriaxone Capsule	100	80.77	Not Avail
3	Co-trimoxazole	100	82.14	100
4	Oral Rehydration Salt	50	77.78	50
5	TDF+3TC+EFV	50	70.37	Not Avail
6	AZT+3TC+NVP	50	95.24	Not Avail
7	RHZE	100	90.0	Not Avail
Average		71.42	80.42	75.5

Source (Survey, 2018)

Table 4.4 shows on average the level of accuracy of bin card record balance at the hospital level is 71.42%, at health centers 80.42% and at health posts 75%. The level of accurate record on bin card is good at health centers and health posts relative to hospitals.

Utilization of Logistic Report

Logistic reports play a crucial role in decision making. To assist accurate and reliable reporting and resupply within the facility and among the different levels in the health supply chain, IPLS launched the RRF, HPMRR and IFRR. Hospitals and health centers utilize the RRF to report their consumption and to request the resupply quantity every two months from PFSA and health posts use the HPMRR every month to report their consumption to the resupply health center; the health center can then calculate their resupply quantity. The IFRR is an internal facility report and request format between the facility dispensing units and the main facility store.

The findings of this study shows that RRF formats are available in the 2 hospitals and in 26 health centers from 37 health centers which has been assessed by the researcher and HPMRR formats are available in 4 health posts from 7 health posts which has been assessed by the researcher. IFRR formats are available in the 2 hospitals and in 29 health centers.

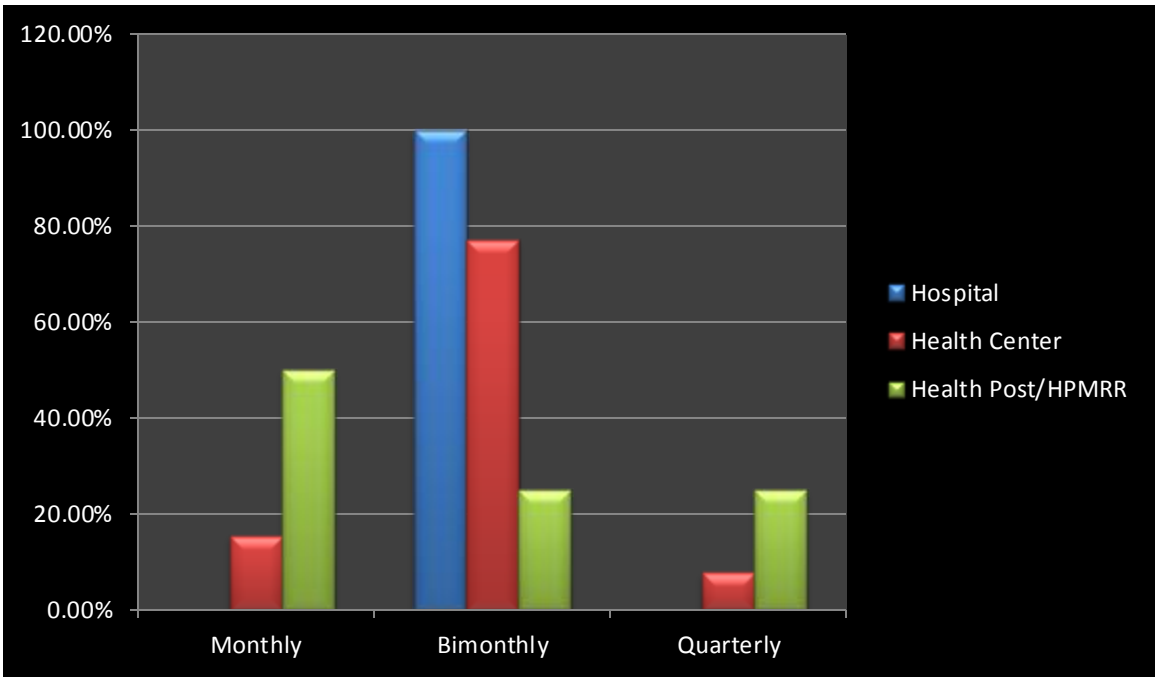
In this sub section the researcher try to explore findings on the degree of utilization of logistic reports accurately by health facilities.

Report and Requisition Form (RRF) and Health Post Monthly Report Re-Supply Form (HPMRR)

Consistent record keeping is vital for the IPLS implementation. Information should be reported to higher levels for efficient logistics decision making. One of the principal objectives of the IPLS is to allow facilities to generate the product demands and resupply form RRF to PFSA every two months. PFSA uses the information from the RRF to distribute pharmaceuticals to health facilities, predict future demands, and make other evidence based decisions. Both of the 2 hospitals which have been surveyed utilize RRF (100%) and 26 health centers from 37 health centers have RRF formats, from those 22 utilize RRF (84.62%). From 7 health posts, 4 health posts have HPMRR formats, from those 3 health posts utilize HPMRR (75%).

In this sub section the study also assessed the reporting rate of RRF by those hospitals and health centers that utilize RRF and those health posts that utilize HPMRR. And also the study assessed the quality of RRF data by assessing its completeness and accuracy. To do this four programs are used to check the completeness and the accuracy. Those are OPD, ART, MCH and TB. A report is considered complete if all the columns for each products listed in the report are filled in for at least one product listed under each program unless the facility does not manage the product. Completeness does not refer to the number of items in an RRF where there is an entry.

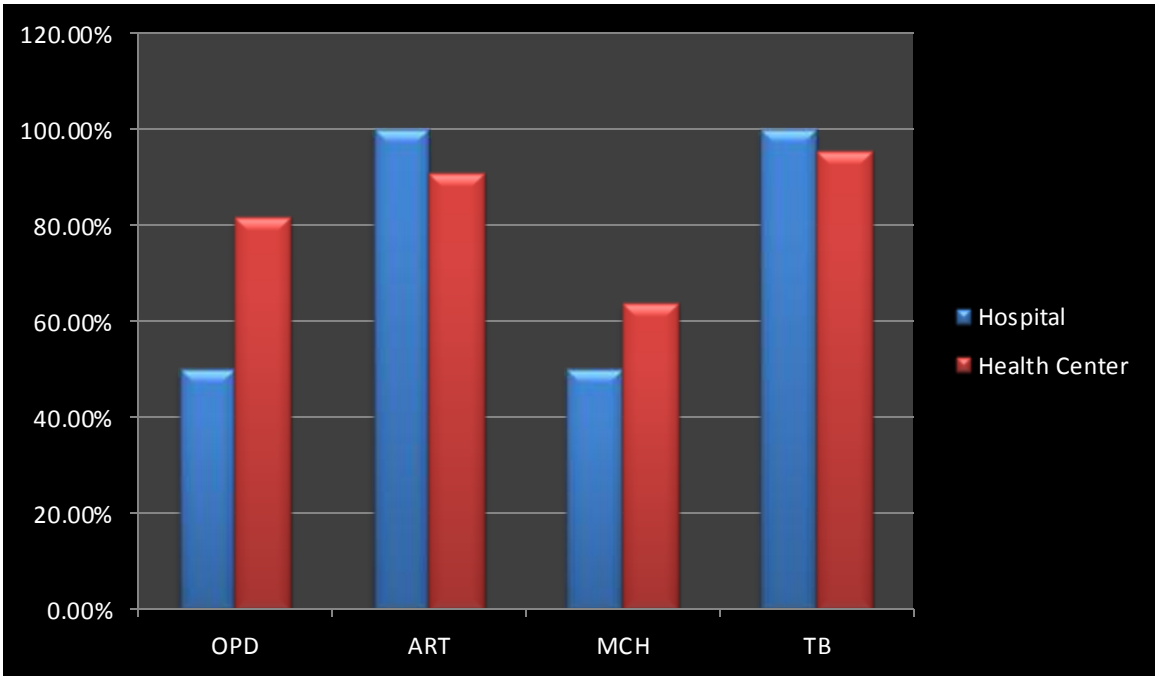
Figure 8: Percentage of Reporting Rate of Health Facilities Using RRF by Facility Type



Source (Field Research, 2018)

Based on figure 8, RRF reporting rate of hospitals are bimonthly (100%), 76.92% of health centers are reported RRF bimonthly, 15.38% are reported monthly, 7.69% are reported quarterly. 50% of health posts are reported HPMRR monthly, 25% are reported bimonthly and 25% are reported quarterly.

Figure 9: Percentage of Complete RRF Reports for DUs by Type of Facility, June, 2018



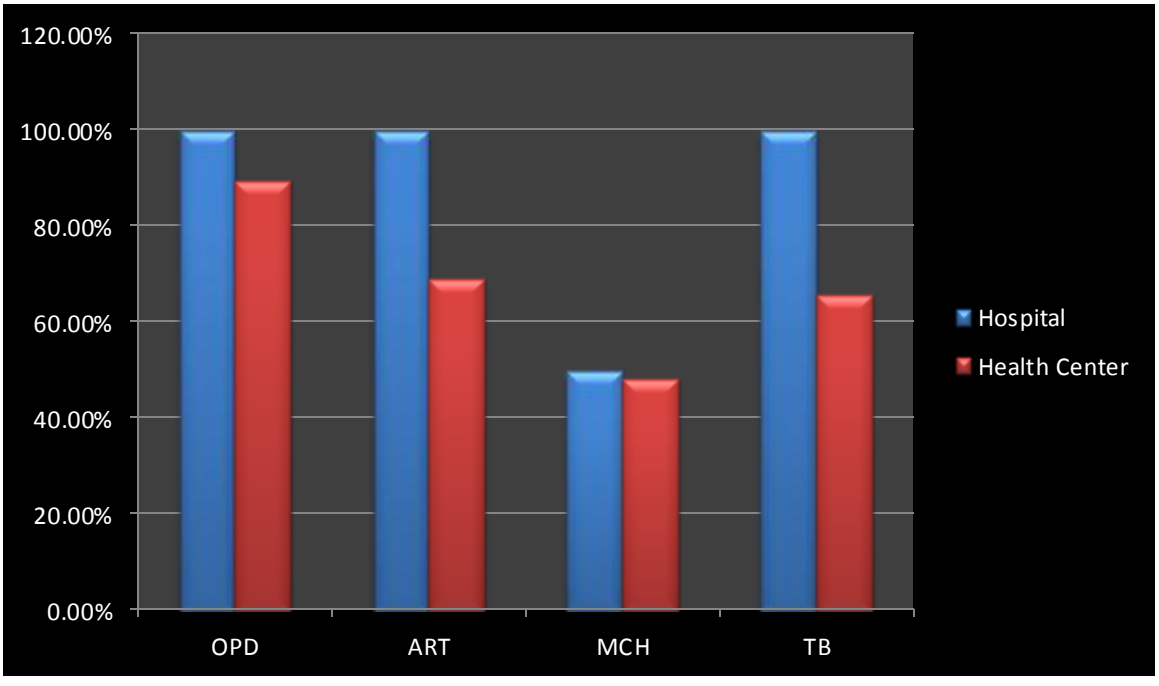
Source (Field Research, 2018)

Based on figure 9, the completeness level of RRF reports are 100% for ART (anti retro viral therapy) and TB (tuberculosis) programs at the hospitals, that means in the two hospitals which have been surveyed for this study, RRF reports are completed for ART and TB programs on the day of visit. The level of completeness of RRF reports for MCH (Maternal and child health) and OPD (outpatient department) programs at the hospital level is 50% (1 hospital). The level of completeness of RRF reports at the health centers for OPD, ART, MCH and TB are, 81.81%, 90.90%, 63.63% and 95.45% respectively.

Internal Facility Report and Requisition Form (IFRR)

In day to day activities utilizing IFRR to re-supply dispensing units of health facilities by store is a key aspect of IPLS. The finding of this study shows that the IFRR formats are available in the 2 hospitals and in 29 health centers. In this sub section the researcher try to explore findings on the degree of utilizing IFRR by the major dispensing units of the 2 hospitals and the 29 health centers.

Figure 10: Percentage of Facilities Utilizing IFRR in Their Dispensing Units by Facility Types



Source (Field Research, 2018)

Based on figure 10, the finding of this study shows the two hospitals utilize IFRR in the major dispensing units OPD, ART and TB (100%). One hospital utilizes IFRR in MCH (50%). 89.66% of health centers utilize IFRR in OPD dispensing unit. 68.97%, 48.28% and 65.52% of health facilities utilize IFRR in the major dispensing units ART, MCH and TB. The utilization degree of IFRR in the major dispensing units is high at the hospital level than health center.

4.6. Order Fill Rate

Data collected through the RRF are used to make a number of important logistics decisions. Mainly, annual quantification and forecasting and regular product refill/resupply decisions are based on the RRF data. PFSA resupplies facilities with the requested quantities within one month of receiving the request. For products procured through the revolving drug fund (RDF), if the product is not available at the PFSA store, facilities can buy products from PFSA or other vendors anytime without a specific resupply schedule.

In this section the researcher tries to explore findings on the percentage of selected pharmaceuticals that were resupplied with the quantity that was requested by the health facilities in the last period.

For this section, the researcher surveyed 2 hospitals and 22 health centers that utilize RRF.

Table 4.5: Findings on Percentage of Order Fill Rate of Selected Pharmaceuticals by Facility type for Last Order Period

No	Pharmaceuticals	Hospitals			Health Centers		
		Quantity Ordered	Quantity Received	Order Fill Rate	Quantity Ordered	Quantity Received	Order Fill Rate
1	**Amoxicillin in 10 uni.**	1600	1650	105%	5500	5100	92.73%
2	**TDF+3TC+EFV,in pk**	400	400	100%	750	750	100%
3	**Ceftriaxone , vial**	1200	1000	83.33%	2640	2300	87.12%
4	**Co-trimoxazole, in pk**	300	300	100%	2200	1700	77.27%
5	**RHZE, 24x28**	400	320	80%	2400	1900	79.17%
6	**Medroxy Progestrone Acetatel, in vial**	700	700	100%	4400	4400	100%
7	**Stat Pack of 20 or KHB of 50, in pack**	120	95	79.17%	880	745	84.65%
8	**Oral Rehydration Salt**	420	420	100%	2310	2310	100%
9	**AZT+3TC+NVP 300+150+200mg of 60**	1200	1200	100%	2800	2800	100%
Average				94.17%	**Average**		91.23%

Source (Field Research, 2018)

The average order fill rate at the hospital level is 94.17% which is better than the order fill rate of health centers which comprise 91.23%. The survey of this study finds the cause for the discrepancy of quantity ordered and quantity received for some pharmaceuticals in health facilities is due to shortage of pharmaceuticals at the PFSA store.

4.7. Product Availability

In logistics system, the most essential key thing is stock availability that improves the performance of health facilities. Stock out in any health system can result in patients going without prescribed pharmaceuticals and put the performance of the health facilities in question.

4.7.1. Stock Outs in the Previous Most Recent Six Months in the Health facilities

In this sub section the researcher try to explore the availability of selected pharmaceuticals within the previous six months from January, 2018 to June, 2018. This is done through data which are collected from health facilities that utilize and update bin cards for managing logistic inventory. The data which is collected by the researcher are on the basis of the record keeping of the health facilities.

Table 4.6: Duration and Frequency of Stock Outs with in the Previous Six Months from January, 2018 to June, 2018 for Selected Pharmaceuticals by Facility Type

No	Pharmaceuticals	Hospitals		Health Centers		Health Posts	
		No. of Days Stock Out	Frequency of	No. of Days Stock Out	Frequency	No. of Days Stock Out	Frequency
1	**Amoxicillin**	15	2	65	3	Not Avail	Not Aval
2	**TDF+3TC+EFV**	40	3	60	2	Not Avail	Not Avail
3	**Ceftriaxone**	30	1	25	2	Not Avail	Not Avail
4	**Co-trimoxazole**	10	1	20	2	40	2
5	**RHZE**	40	3	60	2	Not Avail	Not Avail
6	**Medroxy Progestrone Acetatel**	20	1	30	2	Not Avail	Not Avail
7	**Stat Pack of 20 or KHB of 50**	25	2	35	1	Not Avail	Not Avail
8	**Oral Rehydration Salt**	70	3	50	1	10	1
9	**AZT+3TC+NVP 300+150+200mg of 60**	20	2	40	2	Not Avail	Not Avail
Average		30	2	42.78	1.89	25	1.5

Source (Field Research, 2018)

Based on table 4.6, it is possible to find the percentage of availability and stock out for selected pharmaceuticals listed above within the previous six months.

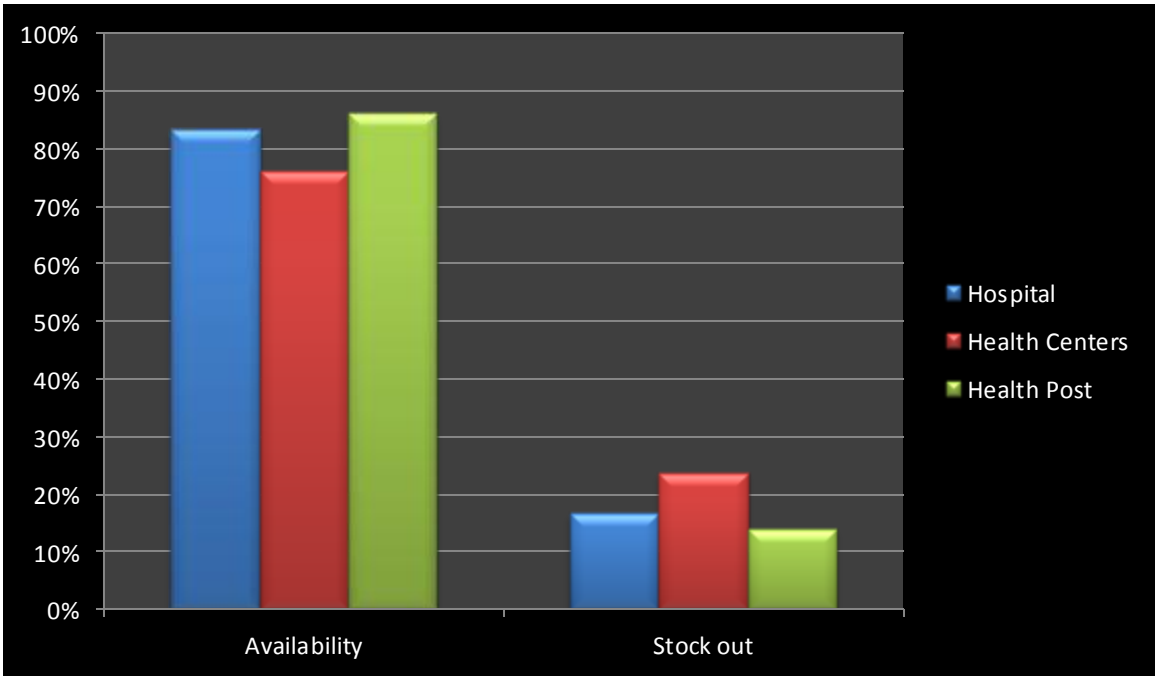
At the hospitals the average number of days in which selected pharmaceuticals stock out are 30 days. Hence percentage of stock out within the previous six months is 16.67%, therefore the availability of pharmaceuticals at the hospitals are 83.33%.

At the health centers the average number of days in which selected pharmaceuticals stock out are 42.78 days. Hence percentage of stock out within the previous six months is 23.77 %, therefore the availability of pharmaceuticals at health centers are 76.23%.

At the health posts the average number of days in which selected pharmaceuticals at the health post level stock out are 25 days. Hence percentage of stock out within the previous six months is 13.89%, therefore the availability of certain pharmaceuticals for health post level is 86.11%.

The average number of times stock out for hospitals, health centers and health posts are 2, 1.89 and 1.5. At hospitals stock out are more frequent than health centers and health posts and also the average number of times stock out at health posts is shorter than health centers due to health posts depend on health centers for re-supply

Figure 11: Percentage of Availability and Stock out of selected pharmaceutical within the previous six months by facility type



Source (Field Research, 2018)

4.7.2. Stock Status in Dispensary Units in the Day of Visit

In this sub section the researcher try to explore findings on stock out of the product on the day of visit in four dispensing units, OPD, ART, MCH and TB of 2 hospitals and 31 health centers. This analysis is done by visually verify the usable pharmaceuticals in dispensing units.

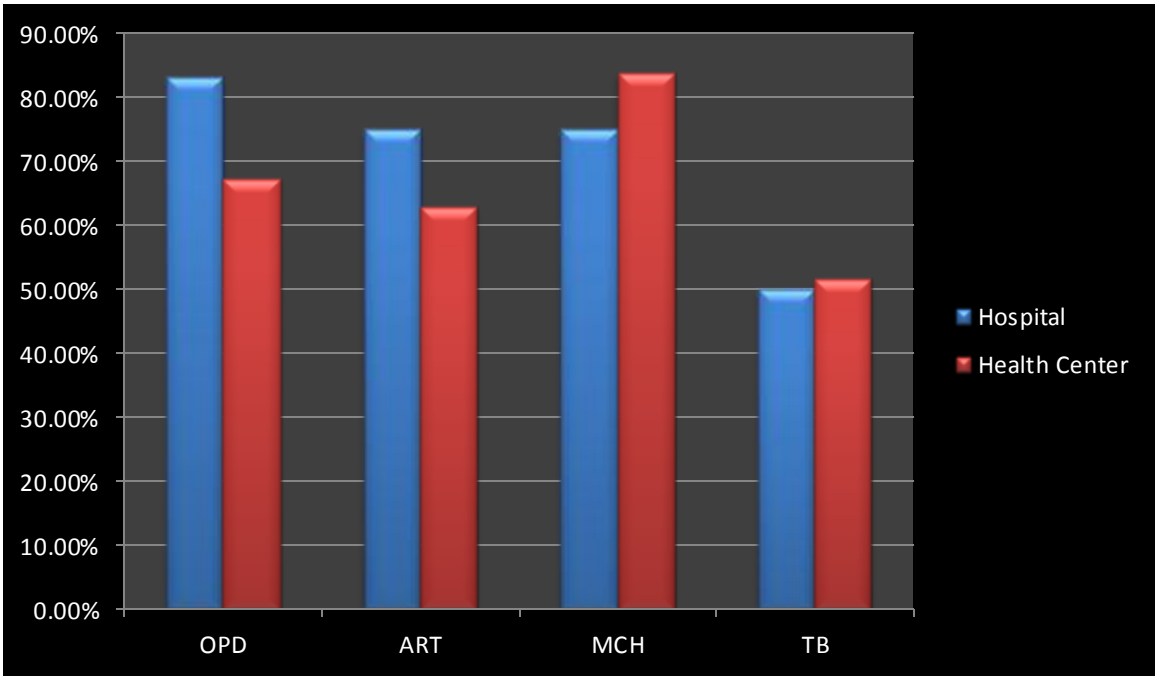
Table 4.7: Stock out of Selected Pharmaceutical in Dispensing Unit of health Facility in the Day of Visit by Facility Type; June, 2018

Sr. No.	Pharmaceuticals	Number of Hospitals Stock out in DUs				Number of Health Centers Stock out in DUs			
		OPD	ART	MCH	TB	OPD	ART	MCH	TB
1	**Amoxicillin**		1			9	12		
2	**TDF+3TC+EFV**	1				3	5		
3	**Ceftriaxone**					11	13		
4	**Co-trimoxazole**		1			14	9		
5	**RHZE**				1				16
6	**Medroxy Progestrone Acetatel**							3	
7	**Stat Pack of 20 or KHB of 50**			1				7	
8	**Oral Rehydration Salt**		1			7	19		
9	**AZT+3TC+NVP 300+150+200mg of 60**	1				17	18		

Source (Field Research, 2018)

On the day of visit the finding of the survey shows, Amoxicillin is stock out in the 2 hospitals' ART Dispensing units and in 9 health centers' and 12 health centers OPD and ART dispensing units respectively and so on. Based on the data obtained, it is possible to determine the percentage of availability of selected pharmaceuticals in dispensing units of the health facilities in the day of visit.

Figure 12: Percentage of Availability of selected pharmaceutical in dispensing units of the health facilities in the day of visit by facility type, June, 2018



Source (Field Research, 2018)

From the figure the availability of pharmaceuticals in OPD dispensing unit at the hospitals is 83.33% and the availability of pharmaceuticals in ART, MCH and TB dispensing units at the hospitals are 75%, 75% and 50% respectively. The availability of pharmaceuticals in OPD, ART, MCH and TB dispensing units at health centers are 67.21%, 62.90%, 83.87% and 51.61% respectively. The availability of pharmaceuticals in dispensing units of the hospitals on average is 70.83%. The availability of pharmaceuticals in dispensing units of the health centers on average is 66.40%.

4.8. Storage Condition

To supply customers with quality products, health facilities must have secure, protected, and well organized storage areas that circumvent damage. For the assessment the storage conditions of health facilities, this study put eleven parameters. Besides using questionnaires for the assessment, the researcher used observations and interviews with health facilities staff assess the adherence of health facility stores to these parameters. Stores that fulfill 80% and more than 80% of the parameters are categorized as suitable otherwise unsuitable.

Eleven (11) parameters to measure the suitability of the store of the health facilities

Parameters to Measure the Suitability of Storage Condition

- ✓ Pharmaceuticals are arranged &organized according to A logical categorization ,e.g. zoning
- ✓ Bin Cards are used & up dated regularly?(Observe by Checking a five or more sample BCs.)
- ✓ Are unwanted items(damaged or expired drugs, non-pharmaceutical items, etc.) in the store room separated from the usable stock?
- ✓ Products are arranged so that ID labels, expiry dates, and/or manufacturing dates are visible.
- ✓ Products are stored& organized in manner which facilitates use of First-to-Expire, first-out (FEFO).
- ✓ Products are protected from direct sun light and high heat at all times of the day/during all seasons.
- ✓ The storeroom is maintained in good condition (clean, no trash, sturdy shelves, and boxes well-organized).
- ✓ The currents pace and organization is sufficient for Existing products and reasonable expansion (i.e., receipt of expected product deliveries for fore see able future).
- ✓ Storage area is secured with a lock and key ,but is accessible during normal working hours; access is limited to authorized personnel
- ✓ Storage area is visually free from harmful insects and rodents (Check the storage area for traces of bats and/or rodents [droppings or insects]).
- ✓ Cartons and products are in good condition, not crushed due to mishandling. If cartons are open, determine if products are wet or cracked due to heat/radiation

The result of observational assessment and interview with key experts shows that, 2 hospitals, 31 health centers and 4 health posts are surveyed by the researcher. On the basis of the survey one hospital fulfill 10 parameters which comprise 90.90% so it has suitable storage condition and the other hospital only fulfill 7 parameters which comprise 63.64% so it has unsuitable storage condition.

From 31 health centers 8 health centers fulfill 9 parameters which comprise 81.81% so have suitable condition. The remaining 23 health centers on average fulfill 6 parameters which comprise 54.55% so have unsuitable condition. All health posts on average fulfill 5 parameters which comprise 45.45% so have unsuitable storage condition.

4.9. Assessment of Inventory Management Challenges in Health Facilities

Inventory Management is the core of pharmaceutical supply management, without which the entire supply chain structure is not viable. The concept of inventory management sounds easy when it is just described as the process to order, receive, storage, issue and then reordering of a limited list of product. In reality, implementation of a robust inventory system for a pharmaceutical supply is a difficult task. A poor inventory management can creep irrational utilization of drugs, shortage or overage of essential medicines resulting in expiration, increase in holding cost and decline in quality of healthcare service.

In this section the researcher tries to explore the major findings on the inventory management challenges of the surveyed health facilities. This is done on the basis of the respond of 79 respondents (6 from hospitals, 67 from health centers and 6 from health posts) from the surveyed health facilities to questionnaire format which contains 10 parameters for the assessment of the inventory management challenges. Five numbers 1 to 5 set for each parameter. The numbers stand for the level of response i.e 1= strongly disagree, 2=disagree, 3=Neutral, 4=agree, 5=strongly agree

Table 4.8: Number of Respondents Answer to Each Questionnaire Question for the Assessment of the Inventory Management Challenges by Facility Type

No	Questions	Hospitals					Health Centers					Health Posts				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1	Automated recording system can improve your inventory management practice	1	2	-	2	1	4	55	3	5	-	2	4	-	-	-
2	The type of trainings has an impact on your inventory management practice	-	3	1	1	1	5	47	6	7	2	2	3	1	-	-
3	The type of personnel involved in inventory management practice does not matter, as far as they are certified from any discipline	2	4	-	-	-	-	17	4	40	6	-	3	1	2	-

No	Questions	Hospitals					Health Centers					Health Posts				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
4	Service years do have an impact on inventory management	-	1	1	2	2	3	13	3	40	8	1	4	-	1	-
5	Incentives to staffs can improve inventory management practice	-	-	-	1	5	-	-	-	8	59	-	-	-	2	4
6	Frequency of stock taking does not matter once the records are accurately filled	-	-	2	3	1	-	2	8	51	6	-	2	-	3	1
7	Regular supervision does have input for improvement of inventory management practice	1	3	1	1	-	-	39	20	3	5	2	3	-	1	-
8	Regular meeting for discussion on inventory management practice does have an influence on inventory management performance	2	2	2	-	-	25	20	10	12	-	-	4	1	1	-
9	Medicines stock out rate in your facility is a major problem	1	3	1	1	-	10	34	-	13	10	5	1	-	-	-
10	Interruption of electric power supply affects your storage condition	-	-	-	3	3	-	-	5	56	6	-	-	-	-	6

Source (Field Research, 2018)

Based on the response of the respondents, it is possible to calculate the weighted mean for each parameter or question by facility type and by considering the weighted mean value ≥ 3.5 and < 3.5 it is possible to interpret the findings for each question.

$\overline{W} = \frac{\sum x_i f_i}{N}$ Where f_i is level of responses where $f_i = 1, 2, 3, 4, 5 \; and \; i = 1, 2, 3, 4, 5$ and x_i is number of respondents for each level of response and $\overline{W}$ is weighted mean

Table 4.9: Weighted Mean of Each Questions of Table 4.11 by Facility Type

Question Number	WEIGHTED MEAN		
	Hospitals	**Health Centers**	**Health Posts**
Q1	3	2.13	1.67
Q2	3	2.38	1.83
Q3	1.67	3.52	2.83
Q4	3.83	3.55	2.17
Q5	4.83	4.88	4.67
Q6	3.83	3.91	3.5
Q7	2.67	2.61	2
Q8	2	2.13	2.5
Q9	2.33	2.69	1.17
Q10	4.5	4.01	5

Source (Table 4.9)

The weighted means for question 10 are 4.5, 4.01 and 5 at the hospitals, health centers and heath posts respectively. Therefore Interruption of electric power supply affects storage condition at the hospitals, health centers and heath posts most significantly at health posts. The weighted means for question 5 are 4.83, 4.88 and 4.67 at the hospitals, health centers and heath posts respectively. Hence respondents believe that incentives to staffs can improve inventory management practice. The weighted means for question 6 are 3.83, 3.91 and 3.5 at the hospitals, health centers and heath posts respectively. Therefore the respondents believe that frequency of stock taking does not matter once the records are accurately filled. On the same manner for question 1 using automated recording system to improve the inventory management practice is poor at the three health facilities most significantly at health posts and health centers. The type of training has good impact for inventory management at the health centers and has poor impact at hospitals and health posts. Service year has an impact for inventory management at the hospitals and health centers but not at health posts. Regular supervision and Regular meeting for discussion on inventory management practice do not have influence on inventory management at the three health facilities.

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1. Summary

The first thing that is surveyed in this study is training in IPLS for responsible staff members of health facilities. The survey of the study shows the degree of giving training to responsible staff members at the hospitals is 100% where as to health center is 85.07%. But the survey shows at the health posts all respondents, who responsible for logistic inventory are not trained in IPLS. The second thing this study surveyed is facility service and infrastructure. The coverage of ART service at hospitals is 100% and at health centers is 83.78%. But all health posts which are taken for this study do not have ART service. Infrastructures like availability of paved road in the facility, operational electricity, operational water in the building and operational telephone (mobile) are also surveyed in the selected health facilities. On average the availability of those all infrastructures at hospitals is 100%, at health centers is 77.02% and at health post is 32.19%. The other crucial things which surveyed in this study are the degree of availability, utilization and updating of logistic record and report formats which are crucial for the implementation of IPLS. The finding of this study shows the availability of blank bin cards at hospitals, health centers and health posts are 100%, 83.78% and 42.86%. The degrees of utilizing those blank cards are, 100%, 75.56% and 50% at hospitals, health centers and health posts respectively. The degrees of updating those used blank bin cards are, 100%, 75.92% and 100% at hospitals, health centers and health posts respectively. RRF and IFRR are used by hospitals and health centers for logistic report where as health posts use HPMRR for logistic report. The availability of RRF formats at hospitals is 100% and at health centers is 70.27%.

The degree of utilizing RRF formats for logistic report at hospitals is 100% and at health centers is 84.62%. The degree of availability of HPMRR formats at health posts is 59.46% and the degree of utilizing HPMRR for logistic report at health posts is 75%. IFRR is a logistic report format utilized to re-supply dispensing units of health facilities by store. The degrees of availability of IFRR are 100% and 78.38% at hospitals and health centers respectively. The degrees of utilizing IFRR by major dispensing units of hospitals and health centers are 87.5% and 68.10% respectively. The study also explored major findings on product availability.

The availability of selected pharmaceuticals at hospitals, health centers and health posts are 83.33%, 76.23% and 86.11% respectively.

Finally this study explored the storage condition of the health facilities. The finding of the study shows the surveyed hospitals fulfill 77.23% of the parameters for acceptable storage condition and the surveyed health centers fulfill 68.18% of the parameters for acceptable storage condition. The surveyed health posts fulfill 45.45% of the parameters for acceptable storage condition.

5.2. Conclusion

IPLS is the term applied to a single pharmaceuticals reporting and distribution system. It integrates the supply chain management of all types of pharmaceuticals (medicines, medical supplies and equipment, and laboratory chemicals and reagents) in the public health sector. The IPLS is found to be well designed for the purpose it is intended to serve; all the basic logistics data items, as defined by PFSA, are clearly identified and defined in the IPLS SOP with their sources and accompanying instructions.

This study critically examines the degree of implementation of IPLS and its challenges in health facilities by taking a case in 46 health facilities (2 hospital, 37 health centers and 7 health posts) in Guji and Western Guji zone of Oromia.

5.3. Recommendations

Even though some of the findings of this study are motivating, there are some identified problems that need to be addressed for system enhancement. Based on the findings of this study, the following recommendations are forwarded for action by the appropriate stakeholders.

- PFSA and Woreda health offices need to have training plan for those staff members of health centers and health posts who are responsible for the implementation of IPLS practices to cover the identified gap in training at health centers and health posts.
- The Woreda health offices in collaboration with Zonal and regional health offices need to have need assessment plan in order to widen ART service at health centers and if it is necessary at health posts to the cover the gap on the scope of ART service at health centers and health posts. The Woreda health offices and the Woreda administration should work in collaboration with Zonal health offices and Zonal administration in order to solve infrastructures problem of health centers and health posts.

- Availability of logistic record and report formats are the main problems at health posts and to some extent at health centers. To fill this gap every responsible body like Woreda health offices and PFSA should distribute regularly on the basis of the need of the health facilities.
- The degree of utilizing available logistic recording and reporting formats need to be improved at health posts and to some extent at health centers. To fill this gap responsible stake holders like Woreda health offices and PFSA should give supportive training and implement regular supervision on health facilities.
- The availability of pharmaceuticals in the health facilities relatively good but due to low degree of utilizing logistic record and report formats at health posts and health centers lead the mismanagement of pharmaceuticals and over stocking. To full fill this gap, every stake holders should work for the complete implementation of IPLS at all health facilities.
- Utilization of automated record keeping is poor in all health facilities this needs to be improved.
- The storage conditions of all health facilities on average do not satisfy the parameters of acceptable storage condition. To full fill this gap the PFSA, Woreda health offices, Zonal health office and Regional health office should support health facilities to improve the storage condition.
- 70.27% of Health centers deliver products directly from PFSA. To full fill the remaining gap the health centers should work in close proximity with PFSA in order to deliver products directly from PFSA.
- All stake holders who are responsible for the implementation of IPLS should also focus on monitoring and evaluation of IPLS practices at all level of the health facilities.

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ANNEX

Annex 1: Dissemination plan

The result of the study will be presented to the staff of the school of commerce, Addis Ababa University, In addition to this the findings of this study will be published in journals if it deserves. The final (report paper) will be submitted and finding will be communicated with the zonal heath bureau in the area (Guji and West Guji zones). The study result will be present in the annual scientific conferences of health professional associations' and attempts will also be made to published in reputable local or international journals.

Annex 2: Work plan

S/N	Activities	April	May	June	July	August	September
2	Proposal development and submission	√					
3	ethical clearance	√					
4	Recruiting and Training of data collectors and supervisors		√				
5	Pretest questionnaires		√				
6	Actual data collection		√	√			
7	Data entry, cleaning &Data analysis			√			
8	Writing results and discussion			√	√		
9	Preparation of first draft and submission to advisors				√		
11	Final draft preparation and submission				√		
13	Thesis defense and result Dissemination					√	√

Annex 3: Data collection Format

Addis Ababa University

School of Commerce

Section I: Background Characteristics of the Respondent

Name of the Respondents: _____

Sex: _____

Educational Qualification: _____

Work Experience in Year: _____

Profession: _____

Are You Trained in IPLS: _____

Section II: Facility Services and Infrastructure

No	Questions	Code Classification
01	Region, Zone, Woreda, City/ Town	
02	Supplying Hub	
03	Facility Code	
04	Type of Facility	1=PFSA 2=PFSA hub 3=Hospital 4=Health Center 5= Health Post 6=Other_____
05	Does your facility provide ART Service	1=Yes 2=No
06	Product Delivery Modalities from PFSA	1=Direct 2=Indirect
07	**Availability of the following facility at the health facility**	
	Paved road to the facility	1=Yes 2=No
	Operational electricity on day of visit	1=Yes 2=No
	Operational water in the building on day of visit	1=Yes 2=No
	Operational Telephone(Mobile)	1=Yes 2=No

Section III: IPLS Implementation

No	Questions	Code Classification
01	**Are the following LMIS formats, jobs Aides and SOP at the facility? (Ask documents to verifay)**	
	Bin Cards	1=Yes 0=No
	Health Post Monthly Report Re-supply form (HPMRR)	1=Yes 0=No
	Internal Facility Report and Requisition Voucher(IFRR)	1=Yes 0=No
	Facility Report and requisition Form(RRF)	1=Yes 0=No
	Standard Operation Procedure(SOP)	1=Yes 0=No
02	**Do you use the following stock keeping logistics forms to manage health products in the facility? (Must be verified by checking sample completed cards).**	
	1. Bin Cards	1=Yes 0=No
	2. Other(Specify)_____	1=Yes 0=No
03	**What LMIS forms do you use for reporting/ordering? Multiple responses are possible. Must be verified with completed report**	
	A. FRR	1=Yes 0=No
	B. RRF	1=Yes 0=No
	C. Other	1=Yes 0=No
04	The health facility complies and sends RRF reports to higher level	1=Yes 0=No
05	If yes for question No. 4 to who Multiple responses are possible. Do not read the response	PFSA_____A RHB_____B Zone health office _____C WHO_____D You Don't know _____F Other(Specify)_____W

06	If yes for question No.4, how often are these LMIS(RRF) reports sent to higher level Multiple responses are possible. Do not read the response	Monthly _____A Bimonthly (every two month) ____B Quarterly _____C Annually _____D Semiannually _____E Other (Specify) _____W
07	When was the last time this facility sent RRF? Must be verified with complete report.	Never_____1 Within the last month _____2 Two month ago _____3 Three month ago _____4 More than three month ago_____5
08	Are all the columns in RRf completed for all medicines? Must be verified with complete report.	1=Yes 0=No Completed report not Available____9
09	**Do major dispensing units (DUs) use IFRR for regular reporting?**	
	OPD	1=Yes 0=No NA=99
	ART	1=Yes 0=No NA=99
	MCH	1=Yes 0=No NA=99
	LAB	1=Yes 0=No NA=99
	TB	1=Yes 0=No NA=99
10	How many emergency orders have you placed in the last three month? If available, ask for documents to verify using RRF	None _____0 1 _____1 2 _____2 3 _____3 More than 3 _____4 NA _____5
11	Who determines the facility's re-supply quantities? Multiple responses are possible.	The facility itself _____A Higher level(Health center, PFSA/Woreda/Zone/RHB) _____B Other _____W
12	What are the sources of supply for RDF commodities in the facility? Multiple responses are possible	PFSA_____A RHB _____B ZHD _____C Woreda _____D Health center _____E Other (Specify) _____w
13	If multiple responses is given for Question 12, what is the usual source (or most common source)? Select only one answer	PFSA_____1 RHB _____2 ZHD _____3 Woreda _____4 Health center _____5 Other (Specify) _____6

Section IV. Product Availability

Table1.StockStatus (Specify a full six month period prior to this data collection; and the day of visit)

Column:

1. Name of all authorized products that will be counted
2. Unit of count for the product

Note: Columns 1 and 2 will be filled out before questionnaires are printed for the survey.

3. Record whether or not the product is managed at this facility, answer Y for yes or N if no.
4. Check if the bin card is available, answer Y for yes or N for no.
5. Check if the bin card has been updated within the last 30 days, answer Y for yes or N for no.

Note: If the bin card was last up dated with the balance of 0 and the facility has not received any resupply, consider the bin card up-to-date.

6. Record the balance on the bin card.
7. Record if the facility has had any stock out of the product during the 6 month period from Sept 2015, to Feb 2016, answer for yes or N for no.
8. Record how many times the product stocked out during the 6month period from Sept 2015, to Feb 2016, according to bin cards, if available.
9. Record the total number of days the product was stocked out between Sept 2015, to Feb 2016, only.
10. Record the quantity of product issued from the store room between Sept 2015, to Feb 2016, only.
11. Record the number of months the issued data represents (may be 6 months or less); record the months for which there is any data available, including 0.
12. Record the physical count in the store room.
13. Record if the facility experiencing a stock out of the product on the day of the visit, answer Y for yes or N for no. If products are available outside the store room there is no stock out. Visually verify that usable products are in stock.
14. Record if the facility has expired products. If there are products that are near expiry (within one month), Note the product and quantity in the comments section.

Maximum months of stock_____

Minimum months of stock Order interval_____

Product	Units of count	Manage date this facility? (Y/N)	Bin card available ?(Y/N)	Bin card updated? (Y/N)	Balance on bin card	Stock out most recent6 months (Y/N)	Number of stock outs	Total number of days stocked out	Total issued (most recent6 months)	Number of Months of data available	Physical inventory — Store room	Stockout today? (Y/N)	Availabilityof expired product (Y/N
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Amoxicillin 500mg/250 mg Capsule	10												
TDF+3TC+EFV 300+300+600mg Tab of 30	PK												
Ceftriaxone 1g-m/500mginjection	Vial												
Co-trimoxazole 480mg/960mg of 1000	PK												
Co-trimoxazole 240mg/5ml suspension,100ml	Bottle												
RHZE-150mg/75mg+400mg+275	24X28												
Medroxyprogesterone Acetate150mg/mlin1mlvial (Depo-Provera)Injection with 1mlsyringeand needle	Vial												
Stat pack of 20 or KHB of 50	Pack												
Oral Rehydration Salt (ORS)	Sachet												
AZT+3TC+NVP 300+150+200mg of 60	Pack												

Section V: Stock Status in Dispensary Units

Table 2:

1. Name of all authorized products that will be assessed
2. Unit of count for the product balance of 0 and the dispensing unit has not received any re-supply, Consider the bin card up-to-date.
3. Record if the dispensing unit experiencing as to ck out of the product on the day of the visit, answer Y for yes or N for No. Visually verify that usable products are in stock.

Sr No	Product	Units of Count	OPD Stock out today? (Y/N)	ART Stock out today? (Y/N)	MCH Stock out today? (Y/N)	TB Stock out today? (Y/N)	IPD Stock out today? (Y/N)	
	1	2	3	3	3	3	3	
1	Amoxicillin 500mg/250mg capsule	10						
2	TDF+3TC+EFV 300+300+600mg Tab of 30	PK						
3	Ceftriaxoneg-1gm/500mg injection	Vial						
4	Co-trimoxazole 480mg/960mg of 1000 tab	PK						
5	Co-trimoxazole 240mg/5ml suspension, 100ml	Bottle						
6	RHZE-150mg/75mg+400mg+275mg-tablet	24X28						
7	MedroxyprogesteroneAcetate150mg/mlin1mlvial (Depo-Provera) Injection with 1mlsyringeand needle	vial						
8	Stat pack of 20 or KHB of 50	Pack						
9	Oral Rehydration Salt (ORS)	Sachet						
10	AZT+3TC+NVP 300+150+200mg of 60	PK						

Section VI. Storage Conditions

Table 3. Storage Conditions

Items 1-11 should be assessed for all facilities for products that are ready to be issued or distributed to clients. Place a check mark in the appropriate column based on visual inspection of the storage facility; note any relevant observations in the comments column. ***To qualify as "yes," all products and cartons must meet the criteria for each item.***

No	*Description*	Yes	Comments
01.	Pharmaceuticals are arranged &organized according to A logical categorization ,e.g. zoning		
02.	Bin Cards are used& up dated regularly?(Observe by Checking a five or more sample BCs.)		
03.	Are unwanted items(damaged or expired drugs, non-Pharmaceutical items, etc.) in the store room separated from the usable stock?		
04.	Products are arranged so that ID labels, expiry dates, and/or manufacturing dates are visible.		
05.	Products are stored& organized in manner which facilitates use of First-to-expire, first-out(FEFO).		
06.	Products are protected from direct sun light and high heat at all times of the day/during all seasons.		
07.	The storeroom is maintained in good condition (clean, no trash, sturdy shelves, and boxes well-organized).		
08.	The currents pace and organization is sufficient for Existing products and reasonable expansion (i.e., receipt of expected product deliveries for fore see able future).		
09.	Storage area is secured with a lock and key ,but is Accessible during normal working hours; access is limited to authorized personnel.		
10.	Storage area is visually free from harmful insects and rodents.(Check the storage area for traces of bats and/or rodents[droppings or insects].)		
11.	Cartons and products are in good condition, not crushed Due to mishandling. If cartons are open, determine if products are wet or cracked due to heat/radiation		

Section VII. Order Fill Rate

Table5.PercentageDifference between quantity Ordered and quantity Received Column:

1. List the same products as in table1 or use a sample of those products.
2. Whether or not the product is managed at this facility, answer Y for yes or N if no.
3. Check if the bin cards and RRF are available, answer Y for yes or N for no.
4. Enter the quantity ordered for the last order period for which products should have been received (i.e., don't include open orders whose expected receipt date has not arrived).
5. Enter the quantity received in the last order.

Product	**Managedatthe facility** **No=0Yes= 1**	**AreRRFs available?No=0 Yes= 1** ***(IfNOSkipto nextitem–only useacceptable datasources)***	**Quantity Ordered For Last Order Period**	**Quantity ReceivedInLast Order/Procureme nt**	**Reasons for discrepancy**
1	**2**	**3**	**4**	**5**	
Amoxicillin 500mg/250mg capsule					
TDF+3TC+EFV 300+300+600mg					
Ceftriaxoneg-1gm/500mg injection					
Co-trimoxazole 480mg/960mg of					
Co-trimoxazole 240mg/5ml					
RHZE-150mg/75mg+400mg+275mg-tablet					
MedroxyprogesteroneAcetate150mg/mlin1mlvial(Depo-Provera)Injectionwith 1mlsyringeand needle					
Stat pack of 20 or KHB of 50					
Oral Rehydration Salt (ORS)					
AZT+3TC+NVP 300+150+200mg of					

Part VIII: likert scale type questions for the assessment of inventory management challenges in IPLS implementation. The following questions are for the assessment of inventory management challenges, please give your answer by encircling the numbers provided after each questions. The numbers stand for the level of responses i.e. 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree

S.№	Questions	Level of responses				
01	Automated recording system can improve your inventory management practice	1	2	3	4	5
02	The type of trainings has an impact on your inventory management practice	1	2	3	4	5
03	The type of personnel involved in inventory management practice does not matter, as far as they are certified from any discipline	1	2	3	4	5
04	Service years do have an impact on inventory management	1	2	3	4	5
05	Incentives to staffs can improve inventory management practice	1	2	3	4	5
06	Frequency of stock taking does not matter once the records are accurately filled	1	2	3	4	5
07	Regular supervision does have input for improvement of inventory management practice	1	2	3	4	5
08	Regular meeting for discussion on inventory management practice does have an influence on inventory management performance	1	2	3	4	5
09	Medicines stock out rate in your facility is a major problem	1	2	3	4	5
10	Interruption of electric power supply affects your storage condition	1	2	3	4	5