School of Information Science and School of Public Health M.Sc in Health Informatics Programme

Project Report

Determinants of Health Management Information Utilization for Decision Making in Health Facilities improvement project at Woliso Town administration health office S/W/Shoa zone of Oromia region

By

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Determinants of health management information utilization for decision making in health facilities improvement project at Woliso Town administration health office

A research project submitted to the School of Graduate Studies of Addis Ababa University in Partial Fulfillment of the Requirements for the Degree of Master of Science in Health Informatics

By

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Declaration

I declare that the project research is my original work and has not been presented for a degree in any other University

Tesfaye Kitaba

Signature _____

Date_____

This Project research has been submitted for examination with my approval as university advisor

Advisors

Name	Date	Signature
Dr Tibebe Beshah	_____	_____
Dr Wakgari Deresa	_____	_____

Dedication

This work is dedicated to my Wife and Children for their love, Patience, understanding and support. May God bless them for their unending motivation.

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I wish to acknowledge my advisors Dr.Tibebe Beshah and Dr.Wakgari Deressa for their constrictive guidance, inputs and inspiration during the planning and execution of the project.

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Finally I thank my families and friends for their endless love, encouragement and moral support. They are my source of inspiration, strength and joy. I wish them happiness and good health all the time.

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List of abbreviations

CBOs	Community based organizations
DPT	Diphtheria, Pertussis and Tetanus
FGDs	Focus group discussions
FMOH	Federal Ministry of Health
HF	Health Facility
HIS	Health information system
HMIS	Health Management Information System
HSDP	Health Sector Development Program
ICD	International classification of disease
ICT	Information and Communication Technology
IT	Information Technology
M&E	Monitoring and Evaluation
MAT	Management assessment tool
MDGs	Millennium Development Goals
MEASURE	Monitoring & Evaluation to Assess and Use Results
NGO	Non Governmental Organization
OBAT	Organizational and behavioral assessment tool
OGO	Other Governmental Organization
OPD	Outpatient department
PRISM	Performance of Routine Information System Management
RHIS	Routine Health information system
SNNPR	Southern Nation Nationalities Peoples Region
SPSS	Statistical Package for Social Science
TT	Tetanus Toxoid
VCT	Voluntary counseling and testing
VDRL	Veneral diseases research laboratory
WoHOs	Woreda health offices
ZHD	Zonal health department

Abstract

Introduction:-The primary aim of HMIS is to support informed operational and strategic decision-making in the health care system by providing quality data that help managers and health workers to plan and manage the service of health care delivery for the population. Data must be collected, processed and transformed, communicated, and used to inform decisions on resource allocations, policies, staffing, service delivery, cost-recovery, supportive supervision, and other elements working toward improved health outcomes.

Objective: - To identify determinants of Health management information utilization for decision making in health facilities of Woliso Town administration Health office.

Method: - A cross sectional, descriptive study was conducted in the health facilities found in Woliso Town Administration. A structured questionnaire was filled by 38 health professionals. Observation cheek list was used to observe different documents and in-depth interview with 6 candidates using semi structured questionnaire and a total of 44 health professionals and HIS focal persons was participant of the study. The data from the questioner were checked, entered and analyzed using SPSS version 16. Data was described and presented using frequencies, tables, and graphs. Determinants that affect the use of HMIS were analyzed using logistic regression. Odd ratio with 95 percent confidence interval and 5% level of precision were used for data interpretation.

Result: - The overall utilization of information by health workers were 50%.The main determinant factors that limit use of information was inadequate training of health workers to fill out format, managers poor data quality cheek with review team regularly, Inadequate feed back to the staff regularly by managers and poor discussions of achievements with their friend by health workers and low confidence level of health workers in calculating percentages and rates correctly were the major ones. These determinants need improvement through proposed solutions and intervention.

Conclusion and recommendation: - The study project demonstrates limited utilization of routine data to make decisions in the health facilities due to many determinant factors identified as Technical, Organizational and Behavioral factors that needs intervention. It can be used as base line to intervene on identified determinants to improve utilization of information for decision making in government health facilities of Waliso Town Administration.

CHAPTER ONE

1. Introduction

1.1. Background

Health Information System (HIS) is one of the six health system building blocks. A well-functioning health information system supports the delivery of health services by ensuring the analysis, dissemination and use of reliable and timely information on health determinants, health system performance and health status (1).

According to the assessment of the Ethiopian National health information system final report (2007) indicate that, among the six major components of HIS resources, three were very weak, data management, dissemination and use were rated as "not adequate". Among the HIS resources, policy and planning, as well as HIS institutions, human resources and finance were rated inadequate, while HIS infrastructure is rated present but not adequate. Referring to dissemination and use of health information, analysis and use was found to be present but inadequate, while planning and priority setting was rated the least. On the other hand policy and advocacy, resource allocation and implementation and action were rated not adequate (2).

Routine health information forms a critical backbone of strong health systems, and strengthening routine health information systems is a challenging task currently being confronted by countries throughout the developing world. Data must be collected, processed and transformed, communicated, and used to inform decisions on resource allocations, policies, staffing, service delivery, cost-recovery, supportive supervision, and other elements working toward improved health outcomes (3).

There is no value in collecting HMIS data unless they are turned into information that health workers and managers can use and give decision to improve health service delivery. Therefore, priority in HMIS reform should be given to training in interpretation of information and problem solving techniques, and especially to facility and woreda managers whose decisions and actions

have the most immediate and direct effect on service delivery. Successful implementation of HMIS process reform requires reorientation of both process and organizational culture from data collection towards use of information for continuous quality improvement (4).

HMIS has been envisaged to not only help the administrators to have better monitoring and control of the functioning of hospitals and public health programs, but also assist the doctors and medical staff to improve health services with readily reference patient data, work flow across the health institution by using decision support indicators. This also enabled less paper-process and parameterized alarms and triggers during patient treatment cycle. HMIS enables monitoring pre-defined health indicators and the embedded exception reporting facilitates decision making by the hospital management and higher level administrators for policy and strategic decisions. (5).

In Oromia regional state, Jimma Zone data/information quality and use remain weak, particularly at District Health Offices and primary health care facilities, which have primary responsibility for operational management. Five strategic issues have been identified as critical to strengthen and continuously improve health sector HMIS. Capacity building, standardized and integrated data Collection and reporting, linkage between information sources, information use, action oriented Performance monitoring and use of appropriate technology (6).

Sound policy, resource allocation and day-to-day management decisions in the health sector require timely information from routine health information systems (RHIS) in order to track the delivery of quality health care services and related support systems, including equipment and supplies, finance, infrastructure and human resources. However assessments in developing countries indicate that the RHIS is often in disarray. Problems constraining RHIS performance at the country-level include, poor data quality, limited use of available information weaknesses in how data are analyzed and poor RHIS management practices (4)

1.2. Statement of the problem

Despite vast amounts of resources and time invested in the development and implementation of health information systems (HIS), health data is under utilized by health workers for service delivery planning and decision-making (2).

Availability of health information is the foundation of public health action; it is often unavailable due to under-investment in systems for data collection, analysis, dissemination and use.

Consequently, decision-makers cannot identify problems and needs, track progress, evaluate the impact of interventions and make evidence-based decisions on health policy, program design and resource allocation. The access and use of information by program managers and service providers help resolve bottlenecks and improve program implementation. This eventually leads to improvement in health service delivery and there by improvement in the health status of the population (2). Quality of information and use remain weak within the health sector, particularly at the peripheral levels of woreda and health facility, which have primary responsibility for operational management. (8).

Information use guidelines and trainings are used as instrument to promote culture of information use in the zones. However, lack of guidelines and trainings on use of information were not widely provided at facilities, indicating that data are collected mainly for reporting purposes. In the health facilities absence of such guideline was one of the contributing factors for the observed minimum use of HMIS information in the annual plans (12).

In health facilities data production; documentation and transfer were not fully supported by information technologies. Data collected at lower level but processed at central levels. This practice is paradoxical in the context of decentralization which increases the demand of data for decision-making at the districts and health facilities (6).

As to the knowledge of the person undertaking this study, there was no study or project carried out on identifying the determinant factors that affect the utilization of HMIS data for decision making in studied health facilities. Hence this project may be taken as one initiating point to start to utilize HMIS data for decision making in health facilities in which actual data is collected to improve health care delivery.

As the preliminary discussion was made with the Health center director and experts most of the time collected data was used only for reporting purpose, but data analysis, interpretation and use for decision making for improving health service in the facility was very low.

The research project is to identify about the determinants related to the HMIS Utilization for evidence base decision making and enhancing data capturing, analysis, and information utilization for action by health professionals and managers at health facilities of Woliso Town administration health office, south West Shoa, Zone Oromia Region.

The project was aimed to answer the following question

- To what extent health management information is utilized for decision making in the health facilities?
- What are the factors influencing utilization of generated routine data for decision making in health facilities?
- What interventions are proposed to improve utilization of HMIS data for decision making?

1.3. Objective

1.3.1. General Objective

To identify determinants of Health management information system utilization for decision making in health facilities of Woliso Town administration Health office

1.3.2. Specific Objectives

- To examine the level of utilization of HMIS data for decision making in the health facilities.
- To identify the factors influencing utilization of HMIS in health facilities.
- To propose possible solution and intervention.

1.4. Significance of the Study

This study serves as starting point for the assessment of the current health management information utilization based on the situation in public facilities to identify the strength and weakness. Furthermore, determinant factors affecting utilization of information are identified. The findings and recommendations of the study would contribute towards the ongoing efforts of achieving service delivery.

Specifically, the findings of the study benefits facilities and institutions by helping them to identify their weakness in implementing HMIS and propose better ways that help them improve their information utilization.

Limitation of the study

- Limited time and budget to accomplish further intervention
- Limited sample size because of limited sampling frame of study subject in government health facilities
- There were not enough literatures especially on local study project interventions

1.5. Scope of the project

This project focuses to explore health management information utilization and factors affecting HMIS utilization for decision making based on Performance of Routine Information system Management (PRISM) tools. It also limited to government health facilities.

CHAPTER TWO

2. Literature Review

2.1 General Literature

2.1.1. Health Management Information System

Health Management Information System is an organized system of collecting, processing, storing and disseminating data in the form of information needed to carry out the functions of management in health. Health information system performance should therefore be measure not only on the quality of data produced, but on evidence of the continued use of data to improve health system performance, to respond to emergent threats, and to improve health. Improving health information systems in terms of data availability, quality and use often requires interventions that address a wide range of possible determinants of performance.(4)

According to Health Matrix network of World Health Organization, Health information system has six major components

Inputs

1. **Health information system resources** – these include the legislative, regulatory and planning frameworks required to ensure a fully functioning health information system, and the resources that are prerequisites for such a system to be functional. Such resources involve personnel, financing, logistics support, information and communications technology (ICT)

Processes

2. Indicators – a core set of indicators and related targets for the three domains of health information is the basis for a health information system plan and strategy. Indicators need to encompass determinants of health; health system inputs, outputs and outcomes; and health status.

3. **Data sources** – can be divided into two main categories; (1) population-based approaches (censuses, civil registration and population surveys) and (2) institution-based data (individual records, service records and resource records). A basic set of standards for each source. It should be noted that a number of other data-collection approaches and sources do not fit neatly into

either of the above main categories but can provide important information that may not be available elsewhere. These include occasional health surveys, research, and information produced by community based organizations (CBOs).

4. **Data management** – This covers all aspects of data handling from collection, storage, quality-assurance and flow, to processing, compilation and analysis. Specific requirements for periodicity and timeliness are defined where critical – as in the case of disease surveillance.

Outputs

5. **Information products** – data must be transformed into information that will become the basis for evidence and knowledge to shape health action.

6. **Dissemination and use** – the value of health information can be enhanced by making it readily accessible to decision-makers (giving due attention to behavioral and organizational constraints) and by providing incentives for information use. (11)

According to Ethiopian Ministry of Health Management Information System Monitoring and Evaluation strategic plan the HMIS Program is to improve and strengthen the HMIS and information usage at all levels of health delivery system. This would contribute to overall strategy of improving HIS in this country indicates:-

• Ensure that the HMIS provides and disseminate quality essential indicators such as for monitoring the Millennium Development Goals.

• Improve and strengthen the HMIS and information usage at health facilities, districts, and regional and at the national levels.

The HMIS will be strengthened according to specific criteria regarding data completeness, timeliness and quality, as well as the analysis, dissemination and use of information. These criteria will be monitored and evaluated for each facility, district and region taking part in the program (8).

The HMIS in Ethiopia was developed within the framework of the following concepts: The information collected is relevant to the policies of the Government, and enabling the health professionals to utilize data for decision making at the level of collection. Secondly, the information collected is functional, i.e. it is to be used immediately for management purposes

and should not wait for feedback from higher levels. Information collection is integrated, hence there should be one set of forms with no duplication of reporting; and finally, HMIS should be designed in such a way that the information is collected on a routine basis from every Health facility in every district throughout the country. (8)

Health Management Information System has three overarching principles;

Standardization; Common definitions of indicators, data collection instruments, and data processing and analysis procedures form the foundation for effective HMIS/M&E. Without consistent principles and definitions performance cannot be systematically measured and improved across locations or over time.

Integration; A single HMIS Monitoring and evaluation plan, shared by all partners, is a cornerstone of HSDP III & IV. Implementation of this principle requires integrating data from different programs into a shared channel from which all derive their information.

Simplification; Collecting, analyzing, and interpreting data that is immediately relevant to performance improvement and makes best use of scarce resources, such as human resources (8).

There are six critical areas that play a great role in improving HMIS activities to produce intended result.

1. **Information use.** If information is not used, especially by those who produce the service, to improve service delivery management and the health of the population, then it has limited value to the organization.
2. **Data Quality.** Decisions based on poor quality data are also likely to be of poor quality.
3. **Data Burden.** HMIS data are primarily useful for action-oriented decision-making. Collecting data that are not directly relevant to action certainly adds unnecessary costs, wastes the scarce time of health workers.
4. **Human Resources.** If the number or skills of human resources are not adequate to collect, analyze, and interpret the data, then information flow and utilization break down.
5. **ICT.** Appropriate use of ICT can improve the timeliness and availability of information. It can free managers' time from the burden of manipulating data so that they can focus on using the information generated from the data to improve service delivery. However,

without appropriate human and financial resources to support ICT, breakdowns are inevitable.

6**. Financial Resources.** Adequate financial resources must be assured for ongoing system operation, including recurrent costs for stationary, equipment maintenance, and supportive supervision (4).

2.1.2. Conceptual Framework

The Performance of routine Information system Management (PRISM) framework which has been developed by the MEASURE (Monitoring & Evaluation to Assess and Use Results) defines information system performance as improved data quality and continuous use of information for decision-making. It hypothesizes that improved performance leads to better health system performance which consequently affects the health status of the population. The PRISM framework explores how the HMIS processes (data collection, transmission, processing, analysis, display and feedback) influence HMIS performance (15).

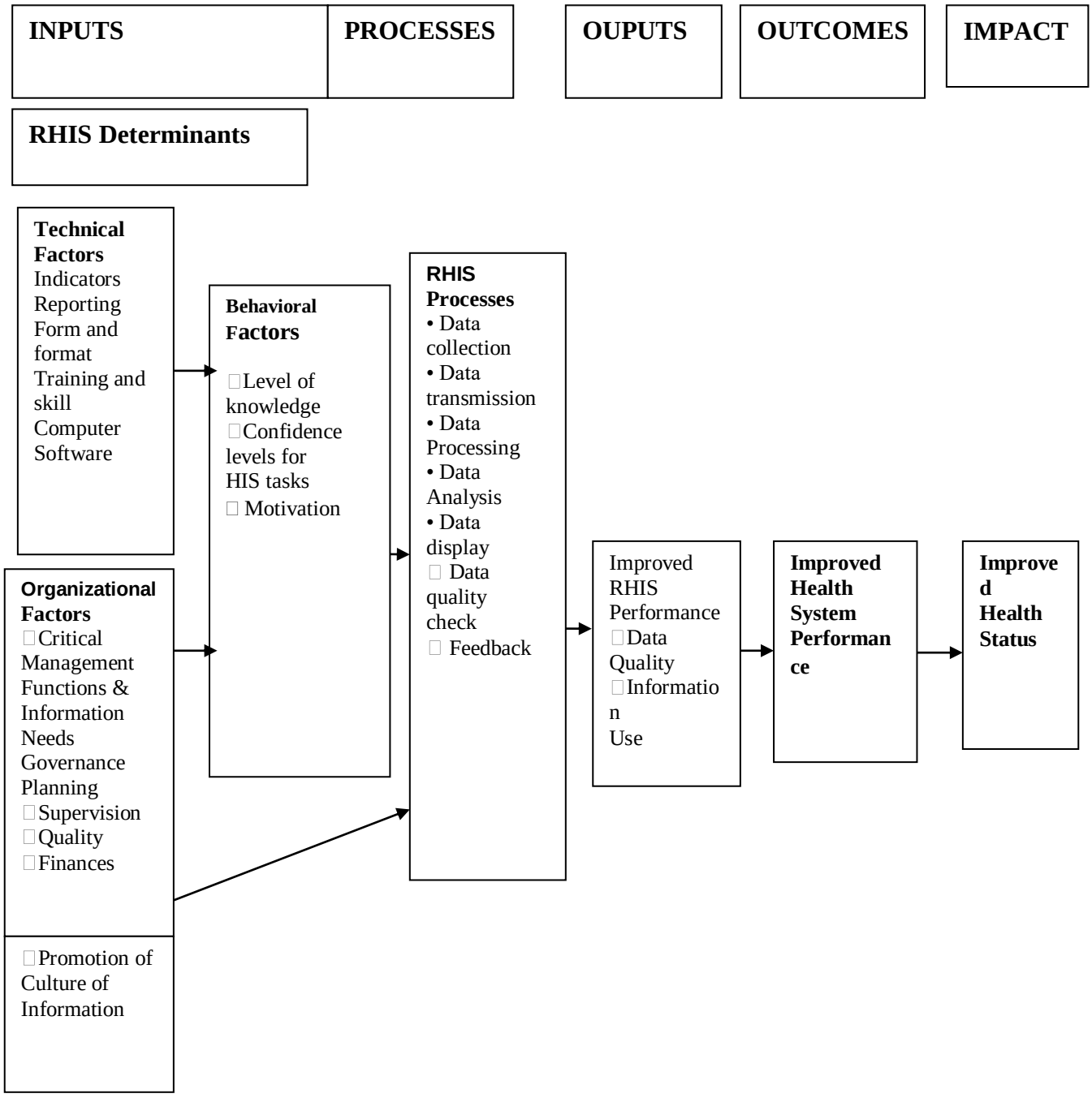

Figure 1; The PRISM Framework (4)

Technical, Organizational and Behavioral Determinants of Use of Health information system

Use of health information system is determined by technical, organizational and behavioral factors. Health workers and health managers are motivated to use HIS as a basis for making decisions, when a culture of information use is promoted, attitude of staff towards work in general, and HIS in particular, and their training and perceived self-efficacy in the use of HIS(8).

Technical factors; These interventions include indicator selection, forms design, data transfer procedures, and Information and Communications Technology (ICT) support, along with procedures to ensure consistent definitions, data encoding, and measurement.(16)

Organizational factors; Improving information culture, structure, resource, roles and responsibilities and evidence-based decision making requires institutional commitment to human and technical resources and openness to change, sometimes radical, in management practice. Regular performance review, based on an action plan with measurable indicators of improvement, is a key organizational component of HMIS performance. Other organizational components include governance, operational, and supervision practices that promote information use. (16)

Behavioral factors; The knowledge, skills, attitudes, values, and motivation of the people who collect and use data. Any intervention to strengthen the health information system that does not address behavioral factors like the knowledge ,skill, attitudes, values, motivation of people who collect and use data will result in poor quality data, underreporting, infrequent data use, and poor decision making (16).

2.1.3. PRISM Tools

The PRISIM tools identify data quality and information use as the two important performance indicators in the improvement of HMIS utilization. The tools has been adapted by MEASURE evaluation to identify specific technical, behavioral, and organizational factors that affect RHIS Performance and how to modify those factors and to assess the quality of data and information use in its routine health information system(15).

The Performance of routine Information system Management (PRISM) has the following

Tools

RHIS performance diagnostic tool

It determines the overall level of RHIS performance, looking separately at quality of data and use of information. The tool specifically measures: (a) status of RHIS processes; (b) the promotion of a culture of information; (c) supervision quality; and (d) technical determinants. The tool collects data based on records observation, which is considered the gold standard and therefore confirms its validity. The tool provides opportunities to compare RHIS performance with status of RHIS processes and other determinants, as well as to identify strengths and gaps for appropriate actions/ interventions.

RHIS overview tool

This tool provides information on all existing routine information systems, their interaction and overlaps. Thus, it identifies redundancies, workload, fragmentation and level of integration, which create demand for integrated information systems development. The review also provides information on the complexity and user-friendliness of the registers and forms. The office/facility checklist assesses resource availability at the facility and higher levels. The details of collected information are provided in. The tool collects data based on records observation and interviews. A comparison of resources availability (human, equipment, logistics) with RHIS performance provides information as to whether resources are appropriate and creating their intended effects.

RHIS management assessment tool (MAT)

This tool is designed to rapidly take stock of RHIS management practices. The practices measured relate to different functions such as: (a) governance; (b) planning; (c) training; (d) supervision; (e) use of performance improvement tools; and (f) finances The RHIS management assessment tool is part of the organizational determinants. The tool collects data based on records observations. Besides providing information on the level of RHIS management functions, it indirectly shows senior management's commitment to an efficient and effective Routine Health Information System.

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RHIS organizational and behavioral assessment tool (OBAT)

This tool identifies organizational and behavioral factors that affect RHIS performance. It measures the level and role of behavioral factors such as motivation, confidence levels, demand

for data, task competence and problem-solving skills, while organizational variables include Promotion of a culture of information and rewards. Organizational and behavioral assessment tool **(**OBAT) compares RHIS knowledge, skills and motivation with actual performance, and identifies the strengths and weaknesses of these behavioral factors. Similarly, it is possible to determine to what extent organizational factors influence performance directly or indirectly through behavioral factors Information obtained through the PRISM tools provides a comprehensive picture of the given RHIS, creating opportunities for intervention.

The rationale for using the PRISM framework is that the framework not only defines and measures information system performance but also explores determinants of performance. Thus, it creates opportunities for improvements by identifying the strengths and weaknesses of the information systems and the determinants of their performance and identifies area of intervention (17).

The determinant identification on the utilization of HMIS of the project was carried out based on the performance of routine information system management (PRISM) framework which consists of tools that was used to assess factors Routine Health Information System (RHIS) utilization, identify technical, behavioral and organizational factors that affect the utilization of Routine Health Information Systems for decision making at the Health Facilities. The framework also assists in designing priority interventions to improve performance, and utilization of routine health data that was generated from health facility in every day activity.

2.2. Related Works

According to the study conducted on determinants of use of health information concluded that Health Information System Policy and Strategies for improving data quality and use are not being adequately implemented to influence staff motivation. Management styles in the facilities do not encourage information use. Lack of full commitment by management at many levels has been a major obstacle to implementation of health information systems and also, there is very little feedback, both written and oral, on HIS reports sent from the facilities (9).

The study conducted on the assessment of new implementation status of HMIS in Addis Ababa Health Facilities in 2010 showed that a large number of respondents were indicated the using of

manual base for HMIS activities. Lack of well designed data collection and reporting format, short period on job- training, absence of incentive and motivation and lack of management support were lead to poor information use in the Health facilities. HMIS implementation suffered from lack of ownership, follow-up, communication and leadership (7).

Assessment of Health Management information System(HMIS) Performance in SNNPR, Ethiopia (2013), results of Self-efficacy or Confidence Level for HMIS tasks showed that on average confidence levels of respondents for calculation, plotting, and use of data were above 75%, but confidence levels were around 70% for checking data quality and interpretation of data. This indicates that respondents felt more confident in collecting data than interpreting data. A similar pattern of confidence levels for various tasks observed between health extension workers, ZHD, WoHOs and hospital staff. The lowest average confidence level (66%) was observed among health workers in the health centers. Overall, respondents in all levels (mean score of 70%) believed that performing HMIS tasks bring about positive outcomes. (12).

According to the study made in Ayder referral hospital on the assessment of Health Management Information system Implementation the result of information use indicates that, in the hospital there was no known performance monitoring team. And there was no regularly monthly/quarterly data evaluation made with the alignment of the national and regional targets. In the facility there were no charts of target displayed at any of the higher officials. The catchment area map was not also available in the facility. There was no report displayed using a chart in the facility using the data of either quarterly or monthly (18).

The study conducted on analyzing the hindrance to the use of information and technology for improving efficiency of health care delivery system shows that decision making processes at various levels. There was no evidence found regarding the use of HMIS information other than health workers using information to know how many and what medicines are being used, the services that they are providing, the use of equipment and what additional equipment are required. This indicated that most of the health workers fail to understand the purpose of collecting data, as it is expressed in the following statement by one of the District Health Secretary: Most health workers do not understand the purpose of health data collection, resulting in poor reporting (19).

There was a general assumption that data is only needed at the Ministry of Health where planning and decision making was to be done for the lower levels. Thus, the Ministry of Health had the information, power and authority to tell the lower levels what to do in order to improve their health status. Another problem expressed was how the lower levels work under orders from the higher levels as well as from donors (19).

Another study conducted on determinants of use of health information a result on a review of report (feedback, monthly, quarterly, others;) available in 40% of the facilities, showed that information use was low at the facility level because only 30% of the facilities used information for monitoring, 40% of the facilities were having discussions about Routine Health Information System (RHIS) information, and 20% were making decisions after the discussions. Ten percent of the facilities showed promotional activities for using information, indicating that senior management needs to promote the use of information more often (9).

The study conducted on determinants of utilization of routine data for decision making in health facilities concluded that a number of factors influence the data utilization for decision making such as lack of capacity and skills to use the routine data for decision making is a major factor in health facilities. The health care providers cannot interpret data thereby impeding the ability to analyze, interpret and utilize the data. Continuous professional development in data related areas is very little with less than 26% of the health care providers having had any training in data related areas (20).

Guiding documents are not available in over 62% of the health facilities and also lack of meetings to discuss data issues. Overall lack of computer literacy is a problem. The study showed that the computer is often seen as a privilege in the health system and for those using it was not to its full potential. Most data work is manually done. Also the use of supportive staff to fill the data compromises the quality and any problem or abnormal indicator may easily be missed out (20).

The study conducted on implementation of an integrated Health Management Information System and Monitoring and Evaluation system in Ethiopia (2009): progress and lessons from

pioneering Regions the result of resource and process shows that availability of the HMIS registers, forms and tools was not up to the expectations. Only half of the 20 HFs had the required registers and 60% had the required forms during the time of assessment; this was also a major issue raised as a problem during the FGDs. Yet these supplies were available at RHB and WorHO levels, indicating the need to strengthen follow up and support from upper levels. Interruption of supply of forms and registers may frustrate the health staff in HFs, compromising the attention paid to successful application of the system (21)

Most of the HMIS and M&E standard guidelines were not available at various levels. At least one copy of the required technical standards was found in 3 of the 20 HFs assessed. Lack of disease classification list at Outpatient Department (OPD) level was reported to have affected the quality of recording and reporting in some cases. Also some deficiencies were noted in the forms in terms of presentations and contents, including tracking priority services, like voluntary counseling and testing (VCT), and environmental health services and specialist services at hospital level (21).

The study conducted on utilization of health information system at district level the result of schedule of reporting HMIS data by units/departments of Health Posts, Health Centers and District Health Offices shows that Among 332 individuals participated from Health Center and District units/departments 127(38.3%) revealed inconsistency of reports and 86(26.0%) ambiguity of the report formats and International Classification of Disease (ICD) codes. Moreover, 78(23.5%) of them mentioned that the formats were not updated and does not consider newly emerging diseases. In addition, 38(11.2%) of them claimed that the formats were incomplete and redundancy like reporting by different formats to different bodies, while 3(1.0%) of them complained lack of supportive supervisions and timely feedbacks (6)

The study identified how the units/departments of Health Centers and District Offices keep their data and their records in 2006 and 2007. Out of the total 332 observed units/departments, 236(71.0%) keep their reports and registrations in well organized hard copy form. Seventy nine (24.0%) units/departments did not have well organized data, while 17(5.0%) secured data in both hard and soft copy form (6).

The study done on the assessment of National Health information System shows the Promotion of a culture of information in all the facility respondents strongly believe (mean score 73% or above) that the health department promotes an emphasis on data quality, use of information, problem solving, empowerment and sense of responsibility, except for evidence-based decision making which is at 65.5%. The response pattern was similar at the district level (13)

Activities for promotion of a culture of information that were observed at the facility level were: communication about targets 63.9%, directives to use information 51.2%, sharing of success stories 28%, and the presence of advocacy using information system was 51.8%. These activities were more often observed at the district level but the response pattern remains the same at facility level. Only that of sharing stories of information differed which was half at the facility level. Supervision: 47.6% of the facilities reported having one or more supervisory visits in last three months. Of those facilities visited, 84.8% reported that supervisor checked data quality, 68.4%, discussed facility performance using Health Information system information, 69.6% helped them make a decision, and 73.4% stated supervisors sent feedback in the last two months (13).

According to the study conducted on Bridging the gaps in the Health Management Information System in the context of a changing health sector shows of all reviewed HMIS booklets only a single delivery register from only one health facility was judged to be 100% complete. These booklets, however, were not filled in as many as 55% of the health facilities. The types of information that was found not recorded in the booklets for postnatal services (child vaccination/weight) were measles vaccine, DPT 3, polio vaccine and Vitamin A. These services were not recorded in these booklets despite the fact that it was assumed that these important health interventions had been given to the clients (22)

The type of information which was mostly not filled in the delivery booklets was the condition of the mother at discharge. The parameters which were commonly missing in the antenatal services' booklets were pregnant mothers' risk factors, VDRL test, TT vaccination and height. Reasons for such incompleteness found were lack of VDRL reagent, workload pressure, forgetfulness and poor knowledge on data recording (22).

Another study conducted on factors associated with low level of health information utilization in resources limited setting, eastern Ethiopia indicated that overall utilization rate of information was found to be 53.1%. The availability of standard set of indicators, well designed format, friendly format for reporting, trained staffs to fill format and use of appropriate technology for data analysis were the main determinant factors for information utilization (23).

According to the study conducted on Assessment of the Health Management Information system (HMIS) implementation status in public health facilities and Institutions in Amhara region the case of Bahirdar city Administration the result of technical factor indicates that that were asked for existence of training to fill HMIS format shows most 58(65.2%) of respondents that disagree with the existence of trained staff to fill formats(24)

The study conducted on evaluation of health management information system, the result of promotion of culture of information shows that Evidence-based decision-making was 64%, Empowerment & Accountability 68% and Feedback from Staff & community 73.3%.(25)

CHAPTER THREE

3. Methods

3.1. Study Setting

The project was conducted at Woliso Town administration Health Office, South West Shoa zone, Oromia Region, located about 114 KMs from Addis Ababa in South West direction. Based on the 2007 census results, The Town has a projected total population of 52,777 consisting of 26,306 men and 26,471 women in 2015.There are different types of Governmental and non-governmental health facilities found in the town. They are one NGO hospital, two health centers, 4 medium private clinics, 6 lower clinics and 13 drug outlet retailers and two OGO lower clinics providing health service for the population. There are two government health centers and Town administration health office on which the project was carried out, it consisting of 69 total staff, from these, 44 health professionals and 25 supportive staffs.

3.2. Study Design and period

A cross sectional study was carried out from Jan. 2015 to June, 2015. It was used quantitative and qualitative approach. Quantitative approach used self administered questionnaire for data collection and the qualitative approach used observation and an in-depth interview with key informants.

3.3. Source of population and Study subjects

The source of population and study subjects were all health professionals HMIS focal persons and managers who are working in two government Health centers and town administration health office. For quantitative study all health professionals who are currently working in two government health centers and town administration health office and for qualitative study HMIS focal persons and heads of the health centers and town administration health office were included.

Inclusion and Exclusions Criteria

Inclusion Criteria

All health workers, HMIS focal persons and managers who are currently working in two government health centers and town administration health office were included in the study.

Exclusion Criteria

Health professionals and managers who are not satisfy the above criteria and who are working in privet and NGO health institutions.

3.4. Sample Size and Sampling Procedure

Due to the small sampling frame of study subjects in government health centers and town administration health office in the study area, all health professionals and managers working in the facilities were included. Self administered questionnaire was filled by 38 health professionals and an in depth interview was conducted with 6 candidates who are purposively selected by virtue of their positions and they are 2 health center directors, 2 Health information administrators, 1 HMIS officer and 1 Town Administrative Health Office Head and a total of 44 participants were involved in the study.

3.5. Data Collection Techniques

Quantitative approach used self administered questionnaire which was distributed to health professionals and the qualitative approach used an in-depth interview and observation.

Self-administered questionnaire was adopted from PRISIM tools and from the study conducted on assessment of health management information system implementation status in public health facilities and institutions document (24). The questionnaire was pre tested in neighboring health center with 4 participants (10% of the sample size) checked for missing values and inconsistency, completeness and legibility prior to the actual study period and appropriate amendments were made. The questionnaire was filled by health professionals in order to assess Technical, Behavioral and organizational factors and use of information. Semi structured questionnaire were prepared as a guide for in-depth interview which was held by principal investigator for further exploration. Observation also used on minutes of important HMIS related meetings official letters, Monthly HMIS reports, availability and functionality of IT equipment, working environment and display of key indicators.

Study variables

Dependent (outcome) variables

- Utilization status of HMIS

Independent variables

- Organizational factors: - i.e. decision making, Management support, responsibilities of the staff, resource and roles and responsibilities.

- Behavioral factors:-i.e. knowledge/skills, attitudes, values and motivation of the people who collect and use the data.
- Technical factors: - implies data collection forms, set of indicators, training and use of technology.

3.6. Data Analysis

The data from the questioner were checked, entered, and analyzed using SPSS for window version 16. Data was described and presented using frequencies, tables, and graphs. Moreover, associations between the dependent and independent variables were computed using Bi- variate and multivariate logistic regression. The possible factors that affect the use of HMIS were analyzed using binary logistic regression and all the factor were adjusted for possible confounding. Odd ratio with 95 percent confidence interval and 5% level of precision were used for data interpretation. The qualitative data were analyzed using an open coding system which included note taking, coding, sorting, examining, comparing and categorizing data and writing the findings. On the completion of interview, participants were invited to provide comments on final narrative. Finally, these categories of data were presented in narrative in triangulation with the quantitative results using well-said verbatim of the study participants as illustrations

Performance of Routine Information System Management (PRISM) framework help to measure the performance of health management information system PRISM tools are useful to get detail information on the strengths and weakness of the routine health management information system. According to PRISM framework, factors influence the implementation statuses are classified in to technical, organizational and behavioral determinates The response to question on each set of determinates were categorized in to strongly agree, agree, disagree and strongly disagree and neutral. During the analysis, these type of categories choices were further regrouped and recoded into three categories dichotomized strongly agree and agree in to ‘agree’ as positive rating and strongly disagree and disagree in to ‘disagree’ as a negative rating .Neutral response is

believed to be equidistance to the adjacent ratings in both directions and is ignored as a non response for this study..

3.7. Data quality Management

Data quality was assured by using different techniques. Training was given to the data collectors about the content of the questionnaire and frequent supervision was done. Pre test was done prior to final distribution and appropriate corrections were made. The questionnaires were checked for missing values and inconsistency, completeness and legibility.

3.8. Operational definitions

Data: A collection of row facts needed to transform in to information for decision-making

Data utilization: The extent to which the health care providers uses the collected data for decision making and it is the composite variable calculated from 7 variables (day-to-day program management, formulating plans, review financial statement and budget preparation, deciding budget reallocation, human resources management, monitoring key objectives and policy, medical supply & drug management) for each respondents total sum of 7 variables computed and categorized in to 1 and 0 based on the mean of computed summation of variables. Those who have summation below the mean (16.7) are categorized as utilizing data and which is categorized as (1) and those who have summation of above the mean categorized as not utilizing (0).

Decision making: The process of selecting the logical choice or a course of action from the available options or alternatives. It is done to achieve a specific objective or to solve a specific problem.

Health Management Information System (HMIS): an organized system of collecting, processing, and disseminating and use information in a health in Health Centers or higher level. It also designed to serve different levels of customers (clients, service providers, Managers, Planners and policy makers)

Indicators: are variables that help to measure changes, directly or indirectly

Information: is processed data useful for decision making .Information system is a system that provides information support the decision-making at each level of an organization.

Quality data: represent what was intended or defined by their official source, are objective, unbiased and comply with known standards.

Technical factor:-refers to all factors affecting RHIS utilization which are related to system component such as indicators, personnel training, technology and forms.

Organizational factors:-refers to all those factors related to organizational structure, resource, procedure, support service, and culture to develop and manage and improve HMIS process and utilization

Behavioral determinant:-factors affecting RHIS performance related to individual behavior such as motivation, attitude and confidence

HMIS;-is an organized system of collecting, processing, storing and disseminating data in the form of information needed to carry out the functions of management in health

3.9. Ethical Clearance

The study was carried out after getting permission from the ethical clearance committee of Addis Ababa University, School of Public Health. Data was collected after getting written permission from Woliso Town Administration Health office. Informed Consent form was delivered along with each questionnaire and all the subjects were asked if they are willing to participate in the study project; and informed verbal consent was obtained by explaining the benefits of the study from all interviewed subjects.

3.10. Dissemination of result

The result will disseminate to Addis Ababa University and Woliso Town Administration Health Office and should be placed in the libraries of both Addis Ababa University and Woliso Town Administration Health Office for those who are interested in the areas to make further investigation and reference.

CHAPTER FOUR

4. Discussion of Results

4.1. Result.

4.1.1. General characteristics of the project respondents

The sex distribution of participants in the Study units showed that 15 (39.5%) were male and 23 (60.5%) were female (Table1)

Table 1 Distribution of sex of respondents

Characteristics	Frequency(N=38)	Percentage (%)
Male	15	39.5
Female	23	60.5
Total	38	100

Out of the 38 interviewees, 28 (73.7%) respondents were between the ages of 25-34 years. This age group formed the highest number of participants and the lowest numbers were around the age 24 which constituted 3 (7.9%) Table 2

Table 2 Distribution of age of respondents

Age	Frequency(N=38)	Percentage (%)
>24	3	7.9
25-34	28	73.7
35-44	7	18.4
Total	38	100

Regarding the professions of the respondents majority 22(58%) of the respondents were all kinds of nurses and followed by 6(15.8 %) were Health Officers and the lowest was MPH 1(2.6%) (Table 3)

Table 3 Distribution of respondents by profession

Profession	Frequency(N=38)	Percentage (%)
Health Officer	6	15.8
Nurses of all category	24	63.2
Laboratory Technician and Technologist	1	2.6
Pharmacy Technician and Pharmacist)	3	7.9
Environmental Health	3	7.9
MPH	1	2.6
Total	38	100

4.1.2. Level of data utilization for decision making among health care providers

The level of data utilization on various tasks in the health facilities indicates that 22 (58%) of the respondents disagree with use of the data in day to day program management, almost 100% of the respondents agree with use of data for formulating plan,23 (61 %) disagree with use of data for review financial statement, 22(58%) agree with use data for deciding budget reallocation, 21(55%) agree with use data for human resource management and 22 (58%) agree with use of data for monitoring key objective and policy and 29(76%) agree to use data for Medical supply and drug management and the overall level of data utilization by the facilities were found be 50 % (Figure 2)

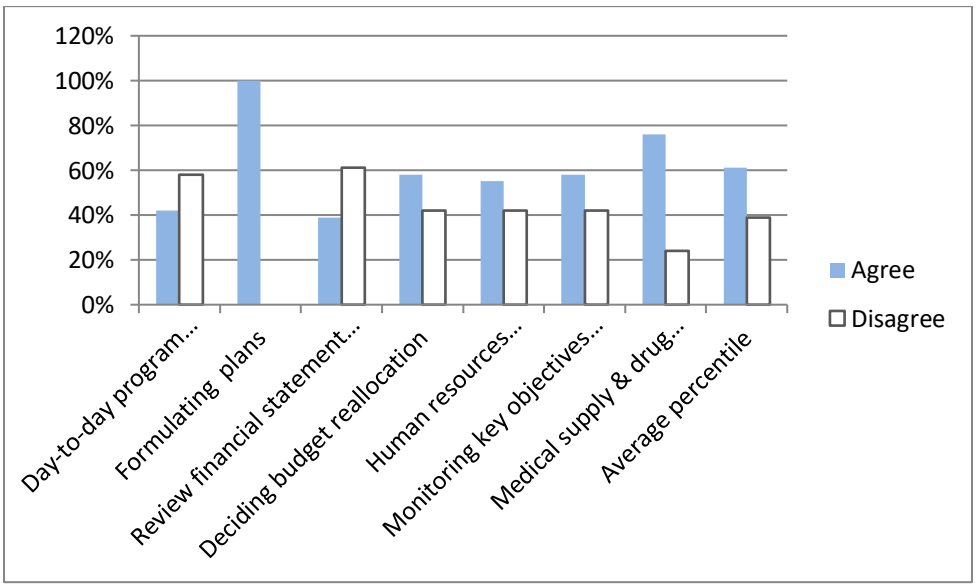

Figure 2 Level of data use in several categories of decision.

4.1.3. Technical factors of data utilization

The PRISM tools identify many technical issues which can affect utilization of information. The technical issues include: standardized set of indicator, well designed data collection and reporting format, trained staff able to fill out format, skilled human resource on collecting, processing, and analyzing and use of data and use of appropriate technology for data analysis, transfer and presentation.

Out of 32 (84%) of respondents were agreed with the presence of standard set of indicators in their facility, 30(79%) of respondents also agreed with the regarding of well designed data collection and reporting formats, 20(53%) disagree with the trained staff able to fill out formats, while about 20(53%) agree with skilled human resource on collecting, processing, analyzing and use of data related to HMIS activities. Most of respondents, 20(53%) disagree on friendly format for reporting result and easy to visualize and 21(55%), agreed on the use of appropriate technology for data analysis transfer and presentation.

An in-depth interview with data manager, one data manager says “they encounter shortage of resources such as CD, printers and internet due to shortage of budget” (Fig.3).

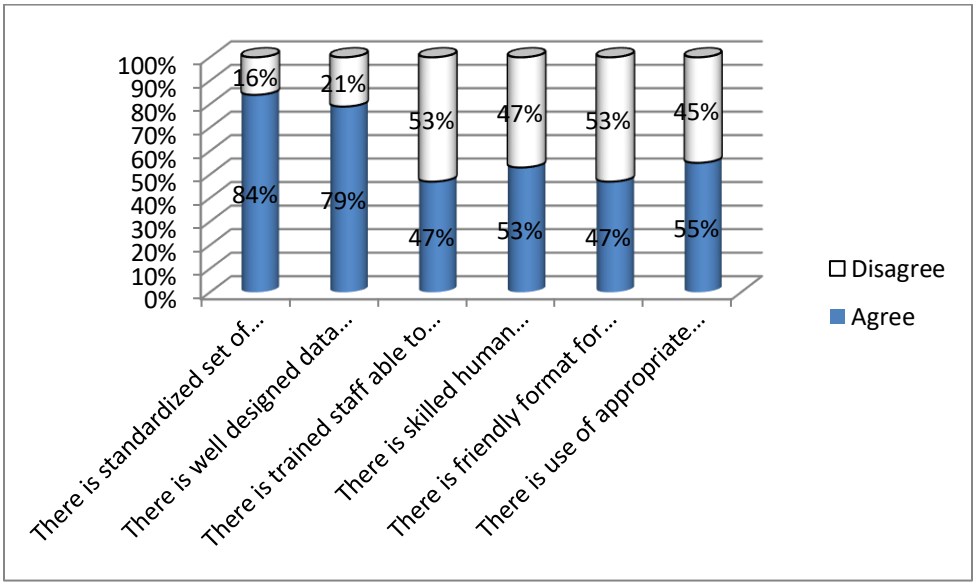

Figure 3 Technical factors of data utilization

4.1.4. Organizational Factors

4.1.4.1. Decision making

Making decisions in every Health Institutions activities is important for prompt patient care in order to promote health care delivery .The response of Health workers on how decisions are made in their respective Health Facilities, 26 (68%) of respondents were agree that decision are given based on personal liking, 20 (53%) were agree on decisions are based on superior directives, 53% were agree with use of evidence for decision making,29 (71%) disagree on decision are based on political interference,24(63%) agree with decisions are used based on comparing data with annual plan and 21(55%) agree with the use of decision by considering cost.(Figure 4)

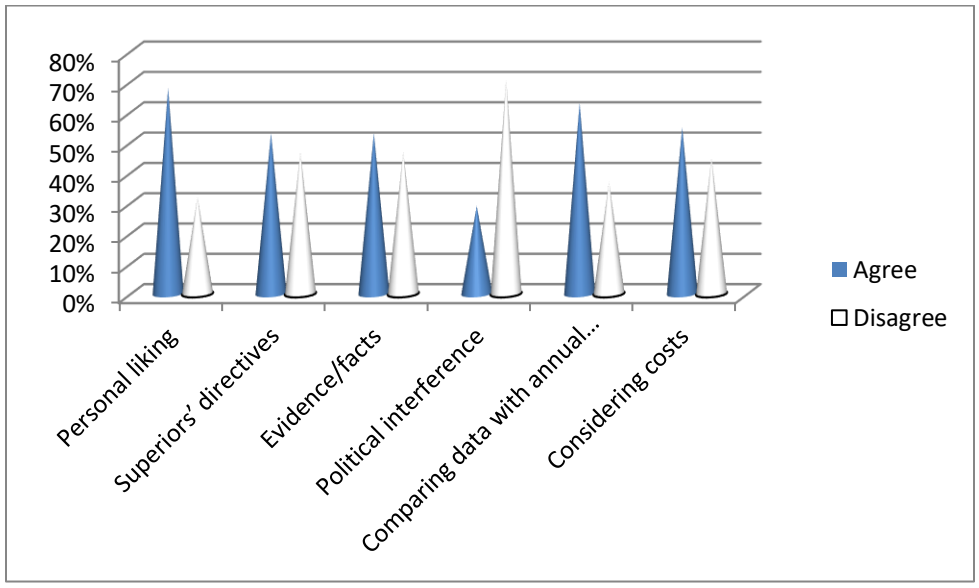

Figure 4 Decisions are based up on different factors

4.1.4.2. Management Support (promotion of a culture of information)

Task Performance of the staff working in Health Institutions should be given value and encouraged by the Institutions management. Respondents were asked about their Health Institution. 19 (50%) responded disagree with that health facility management seek feedback from concerned persons, 28(74%) agree with emphasize data quality in monthly reports, 22(58%) agree with discuss conflicts openly to resolve them, 20(53%) agree with seek feedback from concerned community and staff, 21(55%) agree with check data quality With review team regularly, 24(63%) agree with provide regular feedback to their staff based on evidence, 23

(61%) agree with display data for monitoring their set target, 19(50) disagree with can gather data to find the root cause(s) of the problem,19(50%)agree with can develop appropriate criteria for selecting interventions for a given problem, 24(63%) agree to evaluate whether the targets or outcomes have been achieved.(Table 4)

On in-depth interview one respondent underlined that "there was inadequate regular data quality check with review team before it is passed to upper level as a consequence the facilities encounter under reporting on family heath service indicators like antenatal care, postnatal care and expanded program of immunization and over report on the of Family planning indicator duo to work over load by health worker" and also on observation of document it revealed that there was no meeting minutes during the last three months concerning management support on data quality review team meeting. There was also inadequate regular feed back to the staff from the management concerning data collection analysis and report during the last six months.

Table 4 Shows management support

	Factors	**Agree**	**Disagree**
1	Seek feedback from concerned persons	50%	50%
2	Emphasize data quality in monthly reports	74%	26%
3	Discuss conflicts openly to resolve them	58%	42%
4	Seek feedback from concerned community and staff	53%	47%
5	Check data quality With review team regularly	55%	45%
6	Provide regular feedback to their staff based on evidence	63%	37%
7	Display data for monitoring their set target	61%	39%
8	Can gather data to find the root cause(s) of the problem	50%	50%
9	Can develop appropriate criteria for selecting interventions for a given problem	50%	50%
10	Can evaluate whether the targets or outcomes have been achieved	63%	37%
	Total	57.7%	42.3%

4.1.4.3. Responsibility of the staff

Respondents were asked about their responsibilities in performing HMIS tasks, 24(63%) agree that they were punctual, 24(63%) agree that they were documented their activities and keep their record, 20(53%) disagree about discussions of achievement/success story with their friend, 26(68%) agree with that they are feel committed in improving health status of the target population, 20(53%) agree with set appropriate and doable target of their performance. 20 (53%) disagree with feel guilty for not accomplishing the set target /performance, 22(58%) disagree with the presence of reward for their good work. (Fig 5)

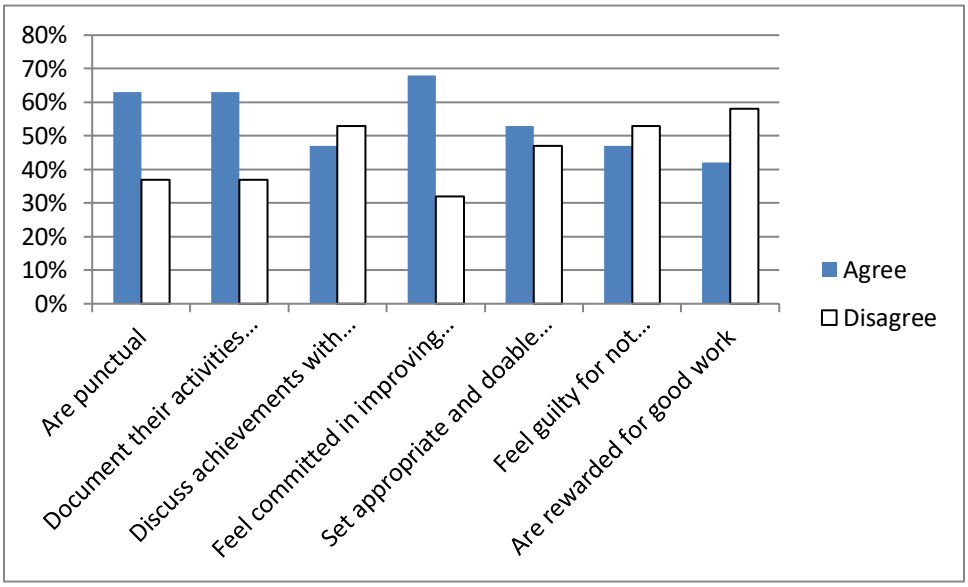

Figure 5 Shows responsibilities of the staff to perform tasks.

4.1.4.4. Empowerment of the staff

Empowering is about enabling the staffs to give decision for better work performance. 21(55%) agree with empowered to make decision, 22(58%) disagree with able to say no to superiors and colleagues for demands/decisions not supported by evidence 21(55%) of the respondents disagree with made accountable for poor performance and 24(63%) are also disagree with use of HMIS data for community education and mobilization and 25(66%) agree with admit mistakes for taking corrective actions. (Fig 6)

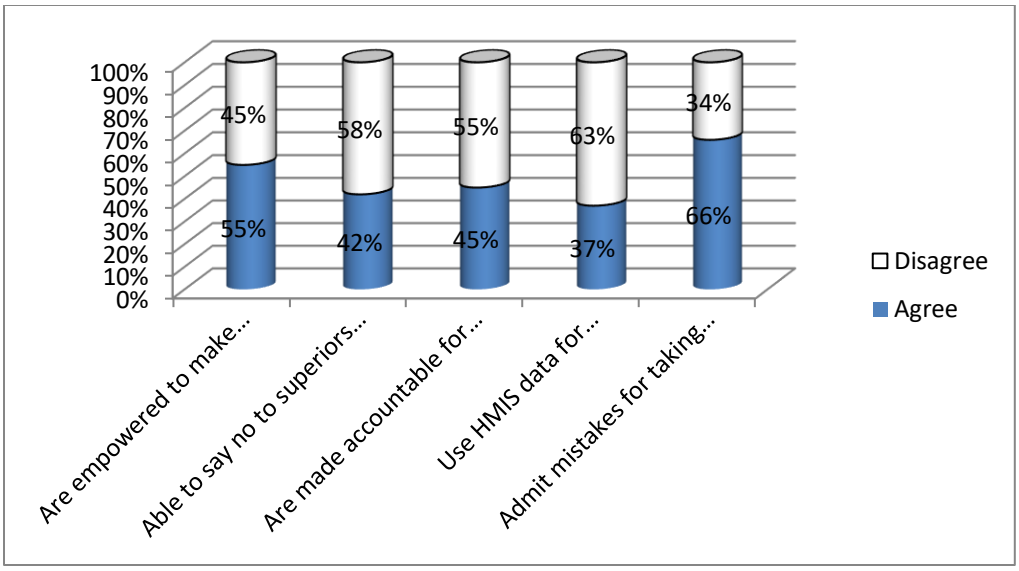

Figure 6 Empowerment of the staff to perform task

4.1.5. Behavioral Factors

4.1.5.1. Motivation of the staff

Respondents were asked about concerning their motivation, 20(53%) agree with collecting information which is not used for decision making discourages them, 24(63%) disagree with collecting information makes me feel bored, 32(84%) collecting information is meaningful for me and 29(76%) agree with collecting information gives me the feeling that data is needed for monitoring facility performance (Table 5).

Table 5 Shows Motivation of the staff to perform tasks

	Factor	Agree	Disagree
1	Collecting information which is not used for decision making discourages me	53%	47%
2	Collecting information makes me feel bored	37%	63%
3	Collecting information is meaningful for me	84%	16%
4	Collecting information gives me the feeling that data is needed for monitoring facility performance	76%	24%
	Total	62.5%	37.5%

4.1.5.2. Confidence level for HMIS tasks

Respondents were asked about can check data accuracy, can calculate percentages/rates correctly, can plot data by months or years, can compute trend from bar charts and can explain findings & their implications were agree about on their confidence level information utilization. (Table 6)

Table 6 Shows Confidence of the staff to perform tasks

No	Factor	Agree	Disagree
1	I can check data accuracy	84%	16%
2	I can calculate percentages/rates correctly	68%	32%
3	I can plot data by months or years	68%	32%
4	I can compute trend from bar charts	55%	45%
5	I can explain findings & their implications	66%	34%
6	I can use data for identifying gaps and setting targets	63%	37%
7	I can use data for making various types of decisions and providing feedback	68%	32%
	Total	68.4%	31.6%

4.1.6..Determinants of utilization of health information

Bivarate analysis was conducted to see association between technical factors and data utilization. The result shows well designed data collection and reporting format indicators have not significantly associated with data utilization. Hence these factors not candidate for multivariate analysis (Table 7)

Table 7 Possible technical determinants of information utilization in government health facilities

Determinants	HMIS Utilization		COR With 95%CI
	Utilizing	Not utilizing	
There is well designed data collection and reporting format			
Agree	17(56.7%)	13(43.3%)	(.678,22.705)
Disagree	2(25%)	6(75%)	1
There is trained staff able to fill out format?			
Agree	14(77.8%)	4(22.2%)	10.500(2.336, 47.201)
Disagree	5(25%)	15(75%)	1
There is friendly format for reporting result and Easy- to- Visualize?			
Agree	11(73.3%)	4(26.7%)	5.156(1.234, 21.554)
Disagree	8(34.8%)	15(65.2%)	1
There is use of appropriate technology for data analysis, transfer and presentation?			
Agree	14(66.7%)	7(33.3%)	4.800(1.204, 19.129)
Disagree	5(29.4%)	12(70.6%)	

Possible Organizational and behavioral determinants of information utilization analyzed by bi-variate logistic regression to see their association and for further possible multivariate analysis to reduce confounding effect. Hence the indicators, management Seek feedback from concerned community and staff, feel committed in improving health status of the target population, rewarded for good work, health workers ability to check data accuracy has no association and then omitted from multivariate analysis (Table 8)

Table 8 Organizational and behavioral determinants of use of information

Determinants	HMIS Utilization		COR With 95%CI
	Utilizing	Not utilizing	
Seek feedback from concerned person			
Agree	11(57.9%)	8(42.1%)	7.84 (1.850,33.225)
Disagree	8(42.1%)	11(57.9%)	1
Seek feedback from concerned community and staff			
Agree	12(52.2%)	11(47.8%)	(.218,2.952)
Disagree	7(46,7%)	8(53.3%)	1
Check data quality with review team regularly			
Agree	15(71.4%)	6(28.6%)	8.125(1.874, 35.233)
Disagree	4(23.5%)	13(76.5%)	1
Provide regular feedback to their staff based on evidence			
Agree	16(66.7%)	8(33.3%)	7.333(1.583, 33.967)
Disagree	3(21.4%)	11(78.6%)	1
Can gather data to find the root cause of the problem			
Agree	9(47.4%)	10(52.6%)	7.840(1.850,33.225)
Disagree	10(52.6%)	9(47.4%)	1
Can develop appropriate criteria for selecting intervention for given problem			
Agree	12(63.2%)	7(36.8%)	11.687(2.082,65.605)
Disagree	7(36.8%)	12(63.2%)	1
Discuss achievement with their friend			
Agree	11(61.1%)	7(38.9%)	9(1.949,42.895)
Disagree	8(40%)	12(60%)	1
Feel committed in improving health status of the target population			
Agree	23(88.5%)	3(15.5%)	(.154,2.440)
Disagree	9(75%)	3(25.5%)	1
Set appropriate and doable target of their performance			
Agree	24(96%)	1(40%)	(0.71,1.23)
Disagree	8(61.5%)	5(38.5%)	
rewarded for good work			
Agree	15(93.8%)	1(6.2%)	(.111,1.558)
Disagree	17(77.3%)	5(22.7%)	1
Made accountable for poor performance			

Table 8 Continued

Agree	9(52.9%)	8(47.1%)	14.933(3.012,74.041)
Disagree	10(47.6%)	11(52.4%)	1
Disagree	16(76.2%)	5(23.8%)	1
I can check data accuracy			
Agree	29(90.6%)	3(9.4%)	(.016,1.487)
Disagree	3(50%)	3(50%)	1
Can calculate percentage and rates correctly			
Agree	16(61.5%)	10(38.5%)	4.800(1.043,22.100)
Disagree	3(25%)	9(75%)	1

4.1.7 Determinants significantly and independently associated with data utilization

Associated Technical determinant characteristics of information utilization

Health facility which had trained staffs to fill format were 10.5 times more likely utilize information than health facility without trained staffs (COR=10.50,95%CI [2.336,47.201]).Similarly health facility with friendly format for reporting were 5.16 times more likely utilize information than health facility without friendly format (COR=5.16, 95%CI [1.234,21.554]). Health facility which use appropriate technology for data analysis were 4.8 times more likely utilize information than those health facility which did not use technology for data analysis (COR=4.800,95%CI [1.204,19.129]). However when they are adjusted with other predictor variables, only health facility which had trained staffs to fill format showed statistically significant association (AOR=6.076, 95%CI [1.028, 35.897]). Hence, health facility which had trained staffs to fill format 6.076 times more likely utilizing HIS than health facility without trained staffs to fill format (Table 9).

Table 9 Associated Technical determinant characteristics of information utilization

Factors	HMIS Utilization		Crude OR With 95%CI	Adjusted OR With 95%CI
	Utilizing	Not utilizing		
There is trained staff able to fill out format?				
Agree	14(77.8%)	4(22.2%)	10.500(2.336, 47.201)	6.076(1.028, 35.897)
Disagree	5(25%)	15(75%)	1	
There is friendly format for reporting result and Easy- to-Visualize?				
Agree	11(73.3%)	4(26.7%)	5.156(1.234, 21.554)	
Disagree	8(34.8%)	15(65.2%)	1	
There is use of appropriate technology for data analysis, transfer and presentation?				
Agree	14(66.7%)	7(33.3%)	4.800(1.204, 19.129)	
Disagree	5(29.4%)	12(70.6%)		

Associated organizational and behavioral determinants of information Utilization

Health facilities who had management performing data quality check with review team regularly utilize more information than who did not check data quality with review team. [Adjusted OR: 40.898:95%CI :(2.142, 780.78)} Similarly, health facilities that had management who provide regular feedback to their staff based on evidence more likely utilized information than those who don't provide regular feedback to their staff. [AOR: 34.052:95%CI :(1.612, 719.456)}, on the other hand individuals who had confidence to calculate indicators correctly utilize more information [AOR: 19.346:95%CI: (1.158, 323.318)} than who can't. In-depth interview participants were responded that "inability to calculate indicator is the main factor for not utilization of information". Data manager who are working on data compilation analysis and report said "some of the health workers didn't trained on HMIS and can't calculate indicators to change data to information" (Table 10)

Table 10 Associated organizational and behavioral characteristics of information Utilization

Determinants	HMIS Utilization		Crude OR With 95%CI	Adjusted OR With 95%CI
	Utilizing	Not utilizing		
Seek feedback from concerned person				
Agree	11(57.9%)	8(42.1%)	7.84(1.850,33.225)	
Disagree	8(42.1%)	11(57.9%)	1	
Check data quality with review team regularly				
Agree	15(71.4%)	6(28.6%)	8.125(1.874, 35.233)	40.898(2.142,780.78)
Disagree	4(23.5%)	13(76.5%)	1	
Provide regular feedback to their staff based on evidence				
Agree	16(66.7%)	8(33.3%)	7.333(1.583, 33.967)	34.052(1.612,719.456)
Disagree	3(21.4%)	11(78.6%)	1	
Can gather data to find the root cause of the problem				
Agree	9(47.4%)	10(52.6%)	7.840(1.850,33.225)	
Disagree	10(52.6%)	9(47.4%)	1	
Can develop appropriate criteria for selecting intervention for given problem				
Agree	12(63.2%)	7(36.8%)	11.687(2.082,65.605)	
Disagree	7(36.8%)	12(63.2%)	1	
Discuss achievement with their friend				
Agree	11(61.1%)	7(38.9%)	9(1.949,42.895)	
Disagree	8(40%)	12(60%)	1	
Made accountable for poor performance				
Agree	9(52.9%)	8(47.1%)	14.933(3.012,74.041)	
Disagree	10(47.6%)	11(52.4%)	1	
Can calculate percentage and rates correctly				
Agree	16(61.5%)	10(38.5%)	4.800(1.043,22.100)	19.346(1.158, 323.318)
Disagree	3(25%)	9(75%)	1	

4.2. Discussion

Based on PRISM framework this study tried to assess the current status of HMIS utilization at health facility's and try to identify possible determinant of technical, organizational and behavioral factors

It is known that health facilities are the primary producers of data and are expected to change this data in to information at the site of data generation. This information is used for evidence based decision making for planning, budget allocation, day to day program management, human resource management, medical supply and drug management monitoring and evaluation of program to take immediate action. In this study overall utilization information was found to be 50%. This finding was coincide with the study done in Eastern Ethiopia overall utilization rate was found to be 53.1% and higher when compared with other similar studies in which only 22.5% HIS utilization was reported in North Gonder, 32.9% in Jimma, 45.6% in Bahr Dar, and 44.6% reported in Malawi. On the other hand this finding could be strengthened by the report of progress and lessons on HMIS/M&E implementation from pioneer regions (including Dire Dawa) in 2008 showed that health facilities implementing the new HMIS and M&E achieved considerably high improvements in data quality, information management, and reporting and information use (6,9,23).

According to this study among the seven indictors used by health workers formulating of plan was the indicator mostly used this was somewhat coincide with a study done in Kenya on determinants of utilization of routine data for decision making in health facilities identification of emerging epidemics followed by formulating of plans.

Heath workers are facing difficulties in filling out format due to lack of sustainable training on HMIS format on recording analyzing and use of information. The training which was provided took long time, moreover, those who were trained on the format do not have the environment to transfer their knowledge and skill to their friends due to lack of culture of information sharing in their facilities (9).

This study revealed that 53% 0f the health workers had no training to be able to fill out format for reporting, processing and utilizing of information in their respective facilities. It is higher than the study done in Kenya 26% and lower than the study done in Baher dar 65.2% health workers had no training to be able to fill format respectively (20,24). Inability of health workers

to fill out format to generate information and use is thought to be an important constraint on the availability of current use of data for decision making. We realized that continuous training on HIS activity is important to create awareness of health workers in order to improve their confidence and motivation to perform HIS task.

According to this study checking of data quality with review team regularly and providing regular feedback to the staff based on evidence are the main contributing determinants factor for the low utilization of information for decision making in health facilities. The study is Similar to the study made in Ayder referral Hospital Mekele (2014) indicates that, in the hospital there was low information utilization due to, no known performance monitoring team but there was informal monthly performance made by the higher bodies' team which didn't include the HMIS unit as a part (18).

Other study conducted in Malawi a result on a review of report (feedback, monthly, quarterly, others) available only in 40% of the facilities, showed that information use was low at the facility level (9). Even though the study was made in different countries we can understand no well established information-use culture in the facilities and lack of strict supervision and follow up from the supervisors might be another reason.

Since health care delivery is the result of group work so, health workers discussions of achievements with friend are an important indicator of information utilization in the facilities. In this study 47 % of the respondents made discussion with their friends' about routine health information utilization. Similarly, the study conducted in Malawi shows 40 % of the facilities were having discussions about routine health information system and 51.2 % made sharing of success stories in health management information utilization in Mexico (9,13).

People working within an organization perform tasks and behaves which they believe are valued and promoted by the organization. In other words, organizations create a culture for promoting and sustaining certain values around organizational functions to be performed at optimal levels. These values are about the way the information systems function, we say that the organization is promoting a culture of information (9).

According to this study evidence base decision making, empowered to make decision and accountable for poor performance are 53%, 55%, and 45% respectively. Similarly the study

conducted in India on Evaluation of Health Management Information Systems shows that evidence base decision making 64% and empowerment and accountability was 68%(25). The result of the study was less than that of Indian this is might be due to sample size difference. Further more in probably in India there is better promotion of culture information on the above indicators.

CHAPTER FIVE

5. Conclusions and Recommendations

5.1. Conclusions

This study was conducted on the aim of proposing intervention on the identified gaps of Health Management information System utilization in Woliso Town Administration Health facilities by assessing the weakness and strength HMIS performance and its major barriers grouped under Technical, Organizational and Behavioral factors.

Use of health information for decision making determines effectiveness in detecting problems, defining priorities, day to day program management, and allocating resources for improved health outcomes. This study demonstrates utilization of information from routinely generated data in health facilities in various levels of indicators for different activities of decision making. The overall utilization of information in health facilities were 50% and found to be low.

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A number of determinant factors influence data utilization for decision making such as lack of training of health workers to be able to fill out format, inadequate data quality check with review team regularly by management, inadequate provision of regular feed back to the staff, poor discussions of achievements with their friend by health workers and low confidence level of health workers in calculating percentages and rates correctly were among the major determinants factors.

In order to minimize determinant factors that reduces data utilization for decision making, managers should give attention to health workers continues and sustainable capacity building on utilization of information, sharing of successful work stories, establishing functional performance review team, provision of regular feed back to their staff and improving confidence level of health workers in calculating percentages and rates correctly are currently the main intervention areas of health facilities.

5.2. Recommendations

The finding of the project will help the Town Administration Health office as base line to act on the determinants of utilization of Health Management Information in the facilities to improve information utilization and decision making which eventually improve the health care delivery of the population

Utilization of routine health data for decision making is an ongoing action; it needs frequent and programmed effort for better improvement of service delivery of health care.

1. Based on the findings of the project the following recommendations were made to the concerned bodies and stakeholders of HMIS

- The health facilities should improve feedback/supervision system, focusing on how to use of information for decision making.
- The facilities should build capacity and skills of health care providers in routine data utilization for decision making through on job trainings.
- The facilities should improve sharing of stories/achievement on the use of information and role modeling.
- The health facilities should establish the system of rewarding individuals to encourage best achievement.
- Improve HIS skills in data interpretation, use of information and problem solving
- Further research is needed Waliso Town to assess factors that limit utilization of information of decision making in health facilities.

2. According to the findings of this study the health facilities have to improve information utilization by doing interventions based on proposed solutions on the gaps identified for the factors that limit the utilization of information for decision making in their respective facilities (Table 11).

Table 11 Recommendations of Proposed intervention for HMIS utilization improvement project

No	Identified gaps	Reason for identified gaps	Possible solution
1	Lack of capacity in using data for day to day activities	Lack of training	Provision of training on data utilization for day to day activities
2	Poor data capturing ,analyzing and utilization	Lack of training	Provision of training on data capturing. analyzing and utilization
3	Lack of motivation	Lack of feedback and reward	Establishing the mechanisms of provision of regular feedback and reward for best performance
4	Inadequate information utilization	Poor regular review team data quality cheek and supervision	Strengthen regular monthly meeting of data quality cheek with review team and establish regular supervision
5	Poor culture of information sharing	Poor success story discussion among health workers on the use of health information, empowerment and accountability	Establishing conducive environment for empowerment and, accountability and to discuss success story sharing meeting
6	Less sense of responsibility	Poor motivation mechanisms and empowerment	Establish method of motivation for good work to motivate health worker
7	Low confidence of calculating indicators	Lack of on the job training	Strengthen on job training to build the capacity of health worker

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7. Annex 1

Dear Respondent

This questionnaire is designed to collect data for project entitled Determinants of Health management information system utilization for decision making in health facilities in Woliso Town administration health office and Health Centers. The study is conducted for the partial fulfillment of Master degree in health informatics. The researcher kindly requests your participation in filling this questionnaire because your participation by giving clear and accurate answer is very important for realization of the project. Please be sure that all the information provided in this questionnaire will be used for the project purpose only and treated with at most confidentiality, you are not obliged to answer any question that you do not want to answer. Your participation in this study does not involve any direct risk or benefit for you. It is very useful since your answers and those of other participants will help to improve the problem related to HMIS utilization for decision making in your facilities.

Thank You

Part one: Background Information

No	Questions	Answer	Remark
101	Name of health Institution		
102	Case Team		
103	Sex		
104	Age		
105	Qualification		
106	Year of service	……year	

Part Two: Level of Data Utilization for Decision Making

No	Questions	Strongly Agree	Agree	Disagree	Strongly Disagree	Neutral
	To what extent is the collected data used in making the decision in the following categories:					
201	Day-to-day program management	1	2	3	4	5

202	Formulating plans	1	2	3	4	5
203	Review financial statement and Budget preparation	1	2	3	4	5
204	Deciding budget reallocation	1	2	3	4	5
205	Human resources management	1	2	3	4	5
206	Monitoring key objectives and policy	1	2	3	4	5
207	Medical supply & drug management	1	2	3	4	5

Part Three: Technical Factors

No	Question	Strongly Agree	Agree	Disagree	Strongly Disagree	Neutral
	In My facility/Case Team	1	2	3	4	5
301	There is standardized set of indicator?	1	2	3	4	5
302	There is well designed data collection and reporting format?	1	2	3	4	5
303	There is trained staff able to fill out format?	1	2	3	4	5
304	There is skilled human resource on collecting, processing, and analyzing and use of data?	1	2	3	4	5
305	There is friendly format for reporting result and Easy- to-Visualize?	1	2	3	4	5
306	There is use of appropriate technology for data analysis, transfer and presentation?	1	2	3	4	5

Part Four: Organizational and Behavioral Factors

No	Question	Strongly Agree	Agree	Disagree	Strongly Disagree	Neutral
	In your facility, decisions are based on					
401	Personal liking	1	2	3	4	5
402	Superiors' directives	1	2	3	4	5
403	Evidence/facts	1	2	3	4	5
404	Political interference	1	2	3	4	5
405	Comparing data with annual plan	1	2	3	4	5
406	Considering costs	1	2	3	4	5
	In your facility managers(management support)					
407	Seek feedback from concerned persons	1	2	3	4	5
408	Emphasize data quality in monthly reports	1	2	3	4	5
409	Discuss conflicts openly to resolve them	1	2	3	4	5
410	Seek feedback from concerned community and staff	1	2	3	4	5
411	Check data quality With review team regularly	1	2	3	4	5
412	Provide regular feedback to their staff based on evidence	1	2	3	4	5
413	Display data for monitoring their set target	1		3	4	5
414	Can gather data to find the root cause(s) of the problem	1	2	3	4	5
415	Can develop appropriate criteria for selecting interventions for a given problem	1	2	3	4	5
416	Can evaluate whether the targets or outcomes have been achieved	1	2	3	4	5
	In your facility, staff					
417	Are punctual	1	2	3	4	5
418	Document their activities and keep records	1	2	3	4	5
419	Discuss achievements with their friends	1	2	3	4	5
420	Feel committed in improving health status of the target population	1	2	3	4	5
421	Set appropriate and doable target of their performance	1	2	3	4	5

422	Feel guilty for not accomplishing the set target/performance	1	2	3	4	5
423	Are rewarded for good work	1	2	3	4	5
	In your facility, staff					
424	Are empowered to make decisions	1	2	3	4	5
425	Able to say no to superiors and colleagues for demands/decisions not supported by evidence	1	2	3	4	5
426	Are made accountable for poor performance	1	2	3	4	5
427	Use HMIS data for community education and mobilization	1	2	3	4	5
428	Admit mistakes for taking corrective actions	1	2	3	4	5
	Personal					
429	Collecting information which is not used for decision making discourages me	1	2	3	4	5
430	Collecting information makes me feel bored	1	2	3	4	5
431	Collecting information is meaningful for me	1	2	3	4	5
432	Collecting information gives me the feeling that data is needed for monitoring facility performance	1	2	3	4	5
433	Rate your confidence of your ability to perform activities listed					
434	I can check data accuracy	1	2	3	4	5
435	I can calculate percentages/rates correctly	1	2	3	4	5
436	I can plot data by months or years	1	2	3	4	5
437	I can compute trend from bar charts	1	2	3	4	5
438	I can explain findings & their implications	1	2	3	4	5
439	I can use data for identifying gaps and setting targets	1	2	3	4	5
440	I can use data for making various types of decisions and providing feedback	1	2	3	4	5

Annex.2

Interview guide Line

Health Center Head and Town Administration Health Office Head

1. Does your Facility compile HMIS Data submitted by Department/ facilities?
2. Does your Facility keep copy of HMIS (Monthly, Quarterly) report
3. Does your facility have manuals (HMIS indicator definition, HMIS disease classification and HMIS information use guide)

4. Does your facility perform supportive super vision in the last 6 months? (July 2014-Dec2014)

5. Does the office display a summary of demographic information such as population by target group(s)?
6. Does your Facility office have performance review meetings?
7. Do you maintained minutes of performance review meetings?

8. Have you made any decisions based on the above meeting findings about HMIS utilization?
9. Does your facility have incentive mechanism for best performance?

10. Does your facility have separate budget for HMIS activities?

11. . Identify challenges that may influence the data utilization for the decision making.

12. Identify the Process for addressing the issues emerging as the challenges and obstacles of using data for decision making among the health care providers

Thank you for taking the time to conduct this interview!!

Annex .2.1

HMIS administrator and Officer

1. Does HMIS resources such as computer, Printer, CD, internet etc available?
2. Did you compile HMIS data?
3. Did you receive any training on HMIS?
4. Did you keep copies of the HMIS monthly reports which were sent to the above level?
5. During the last three month, did you receive any feedback report from your supervisor concerning HMIS utilization?
6. Do you organize process and analyze data collected to produce relevant, timely and quality information?
7. Do you have guide line/standards regarding information generation, reporting and use?
8. Does the performance review team cheek the data for accuracy and completeness before transfer to the above level?
9. What are the existing challenges/problems in connection with the HMIS Utilization?
10. How can these situations be improved?

Thank you for taking the time to conduct this interview!!

Annex.3

Observation Checklist

1. Assess the availability of data collecting tools

1. Assess filled formats tally sheets, and registers their legibility and completeness and copies of Monthly report
2. Assess data collection, processing, Reporting and usage
3. How and who record and compiles data
4. Availability and functionality of HMIS IT resources (computer, printer ,USB,CD, Internet etc)
5. Availability of guiding document in the facility
6. Presence of performance review meeting minute record. Does it include HMIS related activities? When was the last meeting?
7. Availability of documented feed back
8. Availability of supervision document
9. Display of important indicators, charts and Tables