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Process Evaluation of Community Health Information System in Ayehu Guagusa District, Awi Zone, Ethiopia,2021.

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PROCESS EVALUATION OF COMMUNITY HEALTH INFORMATION SYSTEM IN AYEHU GUAGUSA DISTRICT, AWI ZONE, ETHIOPIA,2021.

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A THESIS SUBMITTED TO THE DEPARTEMENT OF HEALTH SYSTEMS MANAGEMENT AND HEALTH ECONOMICS, SCHOOL OF PUBLIC HEALTH, COLLEGE OF MEDICINE AND HEALHT SCIENCES, BAHIR DAR UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTTER OF PUBLIC HEALTH IN HEALTH SYSTEMS AND PROJECT MANAGEMENT.

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ACRONYMS

CHIS	Community Health Information System
C-HMIS	community based Health Information Sysetem
E.C	Ethiopian Calendar
FF	Family Folder
FMOH	Federal Ministry of Health
HEP	Health Extension Program
HEW	Health Extension Worker
HH	Household
HMIS	Health Management Information System
HP	Health Post
HSTP	Health Sector Transformation Plan
LQAS	Lot Quality Assurance System
M&E	Monitoring and Evaluation
MFI	Master Family Index
PHCU	Primary Health Care Unit
WHO	World Health Organization

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ABSTRACT

Background: Health Information system is one of the building blocks of health system and basic for decision-making among the health system building blocks. The overall design of the community health information system innovation is to simplify the community health extension worker's role and focus on the delivery of health care at the community level by identifying community health needs easily. Reform has taken significant measures to remedy the lack of routine health information that has limited the quality of treatment, planning, and management processes, as well as decision-making by managers at all levels of the health system. But data quality is not at the required level. Though there are some studies conducted on quality of data generated at health facilities and culture of utilization of data, there is only one study conducted to show extent of implementation of community health information system. So, this evaluation fills the information gap on extent of implementation in terms of input, activity and output.

Objective: To evaluate the extent of community health information system implementation at Ayehu Guagusa in 2021.

Methods: Convergent parallel mixed study design was used. The evaluation approach was formative and the availability, compliance and consistency were evaluation dimensions. Resource inventory tool, document review template, an observation checklist and key informant interview guide were used to collect data. Lottery method was used to select six health posts. Then 846 family folders proportionally allocated to each health post and selected by using systematic random from each health post. key informants were participated in the study based on their expertise and experience. Data quality was assured before, during and after the data collection process. Quantitative data were entered and analysed by SPSS 23. The qualitative data were recorded, transcribed, translated, familiarized, coded and finally conceptualized to themes.

Result: the overall implementation was 63.7% which is poor according to judgment criteria. Availability of CHIS tools in the district was 79.4%. The overall compliance of implementation with standard guideline was 37.4%. The consistency of data in different sources was 83.4%.

Conclusion: The overall implementation was poor according to judgmental criteria and low compared to national expectations. Weak supportive supervision and feedback system, shortage of resources, difficulty of understanding English language and lack of training were major reasons. So, it is better to improve the operation by giving attention on identified reasons.

1.INTRODUCTION

1.1 Background

Data is a key ingredient to improve health care quality (1). Health Information system is one of the six building blocks of a health system, thus strengthening and availability of sound and reliable information is the base for decision-making through all health system building blocks (2; 3). Health information system is important for health system policy development and implementation, governance and regulation, health research, human resources development, health education and training, service delivery and financing. It also enables health managers to utilize evidences for better policy-making, planning, implementation and monitoring and evaluation of health (1).Health management Information System (HMIS) is a system that integrates data collection, processing, reporting, and use of the information. It uses for improving health service effectiveness and efficiency through better management at all levels of health system (4).

Worldwide strong emphasis has given on promoting and advocating the culture of generating quality data and using evidences based decision making at all levels to improve quality and equity of health services (3). In low and middle income countries, the use of community health extension workers to provide frontline promotional, preventive and basic curative services directly to the community in which they live is widely appreciated as important to achieve international health outcomes and coverage targets (5).The Ethiopian federal ministry of health emphasized on HMIS as a key to successful implementation of the health sector transformation plan and achieving sustainable development goals (6). The Federal ministry of health (FMOH) launched ‘information revolution’ with two main pillars(change in Information use Culture and digitalization) with the main objective of enhancing the use of timely, accurate, complete and reliable information for decision making at local level (7).

The PHCU(primary health care unit) generates and uses most of data, ranging from the Health Extension Program family folder and supply chain information to monthly disease and service reports (7). The federal ministry of health (FMoH) has undertaken revision of the HMIS which is more comprehensive and is strengthening the standardization process through incorporating new initiatives. To support this function, Community Health Information System (CHIS) was introduced to capture basic health and health related information by Health Extension Workers (HEW) at household and individual level (8). The CHIS designed to collect data on basic demographic statistics (8). It is also designed to collect data on health service demand and

delivery and utilization based on the health extension package delivered through the Health Extension Program at health posts(HPs) and feeds HMIS in regular basis (9). Family Folder is a family-centered tool provided to each family and designed for the HEW to manage and monitor her work in educating households and delivering integrated package of promotive, preventive and basic curative health service to families (8).The family folder informs health care through the information found in person and family documents, identifies patients in need of care through a collection of tickler files, and allows additional tally sheets and family folder cards (8).

1.2 Statement of the problem

At international and national levels, the need for coordinated, available, timely and reliable data for health decision making has become a growing concern. A comprehensive reform and redesign of the national HMIS has been undertaken by the FMoH in response to this (10).

The study conducted at Rwanda revealed that about 23.3% of health workers at health Center did not use HMIS information to make any decision (11).

The study conducted at Kenya revealed that CHIS enables the community health workers to identify community health needs and act upon them on time. But difficulty of getting reliable information in time from the health management information system, weak capacities of health management information staff, lack of integration among the many parallel data collection systems and inadequate coordination of available data were challenges. Only 69.9% of community health workers use information for decision making (12; 13).

Though the intensive effort and resources has allocated to improve the efficiency of information system in the past few years, the level of use of information at local level is still a challenge (7).

Despite reform has taken significant measures to remedy the lack of routine health information that has limited the quality of treatment, planning, and management processes, as well as decision-making by managers at all levels of the health system, data quality is not at the required level and a lot has to be done if the data is to be relied upon to inform decisions on health policy, health programs, and allocation of resources (1; 14)

The studies and monitoring and evaluation activities conducted in different areas of Ethiopia showed that the overall level of data quality was below the national standard (90%) in all health facilities; in health posts it was poor compared to hospitals and health centers (15; 16).

Even though CHIS has designed to improve the culture of information use at local level, the facility based cross-sectional study conducted at Hadiya zone showed good utilization of information by HEWs was only 41%; 43.1% use information for decision making, only 34.2% of those who use information for decision take action and 31.2% of them follow actions (17).

The facility based cross-sectional study conducted at Gurage zone also showed that only 27.3% of HEWs use information for decision making and planning of their activities (18). The study conducted at primary health care units of East Wollega zone showed that only 48% of service delivery report was accurate; 36% were over reports and 16% were under reports. About 42% of health professionals did not utilize information generated from HMIS/CHIS at least for one decision making purpose. Information utilization was least at health posts (47.3%) compared to health centers (59.9%) and district health offices (71.6%) (19). Institution based cross-sectional study conducted at public health facilities of North Gondar also revealed that overall utilization of information was 78.5% (20).

Study conducted on determinant factors of utilization of HMIS information at public health facilities at East Gojjam zone revealed that 20% of the study participants had never used HMIS data for any purpose even for reporting to higher level health system. Only 38.4% of the participants have ever used HMIS data for at least one purpose in addition to reporting to higher level; 52% for planning, 24% for giving feedback and 6% for research (21).

CHIS is designed with expected outcome of improving health information utilization in all levels of health system and improve quality of health care. Though some studies have been conducted on HMIS/CHIS utilization and associated factors among health professionals and health care managers, there is only one evaluation conducted to assess extent of implementation of CHIS in terms of input, activity and output standards in evaluation area and in Ethiopia as well. This evaluation study has included to explore reasons for better and weak implementation. Despite implementation of CHIS at Ayehu Guagusa district has scaled-up to all kebele, the quality of health information and status of implementation is not evaluated yet. This evaluation was conducted to address the information gaps on quality of CHIS implementation at grass root level focussing at the CHIS program components rather than focussing on data utilization and data users alone.

1.3 Significance of the evaluation

Since this evaluation identified strengths and areas that need improvement during the program operation, it has an implication in improving the data collection & information use at grass root level.

This evaluation result helps program managers and decision makers at different level to improve the status of implementation of CHIS and ultimately to improve service delivery for the community. Moreover, it will be used as an input for other evaluators/researchers and for vital event registration especially for births and deaths.

2.PROGRAM DESCRIPTION

2.1 Stakeholder analysis and communication

Evaluability assessment was done before the start of evaluation by involving stakeholders. Plausibility, utility and feasibility of program for evaluation in terms of program goals, objectives and design as well as implementation was assessed. During Evaluability assessment, stakeholders involved in CHIS implementation program in Ayehu Guagusa district were identified and discussion about their role in the program, evaluation process and the evaluation question they want to be answered were agreed. Primary investigator was moderator of the whole evaluability assessment process. During evaluability assessment, face to face verbal communication was used for those involved in CHIS implementation at district health office and zonal health department levels. Telephone was used to communicate for those not in district health office and zonal health department. Zonal health department head, district health office extension program officer, district health office vice head and district health office head had reached on consensuses regarding dimensions and indicators of evaluation as well the relative weight of each indicator. Ayehu Guagusa district health office has participated in all steps of evaluation process actively.

Table 2.1 1 matrix of stakeholder of CHIS program in Ayehu Guagusa district, 2021

Stakeholders	Role in the program	Role in the evaluation	Stakeholder's interest	Means of communication	Level of importance
Zonal Health department	Planning and monitoring implementation status, providing resources, conduct review meeting	Facilitate and coordinate the evaluation Decision on indicators and questions	Utilization of evaluation findings, planning for program improvement based on the findings.	Face to face, telephone,	Medium
District Health office	Monitor program implementation, Documenting	Formulate evaluation questions, establish	Utilization of evaluation findings. Improve	Face to face , Through letter, Through telephone	High

	and reporting. Engage relevant stakeholders.	judgment criteria, facilitating the evaluation process	program planning, implementation and monitoring system. Strengthen Supportive supervision		
Woreda administration	Administrative support during registration and Budget allocation	Coordinating evaluation process. Discuss on the evaluation findings. Disseminate evaluation findings	Program evaluation report.	Face to face Through telephone	Medium
Cluster health centers	Planning and monitoring, providing training, supportive supervision, review meeting, utilizing information for decision	facilitating evaluation process	Utilize evaluation findings	Face to face Through letter Through telephone	High
Health Extension Workers	Operate program at the household and individual level,	Providing data for evaluation,	Utilization of evaluation findings for	Face to face interview	High

	Documenting, reporting and utilizing data	Facilitate evaluation process	program improvement.	Through telephone	
Kebele administration	Community mobilisation during registration. Facilitate program implementation.	Facilitate evaluation process.	Use of findings for Program improvement	Telephone Meeting	Medium
Community members	Utilization of services	Give data	Health service improvement	Face to face interview	High
Bahir Dar university	Conduct evaluation	Technical support to evaluator	Evaluation result report	Face to face, email, phone	Medium

2.2 Goal of community health information system

The goal of the CHIS is improving accessibility, quality and utilization of health and health related information so as to ensure quality health service delivery at community level.

2.3 Objectives of CHIS program

The specific objectives of community health information system are:

- To ensure availability of standardized recording and reporting tools at all health post in the district.
- To ensure utilization of CHIS tools in line with standard guideline in all health posts of the district
- To record vital events continuously in each kebele
- Ensuring information use at grass root level for all primary health care units in the district.
- Minimize parallel registration and report to less than 10%.

2.4 Major strategies of CHIS implementation

Strengthening the health system through:

- Ensuring the availability of important CHIS tools, human resources and infrastructures
- Ensuring monitoring and supportive supervision
- Giving training to health extension workers and supervisors
- Review meeting and on-site training
- Giving regular feedback and following implementation of feedback
- Ensuring multi-sectoral involvement
- Strengthening connection with/among and training of health developmental armies(HDAs)
- Community mobilization during registration and updating

2.5 Program resources and activities of community health information system

2.5.1 Resources needed to implement and run community health information system

Resources needed for implementation of community health information system include:

Kebele profiling formats: Kebele demographic profile, kebele resource mapping, kebele household environmental sanitation profile, kebele basic health indicators format

Family/household health information recording instruments: family folder, health card, integrated maternal and child Care card, master family index (MFI), field Book

Tallies: Service delivery tally, disease information tally, tracer drug availability tally, family planning method dispensed count

Reporting formats: Quarterly service delivery reports, quarterly disease reports, annual report, monthly report format

Screening formats: nutrition screening formats, non-communicable diseases screening formats

It also includes guidelines, manuals, standardized shelves with tickler files, inks& brushes for coding house number, skilled information experts, HEWs and supervisors including the capacity building are also vital components of the human resources. As part of the infrastructure and furniture, buildings (health posts), chairs and tables, bags and budget in cash are other important resources.

2.5.2. Activities of community health information system

The major activities of CHIS are registering or recording of households in FF, coding the household number in FF and in houses, and preparing MFI for all HHs & all kebele to access FF of each HH easily, preparing and using tickler files for appointment and defaulter tracing.

The CHIS is also designed for organizing and updating the family folder according to their house numbers and village for new births, deaths and HHs, use the family folder and its cards (Male, Female and Integrated cards) during service provision, tally sheets in their daily activities and performing LQAS after compiling monthly report. Updating kebele demographic profile, training HEWs, health information technicians and health professionals, using field books during HH visit, searching for budget, allocating budget, buying and preparing table and shelves, monitoring, review meeting and supervising. In addition, it is also used for reporting to next level and using the family folder information at grass root level for different purposes.

2.6 Outputs of CHIS program

The CHIS program outputs include: Number HEWS trained, amount of budget allocated, number of HHs provided with FF, Number of HHs and FFs coded ,Number of FFs updated for new data, number of HPs that update kebele profiling formats, number of HPs that use tally sheets in daily activities, number of HPs that provide and use MFI to retrieve FF, number of HPs which provide tickler file to monitor defaulters, number of HPs that use field books during providing services at community and HH level, number of HPs that use shelf, number of HPs which use health cards during service provision, number of HPs that do LQAS monthly

2.7 Outcome of the CHIS program

Expected outcome of the CHIS program includes:

- Improved quality of information at community level
- Improved information utilization for decision making at local level
- Reduced work load of HEWs
- Improved family centered health service delivery and utilization at community level
- Improved vital event registration

2.8 Expected impacts of CHIS

Long term impacts of CHIS program include: Reduction of morbidity and mortality, increased life expectancy

2.9 Program logic model of community health information system

Problem statement: Reform has taken significant measures to remedy the lack of routine health information that has limited the quality of treatment, planning, and management processes, as well as decision-making by managers at all levels of the health system. But data quality is not at the required level and a lot has to be done if the data is to be relied upon to inform decisions on health policy, health programs, and allocation of resources

Goal: To improve accessibility, quality and utilization of health and health related information so as to ensure quality of health service delivery at community level.

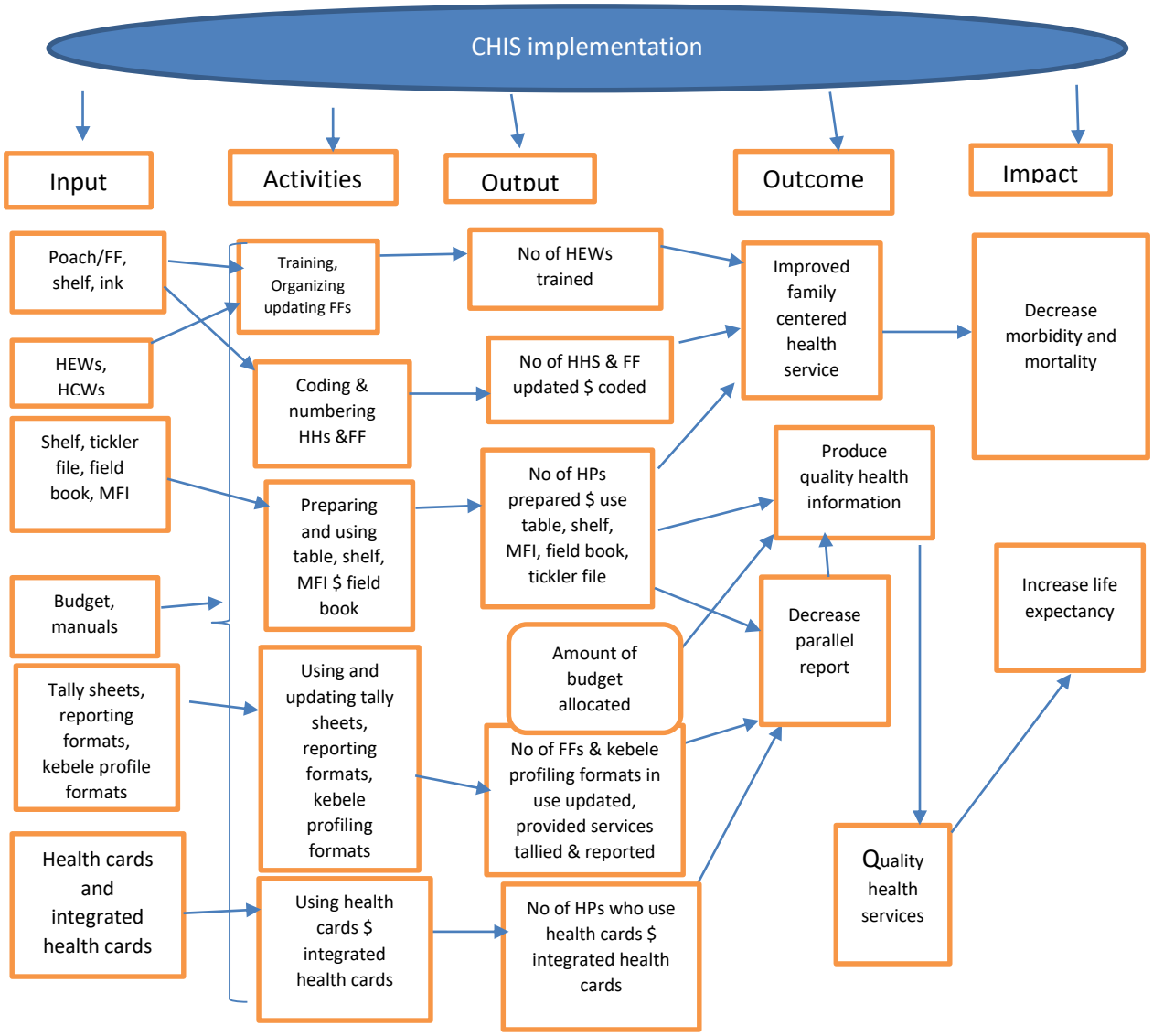

Figure 1 logic model for implementation of CHIS in Ayehu district,2021.

Source: - author's construction based on CHIS user's manual 2011 (8)

2.10 Stage of development of community health information system

The initial design of Family Folder in Ethiopia was done in 2008. However, in the absence of clear-cut implementation guidelines and training manuals, the efforts to scale-up the CHIS nation-wide was difficult. In 2010, the FMOH set up a technical working group - comprising of John Snow Inc. (JSI)/MEASURE Evaluation HMIS Scale-up Project, Tulane University, Italian Cooperation and WHO – that, under the lead of FMOH, conducted a pilot testing in two woreda in SNNP and Amhara Regions, and finalized the health extension supervisors training manual and implementation guideline. CHIS has been implemented in Amhara region starting from 2010 as a pilot and fully implemented in 2013/14. House numbering and registration has carried out mainly by the health extension workers (8).

In Awi zone using family folder, recording and reporting of data through cards was introduced in year 2013/14. Currently, data recording and reporting using CHIS tools (full implementation) have completed and scaled up in to all rural health posts and scaled up to almost all urban health posts (22).

3. LITERATURE REVIEW

3.1 Availability of resources

The study conducted at west and central African countries revealed that countries face significant budget limitations to develop, deploy and sustain CHIS program and only 39% of community health extension workers had taken refreshment training in the last 6 months (23).

Cross-sectional study conducted at Kenya on community based health information system revealed that community based health information was not working very effectively due to inadequacy of data collection tools, bulkiness of data tools and differences of data tools. Availability of important community health information system tools was 96% but not adequate (12).

Researches and evaluations conducted at different areas of Ethiopia shown the presence of gap on availability of crucial CHIS materials even though availability of CHIS materials had significant association on CHIS implementation (14).

The process evaluation done at south East zone, Tigray region shown that the availability of field book, Tigrigna manual, health cards, and brushes and inks was 94%, 76%, 88% and 26% respectively. Availability of family folder, four types of tally sheets, CHIS reporting formats, shelves for family folder, tickler files and MFI was 100%. The study shown that the overall availability of important resources was 88.7% (24).

Process evaluation done at Mekele zone, Tigray region on implementation status of HMIS revealed that overall availability of essential resources was only 83% (25).

Facility based cross-sectional study conducted at Gurage zone indicated that availability of CHIS manual, tally sheets, reporting formats and references materials had significant association with CHIS performance and availing them improves it. Despite this the study assured critical shortage of tally sheets (20.6%), integrated maternal and child health cards (52.7%), reporting formats (46.7%) and training manuals (60%). The study also appreciated the training strongly affects utilization of CHIS tools despite only 44% of HEWs had taken refreshment training within last 12 months (18).

Facility based crossectional study conducted at Hadiya zone appreciated that shortage of CHIS materials and parallel reporting had significant effect on CHIS implementation though 45% of health posts faced shortage of CHIS materials, of which 28.7%, 15.3%,32.2% and 25.7% face scarcity of health cards, integrated maternal and child health cards, family folder training

manuals and reporting formats in the last 6 months respectively. About 51% of study participants had received CHIS training in the last 12 months and 30.2% face difficulty in understanding and using existing materials (17).

Institution based cross-sectional study conducted in East Gojjam shows that despite presence of different reference materials and modules have strong association with data management quality at health posts, 15% of the health posts reported absence of this materials (26).

3.2 Compliance of implementation activities

According to evaluation study performed at South East zone, Tigray region, 94% of the health posts had provided family folder to their respective households and all the family folder/pouch were ordered and shelved according to HH number. About two thirds of the health posts had provided health cards to their clients and all HPs were retrieving FF from the shelf using MFI by his/her name according to the guideline. All health posts were registering household heads on MFI alphabetically, using tally sheets, coding and registering gote by using five-digit number. About 94%, 82%, and 94% health posts had used tickler file for appointment and defaulter tracing, had given 7-digits number for members and update FF for new HHs, births and deaths respectively (24).

Facility based crossectional study conducted at Hadiya zone indicated the presence of complex and multichannel reporting tools and systems at health posts. Study showed that only 73.8% HPs do data quality assurance monthly, of which 46.3% used appropriate data quality assurance technique, and 69% compile and up to date population profile, about 30.2% of the HEWs were not using CHIS tools as intended due to difficulty to understand and use the materials written in English language (17).

Study conducted at Mekele zone, Tigray region revealed about 22.8% of the health posts compile and send parallel reports in addition to standard of CHIS report monthly, quarterly and annual basis though those who use only CHIS only were 4 times more likely to utilize information for decision. Only 57.4% HPs update hygiene and sanitation packages (25).

Another study conducted at Gurage zone identified that 75.8% of health posts used both family folder and register parallel, 17.6% use family folder only and 6.7% use register only for data recording. About 61% of health posts were collecting the same information at different recording tools duplicating effort and creating work load that finally results in poor data quality (18).

3.3Consistency of information

Community based study conducted on community health information consistency in the case of child health records confirmed only 36% of children were registered at child health card but did in FFs (27).

Institution based crossectional study undergone at East Gojjam assured that only 54% of HEWs report their work to higher level consistently, 61% of them faced difficulties in understanding reporting formats due to presence of unusual words and abbreviations (21).

The implementation evaluation conducted at South east Tigray zone showed the average consistency of the program implementation was 83.5%; the consistency of data between FF and MFI, and consistency of data between FF and household was 97.9% and 80% respectively. According to this study 84% of HPs had done LQAS at monthly basis while the rest of them have not done regularly as scheduled (monthly). All the HEWs have had good knowledge about the cut point of data consistency (>85%) (24).

4. EVALUATION QUESTIONS AND OBJECTIVES

4.1 Evaluation questions

Do all health posts have all the important resources? If not, why?

How well community health information system activities are implemented compared to guideline?

Do all the data consistent in different sources? If not, why?

4.2 Objectives of evaluation

4.2.1 General objective

To evaluate the extent of community health information system implementation by Ayehu Guagusa program implementers by the year 2021.

4.2.2 Specific objectives

1. To determine availability of important resources for implementation of CHIS at health posts in Ayehu Guagusa district by the year 2021.
2. To determine compliance of implementation of community health information activities with standard guidelines at health posts in Ayehu Guagusa district by the year 2021.
3. To determine consistency of data in different sources

5. EVALUATION METHODS

5.1 Evaluation area and setting

This evaluation study was conducted at Ayehu Guagusa district which is located in the Awi Zone, Amhara Region, North west Ethiopia. The area is located 486 km North of Addis Ababa. The district has 17 rural and 2 urban administrative kebele, one health post on each kebele, and four government health centers. The major languages spoken in the district are Amharic and Awigna. Both Awigna and Amharic are the official language and Awigna is widely spoken in the area. There are estimated 31,444 households and 135,209 total population (28).

5.2 Evaluation period

This evaluation was conducted from March 10,2013 E.C to April 20,2013 E.C

5.3 Evaluation approach

In this study formative evaluation approach was employed.

5.4 Evaluation design

The evaluation was conducted by using convergent parallel mixed study design. Quantitative study was supplemented by qualitative study. Phenomenological study design was used to asses lived experience of experts and experienced professionals.

5.5. Focus of evaluation and dimensions

5.5.1 Focus of evaluation

The evaluation focused on extent of CHIS implementation process in terms of program inputs, activities, and outputs.

5.5.2 Dimensions of evaluation

For this study the investigator in collaboration with stakeholders decided and used three dimensions. This dimensions were availability of program inputs, compliance of program activities with standard guidelines, and consistency of data between FF and MFI, and consistency of data between FF and household data. The weight of dimensions and the respective indicators was given depending on their level of relevance to the program by discussing with the stakeholders by nominal group technique. In each evaluation dimension, detailed indicators that were used to decide the performance of the program was used. The value of dimensions was the sum of respective indicators, then the sum of all dimension attributed to the implementation status of CHIS. Judgment criteria for each indicator, for each

dimension and for overall implementation status was decided with stakeholders similar as follows: judgment criteria for >=90% is Very Good, 80%-90% is Good, 70%-80% for fair and <70% is poor.

5.6 Indicators/variables

During evaluability assessment, the following indicators were selected in collaboration with key stakeholders of the program.

Indicators for each dimension:

To measure availability of program resources=14 indicators

To measure compliance dimension = 17 indicators

To measure consistency dimension = 8 indicators

Availability indicators (a total of 14 indicators):

Proportion of HPs with trained HEWs on CHIS in the last 12 months.

Proportion of HPs that have kebele profiling format

Proportion of health posts which have pouch/FF

Proportion of HPs which have CHIS manual Amharic version

Proportion of HPs which have health cards (two types)

Proportion of HPs which have tally sheets (4 types)

Proportion of HPs which have reporting formats (3 types)

Proportion of HPs which have shelf

Proportion of HPs which have tickler file

Proportion of HPs which have field books

Proportion of HPs which have MFI

Proportion of HPs which have inks and brushes

Proportion of HPs which have non communicable diseases screening formats

Proportion of HPs which have nutrition screening formats

Compliance indicators (a total of 17 indicators):

Proportion of HPs which provided all households with FF

Proportion of HPs that update kebele profiling format annually

Proportion of HPs organize FF according to HH number

Proportion of HPs which provided health cards to clients

Proportion of HPs which retrieved FF by name from MFI when the client visits HP

Proportion of HPs which recorded household heads in MFI alphabetically

Proportion of HPs which use all types of tally sheets

Proportion of HPs which tally by using HH number after providing services for clients

Proportion of HPs which use household number during using diseases tally sheet

Proportion of HPs that 5-digit number has used for HH number

Proportion of HPs that 7 digit numbers has used for individual identification number

Proportion of HPs which use tickler file for appointment and defaulter tracing

Proportion of HPs which update FF for new HHs, births and deaths

Proportion of HPs which use field books

Proportion of HPs which do lot quality assurance sampling (LQAS) monthly

Proportion of HPs which select data elements to do LQAS randomly

Proportion of HPs that do not use parallel registration and reporting

Consistency indicators (total of 8 indicators):

Proportion HHs in which the records of HH head, father, grandfather, house number and gote code are similar in FF and MFI

Proportion of HHs in which household head's name is similar in FF and in house

Proportion of HHs in which house code is similar in FF and in house

Proportion of HHs that number of family members are similar in FF and in home

Proportion of HHs that availability status of latrine is similar in FF and in house

Proportion of HHs in which hand washing service at latrine is similar in FF and in house

Proportion of HHs in which solid waste disposal system is the same in FF and in house

Proportion of HHs in which liquid waste disposal system is the same in FF and in house

5.7 Operational definitions

Agreed criteria: percentage values of an indicator and dimension decided together with stakeholders to classify the status of performance relative to weighted value.

Availability of trained HEW: when there is at least one trained HEW in the last 12 months in HP.

Availability of kebele profiling formats: at least two demographic profiling formats, two basic health indicators formats, two resource mapping formats and two kebele environmental hygiene profiling format should be present.

Availability of FF/poach: the existing FF is equal to projected number of total HHs including issued by HHs previously.

Availability of Amharic version user's manual: there should be at least one Amharic version user's manual in the HP.

Availability of health cards: the number of unused health card present in the HP should be equal to 10% of projected above five-year-old population in the kebele.

Availability of tally sheets: there should be at least one unused or currently using disease tally sheet, service tally sheet, tracer drug availability tally sheet and family planning discount tally sheet.

Availability of reporting formats: there should be at least two monthly reporting formats, two quarterly reporting formats and two annual reporting formats.

Availability of tickler file/box: there should be 12 boxes assigned for twelve months.

Availability of field book: the number of unused/in use field book present in the HP should be at least equal to number of HEWs in the HP.

Availability of MFI: the number of MFI present should be equal to number of villages in the kebele

Availability of inks and brushes: there should be one ink and brush for each HEW in the HP.

Availability of screening formats: there should be nutrition screening format, non-communicable disease screening format and neglected tropical disease screening format in the health post.

Fair: percentage of observed value relative to weighted value is between 70%-80% in which modification of plans and major improvement needed in a short period of time with frequent supportive supervision, feedback and training.

Good: percentage of observed value relative to weighted value is 80%-90% in which minor modification of plans and improvement is needed with continuous supervision and feedback

Kebele: Lowest level of government administrative structure (sub-district)

Poor: percentage of observed value relative to weighted value is less than 70% that critical program improvement with strong follow up, supportive supervision and training needed within a very short period of time

Stakeholder: person or organization that affects the program, affected by the program or users of evaluation findings to improve implementation of the program.

Training: Training on Community based health information system and its tools according to the national C-HMIS training manual (how to use them), data elements, indicators, and their definitions in the last 12 months

Very good: percentage of observed value relative to weighted value is >=90%, keep it up with close follow, supportive supervision and review meeting

Weighted value: value given to an indicator and dimension to be used for evaluation from 100%

5.8 Population and sampling

5.8.1 Source population

All family folders and respective households, all health posts and HEWs, all Health professionals, district health officers and mangers in Ayehu Guagusa district were source populations.

5.8.2 Study population

The study population were all health posts with building in the district from which sample health posts were selected and all family folders and respective households in Ayehu Guagusa district from the selected health posts were study population for quantitative study. For qualitative study all health professionals in the health Center, all health extension workers from the selected HPs, district health officers and managers in Ayehu Guagusa district were study populations.

5.8.3 Sample and study units

Family folders and their respective HHs, and six HPs selected from the study population were samples and study units were family folders, HHs and health posts. For qualitative part, primary health care unit directors, district health office plan and program officer, district health office health extension program officer and HEWs from selected HPs were samples and study units.

5.9 Eligibility criteria

All kebeles with their own health post (building has been finished) within the district were included in the study.

5.10 Sample size determination

5.10.1 Sample size determination for HH observation and FF review

The sample size for HH observation and FF review was calculated by using single population proportion formula with the following assumptions:

95% confidence interval ($Za/_2$=value at 5% level of significance (α) = 1.96)

Margin of error (w)= 5%

P=50%(expected consistency of data between FF and HH)

n (number of samples) =$(Za/_2)^2$ p (1-q) / w^2 gives 384

Considering non response rate of HHs during survey 10% and design effect 2, total sample size was 846 FFs and respective households.

5.10.2 Sample size determination for resource inventory and compliance study

From the total of 18 health posts in the district, 6 health posts were included in the study to assess availability of resources and compliance of implementation with standard guideline.

5.10.3 Sample size determination for key informant interview

For qualitative study three health extension workers, four health Center directors, plan and program officer in the district office, health extension program officer in the district office were selected purposively based on expertise and experience and participated in the evaluation.

5.11 Sampling technique /procedure

From the total health posts in the district, 6 health posts were selected randomly by lottery method. Then, family folder with respective HH was allocated to each kebele proportionally and picked from selected kebele by systematic random sampling with fixed interval(k)=12(total FFs of the selected kebele divided by the allocated sample size). For each Kebele the first FF and its respective HH was chosen by lottery method and fifth HH and respective FF was selected from first eighteen FFs by lottery method. Then every twelfth FF and HH was selected systematically. First all the selected (846) FFs were reviewed to collect information about availability status of latrine, availability status of hand washing facility within latrine, availability status of solid waste disposal system, availability status of liquid waste disposal system, number of household members, household code and household head name. Then all the HHs were visited to collect information for the above indicators to check whether the data recorded at FFs were similar with the actual data at HHs or not.

For key informant interview health extension workers, health Center directors and participants from district health office (plan and program officer, health extension program officer) were selected by purposive sampling based on expertise and experience. The data for qualitative study were collected until information saturation.

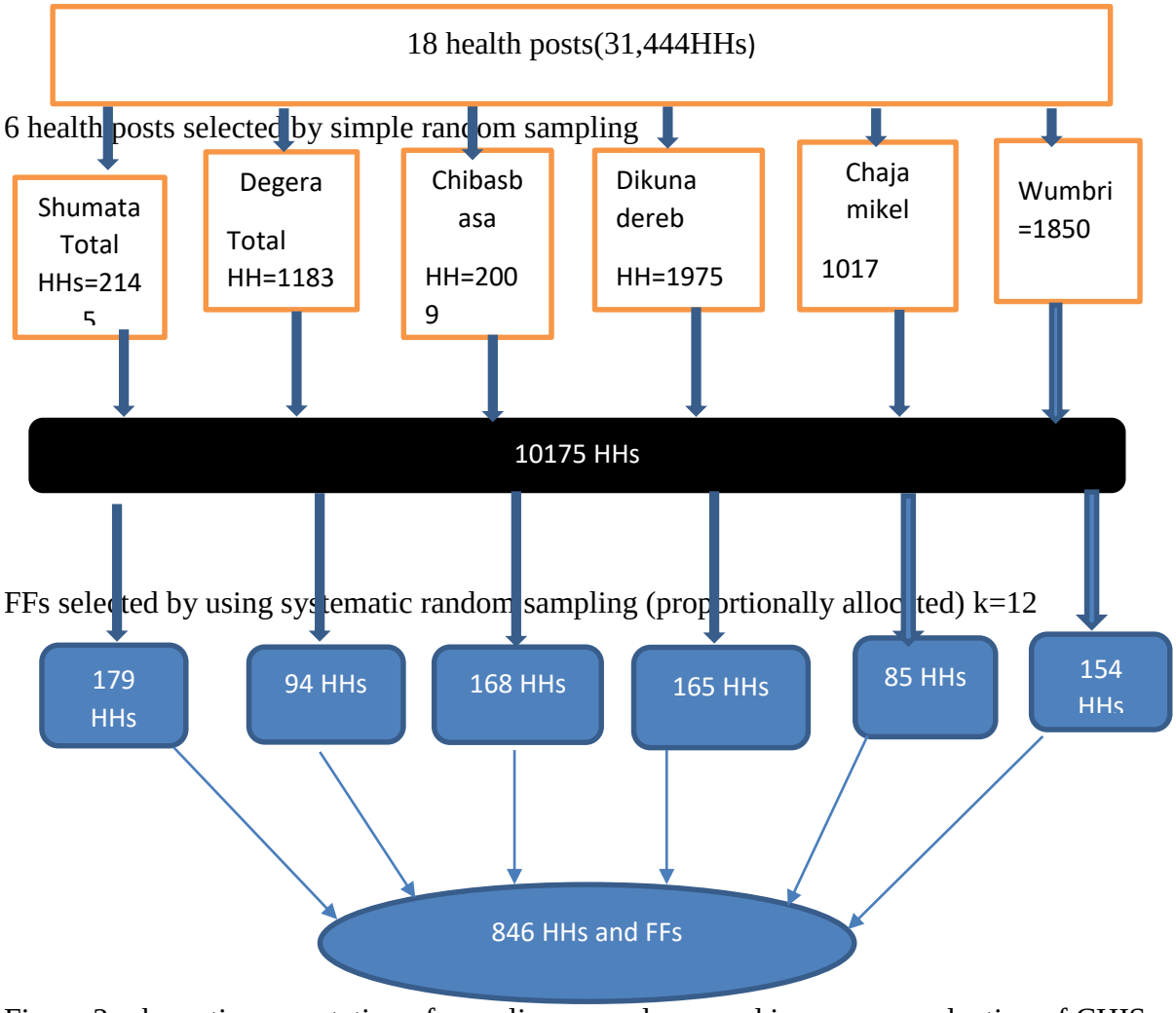

Figure 2 schematic presentation of sampling procedure used in process evaluation of CHIS in Ayehu Guagusa district, 2021.

5.12 Data collection tool and data collectors

5.12.1 Data collection tool

Structured and semi structured questionnaire was developed by principal investigator in collaboration with stakeholders by referring national guideline of CHIS, national CHIS evaluation indicators and check lists (8; 29) which comprises of the following components:

1. **CHIS resource inventory tool:** is an inventory tool containing- human resource, tally sheets, reporting formats, FFs, health cards and other logistics and guidelines which will be used to assess the availability of program resources for the implementation of CHIS.

2. **Key informants interview checklist**-is a tool comprised of components such as background characteristics of the respondent; training and preparation; extent of implementation; barriers to availability of program resources and implementation from the perspective of health care managers and health extension workers and recommended solutions.
3. **An observation checklist:** -is a tool used to assess consistency of data between FF and actually at HHs which was used during household visit. This tool was used to check availability of latrine, availability of hand washing facility, availability of solid and liquid waste disposal system at household to compare it with the data recorded in FF.
4. **Document review template:** -The template for document review was prepared based on CHIS national guideline to assess the compliance of operation by health extension workers with standard guideline.

5.12.2 Data collectors and supervisors

Data collectors and supervisors were recruited by principal investigator together with Ayehu Guagusa district health office representatives based on the educational status, profession, training status of CHIS and experience in data collection. Six data collectors (three health officers, one BSC nurse, one health information technician and one clinical nurse) who have ever taken training on CHIS were participated. Two supervisors (both health officers) who have experience in data collection and have trained in CHIS in the last 6 months were involved.

5.13 Data quality assurance

Data quality was assured before, during and after the data collection process. Pretesting was done on 5%(43) FFs from the kebele not included in the actual data collection in Ankesha Woreda, Hateta kebele before the actual data collection. Training including actual field practice was given to data collectors and supervisors for two days. There was a close day to day supervision in the data collection process. After data collected, it was checked for completeness and consistency by the supervisors each day.

For qualitative study data have carefully recorded and written, repeatedly listened before transcription and transcribed data was read repeatedly before translation.

To increase credibility of data, different data collection sources, data collection methods and evaluation methodologies were triangulated.

5.14 Data entry, management and analysis

5.14.1 Data entry and management

Data cleaning and checking was done at field level and repeated after entry to check for coding error and missing values by principal investigator and completeness was checked. The data recorded was kept in personal computer, phone and flash card.

Quantitative data was entered and analysed by SPSS version 23. Field notes were written after data collection every day afternoon by interviewer for the qualitative data.

5.14.2 Data analysis

A descriptive analysis was done by SPSS version 23 to show the frequencies and percentages of the findings. Tables and texts were used to describe the characteristics of the health posts with respect to the evaluation dimensions.

Qualitative data were analysed thematically. Data were carefully recorded and repeatedly listened before transcription. Then recorded data was transcribed and read repeatedly before translation. Translated data was changed to concepts after reading repeatedly. Then translated concepts were coded and codes were grouped in to themes. Then themes were compiled and summarized for reporting. Finally, quantitative findings were triangulated with qualitative, qualitative supplemented quantitative.

5.15 Matrix of analysis and judgment

In this evaluation, information matrix, indicators definition and judgment matrix had developed by investigator in collaboration with stakeholders. The evaluability assessment was conducted from November 12, 2013 E.C to November 23, 2013E.C by involving Ayehu Guagusa district office head and vice head, Ayehu Guagusa health extension program officer and Awi zone health department head. Weights for dimensions and indicators and judgment criteria was determined by involving stakeholders. For further look the table 5.11, 5.12 and 5.13 from the annex.

5.16 Ethical consideration

The evaluation study was ethically approved by institutional review board of Bahir Dar university College of Medicine and Health Sciences. Before beginning data collection, legal permission with letter of support was obtained from Ayehu Guagusa district health office. All the study participants were informed about the purpose of the study, risk and benefits of the participating in study and their right to refuse at any time. Informed consent was obtained from every respondent. Strict confidentiality was also maintained through coding of questionnaire anonymously.

6.RESULTS

6.1 Socio demographic characteristics participants

A total of six health posts were visited to evaluate implementation of the community health information system in terms of availability of program resources and compliance of implementation with standard guide line. From the six health posts, 846 family folders were reviewed to collect data for consistency indicators and then the respective households were visited to check consistency of data between FFs and actually at household after reviewing document from all FFs for similar indicator.

For the qualitative study nine participants were included, of which three were females. From the qualitative participants three were health extension workers, two from district health office and four were health Center directors. From the total participants three were level four diploma holders, four health officers and two were bachelor's degree holders in nursing. The three HEWs, two health care workers from health office and four health Center directors were included in key informant interview. All participants from health Center and health office were males.

6.2 Availability of CHIS resources

The overall availability of CHIS resources in the district was 79.4% which means the availability of necessary CHIS resources was fair. All the visited health posts have health cards, tickler files, MFI, four types of tally sheets, all types of reporting formats and at least one HEW who have taken refreshment training in the last 12 months. But there was no inks and brushes used to code at all health posts as well as Amharic version user's manual used as reference for health extension workers for day to day activity. Look the table 6.11 for more information.

Table 6.1 1 summary of availability of necessary CHIS resources in Ayehu Guagusa ,2021

Indicator	Weight given (A) in %	Observed value(B) in %	Score(A*B)	Judgment criteria	value	Judgment
Proportion of HPs with at least one trained HEWs on CHIS.	7	100	7	>=90%	Very good	Very good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
	7	100	7	>=90%	Very good	

Proportion of HPs which have pouch/FF				80-90	Good	Very good
				70-80	Fair	
				<=70	Poor	
Proportion of HPs that have CHIS manual Amharic version	8	0	0	>=90%	Very good	Poor
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of HPs that have health and integrated health cards	8	100	8	>=90%	Very good	Very good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of health posts that have all tally sheets	7	100	7	>=90%	Very good	Very good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of health posts that have all reporting formats	7	100	7	>=90%	Very good	Very good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of health posts that have shelf	7	100	7	>=90%	Very good	Very good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of health posts which have tickler file	7	100	7	>=90%	Very good	Very good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of health posts that have field books	7	100	7	>=90%	Very good	Very good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
	6	100	6	>=90%	Very good	

Proportion of health posts that have MFI				80-90	Good	Very good
				70-80	Fair	
				<=70	Poor	
Proportion of health posts that have inks and brushes	8	100	0	>=90%	Very good	Poor
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of health posts that have nutrition screening formats	7	100	7	>=90%	Very good	Very good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of HPs which have all kebele profiling formats	7	33.3	2.33	>=90%	Very good	Poor
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of health posts that have NTD screening formats	7	100	7	>=90%	Very good	Very good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Overall availability of resources	100		79.33	>=90%	Very good	Fair
				80-90	Good	
				70-80	Fair	
				<=70	Poor	

In the qualitative study, most of the key informants described that shortage of health cards, tally sheets, screening formats, Field books, MFI and poach was not the major problem and reason for poor implementation of CHIS as recording and reporting tool. But there were no materials like Amharic version manual, inks and brushes. They also described that shortage of budget for refreshment training, review meeting and supportive supervision was another challenge. The reason for the absence of these materials for a long time was low attention given for the program implementation by officers at district health office, zonal health department and regional health bureau.

A 37-year-old health extension worker who had worked for 15 years said:

"Actually shortage of FF tools is not the major challenge, most of the materials like health cards and screening formats are there in our health post but some items like inks and brushes were not in our health post for last around three years: we repeatedly asked health Center to provide us but they say we have no these materials yet"

Another 32-year-old male BSc nurse health Center director said:

"The major problem is not resource shortage, most of the CHIS materials are present at health Center and health post but we face budget scarcity for supportive supervision and review meeting. Because there is no budget allocated to improve CHIS program implementation"

A 40-year-old male BSc nurse from the district health office described that:

"All the CHIS tools were provided by regional health bearu previously five years back including inks and brushes; again regional health bearu provide all the tools except inks and brushes in this year, actually these materials are cheap and available at local markets, we can buy"

6.3 Compliance of implementation of CHIS with standard guideline

The overall compliance of implementation of community health information system with standard guideline at Ayehu Guagusa district was 37.4% which means the compliance of CHIS implementation was poor. There was no any health post who had given health cards to all members of the household and retrieve family folder by name from master family index. All the visited health posts were not updating kebele profiling formats annually, doing LQAS after compiling report monthly, updating FF for new births, new deaths and new HHs. All health posts were using parallel registration with CHIS and 50% of health posts were using field book during home to home visit. For further information, look table 5 below.

Table 6.1 2 summary of compliance of implementation of CHIS with standard guideline at Ayehu Guagusa district in 2021.

Indicator	Weight given(A%)	Observed value(B)(%)	Score(A*B)	Judgment criteria	Value	Judgment
Proportion of HPs that update kebele profiling format annually	6	0	0	>=90%	Very good	Poor
				80-90	Good	
				70-80	Fair	

				<=70	Poor	
Proportion of health posts who do LQAS monthly	6	0	0	>=90%	V. good	Poor
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of health posts who select data elements to do LQAS randomly	5	0	0	>=90%	Very good	Poor
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of health posts which do not use parallel registration with CHIS	6	0	0	>=90%	Very good	Poor
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of HPs which provide FF for each HH	7	33.3	2.3	>=90%	Very good	Poor
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of health posts that organize FF alphabetically	7	100	7	>=90%	Very good	Very good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of health posts which provided health cards to all members	6	0	0	>=90%	Very good	Poor
				80-90	Good	
				70-80	Fair	
				<=70	Poor	

Proportion of health posts that retrieved FF by name from MFI when the client visits HP	5	0	0	>=90%	Very good	Poor
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of HPs in which household heads recorded in MFI alphabetically	5	100	5	>=90%	Very good	Very good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion health posts that use all types of Recommended tally sheets	7	100	7	>=90%	Very good	Very good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of health posts that tally by using HH number after providing services for clients	5	0	0	>=90%	Very good	Poor
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of HPs which use household number during using diseases tally sheet	5	0	0	>=90%	Very good	Poor
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion HPs that 5-digit number has used for HH number	5	100	5	>=90%	Very good	Very good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	

Proportion of HPs that 7 digit numbers has used for individual identification number	5	100	5	>=90%	Very good	Very good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of health posts which use field books	6	50	3	>=90%	Very good	Poor
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of health posts which use tickler file/ box for appointment and defaulter tracing	7	0	0	>=90%	Very good	Poor
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of HPs which update FF for new HHs, births and deaths	7	0	0	>=90%	Very good	Poor
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Overall compliance of implementation of CHIS	100	37.4		>=90%	Very good	Poor
				80-90	Good	
				70-80	Fair	
				<=70	Poor	

In the qualitative study, majority of the participants described that they were not implementing CHIS as intended. They described the reason for this was absence of budget allocated for supportive supervision and review meeting, difficulty of understanding materials written by English language, absence of refreshment training for health care workers, absence of

continuous and strong supportive supervision and feedback system. The low commitment of health care workers, health extension workers and health care managers at all levels of health system was another major reason for poor implementation.

A 28-year-old male health officer at health Center said:

> "*Despite FF was designed to improve data quality at health post, health extension workers are not using CHIS as tool for data recording, reporting and source of information for providing service for clients… only two health care workers have taken training about CHIS in our health Center, almost all health care workers cannot support, give feedback and follow implementation of feedback"*

Another 33-year-old health extension worker said that:

> *"All the CHIS tools are written by English language that we can't understand well and number of health extension workers as our health post are not enough to implement CHIS as expected; we face difficulty to implement as expected"*

A 37-year-old health extension worker said:

> *"We are doing our best but not as much as expected. Because health centers and district health offices do not give emphasis on CHIS implementation; everyone remembers it every five years as election, they give training every five year but there are many health extension workers and other health care workers employed every year, no supportive supervision."*

A 28-year-old male health officer health Center director said:

> *"I have been working as health Center director for last two years, I took training six months back for the first time, before that time I knew nothing about CHIS. Here in our health Center most of the health care workers are new employee, it is me with more service; only me and one health officer have taken training about CHIS; it is difficult to support and monitor health extension workers"*

A 27-year-old male health officer, health Center director key informant said that:

> *"At now government has given great attention for health information that is why information revolution has launched as one of the four transformation agendas of health sector. But at lower level of health system the tone of the attention for information is low, managers at every level talks about CHIS but nothing is done at grass root level,*

HEWs don't give health cards for clients, tickler file for appointment and defaulter tracing, don't update FF for new births, deaths and new HHs"

A 35-year-old male BSc nurse from health office said that:

"The major reason for poor implementation is absence of commitment in HEWs, health care workers at health office and health Center. Health Center directors and health system managers at all level have no concern for the program, they don't make accountable for those not taking responsibility not only for CHIS but also for all activities"

6.4 Consistency of data in different sources

To check consistency of data, 846 FFs from six selected health posts were reviewed for eight indicators and then the data recorded at FF were crosschecked by actually visiting 846 HHs. In this study the consistency of data between FF and MFI, and consistency of data between FF and household data was checked by taking 846 FFs and their respective HHs. Even though only eight indicators were used, the overall consistency of data in different sources at Ayehu Guagusa district in 2021 was 83.4% which means the consistency of data recorded at FF and data actually we got during HH visit was good. Consistency of data in FF and MFI was 90.2% that is very good according to judgment criteria. Number of household members at family folder and actually at household was similar only 71.3% which was fair. For further information, see the table 6 below.

Table 6.1 3 summary of consistency of data in FF and actually at house, and at FF and MFI at Ayehu Guagusa district in 2021.

Indicators	Weight given (A)	Observed value(B) in %	Score(A*B)			Findings
Proportion of HHs in which the records of HH head, father, grandfather, house number and gote code are similar in FF and MFI	14	90.2	12.63	>=90%	Very good	Very good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	

Proportion of HHs in which household head's name is similar in FF and in house	12	88.6	10.62	>=90%	Very good	Good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of households in which house code is similar in FF and in house	13	90.6	11.78	>=90%	Very good	Very good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of households that number of family members are similar in FF and in house	13	71.3	9.27	>=90%	Very good	Fair
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of households that availability status of latrine is similar in FF and in house	12	91.6	10.99	>=90%	Very good	Very good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of household in which hand washing facility at latrine is similar in FF and in house	12	72.1	8.65	>=90%	Very good	Fair
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Proportion of households that availability status of solid waste disposal system is similar in FF and in house	12	81.6	9.79	>=90%	Very good	Good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	

Proportion of households that availability status of liquid waste disposal system is similar in FF and in house	12	80.7	9.68	>=90%	Very good	Good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	
Overall consistency	100		83.4	>=90%	Very good	Good
				80-90	Good	
				70-80	Fair	
				<=70	Poor	

In qualitative study, participants described that the data present at different sources might be different. They described that the major reason for the difference of similar data at different source might be due to HEWs did not update health information continuously and HEWs use different recording and reporting tools in addition to CHIS.

> *"Health extension workers are not using CHIS for data recording and reporting tool routinely. They use different registers and papers, they don't use health cards during service provision, they don't update FF for new births and deaths."* (a 41-year-old male BSc nurse from district health office)

6.5 Overall implementation of CHIS at Ayehu Guagusa in 2021

We evaluated the implementation of CHIS at Ayehu Guagusa district by using availability of necessary resources, compliance of implementation and consistency of data with 14, 17 and 8 indicators under each dimension respectively. The investigator in collaboration with stakeholders gave 30%, 40% and 30% weights for availability, compliance and consistency dimensions respectively having different weight for each indicator under each dimension. The availability of necessary resources was 79.33% which means fair, compliance of implementation was 37.4% which means poor, the consistency of data was 83.4% which means good and overall implementation of CHIS was 63.7% which means the implementation of CHIS at Ayehu Guagusa district in 2021 was poor.

Table 6.1 4 summary of overall implementation of community health information system at Ayehu Guagusa district in 2021.

	Dimension	Weight given(A) in %	Obtained value(B) in %	Score(A*B)	Agreed criteria	Judgmental value	Findings
1	Availability of necessary resources for CHIS	30%	79.33	23.8	>=90%	Very good	Fair
					80%-90%	Good	
					70%-79	Fair	
					<=70	Poor	
2	Compliance of implementation with guideline	40%	37.3	14.9	>=90%	Very good	Poor
					80%-90%	Good	
					70%-79	Fair	
					<=70	Poor	
3	Consistency of data at different sources	30%	83.4	25	>=90%	Very good	Good
					80%-90%	Good	
					70%-79	Fair	
					<=70	Poor	
	Overall implementation status of CHIS program 100%	100%		63.7	>=90%	Very good	Poor
					80%-90%	Good	
					70%-79	Fair	
					<=70	Poor	

Findings from qualitative study assured that health extension workers were not implementing CHIS as intended.

"Health extension workers are not using CHIS for data recording and reporting tool routinely. They use different registers and papers, they don't use health cards during service provision, they don't update FF for new births and deaths" (41-year-old male BSc nurse from district health office)

The major reasons for poor implementation were low capacity building (training, onsite training), weak monitoring system (review meeting, supportive supervision, feedback and following feedback), low motivation of implementers and decision makers (low commitment, absence of creating room for accountability), resources shortage (budget, manuals, reference materials), skill gap (difficulty of understanding tools written in English, absence of knowledge about the program).

"Frankly speaking health system managers at all levels have no concern for it. There is no continuous and strong supportive supervision system in each level from health centers to zonal health department. Most of the health care workers at health Center don't know about CHIS to support health extension workers, everyone demands training. There are around 34 health care workers in our health Center but only two have taken refreshment training for only two days. To know it detail, training should be given for all health care workers at least for five days." (a 29-year-old male public health officer from health Center)

7.DISCUSSIONS

For this evaluation availability of important resources, compliance of implementation and consistency of data in different sources with weight of 30%, 40% and 30% respectively was used.

7.1. Availability of resources

Without necessary resources, no one can implement and run any program. Availability of program resources is crucial to implement and run CHIS. Despite all the resources were not included as indicator in this study, the overall availability of necessary resources was 79.33% which was fair according to judgment criteria. But most of the participants of qualitative study claimed that most of the necessary resources are stored at health posts, the major problem was not resource unavailability but resource utilization. This result is less than implementation evaluation of HMIS/CHIS in Tigray which was (83%) (25). The difference might be happened due to the difference in study population, the previous study has included health centers and primary hospitals. Another reason for difference might be happened due to difference in indicators used and weights given for each indicator.

Health cards and integrated health cards are very important program resources designed to be issued for each individual in the kebele to record individual health information. All the health posts participated in the evaluation have health cards and integrated maternal and child health cards which was consistent with national CHIS guideline which suggested that all health posts must have all health cards. It also was much better than the study conducted in Hadiya(71.3%) ,Gurage(52.7%) and Tigray(88%) (17; 18; 25). This implies that all the household members in the evaluation area can be issued with health cards and the clients can be appointed as well as traced easily when defaulted from service easily. The reason for this differences might be due to the time gap that the government has increased concern for health information in the last 5 years. After the information revolution being one of the four health sector transformation agenda's, efforts were made to train managers, health professionals, and support staff on the reformed HMIS to enhance their knowledge and skills, improve data management (recording, reporting, data quality), and establish and institutionalize performance review teams (PRT) and data quality assurance mechanisms (7).

The availability of four types of CHIS tally sheets, reporting formats and shelves was 100% which was consistent with National CHIS guideline and similar with evaluation done at East Tigray zone (24) but much different from results of study conducted at Gurage zone that only

(52.7%) and (20.6%) HPs had adequate IMCH and tally sheets respectively (18). The reason for the differences with the Gurage zone might be due to weak indicator definition used at our study and strong definition at previous study for availability of these tools. In addition, weights given for the indicators at our study might vary from that of study done at Gurage zone. All the health posts included in the study had field books, MFI and tickler files that was almost consistent with study conducted in East Tigray region availability of field books (94%), MFI (100%)and tickler files(100%) (24). This implies careful planning of the HEWs in requesting the required tally sheets and better communication between district health office managers, health centers and health extension workers. It also implies that all services provided by the health posts could be tallied and registered and reports would be generated fully. Furthermore, the availability of shelves for family folder and tickler files also showed the endeavour of the local government in furnishing the health posts with the required facilities. This further indicates that all the family folders in each health posts could be handled on shelf. Availability of field books, MFI and tickler files in all the health posts in the district indicates that the district had given great emphasis for systematic house to house services, appointment for follow up care and defaulter tracing.

In this study there was no ink and brush at all health posts during study period which was nearly in lined with study conducted in South East Tigray zone that only 29% of HPs have inks and brushes (24). Inks and brushes are very important CHIS program inputs used to write identification number for each household at the door of their house and identification number for each village at shelves at HPs for easy retrieval of FF (8). HEWs use inks and brushes during registering HH data at FF for the first time and regularly for newly established households and villages to give identification number at shelves. Participants of qualitative study in our study assured that these program inputs were provided from Regional health bearu to zonal health department and then to district health office. Finally district health offices dispatch to health posts. So the reason for the unavailability of these tools might be due to the failure of distribution from higher level health systems during the study period. These tools are cheap and easily accessible at local markets and the reason for the unavailability might also be low commitment of program implementer towards the program.

Health extension workers face difficulty of understanding materials written in English language. Amharic version manual is a reference material that guides health extension workers how to use program resources. Availability of Amharic version manual and training of health extension workers affects the implementation of CHIS (17). There was at least one HEW who

had taken refreshment training in the last six months in all health posts. Despite many of HEWs face difficulty of understanding how and when to use existing materials, there was no Amharic version manual in all health posts which was inconsistent with study conducted in South East Tigray zone that 76% of health posts had Tigrigna version manual (24). The reason for the difference might be due to low consideration of language influence on utilization of program materials given by Amhara regional health bearu.

7.2 Compliance of implementation of CHIS with guidelines

Although all the variables were not evaluated in this study due to time and resource shortage, the overall compliance of implementation of CHIS in Ayehu Guagusa in 2021 was 37.4% which is very low compared with national CHIS guideline and poor according to judgment criteria. This was also very low compared to evaluation conducted at South East Tigray zone(92.4%) (24). The difference might be due to difference in indicators and weights given for each indicator in our study and Tigray region. Despite frequent supportive supervision and training has a significant role in identifying the gaps and improving health extension worker's capacity on how to use program resource, there was no strong and frequent supportive supervision from higher level health systems and regular refreshment training for health extension workers. Most of the health care workers at district health office and health centers never had taken training about CHIS at the study area due to absence of budget allocated for program improvement. The essential role of feedback and external assistance in the form of supportive supervision is to reinforce behaviour change though there was no integrated supportive supervision and feedback system in our study area.

Even though CHIS was innovated to improve the quality of data generated at health post level by reducing workload and integrating different data source in one poach, all the health posts in this study were using different registration and reporting tools in addition to CHIS. This was almost consistent with study conducted at Gurage zone that only 16.7% of HPs use FF independent of other parallel registration and reporting tools (18). But process evaluation done at Mekele zone shown only 22.8% of HPs use parallel registration and reporting tools (25). The local government, HEWs and other stakeholders concern for information revolution, supportive supervision and feedback system at this study area might be weak and relatively strong at Tigray region (24). The reason for better achievement at Mekele zone might also be due to difference in study population that included health centers and hospitals which might be with better infrastructure and skilled health professional. HEWs who use CHIS for recording

and reporting independently were four times more likely to utilize information for decision (25).

No health post was using LQAS to check data quality after compiling report monthly, only half of the HPs use sometimes. From those that did LQAS sometimes all select data element by guessing. This implies that the quality of data generated at local level was almost unknown. Managers at different level of health system were using this data for planning, resource allocation and other different managerial and clinical decisions. Unlike this, study conducted at Hadiya zone shown that 73.8% of HPs do LQAS monthly and 46.3% select data elements randomly (17). This might be due to negligence, lack of skill on how to do LQAS, low concern given for information quality by stakeholders, weak supportive supervision and feedback system in our study.

CHIS was innovated to know vital statistics by recording new births, new deaths and new HHs continuously, and updating kebele demographic profile annually. This helps to know exact number of HHs, population by sex and age, resources available in the kebele, basic health indicators in the kebele and environmental sanitation of kebele. This in turn affects planning, resource allocation and decision making at different sectors and levels. But there was no HP that update FF for new births, new deaths, new HHs and kebele demographic profiles as intended. This result was inconsistent with study done at South East Tigray zone that 94% of HPs update FF for new births, deaths and new HHs and all HPs update kebele demographic profiling formats annually (24). This difference might be due to presence of committed HEWs, availability of different reference materials and manuals written in Tigrigna language and better supportive supervision and feedback system at South East Tigray zone (24). In our study area only a few health professionals at health Center and district health office support and supervise, give feedback and follow implementation of feedback due to absence of commitment and chance for training because of resource shortage.

Despite health cards and integrated health cards were designed as part of CHIS to simplify system of appointing clients who demand follow up service and trace defaulters from appointment easily by using individual cards, there was no HP that has given health card for all members. Only 16.7% of health posts were providing health cards when client visits health post. There was no HP that retrieve FF from shelf by using MFI though all HPs had MFI. This result was inconsistent with study conducted in South East Tigray zone that 67% of HPs retrieve FF from shelf by using MFI and all HPs had given health cards for clients (24). This

might be due to skill gap and difficulty of understanding manuals and reference materials written in English language. All health posts had no reference materials and manuals written in Amharic language.

7.3 Consistency of data in different sources

Consistency of data in different sources is an indicator of quality of data. The health and health related data inconsistency in different sources and in different times in similar sources was the major challenge in Ethiopia (27). In this study we checked the similarity of household data recorded in FF and actually at households. Despite only a few indicators were used to study consistency of data in FF and MFI as well as consistency of data between FF and actually in household, the overall consistency of data at Ayehu Guagusa district in 2021 was 83.4% which was good according to judgment criteria but bellow national standard. In this study all the visited health posts were using other recording and reporting tools in addition to the standard CHIS tool. So this might contribute to the inconsistency of data recorded in all the tools. This might also be due to HEWs might not update FF after service provision at health posts and during home to home visit or not visiting HH at all. This implies there was under reporting or over reporting at the health posts in the district that directly affects planning and resources allocation in all levels of health system as well as service provision and health outcome of the community. This result was similar with evaluation done at Tigray region(83.5%) (24).

Master family index is one component of CHIS which is important for recording the house hold heads alphabetically and use to retrieve the family folder from the shelf easily (8). It is like the key to open the house and to enter in to house. Household head name at MFI and FF was checked to evaluate consistency of data between FF and MFI and 90.2% of HH heads' name was similar in FF and MFI which was very good according to judgment criteria and national expectation. But this result was less than the result of evaluation done at South East Tigray zone which was 97.7% (24). This indicates that there was a gap in registering all HH heads either at MFI or FF correctly which makes FF retrieval difficult during service provision for family members.

Number of household members registered in FF and number of household members actually at house was similar only in 71.3% of HHs. This implies family folders were not updated for new births, deaths and migrations. Unless continuously updated, number of HH member may increase by new births, immigrations or decrease by new deaths and emigrations. So using FF

as source of demographic data for planning, resource allocation and as sampling frame during conducting research affects representativeness and generalizability.

7.4 Overall implementation of CHIS at Ayehu Guagusa in 2021

CHIS was designed to be used for data collection and documentation to meet the necessary information needs for providing family-focused promotive, preventive and environmental health services at community level. The overall implementation of CHIS at Ayehu Guagusa district in 2021 was 67.3% which was poor according to judgment criteria and very low compared to national expectation that is 100%. The reason for this low result was no integrated and frequent supportive supervision and feedback system, low commitment of HEWs, no continuous refreshment training for HEWs, no training for health care workers who work at health centers and district health offices, no review meeting and no budget allocated for the program improvement. This result was lower than the result of study conducted in South East Tigray zone (87.5%) and evaluation done at Mekele zone Tigray region (75.2%) (24; 25). The difference might be happened due to difference in dimensions, indicators and weights given for each indicator. The reason for the difference with the study conducted at Mekele zone Tigray region might be difference study participants that previous study has included health centers in addition to health posts that might have better professional training skill and better infrastructure.

8. LIMITATIONS OF THE EVALUATION

The study was only descriptive so that we cannot develop inferences. Another limitation of this study was weights for each indicator and judgment criteria was developed by stakeholders that there may be subjectivity and might affect overall result.

9. CONCLUSIONS

According to the evaluation results, we can conclude that the overall implementation status of community health information system in Ayehu Guagusa district was poor according to judgment criteria and low compared to national expectation which demands major modification of plan within short period of time.

In general, the overall availability of necessary resources for the implementation of CHIS was fair according to the judgment criteria. We can say that most of the CHIS materials were available in all health posts of the district. But some necessary resources like inks and brushes, Amharic version manual and reference materials were not there in all visited health posts. The reason for the unavailability of these materials was low commitment of program implementers and these tools were provided by regional health bearu. The implementation of the CHIS system might be affected directly by the unavailability of these resources.

The compliance of implementation of CHIS was poor that needs major improvement in many areas in a short period of time. Most of the health posts were not utilizing their resources according to the standard guideline. They were not updating FF for new births, new deaths and new HHs. They were not using available resources like health cards, demographic profiling formats, tickler files and tally sheets for the intended purpose according to standard guideline. Shortage of resources, difficulty of understanding tools written by English language, weak supportive supervision and feedback from health centers and district health office, low training for HEWs and health care workers were the major reasons for poor implementation.

Regarding the consistency of the data elements in the FF and the actual information in the households as well as data elements in the FF and MFI, it can be concluded that it was good (83.4%) according to the judgment criteria which needs notable improvements.

10. RECOMMENDATIONS

Depending on the result of evaluation, I recommend different activities for different individuals and institutions as follows:

Health posts:

1.Better to have request plan and request unavailable CHIS materials accordingly

2. To update FF for new births, new deaths and new HHs

3. To update demographic profiling formats annually

4. To give individual health cards for all clients and HH members

5. Use tickler files for appointment and defaulter tracing

6.Use field book independent of FF

7. Don't use other recording materials parallel to already available CHIS tools

Health Centers:

1. Support health posts according to plan, give feedback and follow implementation of feedback

2. Request unavailable CHIS tools, dispatch to health posts and follow wise use of tools

District health office:

1. Support, give feedback and follow implementation of feedback for HPs and health centers by giving concern for CHIS.

2. Request materials like Amharic version manual, inks and brushes and other materials from zonal health department and then distribute to health centers and follow distribution of materials to HPs.

3. Give training to all HEWs, health care workers and managers at health Center and health office.

4. Review meeting with concerned stakeholders

5. Allocate budget for training, supportive supervision and review meeting

District administrative:

1. Allocate the resources for refreshment training, review meeting and supportive supervision and follow wise utilization of allocated resources.

Zonal health department:

1. Continuous supportive supervision and coordinating the implementation.

2. Ensure the availability and planning for the resource replacement of health posts in shortage.

3. Support in budget allocation for monitoring system and capacity building.

For all researchers and health care managers

1. I recommend researchers not to use CHIS as sampling frame to choose study participants

2. I also recommend researchers to study including analytic approach.

3. I recommend managers at different level not to use CHIS as source of vital statistical information for planning and resource allocation

11.META-EVALUATION

11.1 Utility

The stakeholders that are going to use evaluation findings have identified and involved in the evaluation process. The purpose of this evaluation was to improve operations of CHIS program that helps decision makers, program implementers, and those affected by the program. The methods and sources of data were selected by discussing with stakeholders and appropriate to the intended use and purpose of the evaluation. The perspectives, procedures and rationale used have described carefully to interpret findings. Reports have also described carefully, significant findings and reports will be shared to users. Finally, the results will be presented for stakeholders. So, the findings of this process evaluation will be utilized by different stakeholders particularly primary users of the evaluation findings.

11.2 Propriety

The results of this evaluation were considered all ethical issues and useful for the improvement of implementation of CHIS in the district. The design and focus of evaluation was adequately detail which have included examination of experiences of those who operate the program. The evaluation findings are important for the welfare of those involved in the evaluation and those affected by its findings. The data collection tools were designed by considering the ethical issues to the rights and welfare of human subjects. Ethical clearance was taken and consent of the study subjects was given due emphasis. There was no procedure that affects privacy, dignity, confidentiality, and rights of participants. The conclusions are easily understandable for the stakeholders and the findings will be made easily accessible to all stakeholders.

11.3 Feasibility

Feasibility standard was used to ensure weather the evaluation was realistic. The program has national guideline and different reference materials with measurable program components. The program was in the stage of implementation. The data collection methods and sources were chosen by investigator in collaboration with stakeholders by considering available time and budget as well as evaluators skill. This evaluation was conducted by available resources and within planned time frame to ensure that an evaluation was realistic and to produce sufficient information. So, it was feasible to evaluate the program.

11.4 Accuracy

To paint an accurate picture of the program, we have tried to engage those who operate the program, who are affected by the program and decision makers. The program description was comprehensive that factors that likely influence the program can be easily identified. The extent of implementation of community health information system has described and documented. The methods and procedures of the evaluation were systematically planned and was monitored and assessed. The information collected in an evaluation was systematically reviewed for answering an evaluation questions effectively. The evaluation results impartially and fairly reflect evaluation findings.

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ANNEXES

Information sheet

Introduction: this information sheet and consent form is prepared by the investigator whose main aim is to evaluate quality of process community health information system implementation in Ayehu Guagusa district health posts. The investigator is MPH student at Bahirdar university college of medicine and health sciences school of public health.

Purpose: The purpose of the evaluation is to assess process of community health information system implementation in Ayehu Guagusa health posts. Hence, the finding of the evaluation will contribute to improve the community health information system implementation in the study area and the country in general.

Procedure: in order to evaluate the community information system implementation, we invite you to take part in the project. If you are willing to participate in our evaluation, you need to understand and sign the consent form. Then, you will be asked to give your response by the data collectors. For this questionnaire based study, participants are health extension workers, health care managers and HHs during the evaluation period. All the responses given by the participants and the results obtained will be kept anonymous and confidential using coding system whereby no one will have access to your responses.

Risk and/or Discomfort: By participating in this evaluation you may feel that it has some discomfort specially on wasting your time (about 40-50 minutes) but this may not be too much as you are going to health institutions for you and your family health care and comparing its potential benefits it contributes to the overall improvement of the health status of the community. There is no risk in participating in this evaluation.

Benefits: If you participate in this study, you may not get direct benefit but your participation is likely to help us in assessing implementation of CHIS and to identify the gaps and strengths, it will help to improve the program implementation that in turn helps to improve service provision and utilization.

Incentives: You will not be provided any incentives to take part in this project.

Confidentiality and Anonymity: The information that we will collect from this research project will be kept confidential. Information about you that will be collected from the study will be stored in a file, which will not have your name on it, but a code number assigned to it.

Which number belongs to which name will be kept under lock and key, and it will not be revealed to anyone except the principal investigator.

Right to Refuse or Withdraw: You have the full right to refuse from participating in this research (you can choose not to respond some or all of the questions) if you do not wish to

participate; and this will not affect in any case. You have also the full right to withdraw from this study at any time you wish to, without losing any of your rights as a member of the institution or community.

Persons to contact: If you have any questions, you can contact me by: -

Phone: -+25936531079

Email: - Abiyotkassahun4@gmail.com

Informed Consent form

I want to thank you for taking time to meet with me today. My name is _____from Bahirdar University and I would like to talk to you about your experiences in the CHIS program. Specifically, as one components of our overall program evaluation we are assessing program implementation in order to capture lessons that can be used in future to improve the program. The interview should take 40 -55 minutes. All responses will be kept confidential. This means that your interview responses will only be shared with research team members and we will ensure that any information we include in our report does not identify you as the respondent. Remember, you don't have to talk about anything you don't want to and you may end the interview at any time. Are there any questions about what I have just explained? Are you willing to participate in this interview?

Signature: Interviewee _____Interviewer _____

Date_____

I. CHIS Resource Inventory checklist

Instruction: This checklist will be used to conduct an inventory of availability of infrastructure and program resources in each health post for the implementation of the CHIS program. And it will be answered by interviewing the health extension workers and observing as needed.

Code of catchment health Center: _____

Code of health post: _____

Total number of households_____

Total number of HEWs_____

Number of trained HEWs_____

Complete the following table by asking the health extension worker or by observing Essential materials and Functional Equipment in place (in use) on the day of visit (Put a √ mark)

Code	Questions		Possible answers			If yes, observe
			Yes(1)	Yes, but not enough(0)	No (2)	
A01	Does health post have family folders /pouches					
A02	Does health post have CHIS manual Amharic version					
A03	Does health post have Health cards (male/Female) Integrated cards	Health cards				
		Integrated health cards				
A04	Does health post have CHIS tally Sheets	Service delivery tally				
		Diseases information tally				
		Tracer drug availability tally				
		Family planning dispensed count tally				
A05	Does health post have CHIS reporting formats	Diseases				
		Services				
A06	Does the health post have shelf					
A07	Does the health post have tickler file					

A08	Does the health post have Field book					
A09	Does the health post have Master Family index (MFI)					
A10	Does the health post have inks & Brushes	Inks				
		Brushes				
A11	Does the health post have NCD screening format					
A12	Does the health post have nutrition screening					
A13	Does the HP have kebele profiling format	Demographic profiling format				
		Resource mapping format				
		HH environmental sanitation formats				
		Basic Health Indicators Compilation Format				
A14	Is there trained HEW worker within last 6 months					

Thank you!

Data collector name: _____ Date of data collection: _____ Signature: _____

Checked by/supervisors name: _____ Checked date_____Signature: _____

II. Observation checklist

Instruction: This checklist will be used to check compliance of implementation with standard guidelines in each health post. It will be answered by interviewing the health extension workers and observing as needed.

Complete the following table by asking the health extension worker and observing the FF or service provided on the day of visit (Put a √ mark)

Code	Indicator	Status of compliance			Remark
		Yes	No	NA	
C01	Family folder / pouch provided to all HH in the kebele				
C02	The family folder / pouch organized and shelved according to HH number				
C03	The health cards provided to clients when a member comes to HP				
C04	The health cards provided to all members				
C05	FF retrieved if a client comes to this health post by name from MFI				
C06	FF not retrieved if a client comes to this health post				
C07	All house hold head recorded in the MFI alphabetically				
C08	The health post used tally sheets				
C09	The service provided to a client has tallied using HH number				
C10	The service provided to a client has tallied using vertical line				
C11	In disease tally sheet has tallied using HH number				
C12	In disease tally sheet has tallied by vertical line				
C13	5-digits has used for HH number				
C14	7-digits has used for individual number				
C15	Tickler files used For appointment & defaulter tracing				
C16	Tickler files used for appointment only				
C17	Tickler files used for defaulter tracing only				
C18	FFs should be updated for all(new HH, new birth &death)				

C19	FFs should be updated for new birth and death only				
C20	FFs should be updated for new HH only				
C21	FFs should be updated for death or birth only				
C22	LQAS done every month after a report compiled				Look recent last 6 month HMIS report
C23	LQAS Sometimes done after a report compiled				
C24	LQAS not done at all				
C25	Data element selected by guessing for checking consistency in the LQAS method				
C26	Data element selected randomly for checking consistency in the LQAS method				
C27	HEWs use field books instead of FF dependently				
C28	HEWs use field books instead of FF independently				

III. Document review and HH observation checklist

Instruction: This checklist will be used to check consistency of CHIS data in FF and household as well as in MFI and FF. It will be answered by interviewing the health extension workers and observing as needed.

Code of catchment health Center: _____

Code of health post: _____

Complete the following table by asking the health extension worker and observing HHs, FFs and MFI on the day of visit (Put a √ mark)

Code	Consistency indicators				Remark
		Yes	No		
CC1	The records consistent between MFI & FF(HH head, father grandfather names, house number, gote code)				Look all the selected FFs, MFI
CC2	Does HH head name the same in FF and in house				

CC3	Does the house number the same in FF and in house				
CC4	Does the number of HH members the same in FF and in house				
CC5	Is availability of latrine the same in FF and in house				
CC6	Does the availability of hand washing the same in FF and in house				
CC7	Does the availability of solid waste system the same in FF and in house				
CC8	Does the availability of liquid waste system the same in FF and in house				

Questions to be used during household survey and FF observation to check consistency of information between HH and FF.

1. code of the HH_____

2.HH head's name_____

3. Is there a latrine at HH? 1.yes 2. No (observe)

4. If the answer for question 3 is yes, what is the type of latrine? 1, VIP 2. Pit latrine

5. Is there a solid waste disposal system? 1. Yes 2. No

6. Is there a liquid waste disposal system? 1. Yes 2. No

IV. Questionnaire: Key informants interview guide for health extension workers

Instruction: This questionnaire/tool will be used to assess the CHIS program implementation extent and organization as well as factors associated with implementation of the program at the heath post level and will be answered by health extension worker.

In general, the following core areas will be addressed:

A. CHIS implementation extent and organization of implementation at the health post

B. Factors that support implementation/Barriers to program implementation

C. Challenges and solutions

A. CHIS implementation and organization of implementation at the health post

1. Could you please briefly describe me for what and how you are implementing CHIS in this health post? _____

_____

B. Factors for CHIS implementation/Barriers to implementation

2.Are the program resources in place to implement CHIS as major health service demand identification and provision indicator tool at this health post? A.yes B. No If No, why? If yes, how?

_____

_____

3. In your opinion, from health practice perspective, what are some of the prominent problems or factors that affect implementation of CHIS at health post?

_____

_____

C. Changes observed

4 What are some of the changes you observed in information quality and health service provision after introduction of CHIS program at this health post?

_____

_____

5. Do you think that you are well trained on CHIS? If not, why?

_____

_____

D. Solutions for the observed challenges

6. What action did you take to alleviate the problem you encountered?

_____

_____

7. Do you have any suggestions that you think are solutions to improve the quality of CHIS program implementation at your health post? If yes, describe them_____

_____

Thank you!!

Data collector name _____ Date of data collection _____

Signature_____ Checked by/supervisors name_____ Checked date _____Signature_____

V. Questionnaire: Key informants interview guide for health care managers

Instruction: This guide will be used to assess program management, barriers to program implementation and measures taken to alleviate the problems. It will be answered by the district health office plan and program officer, district health office HEP officer and Health Center director.

Identification and background characteristics of the respondent

1. Code of the health institution: _____
2. Date of interview: _____
3. Sex of respondent: _____
4. Age of respondent: _____
5. What is your profession?
   - Health officer
   - Mid-wife nurse
   - Clinical nurse
   - Laboratory technician
   - Pharmacist
   - Other, specify_____
6. How long you have been in this position (months/Years)? _____

A. Information related to program management

7. Is there support system (ISS) in this health facility for health extension workers? Yes/ no
8. If yes for Q7, could you please describe how frequently conducted? _____
9. Who conduct ISS? _____
10. If not for Q7 why? _____
11. Is there continuous implementation improvement system in this health facility? Yes /no
12. If for Q11 yes, could you please describe how it will be conducted?

_____

13. If not for Q11 why? _____
14. Is CHIS the component of your supportive supervision check list? A.yes B .no If no, why?

_____

_____

15.if yes for Q 14, how do you think is its implementation process?

_____

_____

16. Do you think CHIS decreases the work load and improves data utilization for decision at local level?

A. yes B.no

17. If yes, how? _____

18. if No, why?

B. Barriers to program implementation

18. From your experience what are the barriers to implementation of CHIS program in this health facility? How and why?

C. Solutions to improve CHIS program implementation

19. Are there measures taken by your office to improve quality of CHIS program implementation? A. yes B. no

20. If staff training, for whom and how?

21. If integrated Supportive supervision (ISS), who and how?

22. If review meeting, when and how?

23. If hiring of HEWs, when and how?

24. If others (specify) _____

25. Finally, if you have any suggestions concerning extent of program implementation; describe

please_____

_____

Thank you!!

Data collector name _____ Date of data collection _____

Signature_____

Checked by/supervisors name_____ Checked date _____Signature_____

Matrix of analysis, judgment and indicator definition

Table 5.1 1 information matrix for indicators used for CHIS program implementation in Ayehu Guagusa district, 2021

Dimensions	Respective indicators	Source of data	Data collection method	Data collection tool
Availability dimension	Proportion of HPs with trained HEWs on CHIS.	HEWs	Interview	Self-administered questionnaire
	Proportion of HPs that have kebele profiling format	HPs HEWs	Resource inventory	Resource inventory checklist
	Proportion of HPs which have pouch/FF	HPs HEWs	Resource inventory	Resource inventory checklist
	Proportion of HPs which have CHIS manual Amharic version	HPs	Resource inventory	Resource inventory checklist
	Proportion of HPs that have health cards	HPs	Resource inventory	Resource inventory checklist
	Proportion of health posts that have tally sheets	HPs	Resource inventory	Resource inventory checklist
	Proportion of health posts that have reporting formats	HPs	Resource inventory	Resource inventory checklist
	Proportion of health posts that have enough shelf	HPs	Observation	Observation checklist
	Proportion of health posts that have tickler file	HPs	Resource inventory	

				Resource inventory checklist
	Proportion of health posts that have field books	HPs	Resource inventory	Resource inventory checklist
	Proportion of health posts that have MFI	HPs	Resource inventory	Resource inventory checklist
	Proportion of health posts that have inks and brushes	HPs	Resource inventory	Resource inventory checklist
	Proportion of health posts that have NCD screening formats	HPs	Resource inventory	Resource inventory checklist
	Proportion of health posts that have nutrition screening formats	HPs	Resource inventory	Resource inventory checklist
Compliance	Proportion of HPs that provide FF for all HHs	HEWs FF	Interview Observation	Observation checklist Interview guide
	Proportion of health posts that organize FF according to HH number	FF HEWs	Document review Observation	Document review template Observation checklist
	Proportion of health posts that have provided health cards to clients	Pouch/health cards HEWs	Document review Observation	Document review template Observation checklist

	Proportion of health posts who retrieved FF by name from MFI when the client visits HP	FF HEWs	Document review Observation	Document review template Observation checklist
	Proportion of HPs in which household heads recorded in MFI alphabetically	MFI HEWs	Document review	Document review template
	Proportion health posts who use all types of Recommended tally sheets	Tally sheets HEWs	Document review	Document review template
	Proportion of health posts who tally by using HH number after providing services for clients	Tally sheets HEWs	Document review Observation	Document review template Observation checklist
	Proportion of HPs who use household number during using diseases tally sheet	Tally sheets HEWs	Document review Observation	Document review template Observation checklist
	Proportion HPs that 5-digit number has used for HH number	FF HEWs	Document review	Document review template
	Proportion of HPs that 7 digit numbers has used for individual identification number	FF HEWs	Document review	Document review template
	Proportion of health posts who use field books	Field book HEWs	Document review	Document review template

	Proportion of health posts who use tickler file for appointment and defaulter tracing	Tickler file HEWs	Document review Observation	Document review template Observation checklist
	Proportion of health posts who do LQAS monthly	HMIS report	Document review	Document review template
	Proportion of health posts who select data elements to do LQAS randomly	HMIS report HEWs	Document review	Document review template
	Proportion of HPs who update FF for new HHs, births and deaths	FF HEWs	Document review	Document review template
	Proportion of HPs that update kebele profiling format annually	FF HEWs	Document review	Document review template
	Proportion of health posts who use parallel registration with CHIS	Registration books HEWs	Document review	Document review template
	Proportion FFs in which the records of HH head, father, grandfather, house number and gote code are similar in FF and MFI	FF MFI HEWs	Document review	Document review template
	Proportion of HHs in which household head's name is similar in FF and in house	FF HHs HEWs	Document review Interview	Document review template Interview guide

	Proportion of households in which house code is similar in FF and in house	FF HHs HEWs	Document review Interview	Document review template Interview guide
	Proportion of households that number of family members are similar in FF and in home	FF HHs HEWs	Document review Interview	Document review template Interview guide
	Proportion of households that availability status of latrine is similar in FF and in house	FF HHs HEWs	Document review Observation	Document review template Observation checklist
	Proportion of household in which hand washing service at latrine is similar in FF and in house	FF HHs HEWs	Document review Observation	Document review template Observation checklist

Table 5.1 2 indicator definition for evaluation of CHIS program in Ayehu Guagusa district, 2021.

Dimension	Indicator	Numerator	Denominator
Availability	Proportion of HPs with at least one trained HEW on CHIS.	Number of HPs with at least one trained HEWs on CHIS	All HPs that participate in evaluation
	Proportion of health posts that have pouch/FF	Number of health posts that have pouch/FF	All HPs that participate in evaluation
	Proportion of HPs who have CHIS manual Amharic version	Number of health posts who have CHIS manual Amharic version	All HPs that participate in evaluation

	Proportion of HPs who have health cards	Number of HPs who have health cards	All HPs that participate in evaluation
	Proportion of health posts who have tally sheets	Number of health posts with four types of tally sheets	All HPs that participate in evaluation
	Proportion of health posts who have reporting formats	Number of health posts who have three reporting formats	All HPs that participate in evaluation
	Proportion of health posts who have shelf	Number of health posts who have shelf	All HPs that participate in evaluation
	Proportion of health posts who have tickler file	Number of health posts who have tickler file	All HPs that participate in evaluation
	Proportion of health posts who have field books	Number of health posts who have field books at least one for each HEW	All HPs that participate in evaluation
	Proportion of health posts who have MFI	Number of health posts who have MFI for each FF	All HPs that involve in evaluation
	Proportion of health posts who have inks and brushes	Number of health posts who have inks and brushes at least one for each HEW	All HPs that involve in evaluation
	Proportion of health posts who have nutrition screening formats	Number of health posts who have child nutrition screening formats at least one for each HEW	All HPs that involve in evaluation
	Proportion of health posts who have nutrition screening formats	Number of health posts who have NCD screening formats at least one	All HPs that involve in evaluation

Compliance	Proportion of HPs who provide FF for each HH	Number of HPs who provide FF for each HH in kebele	All HPs that involve in evaluation
	Proportion of health posts that organize FF according to HH number	Number of health posts that organize selected FFs according to HH number	All HP that involve in evaluation
	Proportion of health posts who provided health cards to clients	Number of health posts who provided health cards to clients who visited a month before the start of study period.	All HPs that involve in evaluation
	Proportion of health posts who retrieved FF by name from MFI when the client visits HP	Number of health posts who retrieve FF by name from MFI when the client visits HP during data collection	All HPs that involve in evaluation
	Proportion of HPs in which household heads recorded in MFI alphabetically	Number of HPs in which selected household heads recorded in MFI alphabetically	All HPs that involved in evaluation
	Proportion health posts who use all types of Recommended tally sheets	Number health posts who use all types of Recommended tally sheets	All HPs that involved in evaluation
	Proportion of health posts who tally by using HH number after providing services for clients	Number of health posts who tally by using HH number after providing services for clients in the last three months	All HPs that involve in evaluation
	Proportion of HPs who use household number during using diseases tally sheet	Number of HPs who use household number during using diseases tally sheet in the last 3 months	All HPs that involve in evaluation

	Proportion HPs that 5-digit number has used for HH number	Number of HPs that 5-digit number has used for HH number for selected FFs	Total FFs selected for evaluation
	Proportion of HPs that 7 digit numbers has used for individual identification number	Number of HPs that 7 digit numbers has used for individual identification number for selected FFs	Total FFs selected for evaluation
	Proportion of health posts who use field books	Number of health posts who use field books	All HPs that involve in evaluation
	Proportion of health posts who use tickler file for appointment and defaulter tracing	Number of health posts who use tickler file for appointment and defaulter tracing	All HPs which involve in evaluation
	Proportion of health posts who do LQAS monthly	Number of health posts who do LQAS monthly in the last 12 months	All HPs that involve in evaluation
	Proportion of health posts who select data elements to do LQAS randomly	Number of health posts who select data elements to do LQAS randomly 12 months	Health posts who do LQAS
	Proportion of HPs update kebele profiling format annually	HPs who update annually in the last 2 years	HPs that have format
	Proportion of health posts who use parallel registration with CHIS	Number of health posts who use parallel registration with CHIS	All HPs that involve in evaluation
	Proportion of HPs who update FF for new HHs, births and deaths	Number of HPs who update FF for new HHs, births and deaths selected FFs	All HPs that involve in evaluation
	Proportion of HHs in which the records of HH head, father, grandfather,	Number of HHs in which the records of HH head, father, grandfather, house number	Total FFs selected for evaluation

	house number and gote code are similar in FF and MFI	and gote code are similar in FF and MFI	
	Proportion of HHs in which household head's name is similar in FF and in house	Number of HHs in which household head's name is similar in FF and in house	Total FFs and respective houses selected for study
	Proportion of households in which house code is similar in FF and in house	Number of households in which house code is similar in FF and in house	Total FFs and respective houses selected for study
	Proportion of households that number of family members are similar in FF and in house	Number of households that number of family members are similar in FF and in house	Total FFs and respective houses selected for study
	Proportion of households that availability status of latrine is similar in FF and in house	Number of households that availability status of latrine is similar in FF and in house	Total FFs and respective houses selected for study
	Proportion of household in which hand washing service at latrine is similar in FF and in house	Number of household in which hand washing service at latrine is similar in FF and in house	Total FFs and respective houses selected for study

Table 5.13 matrix of analysis and judgment for process evaluation of CHIS at Ayehu Guagusa district in 2021.

Indicator	Weight given (A) in %	Observed value(B) in %	Score(A*B)	Agreed criteria	Judgmental parameter	Judgment
Proportion of HPs with at least one trained HEWs on CHIS.	7			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	

				<=70	Poor	
Proportion of HPs which have pouch/FF	7			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of HPs that have CHIS manual Amharic version	8			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of HPs that have health all cards	8			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of health posts that have all tally sheets	7			>=90%	Very good	
				80%-90%	Good	
				70%-79%	Fair	
				<=70	Poor	
Proportion of health posts that have all reporting formats	7			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of health posts that have shelf	7			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of health posts	7			>=90%	Very good	
				80%-90%	Good	

which have tickler file				70%-79	Fair	
				<=70	Poor	
Proportion of health posts that have field books	7			80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
				>=90%	Very good	
Proportion of health posts that have MFI	6			80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
				>=90%	Very good	
Proportion of health posts that have inks and brushes	8			80%-90%	Very good	
				70%-79	Good	
				<=70	Fair	
				>=90%	Poor	
Proportion of health posts that have nutrition screening formats	7			80%-90%	Very good	
				70%-79	Good	
				<=70	Fair	
				>=90%	Poor	
Proportion of HPs which have all kebele profiling formats	7			80%-90% 70%-79 <=70 >=90%	Very good Good Fair Poor	
Proportion of health posts that have NTD screening formats	7			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
	100			>=90%	Very good	

Overall availability of resources				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Indicator	Weight given(A%)	Observed value(B)(%)	Score(A*B)	Agreed criteria	Judgmental parameter	
Proportion of HPs that update kebele profiling format annually	6			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of health posts who do LQAS monthly	6			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of health posts who select data elements to do LQAS randomly	5			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of health posts which do not use parallel registration with CHIS	6			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of HPs which provide FF for each HH	7			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of health posts that organize FF alphabetically	7			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of health posts which provided health cards to all members	6			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of health posts that retrieved FF by name from MFI when the client visits HP	5			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
	5			>=90%	Very good	

Proportion of HPs in which household heads recorded in MFI alphabetically				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion health posts that use all types of Recommended tally sheets	7			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of health posts that tally by using HH number after providing services for clients	5			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of HPs which use household number during using diseases tally sheet	5			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion HPs that 5-digit number has used for HH number	5			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of HPs that 7 digit numbers has used for individual identification number	5			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of health posts which use field books independently of FF	6			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of health posts which use tickler file for appointment and defaulter tracing	7			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
	7			>=90%	Very good	

Proportion of HPs which update FF for new HHs, births and deaths				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Overall compliance of implementation of CHIS	100			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	

Indicators	Weight given (A)	Observed value(B)	Score(A*B)	Agreed criteria	Judgmental value	Findings
Proportion of HHs in which the records of HH head, father, grandfather, house number and gote code are similar in FF and MFI	14			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of HHs in which household head's name is similar in FF and in house	12			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of households in which house code is similar in FF and in house	13			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of households that number of family members are similar in FF and in house	13			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of households that availability status of latrine is similar in FF and in house	12			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of household in which hand washing facility at latrine is similar in FF and in house	12			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of households that availability status of solid waste disposal system is similar in FF and in house	12			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Proportion of households that availability status of liquid waste disposal system is similar in FF and in house	12			>=90%	Very good	
				80%-90%	Good	
				70%-79	Fair	
				<=70	Poor	
Overall consistency dimension	100%			>=90%	Very good	
				80%-90%	Good	

					70%-79	Fair	
					<=70	Poor	
	Dimension	Weight given(A) in %	Obtained value(B) in %	Score(A*B)	Agreed criteria	Judgmental value	Findings
1	Availability of necessary resources for CHIS	30%			>=90%	Very good	
					80%-90%	Good	
					70%-79	Fair	
					<=70	Poor	
2	Compliance of implementation with guideline	40%			>=90%	Very good	
					80%-90%	Good	
					70%-79	Fair	
					<=70	Poor	
3	Consistency of data at different sources	30%			>=90%	Very good	
					80%-90%	Good	
					70%-79	Fair	
					<=70	Poor	
	Overall implementation status of CHIS program 100%	100%			>=90%	Very good	
					80%-90%	Good	
					70%-79	Fair	
					<=70	Poor	

VI. Declaration sheet

I, the under signed, declared that this is my original work, has never been presented in this or any other University, and that all the resources and materials used for the research, have been fully acknowledged.

Principal investigator

Name: Abiot Kassahun (public health officer)

Signature: _____

Date: _____

Advisors

1.Name: Ayinengida Adamu (MPH, Assistant professor)

Signature: _____

Date: _____

2.Name: Asmamaw Ketemaw (MPH/HI, Assistant professor)

Signature: _____

Date: _____

Internal evaluator

Name: Gebeyehu Tsega (candidate PhD, assistant professor)

Signature_____

date_____