Feed Back for Defense Comment

In Table form

S.No	Location in document	Comment given	Corrective Action taken	page
1	**Title**	Titles not similar in both pages	Accepted and corrected on cover page and title page in similar way.	
2	**Acknowledgements**	Words,such as,goes I, Almighty,sululeta,woreda administrative,head chancho health center director while,support,thank to The individuals.not used appropriate capitalization and grammar usage.	Accepted and corrected go,the Almighty ,Sululeta Woreda, Chancho Health Center Director ,supported, during thank individuals All capitalization and grammatical error are corrected.	
3	**Table of contents**	Order of acknowledgements and Table of contents .table of contents is not compatible with page numbers in the text. 4.12 Factors which enhance the implementation of HMIS on page 52 not in the text.	Corrective action were taken all under table of content is compatible with corresponding page number. 4.12 removed from both table of content and text.	
4	**List of Tables**	Not compatible table and	All list of tables are corrected in compatible	

		page .table 4.2 has different title in the text.	page numbers and table 4.2 has the same title with in the text.	
5	List of acronyms	Not comprehensive and not alphabetically arranged.DHS and MOH not included in the list.	Accepted and corrected according to alphabetical order and MOH and DHS added in their respective place.	
6	Abstract	Study is, professional their qualification there is no ,data was,who are convenient at the time of data collection. Of the respondent	Accepted and corrected words such as, study was, professionals with qualification, There is no, data were who are volunteer at the time of data collection. Of the respondents.	X
7	Backgrounds	Improve health (refe),this, stake holder,it also	Reference(4) cited.those includes stakeholders,it is also is corrected like this.	Page 1
8	Statement of the problem	These research project were,	This research project.	Page 3
9	Specific objective	To determine the factors affecting HMIS data quality.	To determine factors affecting HMIS data quality.	Page 5
10	Research questions	Program is more successful	Program is successful	Page5
11	The scope and limitation	Was limited to at health facility level	Was limited to health facility level.	Page7

12	2.1.1 current health information systems	1. Irrelevance….. 2. Poor quality…… 3 lack of timely……	2.1.1.1 Irrelevance of the informa 2.1.1.2 poor quality 2.1.1.3 lack of timely	Page 9
13	2.2.2 HMIS Assessment in Ethiopia. page 25	According by the FMOH. Ref (citation)	According to the FMOH. Inserted citation reference	Page 25and 26
14	Summary of related work	Citation of table is below the table and not complete.	Accept and correct the citation of table above the table of summary in full and complete sentences.	Page 28
14	Methodology	Oromiya region chancho town In depth interview is The interviews were	Oromiya Region Chancho Town. In depth interview was The interviewees were	Page29

15	Results	Fifty questionnaires were distributed and 50 were returned .the number of health worker and staffs participated in implementation of HMIS in the health center was 50 in number. Narrate your table in the chronology of your variables e.g. narrate sex,age, service year ,level of education, field of study. Indicate your table number just following year initial statements.	Fifty questionnaires were distributed and all returned. The number of health workers and staffs participated in implementation of HMIS in the health center. I, accept and correct the comment based on the given guide. Starting narration from sex and ends with field of study. I indicate table number following year initial statement in all tables.	
16	Summary of the main finding	M ix ups of objective, Methods Findings Discussions The main objectives of the study, were to assess weakness and strength of HMIS implementation and its' determinant factors	This study had tried to assess HMIS implementation at Chancho Health Center. In addition the study also tried to show the association between quality of HMIS data and important key factors which may affect the quality of HMIS data such as knowledge of HMIS concept, frequency of training, Availability of HMIS focal person, duration of supervision, and accountability of concerned bodies were the major factors	

		that affect the use of information and data quality in chancho health center. The components of HMIS were assessed, regarding their strength and weakness of the implementation status; investigating factors that possibly affecting implementation program are recommended and provided possible solution for the effective implementation of new HMIS. This finding is discussed based on performance of routine information system management PRISM and HMN (health metric network).Based on PRISM framework by considering technical, behavioral, and, organizational factors. From organizational determinant concerning coordination 41 (82%) of the respondent are disagree	determine HMIS implementation. The components of HMIS were assessed, regarding their strength and weakness of the implementation status; investigating factors that possibly affecting implementation program are recommended and provided possible solution for the effective implementation of new HMIS. This study has shown that implementation of HMIS in the study area covered all departments of health centers. The study tried to identify the status of administrative unit on using the reports of health facility for health care delivery, decision making and planning.	

		.related to budget 37 (74%) of the respondent are disagree on assigned budget. Importance of knowledge of HMIS agree 40 (80%) and on availability of adequate material 44 (88%) disagree.		
16	Interview qualitative result	Two opposing views	Accept the comment and make statement correction on HMIS formats filling. in the health center.	45
17	Reference	Federal MOH and FMOH written in different way.	Corrected in the same way FMOH.	
18	In all pages	The given grammar and spelling error are corrected. in all given pages.	Corrected the given comments on spelling and grammar in all pages.	

Addis Ababa University

School of Information and School of Public Health

Msc in Health Informatics Program

Title: Assessment and Enhancement of HMIS Implementation Strategy in Oromiya Region at Chancho Health Center.

By

Tadele Negash

May, 2015

ADDIS ABABA UNIVERSITY

SCHOOL OF INFORMATION AND SCHOOL OF PUBLIC HEALTH

Assessment and Enhancement of HMIS Implementation Strategy in Oromiya Region at Chancho Health Center

By

Tadele Negash

A Thesis 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

May, 2015

ADDIS ABABA UNIVERSITY SCHOOL OF GRADUATE STUDIES

SCHOOL OF INFORMATION SCIENCE AND SCHOOL OF PUBLIC HEALTH.

ASSESSMENT AND ENHANCEMENT OF HMIS IMPLEMENTATION STRATEGY in Oromiya Region AT CHANCHO HEALTH CENTER

By

Tadele Negash

Name and signature of members of the examining board.

Name	Title	signature	Date
----------	Chair person	----------	----------
Dr Tibebe Beshah	Advisor	----------	----------
----------	Examiner	----------	----------
----------	Examiner	----------	----------

Declaration

I declare that the thesis is my original work and has not been presented for a degree in any other university.

TADELE NEGASH

Signature----------

Date ----------

This thesis has been submitted for examination with my approval as a university advisor.

Pro Damen .H. Advisor----------

Dr Tibebe Beshah Advisor----------

Dedication

This work is dedicated to my dear families and friends whose encouragement and help gave me Strength during my study.

AKNOWLEDGEMENTS

Let all my deepest gratitude go to the Almighty God, for His indispensable help throughout my life and also the strength to go through and finish my master's course.

I would like to extend my heartfelt gratitude and appreciation to my advisors Professor Damen Haile Mariam and Dr Tibebe Beshah for their invaluable guidance and support starting from writing research proposal to the finalization of this thesis. I would like to pass my deepest thanks for the Sululeta Woreda Administrative Head, Ato Zelalem Belachew and Chancho Health Center Director, Ato Gelana Baharu, as well as Chancho Health Center technical staffs, who helped me during data collection and my project work. Special appreciation goes to the Aelimitoo Milk Processing Factory for their financial support during my study. Last, but not least, I would like to thank individuals who directly or indirectly supported me throughout my study.

TABLE OF CONTENTS

CHAPTER THREE METHODOLOGY

CHAPTER FOUR RESULT AND DISCUSSION

CHAPTER FIVE CONCLUSSION AND RECOMMENDATION

REFFERENCES

ANNEX

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
CSA	Central Statistical Agency
CSO	Central Statistical Office
DHS	Demographic Health Survey
FGD	Focus Group Discussion
FMOH	Federal Ministry of Health
HIS	Health Information system
HIT	Health Information Technology
HIV	Human Immune Virus
HMIS	Health Management Information System
HMN	Health Metric Network
HMNF	Health Metrics Network Framework
HSDP	Health Sector Development Program
ICT	Information Communication Technology
IT	Information Technology
KII	Key Informant Interview
LGA	Local Area Government

LQAS Lot Quality Assurance System

OPD Outpatient Department

MOH Ministry Of Health

PATHS Partnership for transforming health system

PRISM Performance Routine Information System Management

RHB Regional Health Bureau

RHIS Routine Health information System

WHO World Health Organization

Abstract

Background: - HMIS is an organized system of record keeping, reporting, processing analysis, use and feedback of information. Effective health management information system (HMIS) is essential for setting priority for community based problems, for allocation of budget and human resource and decision making in general to managers and stakeholders. Facilitate informed Local decision making it is necessary to implement health management information system to timely and accurately provide at the level of health facility.

Objective: - The purpose of this study was to assess the weakness and strength of the existing HMIS and implementation at chancho health center.

Methodology: - A facility based cross sectional Descriptive study was conducted in Chancho Health Center from February to April, 2015. Both qualitative and quantitative research methods were used. Data were collected through open ended questions of self administered filled by 50 health professionals who were volunteer at the time of data collection. Qualitative data which is Observations and in depth interview was conducted with head of health center and HMIS focal person, for qualitative analysis of certain document. SPSS version 20 software was used to analyze quantitative data.

Results: - The finding of the study was presented in table. The quantitative results on each outcome measures use in assessment are reported and explored by qualitative methodology. .Most of the respondents were health professionals with qualification out of the questioned 50 staffs 32 (64%) Diploma and 18 (36%) were Degree. 90% of the respondent reported that 43 (86%) of the respondent said, there is no trained staffs on basic computer literacy and manual reporting. lack of coordination mechanism has also played its part for this challenge.

39 (78%) of the respondents said that, there was no incentive for information use and it shows also that 41 (82%) of the respondents said that, there is no motivation mechanism to improve information culture.

Conclusion and recommendations: I**,** conclude That There is no necessary input to HMIS like budget, training and coordination mechanism in the facility. It was also recommended that HMIS implementation program in the facility should have ownership and it is important to identify the

capacity requirement of the HMIS unit at health center level and the health professional and health managers at health center level need to be motivated and encouraged in order to make them committed and accountable to their work.

Chapter One

Introduction

1.1 Backgrounds

A Health Information Management System (HMIS) is an integral part of the health system whose operational boundaries include all resources, organizations and actors that are involved in the regulation, financing and provision of actions whose primary intent is to protect, promote and improve health [1]. There are different users and uses of information. Patient, communities, service provider, program managers, policy makers, providers of funds, global agencies and organizations all need information in order to gauge the performance of the health system, their actions, and quality of services provided. A range of health-measurement areas are assessed and those includes, information on Mortality and morbidity rates; disease outbreak; determinants of health (such as nutrition, environment, and socioeconomic status); access, coverage and quality of services; costs and expenditure; and equality. Various tools and data collection methods are available including, routine clinic based data collection system and disease surveillance. It is also necessary to assess how the users and uses of information are integrated and if they are consistent with nationally accepted tools and methods of data collection [1].

The HMIS, currently captures data on disease morbidity and mortality, maternal and child health services, service delivery (staff work load, health facility utilization, availability of essential drugs etc). HMIS data collection is conducted at the health facility level using a paper based system and is aggregated and computerized to higher level. Health management information system is a process whereby health data are recorded, stored, retrieved and processed for decision making. To improve the management, optimum use of resource and to make timely decisions to resolve constraints and problems of implementation. Health management information system and monitoring and evaluation are one of seven components of the health sector development program HSDP III of Ethiopia [2].

The process of strengthening HMIS become a continuous cycle in which implementation is followed by evaluation and reprogramming. The current HMIS enables stakeholders to measure

progress document reprogram future health information system. Ultimately, the desired result of the strengthening process is the improved, available and greater use of quality Health information. Health management information system is a system that allows for the collection, storage, compilation, transmission, analysis, and usage of health data that assist decision makers and stakeholders manage and plan resources at every level of health service. It is also used to improve patient satisfaction with health services by tracking certain dimensions of service quality [2].

In Ethiopia, like the service delivery instruments, there is little standardization of HMIS reporting forms. At the onset of health system decentralization as a primary health care strategy, which constituted a key feature of health sector reform across the country efficient and effective health management information systems were widely acknowledged and adopted as a critical element of district health management strengthening programs. According to the Ethiopian context health management information system and monitoring and evaluation was one of the seven components of the health sector development program (HSDPIII) [3].

Health service based sources generate data on outcome of health related administrative and operational activities. There are a wide variety of health service based data .facility based data on morbidity and mortality among those using services. Type of services delivered drugs and commodities provided; information on the availability and quality of services financial and management information most health service based data are generated routinely in the course of recording and reporting on service delivery [3]. At the health facility it is better for providers to know how to use the forms, and that HMIS can generate Quality, useful information for planning and managing health service overall they have to create a sense of ownership putting themselves in the health system hierarchy. Basically, performance of routine information system management (PRISM) broadens the analysis of RHIS performance to include three key categories of determinants that affect performance; behavioral, technical and organizational determinants. Reliable and timely health information is the foundation of public health action [4].

1.2 Statement of the Problem

There is a big concern for the improvement of the health care services delivery system. This is widely seen to be attributed to the short comings of HMIS. HMIS progress assessment conducted in different times at health facility level and it revealed that availability of the HMIS registers, formats, and tools are not up to the needs of the health facility, and among the major issues identified are, lack of adequate skilled staff at health center, in data collection, data analysis and information flow is also in fragmented way including parallel reporting system, with no integration , this is among the various subsystems resulting in redundant and conflicting reports. This led to poor quality of data, in terms of accuracy and timeliness preventing information users from effectively utilizing information in decision making [2].

The major problem, that may contribute to the HMIS failure or not serving, its purpose and not meet its objectives, were lack of attention given to HMIS, shortage of resource and lack of strategic plan. And there are also other problems like, lack of integration, absence of standard guidelines, inadequate staffing and staff with poor IT skills in using computer. Inappropriate design as related to the need is also a major reason for HMIS failure [2].

Thus, this research project empirically investigated the weakness and strength of HMIS use at the selected research site. So design and new strategy development needed to enhance the implementation of HMIS should be grounded for local improvement. However, there are many constraints in terms of data collection, transmission of data, presentation, analysis and use of HMIS for decision making. FMOH and RHB play a vital role and taking measures to overcome these problems by allocating budget and supplying equipments for HMIS implementation, but still there is no significant improvement seen.

1.2.1 Problem on Current HMIS Strategy

Most health workers equate information system with filling endless registers with name and address of patient compiling information on disease. E.g. sex and age of patient every week, or every month and sending out reports without adequate feedback furthermore, the data received are often not helpful for management decision making. Because they are incomplete, inaccurate, untimely, obsolete and unrelated to priority tasks and function of local health personnel. In other words, information system tends to be “data driven” instead of “action

driven". A large part of the data collected passes to higher level without being analyzed. Current health information systems are therefore, widely seen as management obstacles rather than as tool. The reason can be irrelevance of information gathered and lack of consensus between producers and users of data at each level of health care system. Poor quality of data is due to lack of motivation among health services personnel, duplication of data.

The process of transmitting, compiling, analyzing, and presenting the data is usually, so tedious that by the time a report is prepared. The data are frequently obsolete and decision is made without any information input [3].

The first effort to systematically collect, analyze and report data for improved management are undertaken by program managers of vertically structured empires as discussed above.

Health information reforms was done using a more gradual approach which consisted of either the reform of sub systems such as routine services reporting the driving for the reform of health information systems coincided with a revolution in information and communications technology [4].

1.3 Objectives

1.3.1 General objective

- To assess the weakness and strength of the existing HMIS in terms of data quality, technological usage, data generation and transmission in Chancho Health Center, Oromiya Region.

1.3.2 Specific objectives

- To determine factors affecting HMIS data quality;
- To evaluate the design of HMIS routine data collection and reporting instruments registers;
- To describe the process of data generation processing and transmission in the existing HMIS and routine reporting system; and
- To assess the status of using of computer technology for data entry in the utilization of current HMIS.

1.4 Research Questions

This research mainly aimed to answer the question to what extent the HMIS implementation program is successful and especially designed to assess and give answers for the following research questions.

- How data recording and reporting is working to implement HMIS?
- What are determinant factors for proper HMIS implementation?
- How the health data quality and utilization of information for action contribute for informed decision making process.
- Is the current HMIS comprehensive easy to use, user friendly, and interactive?

1.5 Significance of the Study

This study serves as starting point for the assessment of the current HMIS. Based on the situation in public facilities to identify the strength and weakness of the system furthermore factors affecting the generation of quality data and utilization of information. The findings of the study benefits facilities and institutions by helping them to identify their weakness in implementing the new HMIS and propose better ways that help them improve their information system.

The most pressing need of the assessment is to construct standard documentations for the existing HMIS [4].

The findings of the study will help to improve quality of health care delivery in the health center by investing a minimum cost to strength the system. The main beneficiaries of the result will be the public as a whole and other beneficiaries include health facility, policy makers and researcher.

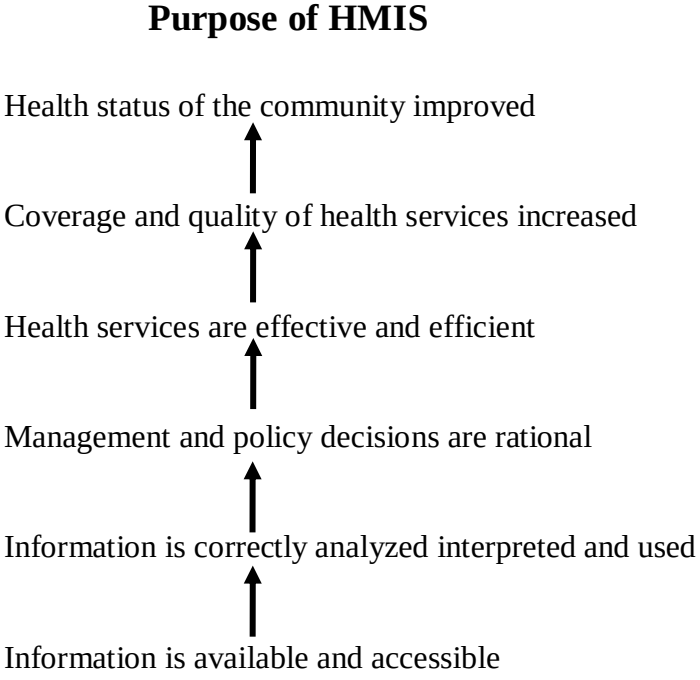

Figure 1.1 HMIS strategy and implementation [3]

1.6 The Scope and limitations.

The study focuses on, assessing the implementation of HMIS in terms of providing completeness, timeliness, report generation, data collection and using information. Concentrates on the HMIS particularly, with routine data collection technique registers, formats, and reporting system.

The assessment of the study Stay, from Feb-April, 2015 and study conducted and restricted in Chancho Health Center and management units. The study focuses on routine service reporting system in the HMIS unit. And was limited to health facility level.

Chapter Two

Literature review

2.1 HMIS Basic concept

Health management information system:- is an information system especially designed to assist in the management and planning of health programmers, as opposed to delivery of care, developing health management information system; practical guide for developing countries [1].

An **HMIS** is an organized system of record keeping, reporting, processing, analysis, use and feed back of information which is designed to provide different level of beneficiaries (clients, community, service providers, managers, planners and policy makers) with timely and relevant information necessary to formulate policy, plan, implement, monitor, supervise and evaluate health programmers [5].

HMIS project was conceptualized by the department of health to ensure the quality of health care. By IT application, in such a manner so has to provide of standard management tolls and integration of Management information, at health facility level so as to ensue on line review.

This is aimed at management of vital patient record, analysis of the critical health related data so as to provide an up dated planning and policy tool towards provision by quality health services.

HMIS is required to ensure the production of high quality information, as resource or in put on timely fashion for the needed purpose.

Health information system:- is a process whereby health data (input) are recorded, stored, retrieved, and processed to provide information (output) for the management of health programmed or system and for monitoring health activities [3] .

The objective in the case of a health information system then is to improve health services management through optimal information support. We define “information” as a meaningful collection of facts or data.

"The enhanced development of the health information system has been used as the entry point for the improvement of managerial capabilities in the health system" [6].

Similarly, was that the development of structured routine information system, closely adapted to the information needs of health services at the district, health center, and community levels, can potentially contribute to the overall improvement of health service management [6].

2. 1.1 Current health information systems

Current health information systems widely seen as management obstacles rather than as tool, the reasons can be summarized, In four points;

2.1.1.1 Irrelevance of the information gathered:

According to WHO Expert Committee (1994) "Many of the data recorded and reported by the health services staff are not needed for the tasks the staff perform" [2].

Data collection tends to focus on disease reporting at the health unit level or at the patient client level. Yet, data that are needed are frequently not collected and there is a lack of a consensus between producers and users of data at each level of the care system regarding the information needed.

2.1.1.2 Poor quality of data

Data requirements are frequently chosen without taking into account the technical skills of the health worker collecting the data, or the available diagnostic equipment in peripheral health For example, at the first level of care, auxiliary health staff without laboratory X-ray facilities is required to report on disease such as leishmaniasis, diphtheria, peptic ulcer. Another reason data quality was low is lack of motivation among health service personnel. Since health services supervisors and peripheral health workers rarely receive feedback on the data report to higher level.

2.1.1. 3 Lack of timely reporting and feedback

The process of transmitting, compiling, analyzing, and presenting the data is usually so tedious that by the time a report is prepared, the data are frequently obsolete and decisions are often

made without any information in put. Planners and managers face deadlines and time constraints in their daily decision making.

2.1.1.4 Poor use of information

Despite the evidence that much of the generated data is irrelevant, of poor quality redundant, or obsolete, there are some useful data sets available. However, a few existing studies do point to some of the culprits. For example, information use was found to be especially weak at the district, health center, and community levels, given the centralization of many health systems and hence, health information systems. This raises serious concerns, given the current effort to decentralize decision making and build capacity at district level [5].

2.1.2 The Health information system structure

A health information system first of all is a "system" like each system; it has an organized set of interrelating components which can be grouped under two entities. The information process and the health information system management structure. Through the information process, raw data (inputs) are transformed into information in a "usable" form for management decision making (out puts). The information process can be broken down in the following components [5].

Data collection, (ii) data transmission, (iii) data processing, (IV) data analysis, and (v) presentation of information for use in planning and managing. The process ensures that the right type of out puts in a timely fashion. For example, the information needed is continually changing with changing planning and management needs, this will in turn affect data collection and other components of the information process.

Components of a health information system

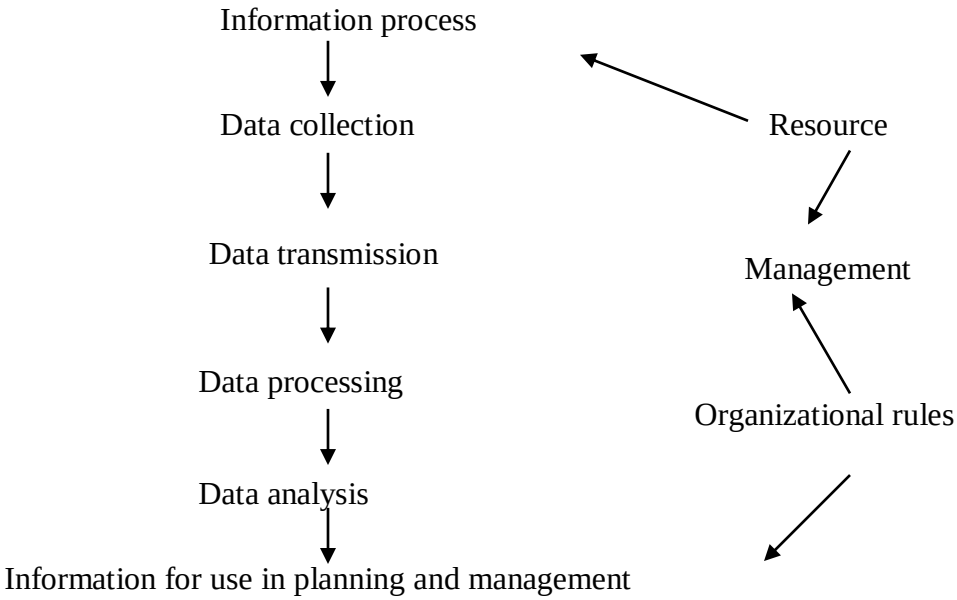

Figure 2.1: component of health management information system[3].

The health information system restructuring process can be broken down into 6 steps.

i) Identify information, needs (ii) defining data sources and developing data collection instruments,

iii) Developing data transmission and data processing

iv) Ensuring use of the information

V) planning for required health information system resources and; (VI) developing a set of organization rules for health information system management. The 1st 4 deal with the development of the information generating process; the last 2 steps deal with setting up the health information system management [7].

2.1.3 using of computer Technology for health information restructuring

One of the main objectives of many typical health information system development projects is the computerization of important data to be managed, monitored, analyzed, and reported. In all

countries, there are always numerous opportunities to apply computers in new or improved ways. However, whenever computerization becomes the primary objective of health information systems development effort, the more important purpose of serving the data needs have the care providers may be lost. Registers and records will be redesigned for facilitating data capture and entry, rather than reinforcing proper action for planning, management, and service delivery [6].

Computers are first and for most a support tool for data processing, data analysis, and data presentation and should be employed only if it is cost effective to do so.

HMIS has used information and communications technology (ICT) systematically to support data collection, transmission, analysis and presentation.

Introduction of ICT and an electronic HMIS at health facility levels will considerably enhance the MOH'S ability to transfer data quickly, accurately, and efficiently. In addition use of ICT expands the range of data presentation and analysis options enormously. The HMIS system will first prove itself as a clean and reliable manual system that can be used as a fall back in case of ICT failures [8].

2.1.4 Assessment of health information system

Assessment of health information system essentially a measurement of the performance of selected components or subsystem of the information system to support and improve health care delivery and management of the health service system at various levels. The assessment was based on the performance of routine information system management (PRISM) frame work. This frame work promotes strengthening of the HMIS performance (PRISM) i.e., better data quality and improved information use by addressing technical, organizational, and behavioral factors affecting HMIS data quality and use for health service performance improvement [9].

The assessment of the study findings that serves as a basis for formulating intervention to improve the HMIS performance. And as a base line for future monitoring of HMIS performance improvement in the health facility. This assessment will further inform needed modification and /or adaptation of the HMIS performance assessment tools to be used. Assessment in health facility in most countries revealed that the following subsystems of the health information systems are found.

1- **Epidemiological surveillance: -** For noticeable infection disease, certain environmental conditions and risk factors.

2- **Routine service reporting**:-Form basic health services at community level, health center, dispensaries

3- **Special program reporting system: -** Such as tuberculoses control. Leprosy control malaria control, material and child health and family planning. Expended program on immunization and AIDS prevention.

4- **Administrative system**: - Including health program budget management, health financing systems, health training program, health research management, health documentation management and management external resources for health.

5- **Vital registration: -** Birth, death, and migration in addition, health information system components as defined above for the assessment, or to select only a few. For the purpose of such assessments health information system components have been categorized as follows.

Data input: - Validity and completeness of data recording and collection, including surveillance, routine case and activity data survey data emerging from administrative process, and registration data.

Data analysis: - Transmission and reporting; efficiency, completeness, and quality of data analysis, processing and presentation at all levels of the health system, in order to produce actionable information.

Use of information: - Decisions and actions taken patient client, community, and health unit, programmed and executive management.

Information systems resources:- Availability sufficient and use of critical resources to support, the health information system budget; staff with necessary training and expertise; facilities such as space for record storage, records and formats, and necessary equipments for data communication, storage, analysis, and document presentation (faxes, computers, printers, photocopy machine, etc);

Information system management; Organization and coordination mechanism for assuring that data and information are properly defined, standardized, produced maintained, shared, and reported.

2.1.5 Performances of routine information systems Management (PRISM) tools

Routine health facility based information system, more than non routine methods .Such as surveys, or rapid assessment methods, are the main data source in most countries. Yet they have producing an irrelevant or low quality data. Therefore most health managers, as a rule do not use the information generated and make decisions based on "gut feeding" by their nature, routine health information systems are intimately linked with the health services structure. So that restructuring routine health information systems can have a direct impact on improved service delivery served as a major responsive to information needs of the health service at all level [9].

Particularly service delivery levels, restructuring of routine health information systems means better matching these management functions with the various components of the information generating process and of the health system management structure. Once routine health information systems fulfill their support role to the decision making process at all levels. May expensive surveys can be eliminated or at least redirected to generate data that are not captured by routine systems [9].

The ministry of health was concerned that, district and facility staff rarely used routine data to identify performance gaps, make plans, and monitor progress.

PRISM tools provided a structured way for the ministry to assess the quality of data and use of information in its routine health information system. Were revealing data errors were very high, due in part to overly complex data from patient records, and calculations errors. The PRISM assessment led to the design of easy to use forms, a refresher training course in data collection and processing for health workers [9].

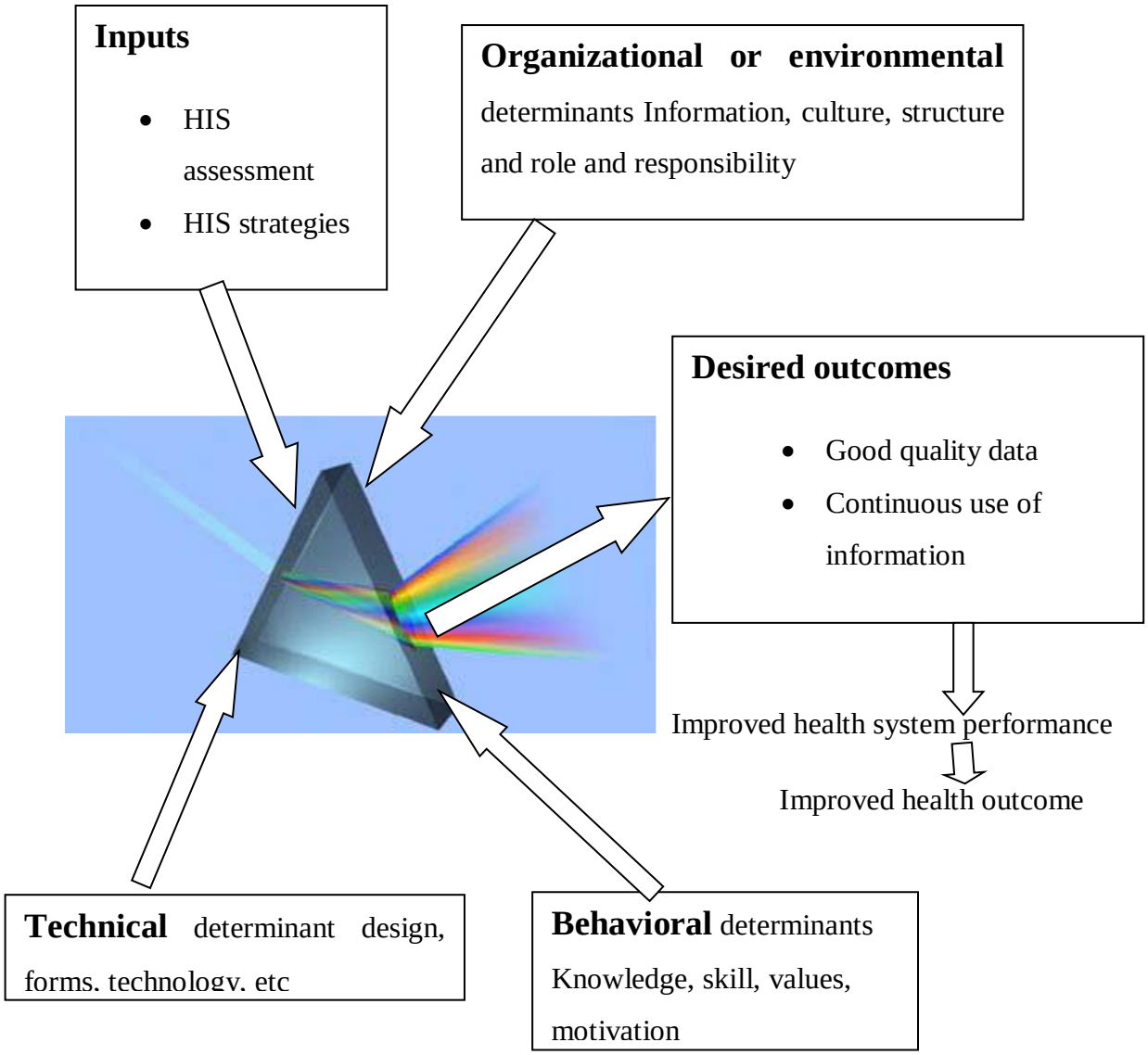

Figure-2.2: PRISM frame Work: source adopted from WHO, 2008

2.1.6 Purpose of PRISM:

Routine health information systems generate potentially use full data. The ultimate objective of routine health information systems (RHIS) is to produce information for taking action in the health sector. “Are we doing things right?” “Are we doing the right things?” If things are being done correctly, the data should demonstrate that all activities were carried out as planned. Positive results should follow.

The RHIS is an important mechanism, to identify gabs in the management of the health system, and resolve them to maintain and improve performance. With timely complete and accurate information, managers can identify strength and weakness of health system functions and services, and take appropriate actions to maximize success however, the system designed to track health data often falls short [10].

Data quality may be low, so nobody has faith in it. Data quality may be sufficient, but there are no processes or channels in place for using the data, other than completing reports to send to district and national authorities.

Managers and staff might not appreciate the importance of their roles in the information process, and they have little incentives to give data processes, care and attention necessarily.

If a routine health information system to produce all the value it should produce high quality data actionable, insights, framed an accurate facts. This information must be actively used to guide day to day operations, track performance, learn from part results, and improve accountability [10].

Together with john snow, inc; developed a conceptual frame work that acknowledge the broader context in which RHIS operates known as performance of routine information system management (prism) this conceptual frame work broadens the analysis of routine health information systems to include three key factors for success.

Behavioral determinants: - the knowledge, skills, attitudes, values, and motivation of the people who collect and use data.

Technical determinants: - data collection processes, systems, forms, and methods.

Organizational /environmental determinants information culture, structure, resources, roles, and responsibilities of the health systems and key contributors at each level.

The prism conceptual frame work and prism tools identify strength and weakness in these areas, as well as correlations, among areas. This assessment aids in designing and prioritizing intervention to improve RHIS performance – which in turn improves the performance of the health system [10].

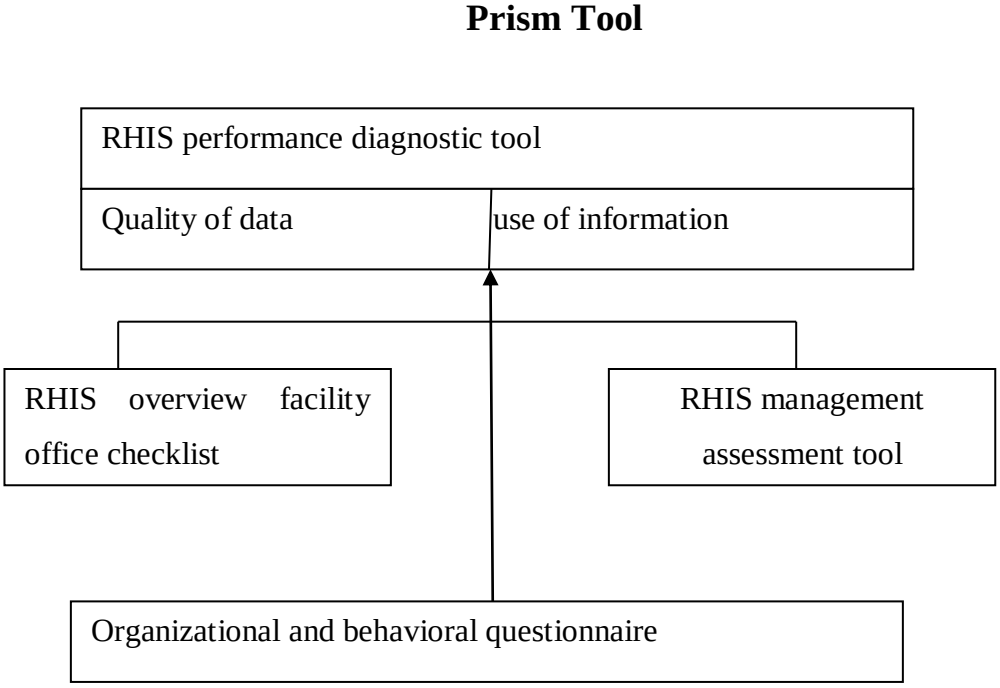

Figure 2.3 Prism tools [9]

2.1.7 Assess the performance of a routine health information system.

PRISM tools provide the methods to objectively measures data quality and the degree to which information is used for evidence based decision making. For example, all the health facilities in a district were submitting monthly RHIS reports to the district health office but only 50% of the data in the reports were accurate when compared to patient records. Information was not used for decision making; the district office is not review RHIS information [10].

2.1.8 Factors that affect RHIS performance

PRISM tools identify specific technical, behavioral, and organizational factors that affect RHIS performance. For example, in the case above, RHIS performance was hindered by complicated

data collection registers and forms, lack of motivation of staff to collect data, and their lack of understanding of the utility of that data. Senior managers were not interested in using the information that was collected. A key advantage of PRISM tool is the focus on behavioral and organizational determinants, and how these issues relate to technical determinants [11].

2.1.9 Design of Interventions to improve RHIS performance

A PRISM assessment identifies which technical, behavioral, and organizational determinants. Should be modified to improve RHIS performance For example:-

- Simplification of the data collection forms.
- Refresher training in data collection and processing for health workers.
- Regular publication of news letter to show success stories of where information was used to improve health facility performance.
- Regular monthly staffing to monitor health facilities performance against objectives using RHIS data.

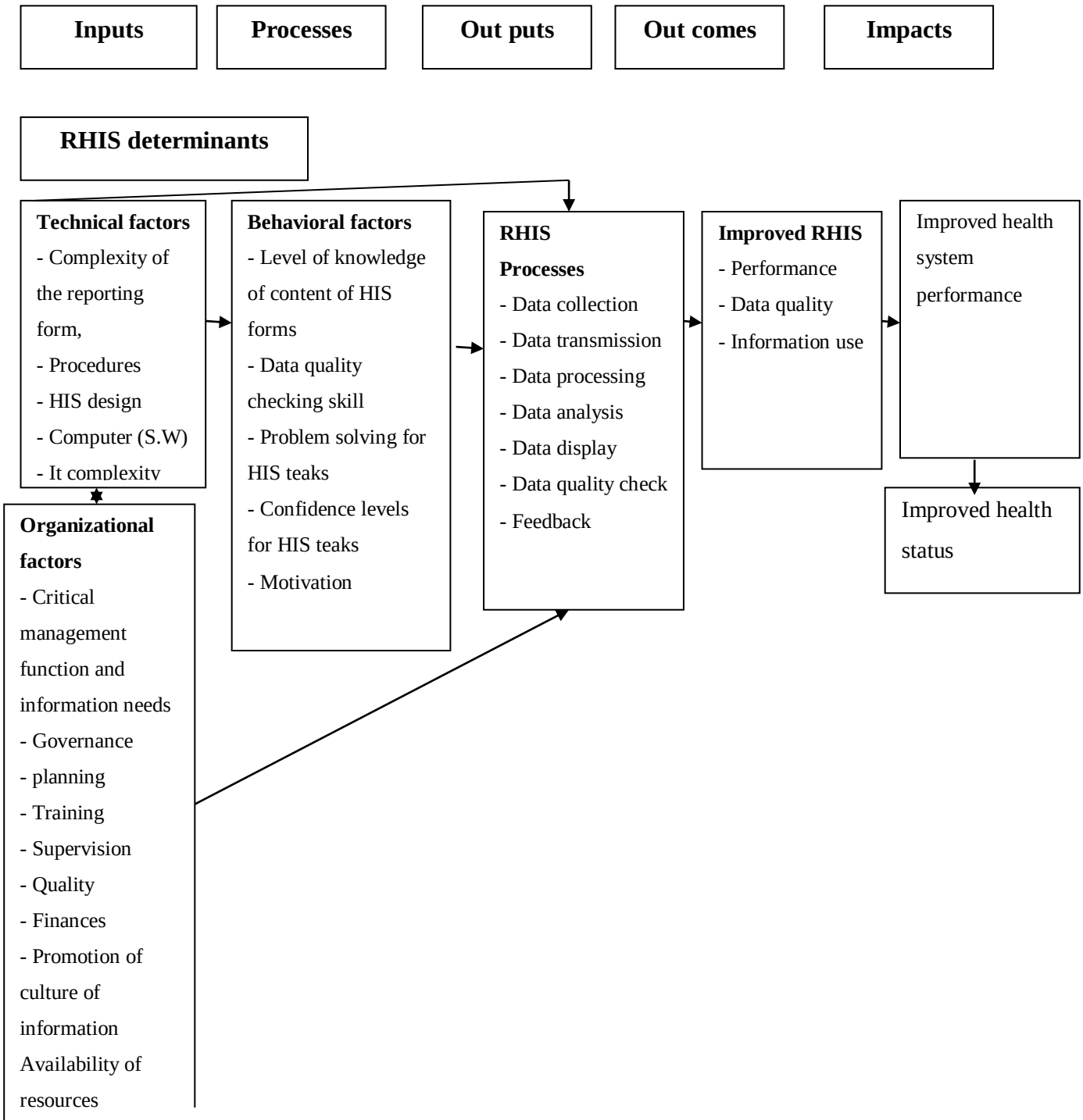

Figure 2.4 process of RHIS frame work [10]

2.1.10 Issue and consideration for using PRISM tool

PRISM tools are based on holistic approach health intervention RHIS performance depends on a combination of technical, organization, and behavioral factors. The causal influences of determinants in all three areas must first be understood in order to improve health system performance. When data collectors understand the importance of their contributions to the RHIS they will be more committed to producing high quality data and analysis. When decision makers be live they have high quality data at hand they are more likely to use that data of evidence based decisions. When people are empowered to make decisions and act upon them they become champions for creating accountability and transparency through information sharing.

When an organization creates a sense of ownership, RHIS initiatives become the responsibility of each of its members. Ownership ultimately leads to the sustained investments required for continuous improvement [10].

2.1. 11 Data source and Methods of collect information

Source of data is routine health information system activity performed in the health center and data collection methods are.

- Self administered questionnaires
- Observations
- Reviews of documents, office records, and RHIS feedback reports.

For instance RHIS performance diagnostic tool overview and facility office checklist. Use observations and interviews, supplemented by document research key informant interview. The organizational and Behavioral questionnaire collects data via self administered questionnaires.

RHIS performance diagnostic tool uses visually. Represent factors. That have multiple component for example, data Quality depends on accuracy, time lines, and completeness. Data handling relies on data recording, processing, and transmission scores on these dimensions.

The collected data can be analyzed manually or entered in any data analyses program such as, spss v 20.

2.1. 12 Health metric network (HMN)

Health Metric Network Supports the use of a common frame work and guidelines for Assessing, strengthening and monitoring health information system, for better decision making and contributes to the developments of new knowledge related to health information systems (HIS) development and management [4].

HMIS: - Health and management information are integral parts of a national health system. This information system is a basic management tool and a key input for the improvement of the health status in the country. The HMIS primary objective is to provide reliable, relevant, up to date, adequate, timely and reasonably. Complete information on health needs, delivery of services, availability and use of resources, and effectiveness of services for health managers at the facility, country, and national levels. Information plays a central role in supporting strategic goals and in underpinning the principles of the national policy and plan [4].

HMN Frame work: components, standards and roadmaps

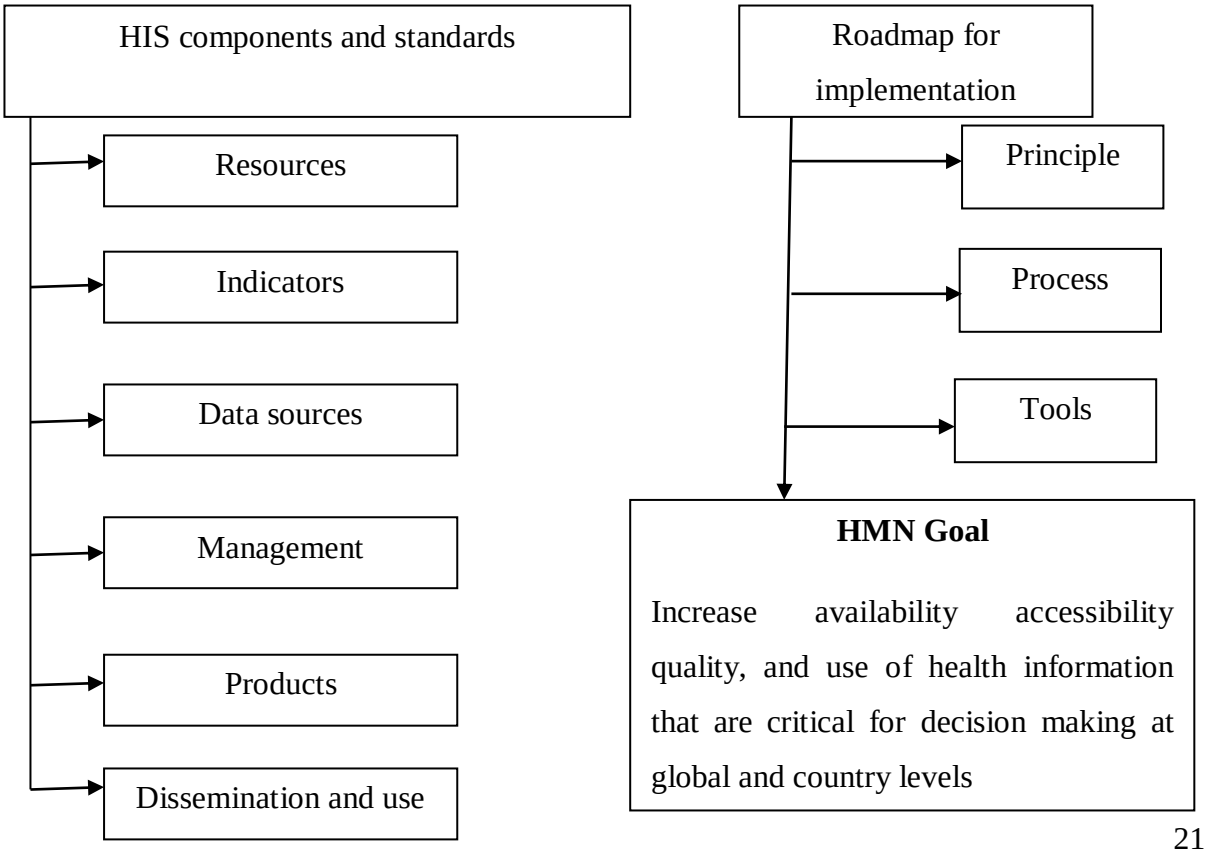

Figure 2.5 HMN frame work [2]

2.2 Related Work on HMIS

As Helen's study shows, in 2012 [25] to the existent this gap persists, Rwanda's national health information system will be affected by decisions made by district level. Actors and stakeholders. Districts may develop independent information management approaches some district health information management may become erratic or fall into disuse if they have little or no central guidance and support. Given that a core value for any national HMIS is to provide national level information to help inform leaders as they make health policy and other decisions affecting the sector and the populations' health outcomes.

Health, systems strengthening in Rwanda require at a minimum that districts coordinate their systems. Coordination requires resources, especially to align data standards, measurements methods content, and technology. These issues constitute existing challenges in Rwanda today

Another study by Helen [25] shows also from Malawi stated that the reasons for inadequate use or non use of information are lack of accountability and leadership, resource constraints, lack of holistic vision approach, lack of management skills and personality, punitive environment, lack of incentives, inadequate dissemination of information, organizational and behavior and absence of change strategies. On this study the interventions to improve the HIS focused only on a specific subsystem primarily the decentralization reform and their impact.

The study, conducted by Alganesh [23] on factors affecting HIS use, the private and public facilities in Addis Ababa in 2005 revealed that the necessary in put to HIS such as legislative and planning framework, unit, personnel, budget, equipments, training and coordination mechanisms among other subcomponents were not sufficiently allocated on the facilities in Addis Ababa. HIS process in these facilities focused on data collection and sending-report presentation.

Assessment on HMIS at public hospitals by Mesay in 2005 [13] also pointed out that the processes of data collection; storage and dissemination on the supply side and provision of resource, regular supervision and feedback on the demand side were weak. Those resulted due to the organizational, technical and behavioral determinants. There was low commitment of

decision making bodies in allocating resource (human, material financial), developing human skill and infrastructure.

The study conducted by sehay [24] on the assessment of new implementation status of HMIS in India in 2011 showed that a large number of respondents were participating in the manual based HMIS activities through a well designed data collection and reporting format, short period on job-training absence of incentives, motivation and lack of management support lead to poor information use culture that limited mainly sending purpose, HMIS implementation suffered from ownership, follow up, communication and leadership.

Assessment study on provision of various tools through an HMIS is an essential component of cultivating information use. On its own it is inadequate to facilitate change processes, from their experience based in Papua New Guinea, argue that "an important way of developing the periphery in this respect is setting up good examples at the top. It senior management seeks information and uses it openly, they the importance of information is reinforced throughout the health system", based on research in Malawi, have described. Various kinds of ways in which a HMIS can support information use including the preparation of district implementation plans, the allocation of financial resources and the strengthening of priority supervision.

The tally tool helps to measure the health system of a country. This tool was tested in 9 countries and based on the analysis. South Africa and Thailand were identified as being out standing in their use of the health information. While in Thailand. The use of information was catalyzed because of its being based on the link of the health information to the universal coverage insurance scheme, including associated. Payments in South Africa information use evolved. Ever a long term process involving the development of national data sets and indicators, data standards district based health information systems, and ongoing and continuous process of capacity development.

Several conditions have been identified that contribute to the weak use of health information in developing countries including institutional capacity. Centralized styles of decision making, weak and uneven infrastructure, and a weak culture relating to information use. While information use can relate to various types such as for reporting, monitoring, evaluating planning [13]

2.2.1 HMIS in developing countries

Health management information system is one of the priority areas in strengthening the health care delivery system in majority of the world countries. The health care delivery and ways of handing patient record in majority of developing country is under question.

To improve the health of population developing countries were investing on HMIS. Strengthening HMIS is considered as improving the health care delivery of a country. HMIS is considered as source of information for the health sector, incorporates all the data needed by policy makers, clinicians, and health service users as a whole. There is a big concern for the improvement of the health care services delivery system, which is widely seen to be attributed to the short comings of HMIS in developing countries [11].

Health information systems program (HISP) has been providing assistance in the development of health management information system in Nigeria since 2003 as part of the partnership for transforming health system (PATHS) program, health system case study this includes work across six states in Nigeria with a population in excess of 30 million people.

Initially the HMIS system was piloted in a small number of local government areas (LGAs) and Associated health facilities in Benue, Enugu, and Jigawa states, During this process the international team worked with Nigerian colleagues to develop appropriate tools in the form of registers and Monthly report a small but manageable essential data base, and to adapt and customize district health management system (DHMIS) soft ware for the Nigeria context. Once the model and the process of rolling it out were well developed and tested, they could then be introduced across each of the six states [12].

HISP in Zambia worked on an HMIS strengthening project funded by the European Union, health systems case study, the first part of this project began in February 2007. The existing HMIS data base of Zambia MOH was a rigid, hard-coded access data base that had been in use since 1998; it could not easily be adjusted accommodate new reporting needs presented by, for instance the HIV/AIDS programmed. Therefore the 1st three months of the project involved customizing the district health information system software for the Zambian Context. As part of

the process, the indicator set has been revised for Zambia, and the data collection tools adjusted to accommodate the increased reporting needs. New data was also added, for instance census data was obtained from the central statistics office (CSO) and imported so as to provide denominators data for many of the indicators. The new HMIS data base is called the "integrated HMIS" database, and serves as a "data were house" for a variety of data related to the health service [12].

2.2.2 HMIS Assessment in Ethiopian

Assessment of the health information system HIS of Ethiopia was done by of MOH and WHO with collaboration with central statistical Agency (CSA) and the health metric net work (HMN) [4].

According to the FMOH has taken HMIS reform and assessment of HMIS was conducted between June and September 2006 to determine its performance capacity, efficiency and effectiveness in preparation for a new design [4]. Quantitative and qualitative data were collected from all regions sample Health facility on information use and data quality. Analysis of the information yielded specific recommendation for preparing a redesign of HMIS process. The areas that needed due considerations are identified by the assessment were related to information use, data quality, data burden, human resources, ICT and financial resources and areas that required special attention. Among the major issues identified were that the HMIS is cumber some and fragmented, staff particularly at the periphery level lack adequate skills in data collection and analysis. Moreover, the information flow was in fragmented way such as including parallel reporting system with no integration among the various subsystems, resulting in redundant and conflicting reports. This ultimately lead to poor quality of data in terms of accuracy and time liners thereby preventing information users from effectively utilizing information in decision making and research. Based on these quite a number of reforms have been made to improve the situation at FMOH and regional levels. The ongoing reforms include: standardization of procedures in data collection, analysis and reporting, selection of sector wide and programmatic indicators with the involvement of all stakeholders, design of simplified items of the formats, and integrated and unified flow of information the overall prevailing factors in today's Ethiopia suggest that some mechanisms shall be in place to improve the country's HIS. It is in this situation that the new initiative HMN came in to picture. Ethiopia is the 1st country

supported by HMN to make assessment of HIS and to design long term plan the assessment tools help in setting the priority areas that the country need to address to strength the HIS [4].

The assessment was done using the HMN framework and tools in an interactive process involving many stakeholders in Adama in March 2007 complemented by key informant interview (K11), focus group discussion (FGD) and document reviews [4].

HMN has developed a framework that serves as a diagnostic tool, as a road map to strengthen the national HIS the HMN framework (HMNF), describes the standards and assessment criteria linked to the inputs, processes, outputs and outcomes of the HIS and encompass six subcomponents. These six components with which the assessment was conducted were; context and resources for health information identification of core health indicators. Data sources and data collection methods information management processes, information products, and data dissemination and use according to the assessment results, among the six major components, three were very weak these were HIS resources, data management the dissemination and use rated as "not adequate". The second major components which was assessed as "present but not adequate" was data sources, among the data sources census, health and disease records, including surveillance, health services records and administrative records were rated present but not adequate, population based surveys were rated highly adequate.

Assessment study on HMIS, by Alganesh in 2005 showed that, the existence of significant awareness on data generation and timely reporting effective use of the adopted DHS showing a good start to expand in long run. The study recommended a short and long term action [13].

As a short term action task capacity building activities at health center level is necessary to play pivotal role of gaping report generation at health center, to perform a verity of analysis and reduce load on higher level.

As long term task adequate ICT infrastructure, trained staff, computer skill, improved staff competence information utilization for decision making was underlined [14].

The Ethiopian national health information system assessment report of 2007 also identified HMIS as the major problem of the health sector [4]. It is characterized by in adequate staff skill, burdensome and fragmented information flow and characterized by parallel reporting system with no integration among the various sub systems. This resulted in redundant and conflicting

report and poor quality of data in terms of accuracy and timeliness preventive information user from effective utilization of information for decision making and research, as result it lacks the foundation of HMIS to supply reliable data.

Summary of relevant literature review.

The study of this thesis focus on assessment of HMIS implementation related with weakness and strength of the process based on these the factor which significantly affect HMIS implementation related with data quality found from literature are technical skill of the health worker for collection and generate quality information, availability of equipment used for data generating mechanisms like computer, improvement of staff motivation is the major factor for generating quality information.

For quality decision making process there is a need of quality information .so the process of timely reporting, complete report and accurate data utilization is important for decision making purpose.

There is also important point from literature is; one of the main objectives of many health information system developments is computerizations of important data to be managed, monitored, analyzed and reported computer are first and for most a support tool for processing .data analysis and data presentation effectively.

To assess the quality data and use of information in its routine health information system the PRISM tool assessment. Led to the design of easy to use forms, a refresher training course in data collection and processing for health worker.

Summary of related work.

The study of Helen in Malawi shows that health decision is affected by district level actors uses independent information management approach and no central guidance and support for generate quality data information use.

Another study from Malawi stated that for inadequate use or non use of information are lack of accountability and leadership resource constraints, lack of incentives, inadequate dissemination of information, and lack of management skills and personality.

Another assessment study on HMIS by Mesay conducted in Addis Ababa in, 2005 also pointed process of data collection; storage; and dissemination on the supply side and provision of resource, regular supervision and feedback on the demand side are weak.

The Ethiopian health information system report of, 2007 Major problem of HMIS in health sector are characterized by parallel reporting system no integration, resulted in redundant and conflicting report and poor quality of data in terms of accuracy and timeliness preventive information user from effective utilization of information for decision making.

TABLE (1) summary of related work on assessment of HMIS in Africa.

Ser No	Author Name and year	Objective of the research	Methodology.	Key findings
1	Helen (2012)	To assess the magnitudes and factors affecting HIS use and data quality	- Structured question for health professional - in depth interview (Qualitative method)	- How quality data recorded, reported and utilized for decision making purpose
2	sehay (2011)	Assessment of HMIS ability to use information.	- By document analysis - checklist - interview - Questioner	Data collection and sending or report presentation
3	Mesay (2005)	Assessment on HMIS at public hospitals	- interview -checklist - questioner qualitative and quantitative	Process of data collection storage and dissemination supply side
4	Alganesh (2005)	Assessment study on HMIS in Addis Ababa	- Medical record - supervision and interview, checklists,	The existence of significant awareness on data generation and timely reporting
5	MOH of Zambia(2007)	To Assess the new HMIS implementation	By reviewing Reporting formats	Large number of respondents participating in manual base HMIS

Chapter Three

Methodology

3.1 Study setting:

The study was conducted in Oromiya Region Chancho Town. Which is the big Town of Sululeta Woreda located 40Km North of Addis Ababa, Ethiopia, on the main high way from Addis Ababa to Gojam. The Town is growing rapidly more than ever in social and economic development. Commercial centers and other development activities have been built. Within the last Five years investors both domestic and foreigners are being attracted to the town as it is very near to Addis Ababa. The study area was selected because of two reasons primary due to its convenience to the researcher and secondly, the area is composed of variety of health organization .And HMIS implementation is existed in these boundaries are one government health center, one hospital, which is on construction, 2 medium clinics 2, small clinics and 2 drug vendors.

3.2 Study Design and Period

A cross sectional descriptive study was carried out from Feb-April, 2015 using pre-designed question, in-depth interview and observational checklist. To collect both quantitative and qualitative data, descriptive statistics are computed for most of the study variables and frequency distribution tables are used to describe most of the findings to determine factor affecting data quality.

3.3 Source of Population and Study Subjects

The source of population for this qualitative and quantitative study was all health Professionals in Chancho Health Center, in which HMIS being implemented earlier. The study subjects were Health professionals HMIS focal person, case team, managers, of the facility. The study participants were selected based on their profession, who are participating in implementation of HMIS in the Health Center.

3.4 Inclusion and Exclusion Criteria

Inclusion criteria: - all health professionals trained with HMIS and directly involved in health care services or manage patients or clients at Chancho Health Center.

Exclusion criteria; health care providers who do not satisfy the above criteria and who were not volunteer were excluded from the study.

3.5 Sample Size and Sampling Procedure

All health professionals that were directly involved in health care delivery service from chancho health centers in which HMIS being implemented were included in the study. The total study subjects in the study facility were 50. This is the number of health professional staff who fulfill the inclusive criteria of the study. HMIS focal person, who are working in budget, planning, human resource and head of health center that were expected to use data for decision making and reporting were included in the study.

Quantitative study

The facility was chosen based on implementing HMIS earlier than other facility and its proximity, in this study, all health professionals and those who were working in health center participated in HIS activity were contacted.

Qualitative study

Health center card room, HMIS team and different departments are observed .their reporting system and experience of respondents on HMIS activity was observed systematically by using physical observation checklist and interview.

3.6 Data Collection Techniques

Data were collected by the use of questionnaire for quantitative data collection; and analysis of certain documents and secondary data obtained from chancho health center found on the service delivery reports were the methods used for qualitative data collection. Secondary data for service delivery reports of the facility included in the study was used as a measuring quality of HMIS data.

Data were collected by observation and interviews. Staff of HMIS and planning teams quantitative data was collected through a data collection self administrated questionnaire then qualitative method was used to further explore the result found from the quantitative using in depth interview with selected participants.

Questionnaire

All questions that help to assess current practice of HMIS addressed the determinants of HMIS use the questionnaire was self administered with reference to standard HMN and PRISM for checking how data are captured and processed. Systematic observation on data capturing and reporting format, document analysis, implementation progress, report, checking for the structure, activities pattern of information flow working environment, availability of equipment and indicators. A checklist was used for recording of information obtained from the personal observation. The questionnaire was pretested prior to the actual study period and appropriate amendments were made .the questionnaire was mainly focused on the factors affecting the implementation of HMIS in relations to human resource, management, and knowledge/skill.

In -depth Interview

In depth interview was held after the questionnaire are collected and analyzed. The interviewees were requested to give further exploration about the results obtained.

The guideline was developed to interview selected health centers staffs about the quality of HMIS data generated at the facility it provides questions to guide the discussion for assessing perception of the staff on data quality and factors affecting the quality of HMIS data.

Observation

Observational checklist was used to collect data to assess completeness, correctness and timeliness of data according to the instruction given in the tools or according to HMIS specifications with emphasis on OPD and health service registers. The checklist was used as an observation tool as well as a tool for checking how data are captured and processed.

The researcher conducted systematic observation on data capturing and reporting formats, document analysis, implementation progress report, checking for the structure, activities pattern

of information flow working environment, availability of equipment and indicators. A checklist was used for recording of information obtained from the personal observation.

3.7 Data Analysis

The data from the questionnaire was entered into SPSS, version 20. The assessment of HMIS components has been described using tables, figures, and frequencies. Performances of routine information system management framework help to measure the performance of health management information system. PRISM tools were useful to get detail information on the strength and weakness of the routine health management information system. The result is said to be significant, if ($p < 0.05$)

According to assess PRISM framework ,factors influence the implementation statuses are classified into technical, organizational, and behavioral determinates the response to question on each set of determinates were categorized into strongly agree, agree ,neutral response is believed to be equidistance to the adjacent ratings in both directions and is ignored as a non response for this study purpose. The data were analyses by using content analysis of individual responses to produce qualitative data finally the response of each selected person were carefully transcribed and categorized according to their items the response of each individual were summarized in table.

3.8 Study Variables

- **-Dependent (outcome) variable**

  Implementation status of the new HMIS in terms of data quality and information use.

- **-Independent variables**

Organizational factors:-i.e. information culture structure, resource, and roles and responsibility.

Behavioral factors: - i.e. knowledge/skills, values, motivation of the people who collect and use the data.

Technical factors: - implies data collection forms processes systems and methods.

3.9 Operational Definitions

System: - is a collection of components that work together to achieve a common objective.

Information system: - is a system that provides information support to the decision – making process at each level of an organization.

Health information system: - is a system that integrates data collection, processing, reporting, and use of the information necessary for improving health service effectiveness and efficiency through better management at all levels of services.

Quality of data :quality of data refers to the degree to which the data or statistics measures what was intended to be measured when the data collection system was designed .Data quality is multidimensional with every step from designing to decision making having the ability to affect the level of quality.

Design of HMIS: - in this research can be described in terms of the technology used and related problems.

Technology: can be further explained by the system used for HMIS and the communication means used to transfer reports to their respective higher levels.

Usability: user friendliness, report generation and the problem observed on the system as a whole and on routine HMIS data collection and reporting tools.

Implementation of HMIS:- is illustrated by general coverage of HMIS in the study area ,quality of HMIS data and factors affecting the quality of HMIS data and their associations .Moreover, it can be described by the status of using the information generated from the existing systems for health care planning and decision making ,availability of separate unit for HMIS and adequate functionality of the unit .Availability of adequate resources both in material and qualified manpower at the unit and availability and use of technology and existence of data quality checking technique.

Decision making: - is defined as the capacity to formulate alternatives, estimate effects, and make choices using information at all units and departments.

Data: - a collection of row facts needed to transform into information for decision making.

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.

Health Management Information System (HMIS):-is simply a process for collecting, processing, and disseminating information in a health system.

Standardization: - provision of uniform recording and reporting formats, registered and tally sheet.

Feed back: - the response to the report they send, negative or positive.

HMIS utilization:-use of information for different purposes (planning, decision making, to take action to provide information at the level of health sector.

3.10 Data Quality Management

Data quality was assured using different techniques .The questionnaires were ensured by the observation before the data was collected and given short briefing to the respondent when the questionnaire are distributed to make sure the respondents well understand.

Properly designed questionnaires and interview guideline were prepared, more over pretest was done prior to final distribution and interview of the study and appropriate corrections were made.

All collected data were checked for completeness accuracy and consistency by the investigator. At the time of data collection anything, which was unclear and ambiguous was corrected by the investigator .On daily base collected data were rechecked by the investigator to ensure proper implementation of the data collection process. The data entry and cleaning was made by investigator.

3.11 Ethical Considerations

The study was carried out after getting permission from the ethical clearance committee of Addis Ababa university school of public health .For ethical approval letters was send to respective health center to inform them about the, aim, design and importance of the study. Data were collected after getting written permission from Sululeta Woreda Health Officer.

Information sheet and written consent forms were delivered along with each questionnaire and all the subjects were asked. If they are willing to participate in the study and informed verbal consent was obtained from all interviewed subjects.

Objective of the study were discussed with each participant and privacy was maintained during interview and also well informed about aim and potential benefit of the study and their consent and confidentiality was ensured.

Chapter Four

Results

4.1 Finding of the study (Analysis)

Characteristics of the respondents

Fifty questionnaires were distributed and all returned. The number of health workers and staffs participated in implementation of HMIS in the health center. Among returned questionnaires, all gave the response rate of 100% were used for analysis purpose of this study.

The finding of the study were presented in a manner of qualitative and quantitative data .The quantitative results on each outcome measures used in assessment are reported and explored by the qualitative results.

According to survey results, the respondents were from the health center. The sex distribution of the respondents in the study units showed that 28 (56%) were male while 22 (44%) were females among the total majority of the respondents was 29 (58%) were within the age of 21 to30 years old and 14 (28%) of them had 3 to5 years of services majority39 (78%) of respondents were serving between 1-10 years.

The majority (92%) of the respondents were health professionals regarding the qualification of respondents who were working in different departments of health facility ranges from diploma to bachelor. From these 32 (64%) were diploma and 18 (36%) degree holders Diploma in clinical nurse was 12 (24%) is the largest number of professional than other profession.

TABLE 4.1; 2015 The socio –demographic characteristics of respondents in Chancho Health Center.

	Variable (n=50)	Frequency	Percentage
Sex	Male	22	44%
	Female	28	56%
Age	<20	3	6%
	21-30	29	58%
	31-40	11	22%
	41-50	7	14%
Respondents' service year	<3	15	30%
	3-5	14	28%
	6-10	10	20%
	11-15	4	8%
	16-20	5	10%
	>20	2	4%
Level of education	Certificate	0	0%
	Diploma	32	64%
	Bachelor	18	36%
	Masters	0	0%
	Doctorate	0	0%
Respondents field of study	Information technology	4	8%
	Nurse Bsc	6	12%
	Pharmacy technician	6	12%
	Clinical Nurse	12	24%
	Midwifery	6	12%
	Health officer	10	20%
	Laboratory technician	6	12%

4.2 HMIS Input

Adequately organized unit of HMIS

Study related with the availability of adequacy in terms of skilled staff, room, logistics, and computer. The availability of logistics that can be used for routine HMIS data processing and its adequacy were assessed from the health center and the study revealed that 38 (76%) of the respondents were disagree and strongly disagree that availability of logistics was not adequate. The respondents were questioned about shortage of HMIS logistics at health center and to identify the major once. The result of the assessment revealed that majority 43 (86%) of the respondents agreed that, there is shortage of HMIS logistics at Chancho Health Center and 37 (74%)of the respondents reported that there is no budget assigned for HMIS .All the health professional asked for the existence of HMIS unit, Shortage of HMIS logistics like ,format, logbook,computer,42 (84%) of The respondents answered that there is HMIS unit and IT staff as focal person assigned for HMIS activities. but most of the respondents agreed about shortage of HMIS logistics .41 (82%)of the respondent agreed that there is no coordination mechanism among staffs. Concerning the necessary equipments for HIS activities. Majority of the respondents 35 (70%) answered there was stationery materials like paper but there was shortage of IT equipment like computer, internet, and any kind of network.

TABLE 4.2, 2015 Factors related with organizational input in Chancho Health Center Health Center.

No	Variable	Strongly agree		Agree		Neutral		disagree		Strongly dis agree	
		No	%	No	%	No	%	No	%	No	%
1	Shortage of logistics of HMIS	28	56%	15	30%	2	4%	4	8%	1	2%
2	HMIS unit adequately organized	1	2%	9	18%	2	4%	8	16%	30	60%
3	Is there any co ordination	2	4%	3	6%	4	8%	6	12%	35	70%
4	Budget assigned for HIS	3	6%	4	8%	6	12%	5	10%	32	64%
5	Are there necessary equipment for HMIS	27	54%	8	16%	5	10%	4	8%	4	8%

4.3 HMIS Processing (Related with Technical Determinants in chancho health center)

Data quality checking mechanism.

HMIS focal person has different roles at the health center level these where conducting data accuracy check, collect records from different departments, and send approved report data to the next level. The assessment was done to identify the existence of data quality checking mechanism and how often it was done. The result from the study showed that 30 (60%) of the respondents of the health center had no data quality checking mechanism and they don't perform the quality check monthly. Technical factors affecting the quality of HMIS data factors that affect the quality of HMIS data and decision making was assessed from 50 respondents of the health center staffs and analyzed. The result showed that 40 (80%) of the respondents reported availability of adequate materials ,knowledge of HMIS , availability of HMIS system used , availability and adequacy of training, knowledge of HMIS as factors that affect quality of HMIS data and decision making.

Using of reports for decision making and information use was assessed and analysis was done the study revealed that 40 (80%) respondents agree and strongly agree on reports of the health center is not used for decision making and information use purpose. 6 (12%) of the respondents said rarely use the reports for health care delivery and decision making purpose.

TABELE 4.3;2015 The Factors related with technical determinants (HMIS processing)

No.	Variable	Strongly agree		Agree		Neutral		Disagree		Strongly dis agree	
		No	%	No	%	No	%	No	%	No	%
1	Using Data quality checking methods(LQAS)	4	8%	11	22%	5	10%	8	16%	22	44%
2	Knowledge of HMIS and availability of adequate materials affect quality of HMIS and decision making	32	64%	8	16%	4	8%	4	8%	2	4%
3	Delay on transferring of	32	64%	15	30%	0	0%	2	4%	1	2%

	report										
4	Utilization of manual system for HMIS	33	66%	12	24%	3	6%	2	4%	0	0%

4.4 Factors related with Organizational determinant at chancho health center

Influence of training in HMIS implementation

Study was done to assess the influence of training on HMIS data quality. The result of the study revealed that 36 (72%) of the respondents reported there was no any kind of training in service on HMIS activities for the staff . And there was no computer training for the staff.

As the assessment shows majority of the respondents 41 (82%) of them have confirmed that no use of information for decision making or strongly disagree for using of information for decision making purpose. Regarding to incentives like money, training and recognition out of 50 respondents 42 (84%) responds disagree or strongly disagree with the existence of incentives that encourages information use .However 7 (14%) of the respondents are agree that there is some incentives that encourages information use.

TABLE 4.4; 2015 The Factors related with Organizational determinants at Chancho Health Center.

No.	Variable	Strongly agree		Agree		Neutral		Disagree		Strongly dis agree	
		No	%	No	%	No	%	No	%	No	%
1	Training on basic computer literacy for the staff	1	2%	5	10%	1	2%	6	12%	37	74%
2	Any training in service on HIS activities on staff	7	14%	5	10%	2	4%	4	8%	32	64%
3	Using of information for decision making purpose	1	2%	3	6%	5	10%	14	28%	27	54%
4	Incentives for information use	1	2%	6	12%	4	8%	12	24%	27	54%

4.5 Assessment of HMIS implementation related with data collection and reporting in Chancho Health Center.

Availability of HMIS data collection and reporting tools and the problem with the existing HMIS tools was assessed. the result of the study revealed that 42 (84%) of the respondents from the health strongly agree on the problem existing with data collection and reporting tools 3 (6%) of the respondents disagree and identified the inadequate tools in addition, repetition of registration due to most of the tools have similar attributes, data collection using tally sheets was not suitable for users because it was not written in bold lead to inaccurate data.

The respondents' from the health center included in the study were asked about data collection and reporting of the health center. The quantitative result of the study revealed that 28 (56%) of the health center staffs are strongly disagree on timely data collection and reporting manner and agree 30 (60%) of the respondent agree on report delay , incompleteness, inconsistency and problem on representation of the data collected .And most of the health centers staffs revealed that they collect health data on daily activity of patient care .After each clinical visits there were classifying and coding the collected data .

TABLE 4.5; 2015 The Factors related with assessment of HMIS data collection and reporting system in Chancho Health Center.

No.	Variable	Strongly agree		Agree		Neutral		disagree		Strongly dis agree	
		No	%	No	%	No	%	No	%	No	%
1	Problem existing with data collection and reporting tools	35	70%	7	14%	5	10%	3	6%	0	0%
2	Collection of health data on daily activity	38	76%	2	4%	7	14%	3	6%	0	0%
3	Data timely collected	5	10%	4	8%	13	26%	25	50%	3	6%
4	Data collection consistency	7	14%	9	18%	4	8%	8	16%	22	44%
5	The collected data is representative	8	16%	13	26	0	0%	25	50%	4	8%

4.6 Assessment of HMIS implementation related with utilization of IT (computer) in Chancho Health Center.

Availability of automated HMIS software

An assessment revealed that automated e- HMIS soft ware which was developed and deployed by TULANE University in collaboration with FMOH was found in the health center.

IT staffs had a vital role for the implementation of the new technology related with computer system currently the health center was using a computer system to facilitate their work and to provide better service for the clients /patients. 12 (24%) had device and access to internet connection.

TABLE 4.6; 2015 The Factors related with using of information technology (utilization of computer) in chancho health center.

No.	Variable	Strongly agree		Agree		Neutral		Disagree		Strongly dis agree	
		No	%	No	%	No	%	No	%	No	%
1	Computer in the health center using for only HMIS task	6	12%	6	12%	2	4%	6	12%	30	60%
2	Is their adequate computer	3	6%	2	4%	2	4%	12	24%	31	62%
3	Networked(LAN)	0	0%	0	0%	0	0%	8	16%	42	84%
4	Usage of internet	10	20%	2	4%	5	10%	3	6%	30	60%
5	Usage of smart care	38	76%	5	10%	0	0%	4	8%	3	6%

4.7 Assessment of current HMIS implementation strategy in Chancho Health Center.

The opinion of the respondents were assessed on whether the current system was enough to support the needs of the health facility and higher levels .The qualitative finding of the study revealed 37 (74%) of the respondents from service providers responded it was not enough to support the needs of the health facility and 40 (80%) of the respondent did not agree with the current HMIS software does not include further statistical analysis it only shows charts blank space these were the major problems of the current HMIS. Furthermore ,shortage of capacity building programs, parallel reporting, and professionals doesn't accept the system they saw as additional work Burdon are among the observed problems reported by the respondents. Although, respondents were asked about the design of the current systems and analysis was done .The quantitative result of the study showed that 41 (82%) there is great problem between design of the system and skill of the system user. Most of the respondents agree on the problem of the current HMIS system and also strongly disagree, 41 (82%) on the current HMIS using is comprehensive and use friendly.

TABELE 4.7; 2015 The Factors related with current HMIS Strategy in Chancho Health Center.

No.	Variable	Strongly agree		Agree		Neutral		Disagree		Strongly dis agree	
		No	%	No	%	No	%	No	%	No	%
1	The current HMIS strategy is enough to support the needs of health facility.	3	6%	8	16%	2	4%	2	4%	35	70%
2	The current HMIS you are using is comprehensive and use friendly.	2	4%	2	4%	6	12%	2	4%	38	76%
3	The current HMIS you are using generate appropriate and required report in timely manner.	7	14%	5	10%	4	8%	6	12%	28	56%
4	Is there any problem between design of the system and skill of the system use?	36	72%	5	10%	3	6%	2	4%	4	8%

Technical factor affecting data quality in HMIS

Most of the respondents 45 (90%) of them agreed with the existence of standard set of indicators in their facility. Majority 42 (84%) of respondents also agreed with the problem existing with data; reporting, collecting and formats. And 36 (72%) of the respondent agreed that, problem with the existence of trained staff to fill formats was major factor affecting data quality. While about 43 (86%) of the study participant; disagree with no skilled human resource related HMIS activity.

Most respondents agreed on standards, of indicators and well designed reporting format of HMIS; has a significant relationship or which, can affect data quality in health facility. These variables have significant association for data quality. [Adjusted OR(CI:95%)2.65(1.03,6.83)and 2.04(1.02,4.52)respectively].

Organizational and behavioral factors affecting data quality in HMIS.

Around 5 (10%) respondents agreed that existence of coordination and leadership, strategies and policy of HMIS, and organizational culture can affect data quality. Mean while, around 7 (14%) of respondents agreed on factors such as Motivation, follow up, and contribute data quality.

Determinants, including the existence of coordination effort and leadership used at facility level was considered as a major determinant factor , existence of strategy , policy, attitude of staff, management towards motivation and Existence of control of budget ;discovered from the data collected, using binary logistic regression ,was found to be affecting the data quality of HMIS in strongest magnitude based on the adjusted ratio 2 times compares to those with no control of budget with 95% CI (1.43,7.53) the confidence interval does not across one which shows that the relationship is significant.

Technical factors affecting information utilization

Most of the respondents agree with the existence of standard set of indicators in their facility, 43 (86%) of respondents were disagree with the existence of trained staff to fill formats, majority of respondents about, 36 (72%) that disagree with skilled human resource

assigned for HIS activities and a Large part of respondents 43 (86%) also disagree with the existence of appropriate technology in their facility to accomplished HMIS activities.

Large number of, 43(86%) of respondents agree, on lacked appropriate technology, to utilize information .Those who disagree with use of appropriate technology 5 (10%), was nearly three times more than those who did not. [Adjusted OR: 2.45, 95%CI :(1.32, 5.68)}Moreover, standard set of indicators, trained staff to fill formats, and skilled human resources were the predetermining factors for information utilization. As well as design of reporting and friendly formats also have contribution for information utilization.

Organizational and behavioral factors affecting information utilization

Regarding about 41 (82%) of respondents claimed that there were no coordination effort and leadership in their facility 39 (78%) of respondents disagree with existence of strategy, policy, motivation and other related factors.

The existence of coordination effort, leadership strategy, policy, and control of budget was important factor for health information utilization. Moreover 39 (78%) of respondents agreed that, motivation and promotion are important for information utilization.

4.8 Interview Qualitative Result

Interview was conducted with 3 respondents. From the health center the interviewed personnel were head of the health center, HMIS focal person and data clerk. The respondents were asked to express their views, about how the current HMIS was going on in their health center, in terms of data collection and reporting system.

Most of the respondents, said that the current HMIS system was not comfortable for the staff for easily access when need arises. The respondents were also asked about the common tools used for data collection interview HIS officer from health center said that ‘’facility based (service report) from population (census) was useful to calculate eligible’s .He also answers question for do you organize, process and analyze data collection? He said,’’ yes, we have guide line and we used it ‘’ he also mentioned that SIS (standardization,

integration and simplification) was good to formulate the indicators based on the produced data.

The respondent said that'' *HMIS formats are unfriendly for all staff ,because of long statement it too difficult to read as well as in case of standardization some important information are missed, and also there is no enough space in tally sheet to put the data we want is the big challenge.''*

Health center head said that'' *our health center is one of a pilot study we are not so comfortable on reporting formats our staffs also in problem to fill the formats, We have shortage of ICT equipments, in case of that reason our registration room is very crowded, but we use index card according to HMIS principle the data could be easily retrieve''*

Assessment of Health workers' skill on HMIS implementation

Using the current HMIS system, health worker require new skill and adopt new behavior and attitude. There was interest to know what common problems were faced during a day to day HMIS related activities. one of the respondents said *'' there is lack of knowledge about HMIS I usually observe that some health workers face many problems when filling the format because of disorientation and lack of training ,I think that make the data being inconsistent and also time wastage.*

HMIS focal person in the health center , said that *''only collection and reporting of data in the health center should not be a final goal of HMIS activities there should be culture of information use both at facility and office level for decision making and planning purpose* .

A health center director pointed out that ''*there is no responsible person for HMIS who can supervise our day to day HMIS activities this may contribute to be staff irresponsible to fill format properly that makes that data lose its quality.*

4.9 Observational qualitative results

A facility based observational study, was conducted in chancho health center. During the observation the following items were considered and observed; implementation progress report, data collection, reporting formats and card room of HMIS .The data compiling tally sheets in chancho health center was poor. I, observed the staffs that fill the formats were not competent, there was shortage of skilled human resource, related to HMIS, the card room

was ventilated but, no enough number of staff was assigned for card room. Regarding the availability of ICT, equipment only HIS office has computer, printer, telephone, but it does not have internet network their backup systems are manual.

In the observational process, there are 2 computers, 1printer, 1telephone, 1card room and 1HMIS officer are found in chancho health center.

Based on, 1 year report shows that; the assessments including all the data which were registered in the last 1 year in addition the tally sheets generated during this 1 year were also included as a part of the assessment .Out of the 12 months data used 50 % was accurate. More than 40 % reviewed patient card were complete .Most of the staffs have never been trained, for the last 12 months. Data consistency is also observed, register and tally sheets was measured, the value of difference was largely seen. There was no sign of using the information generated, by the health center. Use of accurate data in the facility, was low in addition, still information was not used for action .Refreshing training, was not given to staff.

Data collection registers were available in each unit; but some of the registers were worn out their pages .In the facility, there was no shortage of tally sheets, to some extent the tally sheet format made has some data mismatch, because of un relaxed small size cells nature. The staff motivation, to fill daily tallies is low; they prepare report at the end of the month.

Data accuracy was not at good level. The facility shows an increase in using tally sheet and register for data collection from time to time and there is significant increase in data accuracy. According to my observation most of the staffs have know how about HMIS, plays a great role for improving health of community and quality of decision making. But there is no any motivation mechanism in the facility. And some of the staffs assume that, HMIS is expensive and they have doubt about its easy means of information communication.

Skill of The Staff: - a short training was given to majority of the workers before 3 years for 1week on HMIS, but there were no other trainings on HMIS, even new staffs do not taken any training about HMIS.

The HMIS Unit:–HMIS was implemented in the health center before 3 year currently there were worker in the unit has good skill on computer basics there was no budget allocated for HMIS unit. The basic manuals of HMIS were not available in the facility HMIS unit in addition there is no communication means like internet.

Information Use: - the catchment area map was not available in the facility there is report displayed using a chart in the facility using the data of either quarterly or monthly.

HMIS Room Status: - the health center has a well established card room. Of size 6*4=24m2 2 window, 2 worker, 1 computer, there were 4 well established shelves.MPI box and tracer card were arranged according to medical record number with in specified range.

The availability of Internet connection and its use

Using internet technology like the internet and LAN to transfer reports to the higher levels was very important and the information culture of the responsible stakeholders were improved and motivated by their work since it reduces time and the cost invested for buying resources from health center do not have Access of internet connection and had device and access to internet connection.

Availability of ICT at the health center: - ICT at health center from observational study was analyzed the result showed that majority computer in the health center is not only used for HMIS task. Availability of internet connection, availability of training were the major reasons of the respondents who had agreed on the inadequate functionality of the unit .The reasons for those who agreed and strongly agreed was found to be poor commitment ,lack of motivation work load of the staff ,lack of adequate manpower ,and shortage of resource Like computer was reported as the major once.

4.10 Discussion

This study had tried to assess HMIS implementation at Chancho Health Center. In addition the study also tried to show the association between quality of HMIS data and important key factors which may affect the quality of HMIS data such as knowledge of HMIS concept, frequency of training, Availability of HMIS focal person, duration of supervision, and accountability of concerned bodies were the major factors determine HMIS implementation.

The components of HMIS were assessed, regarding their strength and weakness of the implementation status; investigating factors that possibly affecting implementation program are recommended and provided possible solution for the effective implementation of new HMIS. This study has shown that implementation of HMIS in the study area covered all departments of health centers. The study tried to identify the status of administrative unit on using the reports of health facility for health care delivery, decision making and planning.

Design of the current system used for HMIS was not easy to use and comprehensive. However, some of the respondents. Assumed the system as it was difficult to operate this depends on the skill of the users and acceptance of the system by the professionals

This study shows that, availability of adequate materials, knowledge of HMIS, and Availability of HMIS focal person, accountability and responsibility of concerned bodies of the system used, availability of supervision were the factors that affect quality of HMIS data and decision making.

Study by mesay [13] also showed knowledge of HMIS concept and accountability has an association with better quality of HMIS data.

Based on this study the use of accurate data in the facility on average was less than 60%, which indicates significant percentage of data inaccuracy. This value was low when we compare with the national HMIS guideline a minimum of 80%[4] .this was most probably due to counting error in the registers and lack of staff ability to fill formats. Data entry was also another problem that creates data in accuracy in the HMIS unit. in addition to this due to unreported values the HMIS unit uses was a major reason.

Finding the factors of organizational determinants in HMIS implementation

From the finding of this study, revealed that, the Majority 86% of the respondents agrees on in adequacy of logistics in terms of skilled staff, budget allocation and no coordination mechanism among staffs. HMIS encourages the optimal use of resources while making workplace tasks and the HMIS more efficient. Concerning budget the study showed that 74% of the study participant said there is lack of adequate budget or no assigned budget to implement HMIS .Similar study showed, that lack of budget was one of the factors hindering the implementation of HMIS.

From this finding the health center have financial problem to implement HMIS. Therefore adequate budget must be given to health center to improve HMIS implementation.

Related work on HMIS implementation has been conducted in Tanzania and identified the limitation and challenges which were encountered during the design and the implementation was included low participation from workers due to no understanding of the relevance was identified as a major problem.

This study also found that, there is lack of material resource that affects the implementation of HMIS in the health facility.

Finding the Factors related with technical determinants in HMIS implementation.

From this study, most of the respondents 80% of them said that their HMIS staffs have no basic skills of computer knowledge to implement HMIS system.

Similar studies show that there is lack of knowledge concerning how to effectively deploy HMIS so that it needs highly qualified or skilled person to implement HMIS.

Other study on HMIS stated that, the computer knowledge is one of the main factors affecting the HMIS implementation .So most of the similar study result obtained shows that, health facility have lack of adequate skilled human power concerning on the HMIS implementation. So it needs to train more skilled human power to implement new HMIS.

Other study, conducted by Mesay on the assessment of HMIS implementation in, 2005 showed that, a large number of, respondents gave a response that, absence of incentives, motivation, and lack of management support, lead to poor information use culture. That limits mainly data collection and generation purpose. Mostly, HMIS implementation suffered from absence of ownership and follow up. Several, condition have been identified that contribute to the weak use of health information in developing countries including institutional capacity, centralized styles of decision making, weak and uneven infrastructure and a weak culture relating to information use are among the problems identified in the study.

Finding the factors related with behavioral determinants in HMIS implementation

The study showed that 41 (82%) of the respondents are no attitudes of utilizing information, for decision making purpose. From this finding we can conclude, that the lack of awareness about the HMIS implementation is definitely the result of inadequate training and no commitment of the staffs.

A related work had been conducted on the HMIS implementation system in Tanzania identified the limitation and challenges. Some of these challenges were low participation of workers due to non understanding of the relevance, usage of insufficient computer systems. Computer literacy is also a major challenge to implement HMIS in Tanzania.

Other related study of Helen in, 2012 shows that the reason for inadequate use or non use of information are ,lack of accountability and leadership, resource constraints, lack of holistic vision approach, lack of management skill and personally punitive environment were the major problem found by the study of Helen. Other related study shows that, lack of incentives, inadequate dissemination of information, absence of change of strategy was considered as a major problem during the study. To overcome this challenge, the intervention taken to improve the HMIS implementation, primarily focused on the decentralization reform.

According to this study; majority of respondents' agreed that no existence of appropriate technology like computer, internet access, and other important equipments used for

information in the facility, that strongly affect utilization of information. Next to absence of appropriate technology in technical point of view, poor coordination mechanism has a big contribution factor for failures of information use.

Currently, HMIS is undertaking at health center level. Health professionals record data on prepared formats, tally sheets, and registration books, manually. The HMIS focal person at the health center level collects recorded data, summarized and sent to woreda health office using hard copy. All these mentioned were problems to utilize information effectively.

For improved data collection analysis and better information demand of the health center. There should be the need for improved capacity of HMIS at health center levels.

This study shows that, the absence of organized, HMIS team has also an adverse effect on the overall performance of the unit. Inadequate resource and limited knowledge of health manager, in the system, lead to production of low quality information system. And poor appreciation of data quality and limited information utilization for decision making purpose.

To achieve sufficient and reliable health information, health managers should have the capacity to analyze, and interpret results. The health center staffs should get adequate training, feedback and supervisory support to enhance staff motivation and commitment in the generation of reliable data.

Based on the study finding shows, there is marked shortage of trained personnel, equipment, poor staff motivation and commitment in HMIS unit; which is the most important constraint to the progress of the system. The staff working in the HMIS units was with low level of educational status and training these could be the factors that possibly affecting implementation program. According to this research project; the finding is discussed based on performance of routine information system management. PRISM and HMN (health metric network) the study revealed that, the majority of respondents said; necessary input such as focal person on HMIS are available, but budget for HIS activity, necessary equipment, trainings on basic computer and on HIS as well as coordination mechanisms were not sufficiently allocated in the health facility. Absences of budget allocation, for the acquisition of human and material requirements were big problem. The problem on

collection, presentation and reporting of HMIS data could lead to poor decision making process.

Observational study also shows that, adequate ICT equipment and infrastructures for HMIS are needed. There was inadequate computer in the health center. Most respondents assured, that current HMIS does not use appropriate information technology .Inaccuracy of data mostly due to counting error in the register and lack of ability to data entry. That creates data inaccuracy in the HMIS unit. There was significant problem in data recording in registers. Observed in the facility the space provided to fill some data was not also enough which leads to incomplete or unreadable data on registers.

This study shows that, there were new staffs, who do not have taken any training about HMIS. These could be a major reason not to perform well their job. There is no well established information use culture in facility. This might be mostly due to, lack of knowledge on how to use, HMIS data for allocation of resource and manpower in the HMIS unit. There were no enough resource made available, this could be due to lack of allocated budget to the unit; majority of the departments do not submit their report at a specific time and they didn't write data of submission. The HMIS unit lacks resources and new staffs have not taken any training on HMIS, in the facility, there was no performance monitoring team, Information generated by the facility was not used for action. management information system, is an essential tool for, strengthening, planning and management in the health facility but at health facility level due to resource limitation many of health professionals focus on treatment due to lack of, training and there is no awareness on the importance of patient record.

4.11 The current HMIS implementation problem and its solution in Chancho Health Center

4.11.1 Identified problem in HMIS implementation

Based on the finding of the study, the implementation status of Chancho Health Center is affected by different determinants. 36 (72%) of the study shows that the implementation status has found to be poor, due to lack of trained human power. 42 (84%) of the respondents said that, Data handling at facility level not working properly and registration of attendances was

incomplete, due to lack of utilization of computer technology. in addition to this there is also a problem of data entry, which causes data lost between primary registers to monthly summary.

Reporting from facility to woreda was far from complete, this is due to lack of knowledge to fill format appropriately which lead to poor data quality handling. There was also a problem of timely and complete reporting of data. 39 (78%) of the report shows, there was lack of incentives which lead to demotivate the staff to perform their job; and poor information use culture was significantly seen.Other problem found in the Chancho Health Center was on data collection and reporting. 42 (84%) of the study reveals that, which have gaps and overlap. And there is also, poor use of own data and indicator to improve service at facility. It was the main problem, identified during the study; according, to the study the reason of the above problem was caused by poor managerial coordination, lack of knowledge, and no use of staff motivation mechanism like providing training, giving money and other promotion method.

4.11.2 Proposed solutions based on finding

According, to analysis of my study; I try to suggest highlight of the main cause of HMIS failure, where the problem created and how it is resolved by making comparison among organizational, behavioral and technical factors and HMIS performance data quality and information use .the PRISM assessment provided insight into how the different components of the HMIS system are poorly coordinated; identifying underperformance and its determinants created opportunity for optimizing HMIS performance. I, proposed that; the resolution of conflicting HMIS process can be conceptualized as involving revise data collection tools and make it simple data handling processes and it is also necessary to identify and support non-reporters through supervision. Data submission checks at facility and departments are also good. Providing incentives is important point to improve data quality, timely submission, and generate data; designing health information strategy is also important to improve HMIS in better way and develop unified systems to which all stakeholders agree.Based on my study, I try to give suggestion that HMIS implementation can be improved by implementing strategies. According to the understanding of these assessment results and the main issue to enhance the implementation of HMIS in Chancho Health Center is improving capacity building at facility level, regular supervision and using computer technology for information utilization.

Chapter Five

Conclusion and Recommendation

5.1 Conclusion

Generally, according to this study result shows factors which can facilitate or enhance the status of HMIS were availability of HMIS skilled staffs, adequate IT trained staffs, adequate finance; adequate material resource and proper guideline of health management information system are very important factors to enhance implementation of the HMIS in health center. According to the assessment of HMIS implementation at health facility, there are shortages of the necessary inputs such as: budget, training, and coordination mechanism in the facility. Lack of incentives, feedback, technical support and low attitude of health workers are found to be determinant factors. Management commitment, awareness, centralized decision making and absence of information culture was the major findings of the study.

The collected data by the facility were strongly affected by standard set of indicators. The design of the current used for HMIS was reported by majority of the respondents as it was not easy to use .and has some problems were identified on the system.

Thus, generally we can say the design of the system was not comprehensive and complete. Determinant of Quality HMIS data was identified and it was found that knowledge of HMIS was main factor to determine quality information.

The proposed health information system approach will assist health professional in addressing the weaknesses of existing routine health information systems in the health center.

However, changing a new design is not a short term task adequate infrastructure and trained staffs in the area are important .Changing the staff commitment to collect reliable data, information utilization for decision making and improving using computer technology should be taken as long run achievement which needs persistent follow up and hard work to insure success and sustainable change.

Lack of incentives, feedback, technical support, low attitude of health workers management commitment and awareness ,centralized decision making ,absence of information culture all these can be corrected in short time.

5.2 Recommendations

From the finding of this study the following recommendations is forwarded:

- HMIS implementation programming in the facility should have ownership and it is important to identify the capacity requirement of the HMIS unit at health center level. The resource needed including qualification up to the standard. Developed to improve and insure the data collection and information generation of the unit.
- The health professional and health managers at health center level need to be motivated and encouraged in order to make them committed and accountable to their work.
- The collection, compilation and data quality assurance processes of facility must be taken into account before they are requested to send reports.
- The problem related with the design of the existing system used for HMIS and HMIS data collection and reporting tools should have to be solved by incorporating the requirement of the users. Duplicate registration of data on different data collection tools have to be avoided to minimize time spent to fill too much forms and minimize the workload of health professionals.
- Health facility must be given frequent trainings to use the data generated for decision making at facility level and use of HIS for their facility must be underlined in all the trainings.
- Efforts have to be made improve the culture of information and the attitude of staffs towards HIS in the facility levels.
- Supervision and technical assistance should be given to improve HMIS status.
- Health facility level using computer technology needs to be encouraged through appropriate incentives which not only improves data quality, but also information generation and utilization for local intervention. The needed data may be collected or reported on the designed time; but data quality information use and HMIS sustainability, can be assured by training and involving health professionals to focus on local needs. Thus HMIS design not only should enable to collect and summarize data; but also

perform certain procedures that help in the analysis and interpretation of the generated information. Such improvement can be achieved by creating improved awareness on information culture through creation of HMIS manuals.

- Design and resource allocation. Staff training, information use culture and strengthening HMIS unit are some of the major focus areas that health center should have to work on. Because this will help them to collect complete accurate and timely data, therefore decisions will be efficient and effective.

REFERENCES

1. WHO. Regional office for the western pacific developing health management information system; a practical guide for developing countries. world Health organization;ISBN9290611650; 2004.
2. FMOH. Health management information system (HMIS). Monitoring and Evaluation (M&E) strategic plan for Ethiopian health sector HMIS Reform team January; 2008.
3. Theo, lippeveld. Design and implementation of health information systems Boston, MA, USA WHO Geneva, 2000.
4. FMOH. Assessment of the Ethiopian national health information system. Final report October: 2007.
5. WHO regional office. for developing countries. Health management information systems practical guide for developing countries: Western pacific 2004.
6. Campbell, Bruce Benner. Health management information system in lower income countries .analysis of system design, implementation and utilization in Ghana & Nepal, WHO; NY, USA. 1997.
7. Zambia department of planning and development Assessment of the health information system in monitoring and evaluation unit Ndeke house long acres Lusaka April, 2007
8. Bojanala. Raganyakulu: evaluation of health management information system in India, need for computerized data base in HMIS, Harvard school of public health, Boston. S. A: 2000.
9. USAID. Measure Evaluation. Addis Abeba; Ethiopia. June 2012.
10. Performance of routine information systems management (PRISM) tools MS-II-46d. April 2011.
11. Burundi global health initiative strategy 2011-2015 September, 2011.
12. Archangel N. The critical issues affecting The introduction of health management information system in developing countries in Africa (master's Thesis): Amsterdam University; October 2007.
13. Mesay kitanbo Gelaneh. Assessment of HMIS Design and implementation in Ethiopia Addis Ababa, Ethiopia. June 2012
14. Steve S. Assessing health information system. HMIS Strategy and implementation plan for the national health management information system Liberia; June 2009.

15. Health partner interaction, health systems case study. Available from; http:llwww. Health partner-int.co.uk
16. Rwanda's five –year Decentralization implementation program 2004-2008.
17. Gebrie. An assessment of health information system in Addis Ababa [MA Thesis]. School of Health Informatics and School of Public Health: Addis Ababa University; 2005.
18. Chaulagaic. Design and implementation of health management information system in Malawi; Innovations and results. London, 2005.
19. Christon Mesheck moyo. An assessment of the quality of health management information system data in selected health facilities in LILONGWE District university of Malawi; July 2005.
20. Sultan Abajabel, Challi Jira, Waju Beyene. Utilization of Health information system at District level in Jimma Zone; Oromiya Regional State, Southwest Ethiopia. Ehiop J Health Sci 2011; 21 (Suppl 1): 65-76.
21. Kidane Tadesse. Assessment of Health management information system implementation in Ayder referral Hospital, Mekelle, Ethiopia vol.3 No 4, 2014.
22. Ministry of Health, Norway. Context and institutional logics perspective university: Understanding HMIS implementation in a developing country. Oslo, 2012.
23. Alganesh G/hiwot. Assessment of health information system in Addis Ababa Health Biro, June, 2005
24. Sundeep Sahay. Assessment of the ability of the Health Management information system in India to use information for action.July,2011
25. Helen Tesema .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; June, 2011

ANNEX- 1

Structured questionnaire for assessing the implementation status of HMIS in chancho health center.

Subject information sheet

Greetings:

My name is Tadele Negash currently I am a post graduate student in Addis Ababa University, department of health informatics.

The objective of the study is to assess and enhance the implementation status of HMIS in chancho health center; all individuals whose works involve providing health activities (health professionals) are selected. And you are selected just because of your position.

Even though study is conducted for the partial fulfillment of master program in health informatics it is believed to contribute much for the understanding of the current information utilization pattern and to identify the factors contributing to the existing situations. This in turn is hoped to give insight as to how to improve the HIS use in the facilities as well as others.

You will be asked to fill a questionnaire that will help in investigating the issues. Your co-operation is very helpful. Your name will not be written on the questionnaire and all the information you will provide will be kept strictly " confidential " you will be facing no harm by participating and you are also not obliged to answer any question you don't wish to answer. To fill the questionnaire 25-30 minutes will be required. It you wish to comment feel free to use the contact address.

Consent form:-considering the information you get from the general information sheet, we would be thankful if you spend some time with as solving questions related to the issues.

If yes continue to next page

If no, skip to other participant.

Contact address

251 0911774258/0922425293 E.mail tadenega67@gmail.com

Background

Part I.

Background information (filled by all of the respondents)

1).Sex (1)- M (2)-F

2.)Age (1)-<20 (2)-21-30 (3)31-40 (4)41-50 (5) 51-60

3.)How long have you worked in the health sector?

(1.)<3 year (2)3-5 year (3)6-10 year (4)11-15 year (5)16-20 (6)above 20

4.) Your current level of academic education

1) Certificate 2)Diploma 3)Bachelor's 4)Masters
5) Doctorate 6) Other specify

5.)Your field of study _____

6.) Your current department _____

7.) Your position in the department _____

Part II: questionnaire	Sto.a	Agre	Neutra	Dis.	S.di

completed at service provider. QUESTION RELATED WITH FACTORS DETERMINING DATA QUALITY.(OR)	g 5	e 4	l 3	A 2	s ag 1
1.Do you have a responsible unit for HMIS at your health facility?					
2.DO You have IT Staff in your health center?					
3. is there HMIS focal person in your health facility?					
4. is there a shortage of HMIS logistics like registers ,forms, data,books,reports,etc in your health facility?					
5. Do you believe your HMIS unit is adequately organized? In terms of staff, space, logistics,					
6. are there any coordination mechanisms in your facility to facilitate use of HIS resources (human,material,financial……..)					
7.Does your facility assign budget for HIS activities?					
8. How do you rate the adequacy of budget for HIS?					
9.are there the necessary equipment for HIS in your facilit?					
10. emphasize data quality in					

monthly report?					
TECHNICAL DETERMINANT					
11. is there data quality checking method at your health facility?					
12.Do you expect ,availability of adequate material ,knowledge of HMIS and system used can affect quality of HMIS data and decision making?					
13.is there a delay on transferring report to the higher level?					
14.Do you utilize manual system for your HMIS?					
BEHAVIOURAL DETERMINANT					
15 Are there trainings on basic computer literacy for the staff of your facility?					
16.are there any kind of training in service on HIS activities for the staffs?					
17.for all staffs the training were given in the last 12 months?					
18. HMIS data are easily accessible, retrievable of records for all appropriate staffs?					
19.Do you use the information you collected for decision					

making?					
20.are there incentives for information use?					
21. money, training, and recognition can be a kind of incentives for information user?					
PART III RELATED WITH DATA COLLECTION AND REPORTING					
1.IS there any problem with the existing data collection and reporting tools?					
2. does your facility collect health data on a daily activity of patient care?					
3.are records classified and coded just after each clinical visit?					
4. DO you think the data sources to be collected are over whelming?					
5. are there clear procedure for distributing and reporting the data collected?					
6. Do you agree that the data collected by your facility are timely collected?					
7.do you agree that the data collected by your facility are consistent?					
8. do you agree that the data collected by your facility are representative?					
PART IV RELATED WITH UTILIZATION OF IT(COMPUTER)					
1.Does your health facility have computer that can be used only for routine HMIS task processing.					
2. do you think the computer you have adequate?					
3. do you use the computer for record or register patient visits, for administration, finance routines, and to store retireve electronic patient					

information.					
4.are the computer networked in a local area network.					
5.do you use the local area network for printer file sharing ,sharing internet connection and to access stored patient record.					
6.DO you have internet connection at the HMIS unit?					
7.Do you have automated health management information system software in your health institution?					

PART V RELATED WITH HMIS STRATEGY	5	4	3	2	1
1. Do you think the current system you are using for HMIS enough to support the needs of the health facility and higher levels like woreda health office?					
2. How do you see the current HMIS system you are using it is comprehensive ,use friendly and easy to use.					
3. Does the current system generate the appropriate and required reports in timely manner?					
4. Design of the system,skill of the system users is the problem to generate the required report in timely manner?					

Annex 2

Interview Guide Line

Part 1 HMIS Focal Person

1.Can you tell me how the current HMIS is running in your departments (facility? In terms of data capturing, reporting and information use, do you use any facilitying documents (guide line standards, what are your resources of current HMIS data (facility based and population based)?

2.What common tools are used for data collection? Are they currently and completely filled? Do you employ mechanism to control data quality?

3.Do you have guide line (standards regarding information generation, use and reporting?

4.How do you see standardization, simplification and integration in data capturing, recording and reporting in the current HMIS?

5.How do you receive feedback (supervision on HMIS? From whom? In what interval?

6.What are the existing challenges (problems in connection with the current HMIS implementation?

Thank you for taking the time to participate in this interview.

Annex 3

Physical Observation Checklists

1. Department (facility) _____

2. Formats (sheets) register used _____

3. Skill (competence (experience) of the staff) by observing filled formats tally sheets,

4. And registers, their legibility and completeness of data _____

5. Room status _____

6. No of staffs in HMIS unit _____

7. Availability of IT (communication equipment like PC, computer, printer, telephone, internet, network, etc)

8. Availability HMIS office _____

9. Backup systems _____

10. Soft ware used for data capturing, reporting _____