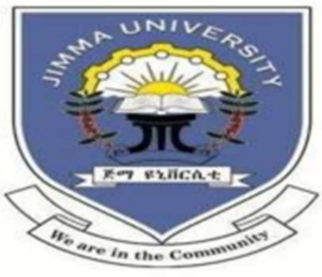


INSTITUTE OF HEALTH

PUBLIC HEALTH FACULTY

EPIDEMIOLOGY DEPARTMENT

LOW ROUTINE HEALTH INFORMATION UTILIZATION AND ASSOCIATED FACTORS AMONG HEALTH WORKERS IN PUBLIC HEALTH INSTITUTIONS OF ILLUBABOR ZONE, WESTERN ETHIOPIA

By:-Amanuel Benti

A THESIS SUBMITTED TO JIMMA UNIVERSITY PUBLIC HEALTH FACULTY EPIDEMIOLOGY DEPARTMENT IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR A MASTER`S DEGREE IN GENERAL PUBLIC HEALTH

September 2021

Jimma, Ethiopia

JIMMA UNIVERSITY

INSTITUTE OF HEALTH

PUBLIC HEALTH FACULTY

EPIDEMIOLOGY DEPARTMENT

LOW ROUTINE HEALTH INFORMATION UTILIZATION AND ASSOCIATED FACTORS AMONG HEALTH WORKERS IN PUBLIC HEALTH INSTITUTIONS OF ILLUBABOR ZONE, WESTERN ETHIOPIA

By:-Amanuel Benti (B Sc)

Advisors: 1- Prof Kifle WoldeMichael (MD, MPH)

2- Dawit Wolde (MSc, Assistant Professor)

September 2021

Jimma, Ethiopia

ABSTRACT

Background: *Routine Health Information system is a system that routinely collects, aggregates, and analyzes health services data that are obtained from health institutions. District and facility staff rarely used routine data to identify performance gaps, make plans, and monitor progress. Evidence-based practice is a key tool to increase the effectiveness and efficiency of healthcare providers worldwide. Although using routine health facility data at all levels of the health system is vital, it is not as practiced as intended in developing countries including Ethiopia.*

Objective: *To assess the magnitude of Routine Health Information Low Utilization from Health Management Information System and identify associated factors among health workers in the public health institutions of Illubabor zone, Western Ethiopia.*

Methods: *Cross-sectional study design was used. Multistage sampling strategy with a random sampling and purposive sampling techniques were used to select study participants. In the first stage, seven Woredas were randomly selected from the zone and all health centers in the selected Woredas were included. All hospitals were included purposefully and one health post was selected randomly from sampled health centers. A total of 455 health workers were randomly selected from seven Woredas, health centers under it, health posts, hospitals and zonal health department. We sampled 8 health workers per health center, 1 health extension worker per health post, 18 health workers per Woreda health office, 50 health workers per hospital, and 22 health workers from zonal health department. A structured questionnaire adapted from the Performance of Routine Information System Management (PRISM) framework was used to collect data. Bivariable and multivariable binary logistic regression analyses were used to identify factors associated with information utilization. Odds ratio along with 95% confidence interval were used to measure yhe strength of the association and P-value<0.05 were used to declare the level of statistical significance.*

Results: *Information utilization of the Illubabor zone was 63 %, and 74 % with 95% confidence interval respectively for health workers and health extension workers. Good knowledge on routine health information (AOR=3.97, 95% CI: 2.33, 6.73), good organization information culture use promotion (AOR=10.04, 95% CI: 5.79, 17.44), No training (AOR 0.17, 95% CI:0.06,0.51), female Sex (AOR= 0.44, 95 % CI: 0.25, 0.77) and facility type (woreda health office) (AOR=0.29, 95%CI: 0.12, 0.36) were significantly associated with routine health information utilization of health workers.*

Conclusion: *The overall utilization of routine health information was moderatoly similar to planned national targets. All concerned bodies have to make joint effort to increase knwoledge, improve organization information use culture and train health workers.*

Keywords: *Health institution, Health worker, Routine Health information utilization, Illubabor, Ethiopia*

Acknowledgment

First of all, I would like to take this opportunity to thank God Almighty for giving me enough provision in everything everywhere.

My sincere gratitude goes to the DDCF for the chance they gave me in exercising research work and granting this work. My gratitude goes to my advisors Professor Kifle WoldeMichael and Mr. Dawit Wolde for their accessibility, willingness to help, inspiration, advice, and camaraderie, which made it easier for me to prepare this thesis.

My special thanks and heartily appreciation goes to the Iluababor zone health department, Woreda health offices, hospitals, health centers, health posts, data collectrion supervisors, and data collectors with their health professionals for their provision of the necessary information that was input for the study.

Lastly but not least my special thanks and love should go to my family and friend for their encouragement, help, and advice throughout my journey of life as well as in this work.

Contents …….…..……. Page

ABSTRACT ……... i

Acknowledgment…… ii

LIST OF TABLES……...……. vii

ACRONYMS/ABBREVIATIONS…….……... x

CHAPTER ONE……. 1

INTRODUCTION…….. 1

1.1. Background…….. 1

1.2. Statement of Problem……... 2

1.3 Significance of the study……... 3

CHAPTER TWO……..... 5

LITERATURE REVIEW……... 5

2.1. Routine Health Information Utilization……... 5

2.2. Factor associated with Routine Health Information Utilization…….. 6

2.2.1. Socio-demographic characteristics……... 6

2.2.2. Behavioral Characteristics……..... 6

2.2.3. Organizational Characteristics…….. 7

2.2.4. Conceptual Framework……. 9

CHAPTER THREE…….. 11

OBJECTIVES……..... 11

3.1. General Objective…….. 11

3.2. Specific Objectives…… 11

CHAPTER FOUR…… 12

METHODS AND MATERIALS…….. 12

4.1. Study area and period……..... 12

4.2. Study Design…….. 13

4.3. Population…….. 13

4.3.1. Source Population……... 13

4.3.2. Study Population…… 13

4.4. Eligibility Criteria…….. 13

Inclusion Criteria…….. 13

Exclusion Criteria…… 13

4.5 Sampling Size Determination and Sampling procedure…… 14

4.5.1. Sample Size Determination……..... 14

4.5.2. Sampling procedure…… 16

4.6. Study Variables…….. 16

4.6.1. Dependent Variable…… 16

4.6.2. Independent Variables…… 17

4.7. Operational Definitions……..... 17

4.8. Data Collection Procedure……. 20

4.8.1.Data Collection Instrument…….. 20

4.8.2.Data Collectors……. 20

4.8.3. Data Collection techniques……. 20

4.9.Data Quality Management…….. 21

4.10. Data Processing and Analysis…….. 21

4.11. Ethical Considerations……. 23

4.12. PLAN FOR DISSEMINATION OF FINDINGS…… 24

CHAPTER FIVE……..... 25

RESULTS……. 25

5.1. Health Workers…….. 25

5.1.1. Socio-demographic characteristics of Health Workers……... 25

5.1.2. Behavioral Characteristic of Health Workers…… 27

5.1.3. Organizational Characteristic of Health Workers……... 30

5.1.4. Routine Health Information Utilization…….. 35

5.1.5. Factors Associated with Routine Health Information Utilization……... 36

5.2. Health Extension Workers……. 40

5.2.1. Socio-Demographic Characteristics of Health Extension Workers……..... 40

5.2.2. Behavioral Characteristic of Health Extension Workers…… 40

5.2.3. Organizational Characteristic of Health Extension Workers……..... 44

3.3.4. Routine Health Information Utilization of Health Workers……... 46

5.2.5. Health Institutions Observation…….. 47

CHAPTER SIX……. 50

DISCUSSION……... 50

6.1 Strength and limitation of the Study……... 51

CHAPTER SEVEN…….. 53

CONCLUSION AND RECOMMENDATIONS……. 53

7.1 Conclusion……...…….. 53

7.2 Recommendations……...……... 53

REFERENCES……...…..... 55

ANNEX I……..... 59

Facilities In Illubabor Zone……...……... 59

ANNEX II…….……..... 63

Informed Consent……..... 63

ANNEX III……....…… 64

Questioner…….…… 64

DECLARATION…… 106

LIST OF TABLES

Table 1, Table showing how sample size was calculated for the significant factors of the study using epi info software. …… 15

Table 2, Characteristic of health workers in public health institutions of Illubabor zone, Ethiopia, 2021 (n=423) …… 25

Table 3, Health Workers knowledge on health data management and use at health institutions of Illubabor Zone, Ethiopia,2021 (n=423) ……... 27

Table 4, Health workers self-efficacy of data analysis and interpretation at Illubabor zone, Ethiopia, 2021 (n=423) …… 28

Table 5, Health workers self-perception on health data and its management Illuababor zone, Ethiopia, 2021 (n= 423) ……... 28

Table 6, Skill of the health workers working for routine health data management at Illuababor zone, Ethiopia, 2021 (n=423) …….. 29

Table 7, Decision-Making Status among Health Workers Working at Illubabor Zone, Ethiopia, 2021, (n=423) ……... 30

Table 8, Information use promotion by Managers or supervisors of health institutions inIllubabor zone, Ethiopia, 2021, (n=423) ……. 31

Table 9, Organizational staffs data management culture in the health institution of Illubabor zone, Ethiopia, 2021, (n=423) ……. 33

Table 10, Supervision and mentorship, and Training of the health workers working at Illubabor zone, Ethiopia, 2021, (n=423) ……. 34

Table 11, Bivariate and Multivariate analysis of factors associated with RHIS Utilization Status among health workers Illubabor Zone, Ethiopia 2021, (n=423) …….. 37

Table 12, Socio-demographic characteristics of health extension workers, Illubabor zone, Ethiopia, 2021 (n=23) …….. 40

Table 13, Knowledge of Health Extension Workers, Illubabor zone, Ethiopia 2021 (n=23)….. 40

Table 14, Perceptions of Health Extension Workers, Illubabor zone, Ethiopia 2021 (n=23)….. 42

Table 15, Attitude of Health Extension Workers, Illubabor zone, Ethiopia 2021 (n=23)…… 42

Table 16, Skill of Health Extension Workers, Illubabor zone, Ethiopia 2021 (n=23)……..... 43

Table 17, Decision-Making Status among Health Extension Workers Working at Illubabor Zone, Ethiopia, 2021 (n=23) …….. 44

Table 18, Supervision and Mentorship, and Training of Health Extension Workers, Illubabor zone, Ethiopia 2021 (n=23) ……. 45

Table 19, Feedback and Tools Availability on Health Posts and health Facilities , Illubabor zone, Ethiopia, 2021 (n=23) …….. 49

LIST OF FIGURES

Figure 1 Conceptual Framework to routine health information utilization, western Ethiopia, Oromia, Ilubabor zone…….…… 10

Figure 2 Map of Illubabor zone, West Oromia……. 12

Figure 3, Information use the practice of the health workers working at Illubabor Zone, Ethiopia, 2021, (n=423) ……... 36

Figure 4, Routine Data Utilization with its variable Among Health Extension workers Working at Illubabor Zone, Ethiopia, 2021 (n=23) …… 47

Figure 5, Background Characteristic of Health Institutions, Illubabor zone, Ethiopia……. 48

Figure 6, Display of Information in Health Institutions, Illubabor zone, Ethiopia, 2021……..... 48

ACRONYMS/ABBREVIATIONS

AOR	Adjusted Odds Ratio
CDC	Communicable Disease Control
CEO	Chief Executive Officer
COR	Crudes Odds Ratio
DHIS	District Health Information System
FMOH	Federal Ministry of Health
G.C	Gregorian Calendar
GPS	Global Positioning System
HC	Health Center
HEW	Health Extension Worker
HIS	Health Information System
HIT	Health Information Technology
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
HMIS/M&E	Health Management Information System Monitoring and Evaluation
ICT	Information Communication Technology
KM	Knowledge Management
MCH	Maternal and Child Health
MD	Medical Doctor
OBAT	Organizational and Behavioral Assessment Tool
ODK	Open Data Kit

OPD	Out Patient Department
OR	Operating Room
PHEM	Public Health Emergency Management
RHI	Routine Health Information
RHIS	Routine Health Information System
TB	Tuberculosis Bacteria
WBP	Woreda Based Planning
WHO	World Health Organization

CHAPTER ONE
INTRODUCTION

1.1. Background

Data generated from healthcare facilities at regular intervals (routine health information system) is an important mechanism to identify gaps in the management of the health system and to resolve them to maintain and improve performance. With timely, complete, and accurate information, managers can identify the strengths and weaknesses of health system functions and services, and take appropriate action to maximize success. For issues outside of their control, they can advocate for possible solutions and policy changes. Because the ultimate objective of RHIS is to produce information for taking action in the health sector (1).

Using data to make evidence-informed decisions (operational decision making, tactical decision making, and strategic decision making) still weak in most low- and middle-income countries. Especially neglected are data produced by RHIS. RHIS comprises data collected at public, private, and community-level health facilities and institutions (2).

Ethiopia is at a pivotal moment in its efforts to improve the health status of its people and move the country into a new phase of social and economic development. Over the past decade, Ethiopia has marshaled its resources, and those of its development partners, into addressing the health inequities that have held the country back. These efforts have begun to bring results (3).

Health information system (HIS) is a system designedfor the collection, processing, use, and dissemination of health related data to improve health care outcomes. It is one of the six fundamental blocks of a health care system which includes health information system resources, indicators, data sources, data management, information products, dissemination, and use (4- 5)

HIS provides specific information support to the decision-making process at each level of an organization". The FMOH adopted a "One Plan, One Budget and One Report" policy to improve management and optimum use of resources for making timely decisions and considers HMIS/M&E as the core information component of effective health care delivery (6).

The Ethiopian Health Management Information System (HMIS) has been implemented since 2008 to capture and provide core monitor-able indicators used to improve the provision of health services, and ultimately, to improve the health status of the population. HMIS is a major source of information for monitoring and adjusting policy implementation and resource use. HMIS reports are being used for varied decision-making processes including Woreda Based Planning (WBP) which is now the formal planning process in every region (7).

HMIS is intended for use at different levels of the health system. The intended users of this document are a range of stakeholders including health workers at different levels of the health system, program managers, policymakers, and other stakeholders such as non-governmental organizations. The revision of HMIS in 2017 has resulted in the selection of 131 HMIS indicators and they are categorized into 4 major categories based on the HSTP strategic perspectives and into 12 based on programmatic categories(8).

District health information software (DHIS) is open-source medical system software. In 2004 DHIS 1 is upgraded to DHIS 2 with all existing functionality. DHIS 2 should be platform-independent and fully open-source. The new software should also work with most relational databases, which is supposed to be web-based with support of both network and stand-alone environments, it should be designed with a modular architecture, dynamic data model, and flexible user interface(9).

1.2. Statement of Problem

Information is used at various levels of the health system for health service and system management, planning, advocacy, policy development, etc (8). The routine health information system is one part of the health information system. Governmental, non-governmental, and all concerned bodies give much more emphasis on the utilization of information revolution now a day.

As studies, literature, and working papers show, routine health information utilization remained low. The major factors related to this are insufficient skill in data use poor data quality,

inadequacy in the availability of data, decision making autonomy and authority structure, organizational factors, behavioral factors, external donors, technical factors, leadership, data use culture, low personal commitment, and emotion, even the system design factors are studied before(10).

As guidelines or working papers suggests decision-makers will use this evidence or processed information for prioritizing the problem and as an input for resource prioritization tool. Because we are living in a world of limited resources. This implies that we must prioritize and give more emphasis on what is more urgent and needs an early solution. This is generated from data in routine health information. If data generated from RHI are not appropriate policymakers can make the wrong decision. These wrong decisions may not only affect resources only but may put human life at risk also.

When routine data are lacking, or are not used, the results can be lower-quality services, weak infection prevention and control responses, lack of skilled health workers available where they are needed, and weak supply chains for drugs and equipment. These all can lead to poor health outcomes for people (2). So if routine health information is appropriately utilized it has a huge impact on the health outcome of the people.

The major aim of this study is to determine the status of health information utilization and its associated factors in the western Oromia region Illubabor zone which helps us a reference in setting solution and being part in information revolution agenda in Ethiopia.

1.3 Significance of the study

Understanding the position of routine health information utilization level and its associated factors is help full. The evidence of this research will be utilized by, policymakers, Programers, health planners, researchers and health professionals.

The result of the study will benefit:

Health professionals: health professionals have contact in a day-to-day life with information directly or indirectly. This means that the result of this study will show major activities on RHIU

to improve health outcomes through evidence-based decision making and appropriate use of resources,

CHAPTER TWO
LITERATURE REVIEW

2.1. Routine Health Information Utilization

Electronic information systems are gradually replacing traditional or paper-based information systems in most public and private organizations in developing countries. This is motivated by the wide acceptance of the use of information technology at almost all levels of government institutions and private institutions (11). In a similar passion, Health Information System (HIS) is potentially very important for the development of the health sector in Ethiopia(12).

Ethiopia has planned to transform the culture of information utilization and enhance digitalization in the health care system as indicated in the information revolution agenda and the health sector transformation plan. One of the strategies for enhancing the information revolution agenda is strengthening the culture of data management and information utilization (7)

MEASURE Evaluation developed the Performance of Routine Information System Management (PRISM) framework and suite of tools in 2011 for global use in assessing the reliability and timeliness of an RHIS, in making evidence-based decisions, and in identifying gaps in an RHIS so they can be addressed and the system can be improved. The framework acknowledges the broader context in which RHIS operates. It also emphasizes the strengthening of RHIS performance through a system-based approach that sustains improvements in data quality and use. PRISM broadens the analysis of RHIS performance to cover three categories of determinants that affect performance: behavioral, technical, and organizational determinants (2).

As literature shows utilization of health information is low in Ethiopia. But, we are in the era of digitalization and the information revolution. There is also a linear relationship between information utilization, and knowledge, skill, self-efficacy, Information use culture, supervision, Training, organization type. This study aims to identify the factor for the utilization of RHIS in the Ilubabor zone.

2.2. Factor associated with Routine Health Information Utilization

2.2.1. Socio-demographic characteristics

A cross sectional study which was done in AMREF Kibera facility in kenya showed that from the barriers to utilize health information were: level of education and age of the health workers(13).

A cross sectional study in Gonder, North west Ethiopia showed that as there is significant relation between EHIU and sex of the health workers (14).

2.2.2. Behavioral Characteristics

A prospective Cross-sectional Study done in Lagos Nigeria showed a very high awareness record of the RHIS indicator that was 88%. Regarding the skill of staff in record keeping, 94.8 % of the respondents were skilled (15).

Studies in Makerere University Uganda concluded that the management and utilization of the HMIS were still inadequate. The majority of the reporting health units were government-owned implying that private practitioners were not represented and yet they have a significant role in health care delivery. Health workers did not appreciate the importance of HMIS(16).

A descriptive cross-sectional study conducted in Addis Ababa, Ethiopia involving 220 respondents recommended the need to strengthen HMIS activity through appropriate human, material, and financial resources. Improved data processing and management should be accompanied by Skilled and trained health workers with appropriate ICT use. Management shall support, facilitate, and motivate information use culture. HMIS implementation in Addis Ababa should have ownership, follow up, coordination, cooperation, and communication among stakeholders (17)

A cross-sectional study which is conducted in East Gojjam, Ethiopia involving 668 health workers or respondents also showed that 45.8 % of respondents have a good level of RHI utilization, and a favorable attitude toward health information utilization, data analysis skill are significantly associated with RHI utilization (18).

A cross-sectional study which was conducted among 369 health workers in Oromia special zone, Ethiopia was showed that 52.8 % of health care professionals utilize health data, and data analysis skills were significantly associated with routine health information utilization (19).

A cross-sectional study which was conducted in Hadiya Zone, Ethiopia by including 480 health workers showed that 62.7 % utilization and competence on routine health information factors were significantly associated factors (20).

A cross-sectional facility-based study revealed that the level of HMIS data utilization for different decision-making purposes was 57.9% in East Wollega. The level of data quality in terms of report timeliness, data completeness, and data accuracy was 70%, 78.2 %, and 48%, respectively. The utilization of HMIS data showed a significant association with staff motivation, decisions based on superior directives, and performance monitoring by health professionals (21).

A cross-Sectional Study which was conducted in East Gojjam Ethiopia, North Gonder, Ethiopia, and Oromia special zone, Ethiopia clearly, shows that there was a significant association between RHI utilization and good data analysis skills (14 - 16).

2.2.3. Organizational Characteristics

The study conducted in Malawi for the effectiveness and efficiency of health management information systems showed that: internal desire, Dedication, and Commitment of leadership are very mandatory factors for effective and efficient HMIS. Unless that factor, whatever an awesome design for the information system there is no effectiveness and efficiency (22).

The study which is conducted in a private hospital in Kenya Nairobi in 600 employees using a cross-sectional survey indicated that HMIS Relative Advantage and healthcare dimensions – Quality, Responsiveness, Responsibility, and Reliability have a significant influence on the successful use of HMIS(23).

Cross-sectional Study done in Lagos Nigeria also showed that management and supervisor in data quality is 93.2%, incomplete data 93.9% and no involvement of decision-makers on data

collection and lack of feedback from a higher level on how data generated have been put to use was 93.6% (15).

There was research published in December 2014 and done in DireDewa city administration. The result of this research shows that 53.1% of the Utilization of HIS is below the expected level. The expected level was 71% using information for decision making. This low level is especially in health posts than in health centers and hospitals. There is also a shortage of HIT personnel, HIT office, and budget (24).

A cross-sectional study which was conducted in North Gonder, Ethiopia showed good governance was significantly associated with routine health information utilization (14).

A cross-sectional study which was conducted among 369 health workers in Oromia special zone, Ethiopia was showed that 52.8 % of health care professionals utilize health data, and Training, availability of standard indicator, performance evaluation, and timely report were significantly associated with routine health information utilization (19).

A cross-sectional study in East Gojjam, Ethiopia shows for the utilization of routine health information HMIS training, and regular feedback were significantly associated (18).

A cross-sectional study which was conducted in Hadiya Zone, Ethiopia by including 480 health workers showed that 62.7 % utilization and training, supportive supervision, good perceived culture of health information were significantly associated factors with data utilization (20).

A cross-sectional study which was conducted in 420 health extension workers and 210 health posts in the Hadiya zone, south Ethiopia showed that 41 % of the good utilization of community health information. Supportive supervision and written feedback were significantly associated (25).

A cross-section study in Kibera, Kenya 196 community health workers shows that organizational information use culture, the community health workers' engagement level, lack of resources, and some socio-demographic characteristics were a barrier to the utilization of the system (26).

Across sectional study which was conducted in East Gojjam, Ethiopia, Oromia special zone Ethiopia, Hadiya Ethiopia, Gucha sub country, Kisii country, Kenya identify that training is significantly associated with routine data utilization (14, 20 - 22).

2.2.4. Conceptual Framework

The Conceptual Framework is from PRISM tools (1), which identifies two interrelated components that are necessary to improve routine information systems and the use of generated data. The element includes behavioral/individual elements and organizational elements. The behavioral/ individual component refers to the behaviors of data users and how data are used for problem-solving and program improvement. The organizational component refers to the structure and processes of the organizations that use the resulting information. These components were used to identify opportunities for and constraints to effective data use, and strategies to improve data utilization were then built through the OBAT tool.

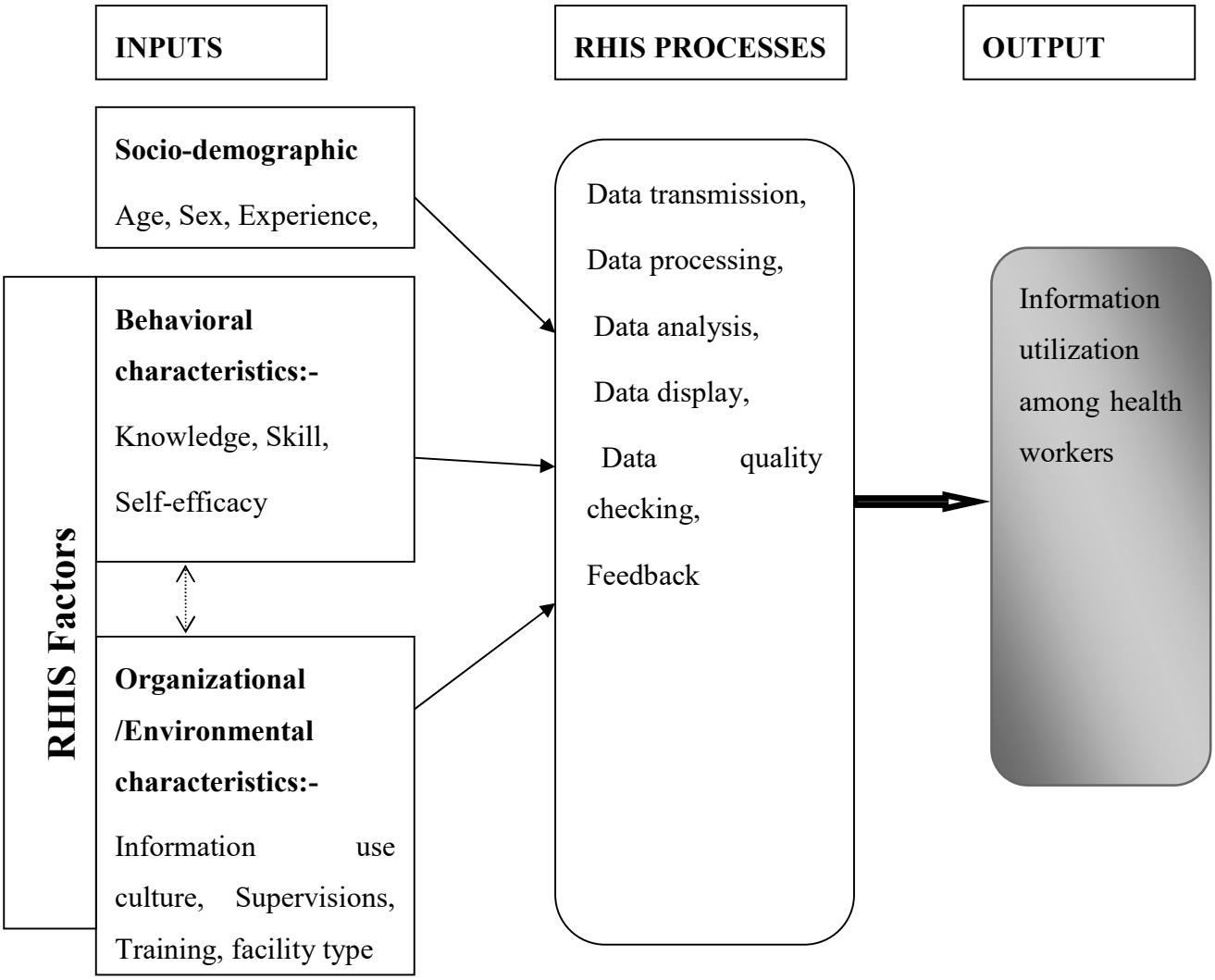


Figure 1, Conceptual Framework to routine health information utilization, western Ethiopia, Oromia, Ilubabor zone

CHAPTER THREE
OBJECTIVES

3.1. General Objective

The main objective was to assess Low Routine Health Information Utilization from Health Management Information System and identify factors associated with it among health workers in the health institutions of Illubabor Zone, Western Ethiopia 2021

3.2. Specific Objectives

- To assess pattern of Routine Health Information Utilization among health workers in Illubabor Zone, Western Ethiopia 2021
- To identify factors associated with Routine Health Information Utilization among health workers in Illubabor Zone, Western Ethiopia 2021

CHAPTER FOUR
METHODS AND MATERIALS

4.1. Study area and period

The study was conducted in selected Woredas of Illubabor Zone, Western Ethiopia. Illubabor is one of the Zonal administrations in the Oromia region. The capital town of the zone, Metu is located 620 KM, Western direction of the capital city of Ethiopia, Addis Ababa. As the Zone administration report shows in 2019 total population of the Illubabor Zone was estimated that 968,303. In the zone, there are 14 Woredas, 1 town administrations, and 23 urban and 263 rural kebele. Regarding the health service coverage, there are 2 hospitals, 41 health centers, and 263 health posts.

The 2021 human resource department report of the zonal health office showed categories were 705 health care professionals with various professional categories, 60 HIT and 309 support staff, and 526 health extension workers.

The study was conducted from March 2021 to July 2021.

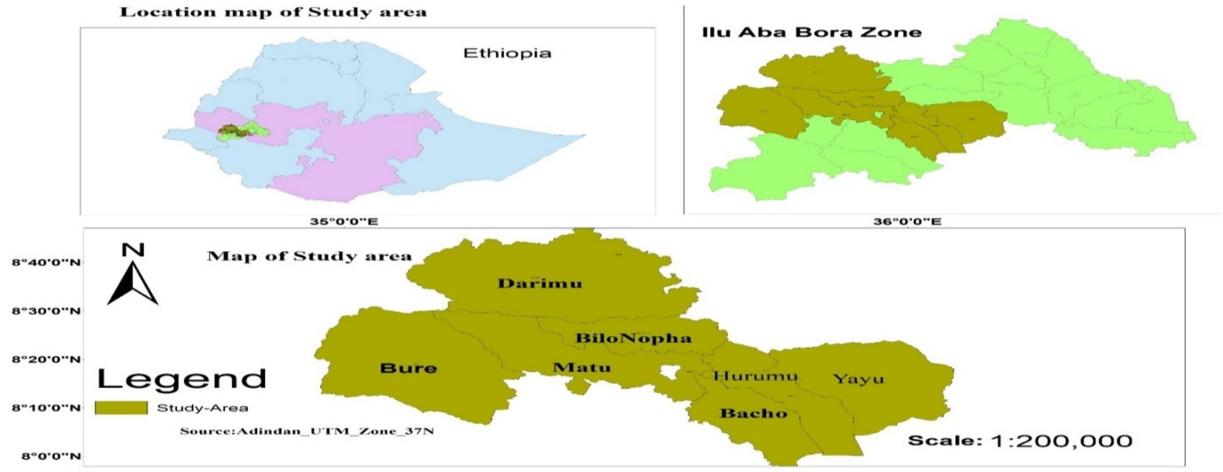


Figure 2 Map of Illubabor zone, West Oromia

Sources: GPS data

4.2. Study Design

Institutional-based cross-sectional study design was employed.

4.3. Population

4.3.1. Source Population

The source populations included all health workers from public health institutions (health centers, health posts, hospitals, Woreda health offices, and zonal health departments) in Illubabor Zone.

4.3.2. Study Population

The study population included all selected health institutions and health workers in Illubabor Zone. The health workers were: Medical Doctors (MD), MPH or M Sc in different health professional categories, Health Officers, Nurses, Laboratory technicians or technologies, Pharmacy technologies or technicians, HIT professionals, Health extension workers, Environmentalists,

4.4. Eligibility Criteria

Inclusion Criteria

Health workers with service experience greater than 6 months and those working as head of health institutions or focal of departments in the health institutions were included.

Exclusion Criteria

Health workers who were on annual leave, sick leave, maternity leave, and study leave were excluded.

workers who did not finish probation period were excluded.

4.5 Sampling Size Determination and Sampling procedure

4.5.1. Sample Size Determination

A single population proportion formula was used to calculate sample size by considering the following assumptions: the proportion of Routine health information utilization among health care professionals working at public health institutions in North Gondar, Northwest Ethiopia as 78.5% in 2017 (18), 95% Confidence level and 5% margin of error.

$$n = \frac{Z^2_{\alpha/2}\, p(1-p)}{d^2}$$

$$n = \frac{1.96^2\, 0.785\ (1-0.785)}{0.05^2}$$

= 259.34

Note:-

n is the minimum (or initial) sample size,

Z^2 is the standard score corresponding to a given confidence level. Using a 95 percent confidence level, equivalent to a 5 percent level of significance ($\alpha = 0.05$), here we have $Z = 1.96$

P is the prevalence, or the percentage of the study phenomena in the population (which can be obtained from previous studies); here we have p (78.5 %)

q is equal to (1 – p) and is known as the percentage of failure; here we have

d is the precision limit or proportion of sampling error (accepted bias for p in the sample); here was, d= 0.05 (5%)

Considering multi-stage sampling, a design effect of 1.6 was used (2).

259 * 1.6= 414

Adding a 10 % non-response rate the total sample size was **455**

To calculated sample size for significant variables at a study held in Ethiopia on a title of routine health information system utilization and factors associated thereof among health workers at government health institutions in East Gojjam Zone, Northwest using Epi info software and the result was as follow (18). In Table 1, the calculated sample size was with a 10 % non-response rate.

Table 1, Table showing how sample size was calculated for the significant factors of the study using epi info software.

Variables	Exposure status		Utilization		AOR	n	n + 10 %
			Utilized	Not-utilized			
HMIS training	Yes	32.7	32.7 %	38.2 %	2.72 (1.60 – 4.62)	389	427.9
	No		73.1 %	26.9 %			
Supervision	Yes	38.3	38.3 %	61.7 %	2.60 (1.42 – 4.75)	410	451
	No		88.1 %	11.9 %			
Regular feed-back	Yes	29.2	29.2 %	70.8 %	2.20 (1.38 – 3.51)	371	408.1
	No		75.9 %	24.1 %			

4.5.2. Sampling procedure

A multistage sampling strategy with random and purposive sample techniques was employed. Primarily 50% of the Woredas was selected using a random sampling technique by lottery method (which yields 7 Woredas) from 14 woredas. Following this, all health centers of selected Woredas were included and in every health center, we have randomly selected one health post. Further, both of the hospitals were included. All study participants (health workers) were selected using a purposive sampling technique.

Twenty-three health centers were available within 7 Woredas. A total of 184 health workers (8 health workers from each of the 23 health centers) were selected and included in the study.

Both hospitals located in the zone were included purposefully. Fifty health workers from each of the hospitals, a total of 100 health workers were considered for the study.

There are 6 rural Woreda health offices and 1 town administration health office within the 7 randomly selected Woredas of the zone. From each Woreda health offices, 18 health workers were selected purposefully making a total of 126 health workers. Moreover, twenty-two health workers were selected and included in the study from Illuababor zone health department.

We have included one randomly selected health posts from each health centers included to the study. From each of selected health posts, 23 health extension workers were sampled purposefully. Head health extension workers were included into the study. Whenever, head of health posts was unavailable we have considered health extension worker that was available at the health posts. If more than one health extension worker available, the selection was based on service experience.

4.6. Study Variables

4.6.1. Dependent Variable

- Low Routine Health Information Utilization from Health Management Information System

4.6.2. Independent Variables

Characteristics of health workers- age, sex, service experience, profession/qualification, position in the health institution

Behavioral determinants- knowledge, skills, and self-efficacy of health workers in the management and use of data

Organizational / Environmental determinants- information use promotion culture of the organization, training status, mentorship and supervision status, type of facility

4.7. Operational Definitions

Routine health information utilization: was measured by the PRISM conceptual framework on the system. It was defined as the use of routine health information for:

Disease prioritization,

Drug procurement, or drug supply and management,

Day-to-day monitoring of health service activities,

Identify and manage epidemics,

Observe the trend of health service in my catchment,

Resource allocation,

Planning,

Evaluation of staff performance,

Decision making, and

Community mobilization and discussion.

All these components of the assessment tool have 1-5 Likert item measures, ranging from “strongly disagree” to “strongly agree”,

Good routine health information utilization: health care professionals who scored mean and above mean for information use practice questions.

Poor routine health information utilization: health care professionals who scored below mean for information use practice questions.

Health care professionals: in this study were defined as any health personnel who were collecting health data to utilize the information for the improvement of health status.

Health extension workers: health care providers trained as health extension workers and working as HEW currently. They focused on community-based programs or services and work at a health post.

Health workers: this study defines health workers as any health care professional who is collecting health data to use the information for the improvement of health status and working at zonal health departments, Woreda health offices, hospitals, and health centers.

Health Institution: in this study is included all health facilities and health posts.

Health facilities: in this study defined health facilities are zonal health department, Woreda health office, hospitals, and health center which work for the improvement of the health status of the people.

Organizational Information Use Culture promotion: this is presented in three groups and with a total of 30 questions in (1 - 5 scale Likert item measure) ranging from “strongly disagree” to “strongly agree” to assess information use culture of the organization. Health care professionals scored mean and above mean form information use culture questions were assigned as they have good organizational information use culture, and health care professionals scored below the mean from organizational information use culture questions were assigned as they have poor information use culture.

Self-efficacy on data analysis and interpretation: the health care professional self-efficacy or belief for routine health information utilization and measured by six questions in (1-5 scales) and six questions (1-10 scales) with a total of 12 questions.

High self-efficacy: health care professionals' mean scores of the half and above half for self-efficacy questions were assigned as they have high self-efficacy.

Low self-efficacy: health care professionals' mean score of below half for self-efficacy questions was assigned as they have low self-efficacy.

Data analysis and interpretation skill: the process of health care professionals to use the routine health data to make meaningful information from routine health data. Measured by using, 12 item questions with different response categories.

Competent: Health workers who have scored half and above from 12 components of skill questions were regarded as competent in data analysis and interpretations.

Not-competent: Health workers who scored below half from 12 components of skills questions were categorized as not competent in data analysis and interpretations.

Competent for health extension workers: Who scored half and above half from 10 components of skill questions were categorized as competent in data analysis and interpretation.

Not competent for health extension workers: Those who scored below half from 10 components of skill questions were categorized as not competent.

Knowledge: is health care professionals reasons or rationale for data collection and how to perform data quality checks, dimension of data quality, aggregated disease data, immunization data, age sex data, geographical data, and population data components with 27 question yes/no response (29).

Good comprehensive knowledge: health care professionals who scored half and above from knowledge questions were assigned as they are good comprehensive knowledge status.

Poor comprehensive Knowledge: health care professionals who scored below half from knowledge questions were assigned as they are poor comprehensive knowledge status.

4.8. Data Collection Procedure

4.8.1.Data Collection Instrument

A structured questionnaire adapted from the Performance of Routine Information System Management (PRISM) model was used to collect data. A paper-based questionnaire was uploaded to-Open Data Kit (ODK) for data collection. The questionnaire comprised of sections like sociodemographic information of health workers, the organizational culture of information use promotion, health workers knowledge on data management and use, health workers self-perception, self-efficacy on data analysis and interpretations, and skill on data analysis and interpretations and facility checklist (1).

4.8.2.Data Collectors

Seven health professionals with a qualification of Bachelor of Science degree have collected the data by using Open Data Kit (ODK). The collected data were submitted to the server which is given from ODK for private purpose. The average sample allocated to each data collector was 65. Data collectors were recruited from outside in the study area to minimize bias.

Two supervisors with a background in health science and qualification of masters` degree were participated in the overall monitoring of the data collection process and provided support at the field level.

4.8.3. Data Collection techniques

Selected data collectors and supervisors prepare for fieldwork after taking the training. The way of data collection and submission of collected data was checked within two days of training. The principal investigator was prepared all key issues like documents, transportation for selected Woredas.

The supervisors were ready for fieldwork after taking the training. Supervisors were facilitating and supervise data collectors in given Woredas and institutions on data collection methods, communication skills, and ways of their data collection. Then give them immediate orientation,

counseling, and encouragement. As well as was taking filled documents and discuss with the researcher.

4.9.Data Quality Management

The questionnaires were translated by a language expert from English into the local language (Afaan-Oromo and Amharic) to make it understandable for the study participants and were translated back into English by another person to check for consistency and understandability of the tool.

A pre-test was conducted in Jimma Zone, Gomma Woreda, on 5% of the sample before the commencement of actual data collection, and the tool was checked for its clarity, simplicity, and understandability.

Data collectors and supervisors were trained on how to conduct the data collection for two days. The training focused on the aim of the study, data collection tools, data collection techniques, research ethics, and how to use Open Data Kit (ODK). The principal investigator and supervisors have closely monitored the data collection process, provided support and feedbacks for the field team daily.

Open Data Kit (ODK) was used to collect data and thus, it increases the quality of data through controlling missing values and enhancing data monitoring.

The investigator, supervisors, and data collectors has conducted a daily meeting following data collection. The meeting was aimed to discuss on a day fieldwork challenges and prepare plans for the next day. This was confirmed by daily improvement in quality as well as the number of data collected.

4.10. Data Processing and Analysis

Data were exported from ODK to SPSS windows version 25 for analysis. The analysis was progressed in such a way that primarily we have conducted descriptive statistics to describe the characteristics of health workers, to analyze the outcome and independent variables. Mean,

frequencies and percentages were computed to summarize the data. The GPS data was exported to GIS Arc10.4.1 for location analysis and making a map of the study area.

We have computed variables like routine information utilization, the organizational culture of information use, knowledge on data management and use, self-perception on health data, and its management, self-efficacy of data analysis and interpretation, and skills of data analysis and interpretation from existing data.

The outcome variable was analyzed based on a 10-item Likert scale of questions ranged from Strongly disagree (1) to Strongly agree (5). The items comprised of the use of data for the day-to-day management of health services, the use of data to identify and manage epidemics, use of data to observe the trend of health services in the catchment area, use of data for planning, use of data for drug supply and management, use of data for disease prioritization, use of data for resource allocation, use of data for monitoring performance, use of data for decision-making, and use of data for community mobilization and discussion. Health workers who scored mean and above the mean score were regarded as having good information utilization and those less than the mean score as poor information utilization.

Organizational cultures of information use promotion were analyzed using 30 questions with Likert scale responses ranged from Strongly disagree (1) to Strongly agree (5). The mean score was used to categorize organizational culture of information use promotion as good (mean and above mean), and poor (below mean).

Health worker's knowledge of data management and use was analyzed based on 27 knowledge questions presented as Yes/No responses. Health workers who were responded mean and above the mean value of the items were regarded as having a good comprehensive knowledge and those below the mean value were categorized as having poor comprehensive knowledge.

Data analysis and interpretation skills were analyzed by computing 12 skill questions presented in different types of presentations. The mean score is used to decide either competent or not-competent to data analysis and interpretation.

perception on data analysis and interpretation was 6 questions from self-perception of competency part (scale 1 – 10). The mean score decides either high or low perception.

Belief on the data analysis and interpretation were analyzed from 6 questions from the personal belief on routine data (scale 1 – 5). The mean score decides either high or low belief.

Binary and multivariable logistic regressions were used to analyze the association between outcome and independent variables. The primary outcome variable was health workers` utilization of routine health information. Binary logistic regression was used to identify candidate variables for multivariate logistic regression. Variables with P-value <0.25 were candidates for multivariable logistic regression. The backward LR method was used to select variables.

The odds ratio was estimated to measure the strength of associations and the significance of associations was declared with 95% CI and P-value<0.05.

The fitness of logistic regression models was checked using the Hosmer-Lemeshow test for goodness of fit statistic and the multicollinearity problem was checked using Variance Inflation Factor (VIF) and the variables which had high multicollinearity problems were eliminated from the model. Then the results were summarized and presented by tables, graphs, and texts.

4.11. Ethical Considerations

Ethical clearance was obtained from Jimma University Institute of Health: Research Ethics Review Board with protocol number IHRPEn/1058/20 on 17/12/2020 by a written support letter to Illubabor zonal health department. Then Letter of cooperation was written with a protocol number F-16/1043 on 10/07/2013 taken from the Zonal health department or district to the Woreda health office, hospitals, health centers, and health posts. The objective of the study was explained for study participants and data was collected after obtaining written informed consent from each study participant (format is available in annex II). The right to study participants to refuse or discontinue participation at any time they want and the chance to ask anything about the study was respected. The privacy of the respondents during the interview and confidentiality

of the information they provide was ensured by sharing only anonymized or coded or secured data with the researcher, and limiting access to the material of third parties (28).

4.12. PLAN FOR DISSEMINATION OF FINDINGS

The research findings will be presented to Jimma university and get approval. The research thesis will be submitted to Jimma University Library and uploaded on eLibrary. Then the findings will be communicated to key stakeholders including health facilities, woreda health office, zonal health department, regional health bureau, and funder in both hard copy and soft copy formats. The effort will be made to prepare findings as short communications and disseminate research findings through presentation to stakeholders. Moreover, the manuscript will be prepared and published in a reputable journal for reaching the scientific community. The title for publication is "Routine Information Utilization and associated factors among health workers of health institutions in Illubbaor zone, Western Ethiopia"

CHAPTER FIVE
RESULTS

5.1. Health Workers

5.1.1. Socio-demographic characteristics of Health Workers

A total of 423 health workers have participated in the study with a response rate of 98 %. Two hundred fifty-five (60 %) of the respondents were Male and most (92%) had service experience of more than 2 years (Table 2).

Table 2, Characteristic of health workers in public health institutions of Illubabor zone, Ethiopia, 2021 (n=423)

Variables	Category	Frequency	Percent
Facility type	Zonal Health Department	21	5
	Woreda Health Office	123	29
	Hospital	95	23
	Health center	184	43
Sex	Male	255	60
	Female	168	40
Service experiences in years	Below 2 years	32	8
	2 years and above 2 years	391	92
profession category	Masters of Public Health	29	7
	Physician	6	1
	Health officer	59	14

	Nurse and midwifery	233	55
	Health Informatics Technician	29	7
	HEW in health centers	6	1
	Druggist or pharmacisit	18	4
	Environmrntal health	10	2
	Laboratory technicians	21	5
	Other*	10	2
Job positioninig of health worker	Facility head	18	4
	Reform and plan head	14	3
	Department head	136	32
	Prevention coordinator	43	10
	Malaria and HIV/TB focal	94	22
	HEP coordinator	23	5
	HMIS Focal	27	6
	EPI and MCH unit	9	2
	Pharmacy Unit	12	3
	Laboratory & WASH	21	5
	Environmental and staffs	9	2
	Other**	16	4

Note- * Other professional categories: Anesthesia (n=1), Biomedical (n=2), CBHI (n=1) , Health education (n=5), Health service managers (n=1).

** Other titles of health workers: Anesthesia (n=1), Biomedicals (n=1), CBHI (n=1), CDC (n=1), Health education (n=2), Non and communicable disease (n=7), PHEM (n=1), quality control (n=1), Regulatory (n=1).

5.1.2. Behavioral Characteristic of Health Workers

Knowledge of data management and use

One hundred twenty-nine (31%) health workers have good knowledge of routine health data management. Three hundred (71 %) health workers have good knowledge of population disease data (Table 3).

Table 3, Health Workers knowledge on health data management and use at health institutions of Illubabor Zone, Ethiopia,2021 (n=423)

	Good knowledge	Poor knoledge
Percent of health workers comprehensive knowledge in (95 % CI)	Frequency (Percent)	Frequency (Percent)
Reason for collecting or using aggregated population data	300 (71 %)	123 (29%)
Reason for collecting or using aggregated age-sex data	60 (14 %)	363 (86%)
Reason for collecting or using aggregated geographical data	56 (13 %)	367 (87 %)
Reason for collecting or using aggregated immunization data	82 (19 %)	341 (81 %)
Reason for collecting or using aggregated disease data	85 (20 %)	338 (80 %)
Dimensions of data quality	184 (44 %)	239 (56 %)
Way of ensuring data quality	107 (25 %)	316 (75 %)

Self-efficacy on data analysis and interpretation

One hundred two (24 %) of the health workers have high self-efficacy in data analysis and interpretation (Table 4 & Table 5).

Three hundred eighty-one (90 %) of the health workers have good competency (Table 5.3).

Table 4, Health workers self-efficacy of data analysis and interpretation at Illubabor zone, Ethiopia, 2021 (n=423)

	Yes	No
Health workers self-efficacy (95 % CI)	Frequency (Percent)	Frequency (Percent)
Checking data accuracy	369 (87 %)	54 (13 %)
Calculating percentages/ rates correctly	367 (87 %)	56 (13 %)
Ploting /developing trend chart	366 (87 %)	57 (13 %)
Explaining findings data analysis and their implications	346 (82 %)	77 (18 %)
Using data to identify performance gaps and its causes	368 (87%)	55 (13 %)
Using data for operational or management decisions	317 (75 %)	106 (25 %)

Health workers self-perception health data and its management

Three hundred thirty-one (78 %) of health workers have a positive belief in data management and use (Table 5).

Table 5, Health workers self-perception on health data and its management Illuabador zone, Ethiopia, 2021 (n= 423)

	Posetive	Negative
Health workers self-perception data management and use (95 % CI)	Frequency (Percent)	Frequency (Percent)
Are discouraged when the data they collect or record is not used for taking action (either for monitoring or decision making)	283 (67 %)	140 (33 %)
A belief that collecting or recording HMIS/CHIS data is tedious	283 (67 %)	140 (33 %)
Data if meaningful or useful for me	294 (69 %)	194 (31 %)
A belief that data they collect or have are important for monitoring (facility) service performance	309 (73 %)	114 (27 %)
Work of collecting data is appreciated and valued by supervisors	277 (65 %)	146 (35 %)
A belief that data collection or recording is not the responsibility of the health care provider	261 (62 %)	162 (38 %)

Skill on data analysis and interpretation

Three hundred (71 %) health workers were competent in routine health data analysis and interpretation (Table 6)

Table 6, Skill of the health workers working for routine health data management at Illuababor zone, Ethiopia, 2021 (n=423)

	Competent	Not-competent
Percent of health workers on competentency (95 % CI)	Frequency (Percent)	Frequency (Percent)
Percentage calculations	355 (84 %)	68 (16%)
Developing line graph	229 (54 %)	194 (46%)
Interpretation of health data	269 (64)	154 (35 %)
Interpreting analyzed health data	250 (59 %)	173 (41%)
Calculating rate (scenario 1)	211 (50 %)	212 (50%)
Calculating rate (scenario 2)	173 (41 %)	250 (59 %)
The skill of disaggregating data	271 (64 %)	206 (36%)

5.1.3. Organizational Characteristic of Health Workers

Organizational Information Use Promotion Culture

Two hundred twenty-five (53 %) of the health workers have good organizational information use culture promotion

Information use culture for decision-making of health workers

Three hundred four (72 %) of the health workers can use routine health data for decision making. (Table 7)

Table 7, Decision-Making Status among Health Workers Working at Illubabor Zone, Ethiopia, 2021, (n=423)

	Yes	No
In my organization or facility decision are based in (95 % CI)	Frequency (Percent)	Frequency (Percent)
personal preference of decision-makers	193 (46 %)	230 (54 %)
Superior directives	224 (53 %)	199 (47 %)
Evidence, fact ,data	307 (73 %)	116 (27%)
History what was done in the last year	265 (63 %)	160 (37 %)
Funding directives	218 (52 %)	205 (48 %)
Political interference	197 (47 %)	226 (53 %)
Health sector strategic plans	313 (74 %)	110 (25 %)
Catchment population need	304 (72 %)	119 (28 %)
Relative cost of intervention	301 (71 %)	122 (29 %)
Participatory by taking inputs from relevant staff	295 (70 %)	128 (30 %)

Information Use Promotion by Managers and supervisors

Two hundred sixty-seven (63 %) managers or supervisors use routine health information systems (Table 8).

Table 8, Information use promotion by Managers or supervisors of health institutions inIllubabor zone, Ethiopia, 2021, (n=423)

	Yes	No
Health Institution Managers or Supervisors (95 % CI)	Frequency (Percent)	Frequency (Percent)
Seek input from relevant staff	301 (71 %)	122 (29 %)
Emphasis on data quality procedures be followed in the compilation and submission of periodic report	289 (68 %)	134 (32 %)
Promote feedback mechanism to share/ present information within the team and lower and upper	261 (62 %)	162 (38 %)
Use RHIS data for service performance monitoring and target setting	319 (75 %)	104 (25 %)
Emphasis the need to use RHIS data to identify political disparities in service delivery and use	269 (64 %)	154 (36 %)
Conduct routine data quality checks where data are captured, processed or aggregated	264 (62 %)	159 (38 %)
Ensure that performance data are reviewed and discussed in the regular meeting	236 (56 %)	187 (44 %)
Ensure that decisions are made and follow-up action identified in PMT meeting based on presented data	235 (56 %)	188 (44 %)
Regular feedback on reported data quality to the staff responsible for compiling and reporting the data	206 (49 %)	217 (51 %)

Recognize or reward staff for good work performance	186 (56 %)	237 (44 %)

Organizational Staffs Data Management

Three hundred twenty-seven (77 %) of the health facilities organize data management practice (Table 9).

Table 9, Organizational staffs data management culture in the health institution of Illubabor zone, Ethiopia, 2021, (n=423)

	Yes	No
Organizational staffs data management culture (95 % CI)	Frequency (Percent)	Frequency (Percent)
Complete RHIS tasks like recording, reporting, processing, aggregation, and analysis on time	292 (69 %)	131 (31 %)
Display commitment to ensure data quality and evidence-based DM	288 (68 %)	135 (32 %)
Pursue indicative national targets and set the feasible local target for essential service performance	275 (65 %)	148 (38 %)
Feel personal responsibility for failing to reach performance targets	260 (62 %)	163 (38 %)
Use RHIS data for the day-to-day management of the facility	215 (51 %)	208 (49 %)
Use RHIS data to solve a common problem in service delivery	302 (71 %)	121 (29 %)
Use disaggregated RHIS data to identify and or solve an equity-related problem in service delivery	285 (67 %)	138 (33 %)

Prepare data visual showing achievement toward targets	305 (72 %)	118 (28 %)
Monitor whether an initiative or intervention achieved the targets or goal can make a decision	262 (62 %)	161 (38 %)
Held accountable for poor performance	316 (75 %)	107 (25 %)
Admit mistakes and when occur take corrective action	304 (72 %)	119 (28 %)

Supervision and mentoring, and Training of health workers

Three hundred ninety-one (92 %) of the respondents respond have good supervision and mentorship status, and Three hundred seventy-five (89 %) respondents have training on data management and related topics (Table 10).

Table 10, Supervision and mentorship, and Training of the health workers working at Illubabor zone, Ethiopia, 2021, (n=423)

Variables	Category	Frequency	Percent (95 % CI)
Had received supervision in the last months	Yes	378	89
	No	45	11
Had received mentorships in the last month	Yes	297	70
	No	126	30
Number of visits in the last six months	No visit	30	7
	One time	194	46
	Two times	160	38

	Three times or more	39	11
Supervisory entity	FMoH	9	2
	RHB	95	23
	ZHD	199	47
	WorHO	157	37
	Donor	88	21
Training topics	HMIS & related	305	72
	Data analysis & use	45	11
	General M&E	25	6
When did you receive training	Last 1 year	144	43
	Before last 1 year	193	57

5.1.4. Routine Health Information Utilization

Two hundred Sixty-five (63%) of the health workers have a good information use practice (Figure 3).

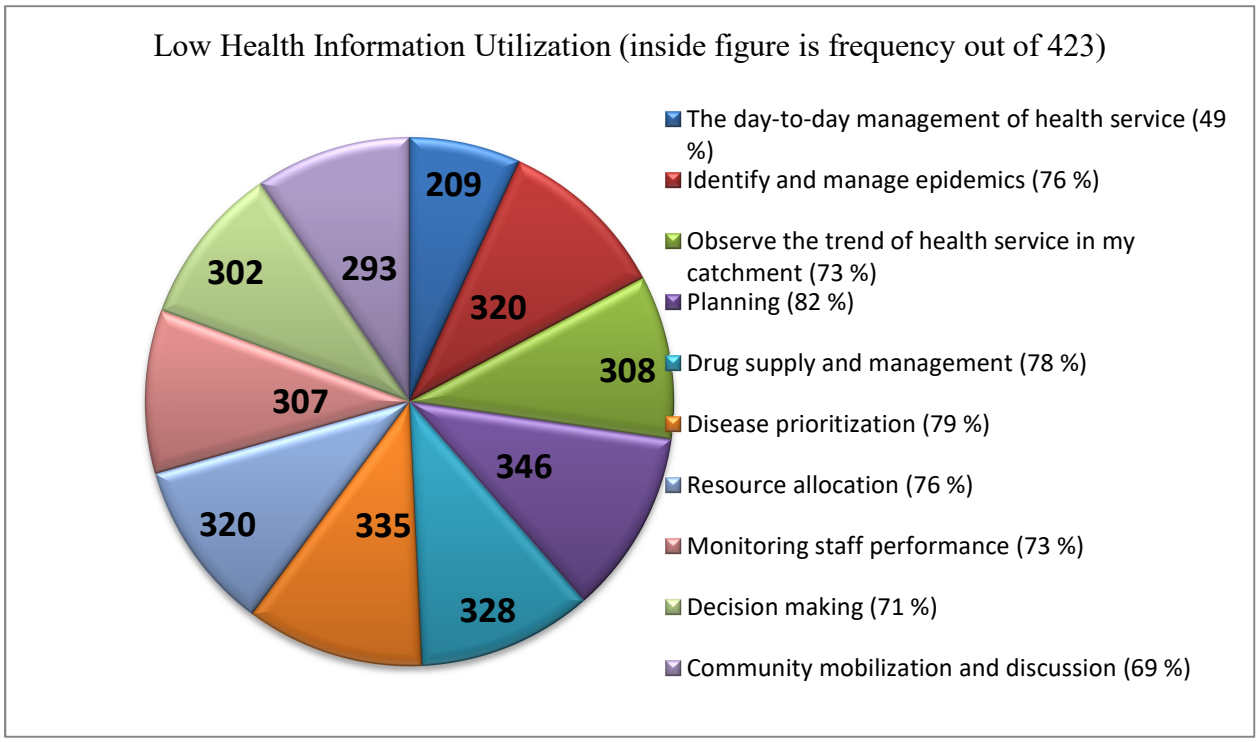


Figure 3, Information use the practice of the health workers working at Illubabor Zone, Ethiopia, 2021, (n=423)

5.1.5. Factors Associated with Routine Health Information Utilization

In bivariate analysis; Knowledge of Routine Health data management and use (P<0.001), Skills to Routine Health Information analysis and interpretation (P<0.001), self-efficacy on data management and use (P<0.001), Organizational culture of information promotion (P=0.001), Supervision and mentorship on Routine Health Information (P=0.06), Organizational type or health facility type (woreda health office) (P<0.001), Training which related to Routine Health Information (P<0.001) and, Work experiences or service of the respondents (P=0.06), age of the respondents (P=0.20), sex of the respondents (P=0.007) were significantly associated with routine health information utilization.

In multivariate analysis; knowledge of Routine Health data management and use, organizational information use culture promotion, sex, training, and facility type was significantly associated with routine health information utilization.

The odds of good information utilization was 0.44 times less likely in female gender health worker compared to male gender health worker (AOR = 0.44 (95 %, 0.25 – 0.77, P=0.004) (Table 11).

Those who are knowledgeable on health information were 3.97 times more likely to utilize routine health information than their counterparts (AOR = 3.97 (95 % CI, 2.33 – 6.73, P=<0.001) (Table 11).

Those with a good status of organizational culture information promotion were 10.04 times more likely to utilize routine health information than those with a poor organizational culture of information promotion (AOR = 10.04 (95 % CI, 5.79 – 17.44, P <0.001) (Table 11).

The odds of good information utilization was 0.17 times less likely in not trained health workers when compared to trained health workers (AOR= 0.17 (95 % CI, 0.06 – 0.51) (Table 11)

Woreda health office were 0.29 times less likely to utilize routine health information than health centers (AOR =0.29 (95 % CI, 0.15 – 0.56, P<0.001) (Table 11)

Table 11, Bivariate and Multivariate analysis of factors associated with RHIS Utilization Status among health workers Illubabor Zone, Ethiopia 2021, (n=423)

Variables	Categories	RHI data utilization		p-value	COR (95 % CI)	p-value	AOR (95 % CI)
		Good	Poor				
Age	>/=35	59 (14%)	27 (6%)		Ref		
	< 35	206 (49%)	131 (31%)	0.201	1.39 (0.83 – 2.3)		
Sex	Female	92 (22 %)	76 (18 %)		Ref		1
	Male	173 (41%)	82 (19 %)	0.007	0.57 (0.38 – 0.86)	0.004	**0.44 (0.25 – 0.77)**
Service in year	<2 year	240 (57%)	151(35%)		Ref		
	>/= 2 years	25 (6 %)	7 (2 %)	0.060	0.45 (0.19-1.05)		
Self-efficacy	Yes	81 (19%)	21 (5 %)		Ref		
	No	184 (44%)	137 (32%)	<0.001	2.87 (1.69 – 4.87)		
Skill	Good	204 (48%)	96 (23 %)		Ref		
	Poor	61 (14 %)	62 (15 %)	<0.001	2.16 (1.41 – 3.32)		
Organizational	Good	190 (45%)	35 (8 %)		Ref		Ref

information use promotion culture	Poor	75 (18 %)	123(29 %)	0.001	8.9 (5.62 – 14.12)	<0.001	**10.04 (5.79 - 17.44)**
Knowledge	Good	59 (14 %)	2 (0.5%)		Ref		Ref
	Poor	206 (49%)	156 (37%)	<0.001	22.34 (5.38 – 92.84)	0.020	**3.97 (2.33 – 6.73)**
Mentorship and supervision	Yes	240 (58%)	151 (37%)		Ref		
	No	25 (59%)	7 (2 %)	0.060	0.45 (0.18 – 1.05)		
Training	No	42 (10 %)	6 (1 %)		Ref		Ref
	Yes	223 (53%)	152 (36%)	<0.001	0.21 (0.87 – 0.51)	0.001	**0.17 (0.06 – 0.51)**
Type of facility	ZHD	21 (5 %)	0	0.998			
	WHO	31 (8 %)	64 (15 %)	<0.001	0.21 (0.13 – 0.36)	<0.001	**0.29 (0.15 – 0.56)**
	Hos	85 (20 %)	38 (9 %)	0.932			
	HC	128 (30%)	56 (13 %)				

Hosmer-Lemeshow test of fitness =0.73 with chi score of 11.5, significance at p<0.05

WHO Woreda Health Office, HC- Health Center, Hos- Hospital, ZHD- Zonal Health Department, M&E- General monitoring and evaluation

5.2. Health Extension Workers

5.2.1. Socio-Demographic Characteristics of Health Extension Workers

A total of twenty- three health extension workers were surveyed (Table 12).

Table 12, Socio-demographic characteristics of health extension workers, Illubabor zone, Ethiopia, 2021 (n=23)

Variables	Category	Frequency	Percent
HEW level	HEW Head	19	83
	HEW	4	17
Educational level	Level III	3	13
	Level IV	20	87
Service experience in years	< 2 years	2	9
	>/=2 years	21	91

5.2.2. Behavioral Characteristic of Health Extension Workers

Knowledge of health extension workers

Two (9 %) of health extension workers with good knowledge on data managemeent and use (Table 13).

Table 13, Knowledge of Health Extension Workers, Illubabor zone, Ethiopia 2021 (n=23)

	Yes	No

HEW Knowledge on data management and use (95 % CI)	Frequency (percent)	Frequency (Percents)
Dimensions of data quality	15 (65 %)	8 (35 %)
Strategies to ensure data quality	0	23 (100%)
Reason for collecting and using aggregated disease data	20 (87 %)	3 (13 %)
Reason for collecting and using aggregated immunization disease data	4 (17 %)	19 (83 %)
Reason for collecting and using aggregated age-sex disease data	2 (9 %)	21 (91 %)
Reason for collecting and using aggregated geographical data	0	23 (100%)
Reason for collecting and using aggregated population disease data	12 (52 %)	11 (48 %)

Self-efficacy of health extension workers

Sixteen (70 %) of the health extension workers have good self-efficacy levels (Table 14, and Table 15)

perception of the health extension workers

Eighteen (79 %) of the health extension workers have posetive perception for routine data management (Table 14).

Table 14, Perceptions of Health Extension Workers, Illubabor zone, Ethiopia 2021 (n=23)

	Yes	No
perceptions for data management and use (95 % CI)	Frequency (Percent)	Frequency (Percent)
Data accuracy checking	19 (83 %)	4 (17 %)
Calculating rates or percentages correctly	19 (83 %)	4 (17 %)
Plotting a trend on the chart	21 (91 %)	2 (8 %)
Explain the finding of data analysis and their implication	19 (83 %)	4 (17 %)
Identifying performance gaps	17 (74 %)	6 (26 %)
Using data for making operational or manage mental decision	10 (44 %)	13 (56 %)

Attitude of health extension workers on data management

Nineteen (83 %) of the health extension workers are a positive belief in data utilization and management (Table 15).

Table 15, Attitude of Health Extension Workers, Illubabor zone, Ethiopia 2021 (n=23)

	Favourable	Unfavourable
Attitude for data management and use (95 % CI)	Frequency (Percent)	Frequency (Percent)
Discouraged when the data I collect is not used for action	18 (78 %)	5 (22 %)

I find collecting or recording HMIS/ CHIS data tedious	21 (91 %)	2 (9 %)
That I collect data if meaningful (useful) for me	20 (87 %)	3 (13 %)
That the data I collect or I have are important for monitoring service performance	19 (83 %)	4 (17 %)
Work of collecting data is appreciated and valued by supervisors	20 (87 %)	3 (13 %)
That data collection or recording is not our responsibility	20 (87 %)	3 (13 %)

The skill of the health extension workers

Fourteen (61 %) have health extension workers who have good skills in data analysis and interpretation (Table 16).

Table 16, Skill of Health Extension Workers, Illubabor zone, Ethiopia 2021 (n=23)

Yes = competent, No= Not competent	Yes	No
competency to analyze and interpret data(95 % CI)	Frequency (percent)	Frequency (Percent)
See aspects of graph	11 (48 %)	12 (52 %)
Interprets aspects of graph	14 (61 %)	9 (39 %)
Interpret table finding to the facility level	11 (48 %)	12 (52 %)
Interpret tables finding to the community level	8 (35 %)	15 (65 %)
Calculate rates	13 (57 %)	10 (43 %)

Calculate and give meaning to the calculated rates	14 (61 %)	9 (39 %)
Description of data quality	13 (57 %)	10 (43 %)
See potential reasons for data quality problems	14 (61 %)	9 (39 %)
Indicate activities or solutions on the potential reason for data quality	10 (44 %)	13 (56 %)

5.2.3. Organizational Characteristic of Health Extension Workers

Organizational Information Use Culture Promotion

Information use culture of health extension workers for decision making

Nineteen (83 %) HEW use routine health information for the decision-making process (Table 17).

Table 17, Decision-Making Status among Health Extension Workers Working at Illubabor Zone, Ethiopia, 2021 (n=23)

	Yes	No
Decisions at health posts are made based (95 % CI)	Frequency (Percent)	Frequency (Percent)
personal preference of decision-makers	20 (87 %)	3 (13 %)
Superior directives	17 (74 %)	6 (26 %)
Evidence, fact ,data	19 (83 %)	4 (17 %)
History what was done in the last year	17 (74 %)	6 (26 %)
Funding directives	10 (44 %)	13 (56 %)

Political interference	12 (52 %)	11 (48 %)
Health sector strategic plans	19 (83 %)	4 (17 %)
Catchment population need	15 (65 %)	8 (35 %)
Relative cost of intervention	17 (74 %)	6 (26 %)
Participatory by taking inputs from relevant staff	17 (74 %)	6 (26 %)

Supervision and mentorship of health extension workers

Twenty (91 %) health extension workers have supervision or mentoring status. Thirty (57 %) HEW was supervised by the Woreda health office and health center and Twenty-one (91 %) of the health extension workers were trained (Table 18).

Table 18, Supervision and Mentorship, and Training of Health Extension Workers, Illubabor zone, Ethiopia 2021 (n=23)

Variables		Frequency	Percent
Had received supervision in the last month		20	91
Had received a mentor in the last month		20	91
Frequency of supervision	No visit	3	13
	One time	4	17
	Two times	14	61
	Three times	2	9
Supervisory entity	FMoH	0	0

	Regional health bureau	1	4
	Zonal health department	2	9
	Woreda health office	13	57
	Health center	13	57
	NGO/ partners	1	4
When did you gate the training?	Within a past 6 month	12	52
	Before past 6 month	9	39
	No training	2	9
Training topics	HMIS/CHIS & data quality	10	44
	Family Folder	2	9
	CHIS data analysis and use	9	39

3.3.4. Routine Health Information Utilization of Health Workers

Seventeen (74 %) of the health extension workers have good information use practice (Figure 4).

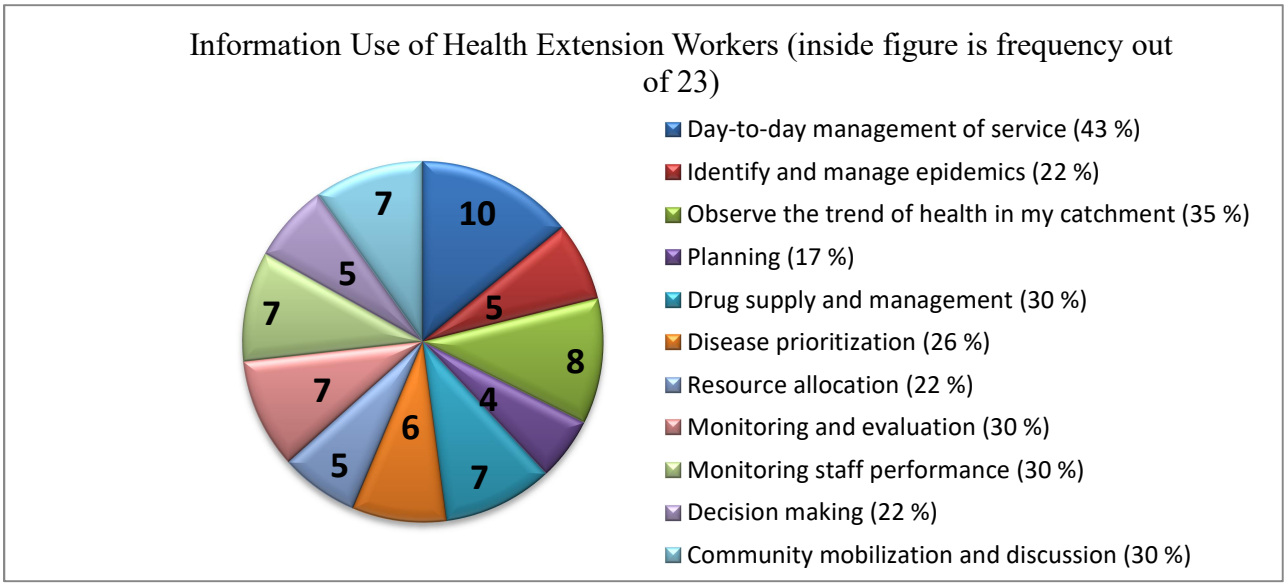


Figure 4, Routine Data Utilization with its variable Among Health Extension workers Working at Illubabor Zone, Ethiopia, 2021 (n=23)

5.2.5. Health Institutions Observation

Background characteristics of Health Posts and Health facilities

Eight (35 %) of the health post have internet access from mobile internet access. Seventeen (74 %), Nineteen (83 %) of the health posts respectively compile and organize RHIS data. Thirty-one (94 %) of facilities were having computers. Twenty-eight (85 %) were not provided feedback. Twenty-seven (82 %) had HMIS tools. (Figure 5).

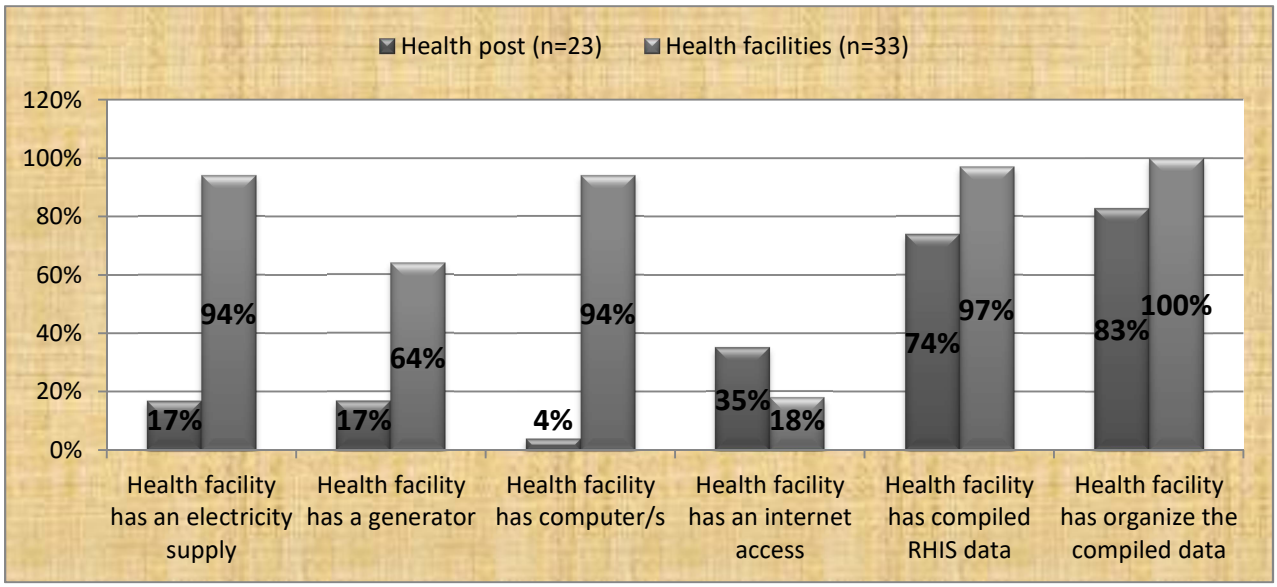


Figure 5, Background Characteristic of Health Institutions, Illubabor zone, Ethiopia

Display of Health Information in Health Institutions

Thirteen (57 %) of the health posts, and Sixteen (49 %) of facilities displayed information by the tables, maps, and charts (Figure 6).

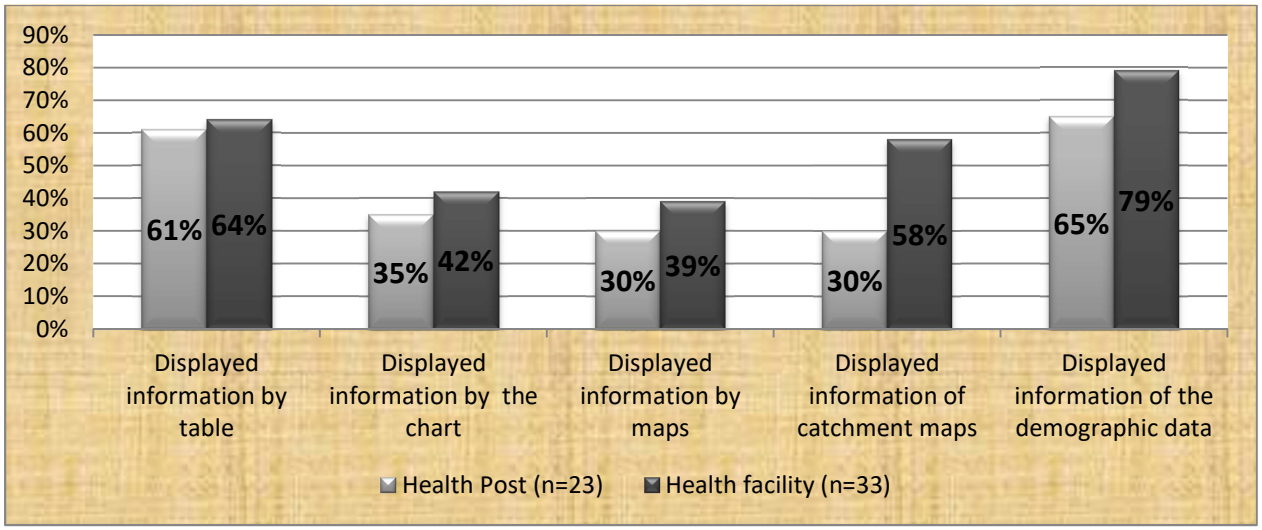


Figure 6, Display of Information in Health Institutions, Illubabor zone, Ethiopia, 2021

Feedback and Tools Availability in health Institutions

Two (9 %) of the health posts have files of feedbacks on reports with guidelines and recommendations for action. Three (13 %) of the health posts, and 22 (67 %) of the facility have have a management meeting maintained. Seventeen (74 %) health posts and 27 (82 %) of the facility have HMIS tools (Table 19)

Table 19, Feedback and Tools Availability on Health Posts and health Facilities , Illubabor zone, Ethiopia, 2021 (n=23)

	Health Post		**Health Facility**	
	Yes	No	Yes	No
Availability of Feedbacks and tools **(**95 % CI)	# (%)	# (%)	# (%)	# (%)
Feedbacks of the report with guidelines, the recommendation action	2 (9 %)	21 (81 %)	26 (79 %)	7 (21 %)
Management meeting maintained	3 (13 %)	20 (87 %)	22 (67 %)	11 (33 %)
HMIS tools availability	17 (74 %)	6 (26 %)	27 (82 %)	6 (18 %)

CHAPTER SIX

DISCUSSION

This study aimed to assess Routine Health Information Utilization from Health Management Information Systems and identify associated factors among health workers in the public health institutions of Illubabor zone, Western Ethiopia. This study revealed that 265 (63 %) of the health workers utilize routine health information, and 17 (74 %) of the health extension workers utilize routine health information in the zone. Current finding is higher than that of a study conducted in Hadiya (41 %) (25), Addis Abeba (37.3 %) (30), East Gojjam (45.8 %) (18), Oromia special zones (52.8 %) (19), and East Wollega 57.9 % (21). This variation might be due to difference in study periods. Besides, the governemnt take HIS as one pillor, and Information revolution is cascaded down to the regional and woreda levels to allow the initiative to be implemented throughout all levels of the health sector (30, 7). Similarly, current finding was higher than those studies reported from Uganda (59 %) (32) and South Africa (65 %) (33). This might be due to varietion in study periods and the criteria for measuring routine health information utilization (34). The result of current study is consistent with the national targets of Ethiopia (67.1 %) information use index in midterm or 2022 GC (35).

Regarding the official management meeting for lots of quality assurance sampling, this study revealed that 66.7 % of the health facility and 13 % of health posts were observed with regular maintained official management meeting records. This result was lower when compared with a health sector transformation plan of 2020 (85 %) of health facilities expected to conduct Lots of quality assurance sampling (LQAS) (7). Regarding reporting tools, 13 % of health posts had no reporting tools. But, all health institutions and stakeholders are expected to report according to the standard reporting format based on the common set of indicators in one monitoring calendar. This affects ``Zero Tolerance for Parallel Reporting`` (5, 27).

Based on a multivariable logistic regression analysis, the odds of routine health information utilization among female respondents were 56 percent times less likely compared to male respondents.

In this study, the odds of Routine Health Information Utilization of health care professionals who had good knowledge on data analysis and use were 3.97 times more likely compared to health care professionals who had poor knowledge on data analysis and use. This may be due to one of the facts that routine health information utilization begins with equipping people with knowledge (10). This result was supported by the result of a study held in south Ethiopia, Hadiya Zone (AOR=1.576), and Western Amhara, Ethiopia (AOR=2.71) (28-29).

Regarding perceived organizational information use culture promotion of health workers, health care professionals with good perceived information use culture were 10.04 times more likely to utilize health information when compared to health care professionals who had no organiztional information use culture promotion. This might be because information use culture is one of the major inputs for the good status of routine health information utilization or building data-driven culture (10). This result was supported by the result of a study held in Southern Ethiopia, Hadiya zone (AOR=5.05) (14).

Regarding training of the health care providers those with no training were 83 percent times less likely to utilize routine health information when compared to trained. This might be because training is important for health information utilization. The result of this study is supported by the result of a study held in the Oromia special zone, Ethiopia, East Gojjam, Ethiopia (14,17). That is perhaps training is one of the capacity building element (10).

Furthermore, from the health facility woreda health office use routine health data 71 percent less likely than the health centers. Current study was supported by that of a finding of study conducted at North Gonder (14), East Gojjam (18). This might be due to the attension given by the governemnt to district health facilities interms of supervision and regular feedback (38).

6.1 Strength and limitation of the Study

To assure data quality data were collected using a mobile-based data collection tool (ODK) with a GPS record for making map of study area. Including half of the woreda to the study. Observing each facility on information use by using facility check list developed in ODK.

This study has limitations like: not including qualitative study such as KII (key informant interview), and FGD (focus group discussion), not including health workers from private sectors and non-governemntal organization, the nature of sampling technique (purposive sampling technique limits generalization the result for the remaining population) and purposive sampling is used due to the nature of the study, the health workers stratified by the health institution. But, not stratified by the educational level and professional categories to minimize hetroginity.

CHAPTER SEVEN
CONCLUSION AND RECOMMENDATIONS

7.1 Conclusion

This study shows that knowledge on information management and use, sex, facility type, Information use culture, training were significantly associated with routine health information utilization.

7.2 Recommendations

Based on the findings mentioned above the following recommendations are forwarded for the following concerning bodies:

Federal Ministry of Health

The Federal Ministry of Health must give focus from the bottom to the top level of the facility in enhancing data utilization and provide possible supportive supervision for bottom line facilities like health posts since no supervision and monitoring history from federal health offices is documented.

District Health Offices

The health office needs to give due attention to increasing the utilization of health information at all levels of the facility. Enhance to increase the practice of utilizing health information and fill the gaps.

Provide all of the reporting tools to all health posts to contribute to global reporting for the production of global statistics and assessment for the achievement of global goals (such as Sustainable Development Goals).

Provide necessary support for the health post and the facilities to improve performance monitoring teems meeting if available strength, if not initiation. Because the health sector transformation plan was to increase LQAS in all facilities to 85 % in 2020.

Researchers

Researchers are recommended to do further investigation on routine health data utilization to enhance health care professionals utilization of health data and use this study as a baseline reference.

The coming researcher is good if addres the limitations of this study by making strata to take samples by level of education and or professional category, triangulate the research with qualitatively methods like FGD (focus group discussion) and KII (Key informant interview) to dig out barriers in utilizations routine health informations.

Therefore this study sugested that, improving the knowledge, training and culture of the health workers can increase utilization of routine health information to improve the status in the study area.

REFERENCES

1. Description P, Use T, Field A, The C, Tools P, Prism T, et al. Performance of Routine Information Systems Management (PRISM) Tools.
2. International I, Joh Snow I, Health management science for, Palladium, University T. Preparing and Conducting a PRISM Assessment 1. 2018.
3. Framework N. mHealth in Ethiopia Strategies for a New Framework. vital wave consulting. 2011.
4. WHO. Framework and Standards for Country Health Information Systems.
5. Aqil A, Lippeveld T, Hozumi D. PRISM framework: A paradigm shift for designing, strengthening and evaluating routine health information systems. Health Policy Plan. 2009;24(3):217–28.
6. Implemented HSP. HMIS Scale-up Project HMIS Scale-Up in Ethiopia. Addis Ababa, Ethiopia;
7. Of TFDR of EM, Health. Health Sector Transformation Plan. Ethiopia, addisabeba; 2015. 157 p.
8. Directorate P. HMIS technical guide refence Technical Standards : Area 1 Policy and Planning Directorate. 2017.
9. DHIS 2 End User guide Applicable to 2 . 32 version. 2020.
10. USAID U of NC at CH. Barriers to Use of Health Data in Low- and Middle- Income Countries A Review of the Literature Barriers to Use of Health Data in Low- and Middle-Income Countries A Review of the Literature. 2018;(May):21.
11. Muhaise H, Muwanga-Zake PJWF, Dr MK. Assessment model for Electronic Health Management Information Systems success in a developing Country context : A case of the greater Bushenyi Districts in Uganda. Am Sci Res J Eng Technol Sci. 2019;1–21.
12. Asress BM. Health Information Systems in Ethiopia.

13. Wekesa RN. UTILIZATION OF THE HEALTH INFORMATION MANAGEMENT SYSTEM BY. 2014;

14. Dagnew E, Woreta SA, Shiferaw AM. Routine health information utilization and associated factors among health care professionals working at public health institution in North Gondar , Northwest Ethiopia. BMC Health Services Research; 2018;6.

15. Afe AJ, Akinmurele T, Olatoun A, Oduola A, Agboola G. Factors That Influence the Use of Routine Health Information in Family Planning Services in Lagos , Nigeria . A Prospective Review of The Use of Family Planning Data. 2019;(January).

16. Kalyowa F. management and utilization of HMIS in busia district Uganda. makerere University; 2001.

17. Abebe T. assesmet of new HMIS implementation in public health facilities and institutions. 2010;(June).

18. Shiferaw AM, Zegeye DT, Assefa S, Yenit MK. Routine health information system utilization and factors associated thereof among health workers at government health institutions in East Gojjam Zone , Northwest Ethiopia. BMC Medical Informatics and Decision Making; 2017;1–9.

19. Seid MA, Bayou NB, Ayele FY, Zerga AA. Utilization of Routine Health Information from Health Management Information System and Associated Factors Among Health Workers at Health Centers in Oromia Special Zone , Ethiopia : A Multilevel Analysis. Dovepress. 2021;1195.

20. Wude H, Woldie M, Melese D, Lolaso T, Balcha B. Utilization of routine health information and associated factors among health workers in Hadiya Zone, Southern Ethiopia. PLoS One [Internet]. 2020;15(5):1–11. Available from: http://dx.doi.org/10.1371/journal.pone.0233092

21. Yarinbab TE, Assefa MK. Utilization of HMIS Data and Its Determinants at Health Facilities in East Wollega Zone , Oromia Regional State , Ethiopia : A Health Facility

Based Cross-Sectional Study. J Med Heal Sci. 2018;7(1):4–9.

22. Chaulagai CN, Moyo CM, Koot J, Moyo HBM, Sambakunsi TC, Khunga FM, et al. Design and implementation of a health management information system in Malawi : issues , innovations and results. 2005;9(September).

23. Jimmy MACHARIA1 CM. Health Management Information Systems (HMIS) Implementation Characteristics that Influence the Quality of Healthcare in Private Hospitals in Kenya. ISTAfrica. 2014;1–12.

24. Teklegiorgis K, Tadesse K, Mirutse G, Terefe W. Factors associated with low level of health information utilization in resources limited setting , Eastern Ethiopia. SciencePG. 2014;3(6):69–75.

25. Zegeye AH. Utilization of Community Health Information System and Associated Factors in Health Posts of Hadiya Zone , Southern. 2020;63(2):13–22.

26. Wekesa RN. UTILIZATION OF THE HEALTH INFORMATION MANAGEMENT SYSTEM BY COMMUNITY HEALTH WORKERS IN THE AMREF FACILITY IN KIBERA,NAIROBI COUNTY, KENYA. 2014;78.

27. Subcounty G, County K. Utilization of Healthcare Information Among Healthcare Workers in Health Education Research & Development. 2016;4(4):10.

28. WHO C. International Ethical Guidelines for Health-related research Involving Humans. Geneva; 2016. 87 p.

29. usaid, MEASURE Evaluation. PRISM toolkit. north carolina; 2019.

30. Mengistu M, Taye G, Ayele W, Biruk E, Habtamu T. Assessment of Routine Health information utilization and its associated factors among Health Professionals in Public Health Centers of Addis Ababa, Ethiopia. Ethiop J Heal Dev. 2020;(17):1–19.

31. FMOH. Information revolution. Mod Healthc. 1989;19(38):90.

32. Gladwin J, Dixon RA, Wilson TD. Implementing a new health management information

system in Uganda. Health Policy Plan. 2003;18(2):214–24.

33. Garrib A, Stoops N, Dlamini L, Govender T, Rohde J, Herbst K. An evaluation of the District Health Information System in rural South Africa. South African Med J. 2008;98(7):522–49.

34. Nutley T, Reynolds HW. Improving the use of health data for health system strengthening. Glob Health Action. 2013;6(1):1–10.

35. Ministry of Health-Ethiopia. Health Sector Transformation Plan-II 2020/21-2024/25. 2021;25(february):109.

36. Feleke AA, Olbamo TT, Taddesse B, Siraneh Y. Utilization of Routine Health Management Information and Associated Factors among Health Professionals Workingat Public Health Facilities of Hadiya Zone Southern Ethiopia. 2019;1–18.

37. Asemahagn MA. Determinants of routine health information utilization at primary healthcare facilities in Determinants of routine health information utilization at primary healthcare facilities in Western Amhara , Ethiopia. Cogent Med [Internet]. Cogent; 2017;21(1):8. Available from: http://doi.org/10.1080/2331205X.2017.1387971

38. Hiwot Belay, Tariq Azim HK. Assessment of Health Management Information System (HMIS) Performance in SNNPR, Ethiopia. ICF Int. 2013;14(87):1–29.

39. MODULE 6 . Organizational and Behavioral Assessment Tool (OBAT) – For Health Post.

40. MODULE 6 . Organizational and Behavioral Assessment Tool (OBAT) – For Health Facility. Ethiopia;

41. M 6 . Organizational and Behavioral Assessment Tool (OBAT) – For Woreda and Higher Levels.

ANNEX I
Facilities In Illubabor Zone

Zone	s/n	Woredas	Health Centers	Health posts
Iluabor zone	1	Yayo	Yayo HC	17 HP (Abiyu, Geri, Hamuma, Wabo, Magal Bondayo, Geci, Tijji, Ilu aba Dinka, Bacho, Yayo, Achibo, Sena, Wante, Jameshano, Sombo, Leka, Ordin Ongo, Kemise, Yambo)
			Yembo HC	
			Senbo HC	
	2	Mettu Woreda	Kemise HC	30 HP(Botoo, Sasrdoo, seddoo, tuluubeee, kacii, kemisee, gabaguda, Qawoof chatuu, cogi, tobacha, algagosi, algaguracha, B/shonkoraa, B/gabisa, A/bise, A/Haro, A/Karo, Burumsa, Huci, H/didu, W/dire, A/Eko, A/warkey, A/Buya, Madalu, Siba, Made, Adalegumar, Galfi, Kodohiri)
			Burusa HC	
			Tulube HC	
			Baroyi HC	
			Kodohiri HC	
	3	Hurumu	Hurumu HC	14 HP(Wangegne, Geba, Haro, Goljo, Godera, Tomayobi, YobiDola, Cebera, Hanto, Baro, sonta rural, sonta urban, Oge, inataro, keresi)
			Sonta HC	
	4	Bilonopa	Bilonopa HC	16 HP (nopa 01, Agata, Kitabir, Kero mariyam, Suli, Jato, Dizi, Umaya, Ukaru, Abu, Bilokero, Adare, Jafti, chercheri, Maru Chege, Maru Ekele)
			Bilokaro HC	
	5	Bacho	Becho HC	17 HP (Becho, Beke, Fu/Serdo, Yemmi, Bokoji, Tubi, Sacho, Gorbi, Agaro, Saki, Tulu
			Leka HC	

			Dembo HC	sune, W/kabsa, Gamechis, Gu/Sor, G/Sor, Gam/Jaba, La/sor)
	6	Mettu city	Mettu HC	6 HP(Kebelle 01 A, Kebelle 01 B, Kebelle 02 A, Kebelle 02 B, Kebelle 03 A, Kebelle 03 B)
	7	Darimu	Dupa HC	47 HP (Boto, Babo, Bero, Calte, Jarso, Sharo, uki, Kusaye, Tulema, W/Bambi, Dupha 01, Furdisa, Gobe rural, Gobe urban, Uche, Gambela, Coradambi, Inariyo, Timji, Gobora, Dade botoro, wacale, Guri, Abu gobora, Hana1, Imbero, Meti guda, Meti kerebe, Meti dheko, bendo, adare, Hiriyo, Egu, Ilalu, Kata/barko/, O/kama, O/Haro, Buko, A/Gali, Mandaya, Gungumi, Wabeko, Efarsi, Bena 1, Bena 2, Bena 3, Bena 4)
			Kidame HC	
			Aremy HC	
			Gejo HC	
			Alge HC	
			Bena HC	
			Gobe HC	
	8	Alge Sachi	Alge HC	31 HP (chokorsaf dayo, nado, agayo bogos, yagere buno, sembeto, Alge, Adare, Oboleyero, Gudaya, Sibofganji, Adakuti, Gabakamise, hannaMogu, Bero kersa, Sardo Sachi, Haro Mole, Haro Gudatu, Wata, Ali, Sarkami, Supe 01, Wayu, UmeAndalo, Usosige, Mogu Cokorsa, chonoso, Sodo, Korkoro honi, Iriyo, Adosa sosob, Anoleboru).
			Supe HC	
			Sodo HC	
			Saci HC	
			Tekestebirhan HC	
			Kamewato HC	

	9	Alle	Gore HC	23 HP (Gore 01, Gore 02, Gore 03, Gore 04, Agalo, Gumaro abo, Kundi gagi, Chatu, Gagi bachano, Dildilu Boru, Kakay badesa, Babe, Yubi Mari, Magela, Inos, Sagi, Onga, Jeto, Kuchi Boran, Gabira Dima, Cari obe, SisoBenja, Ononu, Gumero warsha baleshaye GPP)
			Onga HC	
	10	Nonosale	Asendabo HC	22 HP (Asandabo, Birbirsa, Koti, Derba, Kimo, Sharoobo, Gagro, Bontukorma, tuphi, Yakama, Arbe, Waka, Decha, Sochoso, Jawe)
			Birbirsa HC	
	11	Bure	Bure HC	20 HP (Agalo Uka, Doranidibi, Haro megala, Saco, Sibo, Megersa, Lalisa, SiboAbo, Dhamacho, Gabawitata, Dorani Dobi, Agalomoqa, OboMiriga, NaboMiriga, Qotare, Coredagayo, Bure, Toli ceka, Idgetfana, Adisalem, jajabe)
			Sibo HC	
			Bondewo HC	
	12	Halu	Uka HC	13 HP (Uka 01, HaluGamachis, Kersa, Goresidi , walkitesa, inago, sardo, Yambo, Hamuma, leman, Adare, Kidanemihiret, Didibe)
	13	Didu	Lalo HC	17 HP (lalo magala, lalo badiya, Dabano, Tulema, Gemechu, Babu, Keli, Ongo senkale, Yula Kola, Oljenera, Wada, Gordomo magala, Gordomo badiya, kochil, Dowa, Kashe, Kato, Kore)
			Gordomo HC	

	14	Dorani	Elemo HC	11 HP (Elemo, Wariya, batali, Boco, Badesa, Herma, Warabo, Didu, Didu haro, R/Suxe, Sibo, H/Abbo)
			Didudorani HC	
TOTAL		14 Woreda	41health centers	284 Health Posts
There is one referral hospital in mettu city and there is one primary hospital in Darimu Woreda. This study will consider both hospitals available within the Iluababor Zone.				
There is also 14 Woreda health office and 1 Zonal health office in Iluababor Zone				

ANNEX II

Informed Consent

Based on the understanding of the information and I given information, are you willing to participate in this study?

A) Yes B) No

1. If yes, I will continue

2. If no I will skip to the next participant.

Respondent

Signature _____Date_____

Interviewer

Name_____ Signature_____

Questionnaires number_____

Date of interview_____ Starting time_____ Completed_____

Result of interview A) Completed

B) Not completed

C) Partially completed

Checked by Supervisor: Name _____Signature_____

Address: Cell phone +251 913938773

Email: amanuel_benti@yahoo.com

ANNEX III

Questioner

Organizational and Behavioral Assessment Tool (OBAT)- For health post(39)

Part 1. OBAT for staff and management at all levels
Introduction: This survey is for the assessment of routine health information systems in the illuababor zone and used to know for the partial fulfillment of Masters. The objective of the survey is to assess the routine health information system data utilization and associated Factors Among Health Facilities in illuababor Zone, Southwest Ethiopia". This research is being conducted by a master student Amanuel Benti MPH student at Jimma University, Epidemiology department I hope that I have clarified the purpose of the study. If you have any questions you can contact me at -**+251913938773** or email: amanuel_benti@yahoo.com. or Prophesour Kifle W/Michael ☎ +251 935123168 or email: bethy_kifle@yahoo.com Dawit Wolde ☎ +251 966763913 or email: dave86520@gmail.com Please express your opinion honestly. Your response will remain confidential and will not be shared with anyone. except in aggregate formats. We appreciate your assistance and co-operation in completing this study. Thank you.

2.1 RESPONDENT BACKGROUND		
109	Title of the person completing the questionnaire	Health facility head ----------4 Health facility HMIS focal person /data management staff ----------5 Health care provider ----------6

		Other (specify) ----------96
110	Sex`	Male ----------1 Female ----------2
	Age in year	_____
111	The highest level of education achieved (circle one)	Primary /Elementary ----------1 Secondary /high school ----------2 Post-secondary or higher ----------3
112	If formal technical/ Medical training please specify the type(circle answer)	HEW ----------1 Other (specify) ----------96
113	Year of employment	Year_____ month _____
114	Years of working with health data or RHIS/HMIS/CHIS	Year _____ Month _____
115	Have you ever received formal RHIS/HMIS/CHIS training?	Yes _____1 No _____2
116	If yes, when did you receive the training?	Yes,with in the past 12 month _____1 Yes, before past 12 month _____2
116 A	If 2 for question 116, enter the year since the training received	Year _____ Month _____
117	If **yes** to 115 questions: what type of formal RHIS training have you ever	Health statistics _____1

	received?	HMIS /CHIS (Data collection, transmission, storage, and or data quality assurance _____2 Data analysis and used _____3 General M&E _____4 ICT _____5 Other (specify)_____96

SECTION 2.2: INFORMATION USE CULTURE

We would like to know your opinion (how strongly you agree or disagree) about certain aspects of his in your organization. there is no right or wrong answer. Only an expression of your opinion is based on a scale. The scale assesses the intensity of your belief and ranges from strongly disagree (1) to strongly agree (5).

This information will remain confidential and will not be shared with anyone. Except presented as an aggregated data report. Please be frank and choose your answers honestly.

1= strongly disagree	2= disagree	3= Neither disagree Nor Agree	4= Agree	5= Strongly Agree

To what extent: do you agree with the following on a scale of 1 – 5? (circle one for each of the following)

Number	In your organization /Department decisions are based on:	Strongly disagree	Dis-agree	Neither disagree nor agree	Agree	Strongly agree
118	Personal preference of decision-makers	1	2	3	4	5
119	Superior directives	1	2	3	4	5
120	Evidence /Facts/ data	1	2	3	4	5

121	History, what was done last year	1	2	3	4	5
122	Funding directives from higher levels	1	2	3	4	5
123	Political considerations	1	2	3	4	5
124	Official health sector strategic objectives	1	2	3	4	5
125	Health need of the catchment population as identified locally	1	2	3	4	5
126	The relative cost of interventions	1	2	3	4	5
127	Participatory by taking inputs from relevant staff	1	2	3	4	5
TO WHAT EXTENT, DO YOU AGREE WITH THE FOLLOWING, ON A SCALE OF 1 – 5? (Circle One for each Question)						
128	Seek inputs from the relevant staff	1	2	3	4	5
129	The emphasis that data quality procedures be followed in the complication and submission of the periodic report (Monthly report)	1	2	3	4	5
130	Promote feedback mechanism to share/present information within the team and to lower and upper levels of the system	1	2	3	4	5
131	Use RHIS data for service performance monitoring and target setting	1	2	3	4	5
132	Emphasis the need to use RHIS data to identify potential disparities in service delivery or use	1	2	3	4	5
133	Conduct routine data quality checks of points where data are captured,	1	2	3	4	5

	processed, or aggregated					
134	Ensure that performance data are reviewed and discussed in the regular meeting	1	2	3	4	5
135	Ensure that decision are made and follow-up action identified in PMT meetings based on presented data	1	2	3	4	5
136	provide regular feedback on reported data quality (E.g, accuracy data, compilation/reporting) to the staff responsible for compiling and reporting the data	1	2	3	4	5
137	Recognize or reward staff for good work performance	1	2	3	4	5
TO WHAT EXTENT, DO YOU AGREE WITH THE FOLLOWING ON A SCALE OF 1 – 5? (circle one for each question)						
138	Complete RHIS tasks (recording, reporting, processing, aggregation, and or analysis) on time.	1	2	3	4	5
139	Display commitment to ensure data quality and evidence-based decision making	1	2	3	4	5
140	Pursue indicative national targets and set the feasible local target for essential service performance	1	2	3	4	5
141	Feel ``personal responsibililty`` for failing to reach performance targets	1	2	3	4	5
142	Use RHIS data for the day-to-day management of the facility and Woreda (E.g, service delivery, financial, commodities, and human resource management)	1	2	3	4	5
143	Use RHIS data to solve a common problem in service delivery	1	2	3	4	5

144	Use disaggregated RHIS data to identify and/or solve health equity-related problem in service delivery	1	2	3	4	5
145	Prepare data visual (graph, tables, maps, etc) showing achievement toward targets (indicators, geographic and/or temporal trends or situation data)	1	2	3	4	5
146	Can monitor whether an initiative /intervention achieved the targets or goal	1	2	3	4	5
147	Can make decisions within their scope in response to the finding of data analysis (e.g, changes in service delivery or management practices	1	2	3	4	5
148	Are held accountable for poor performance (e.g, failure to meet reporting deadlines)	1	2	3	4	5
149	Admit mistakes (related to data management)if/when they occur and take corrective action	1	2	3	4	5
TO WHAT EXTENT, DO YOU AGREE WITH THE FOLLOWING ON A SCALE OF 1 - 5? (circle one for each question)						
150	I feel discouraged when the data that I collect/ record are not used for taking action/ either for monitoring or decision making	1	2	3	4	5
151	I find collecting /recording HMIS/CHIS data tedious	1	2	3	4	5
152	Collect data if meaningful (useful for me	1	2	3	4	5
153	I feel that the data I collect or I have are important for monitoring (facility) service performance	1	2	3	4	5
154	My work of collecting data is appreciated and valued by supervisors	1	2	3	4	5

155	I feel that data collection/recording is not the responsibility of health care provider	1	2	3	4	5

SECTION 2.3: RHIS KNOWLEDGE		
156	Indicate possible reasons for collecting or using aggregated data monthly for the following data types. (circle your response either 1.yes or 2.no)	Responses
156.1	The reason for collecting or using aggregated diseases data	
	A, to provide individual-level care	1, Yes 2, No
	B, to know changes in magnitude/burden of selected diseases	1, Yes 2, No
	C, to triage patients who need urgent care and those who can wait for some time	1, Yes 2, No
	D, to identify disease outbreaks and take action to address epidemics	1, Yes 2, No
	E, to plan preventive and promotive activities	1, Yes 2, No
156.2	The reason for collecting or using aggregated immunization data	
	A, to know the coverage of effective intervention (immunization) for improving maternal or child health	1, Yes 2, No
	B, to improve diagnosis and treatment of <5 children	1, Yes 2, No
	C, to take action for providing necessary resources (E.G staffing, equipment, vaccine, etc)	1, Yes 2, No
	D, to plan for immunization activities- developing a target for immunization	1, Yes 2, No

156.3	The reason for collecting or using aggregated age /sex of patients, clients	
	A, to ensure equitable service coverage across people of all group	1, Yes 2, No
	B, to know which group is affected by certain disease	1, Yes 2, No
	C, to gate more funding	1, Yes 2, No
	D, to calculate the workload of OPD and < 5 clinic	1, Yes 2, No
	E, to know if the appropriate group is getting the relevant service	1, Yes 2, No
156.4	The reason for collecting and using geographical data or the residence of the patient, ie where they come from	
	A, to plan preventive and promotive activities targeted to a certain geographic area	1, Yes 2, No
	B, to improve access and utilization of health services	1, Yes 2, No
	C, to determine the behavior of clients, population group	1, Yes 2, No
	D, for disease surveillance (to control epidemic)/ disease outbreak	1, Yes 2, No
156.5	Why are population data needed (E.g number of people living in the catchment area)?	
	A, to use as denominators for calculating the indicator	1, Yes 2, No
	B, to plan the provision of various health service	1, Yes 2, No
	C, to calculate the workload of the health facility	1, Yes 2, No
	D, to know the knowledge and skills of a health professional;	1, Yes 2, No

	SECTION 2.4 COMPETENCY TO PERFORM RHIS TASKS
157	The performance monitoring team of Mettu Health Facility randomly selected 12 data elements from Yekatit monthly report and cross-checked the reported data with the recorded data from the relevant tally sheet and registers. They calculated the data accuracy using the LQAS table. The result showed that the data accuracy score is only 70% and the team felt very disturbed by it. They set up a PMT meeting to identify the reasons for the discrepancy and think about the next steps to improve the data quality. After some discussion about the potential reasons for the low percentage of data accuracy, the team started preparing an action plan for their health facility.
157A	Describe possible data quality problem in this scenario. _____ _____
157B	Write potential reasons for the data quality problem.
	1.
	2.
	3.
157C	Write major activities to improve the data quality of Mettu Health Facility
	1.
	2.
	3.
	4.
	5.

158 –the coverage for fully immunized children 12-23 months was found to be 60%,50%30%,40%, 40% for the year 2004,2005,2006,2007, and 2008 respectively	
158 A- Develop a line graph depicting the trend depicting the coverage of fully immunized children 12-23 months by year.	
159	A survey in the facility catchment area found a total of 500 children (225 boys and 275 girls) under five years old that were malnourished. The total population of children less than five years old was 5,000, among them 55% were female.
159A	What is the malnutrition rate of boys?
159B	What is the malnutrition rate of girls?
159C	What information do you get by disaggregating the data by sex? How does this information help you with planning/improving your service delivery?
2.5 Supervision and mentor	

159	Do the supervisors visit your organization	1 Yes	0 No
160	Do the supervisors mentor you?	1 Yes	0 No
161	How many times do they visit you in the last 6 months?	A,1 B, 2 C,3 D,4 E,5 F,6	
162	From where the supervisors come?	1, zone 2 region 3, federal 4 donators5 other	

Section 2.6 information use practice

Nº		Strongly disagree	Dis-agree	Neither disagree nor	Agree	Strongly agree
177	I often use data for the day-to-day management of health service	1	2	3	4	5
178	I often use data to identify and manage epidemics	1	2	3	4	5
179	I use data to observe the trend of health services in my catchment	1	2	3	4	5
180	I often use data for planning	1	2	3	4	5
181	I use data for drug supply and management	1	2	3	4	5
182	I often use data for disease prioritization	1	2	3	4	5
183	I often use data for resource allocation	1	2	3	4	5
184	I use data for monitoring staffs performance	1	2	3	4	5

185	I use data for decision making	1	2	3	4	5
186	I often use data for community mobilization and discussion	1	2	3	4	5

Nº	Question	Result
survey facilitator:		
101	Enter today date	_____/_____/_____
102	Interviewer name	_____ _____
103	Interviewer code (please enter your 3-character identifier)	___ ___ ___
104	Please circle the type of facility for a health facility /admin unit	Referral/specialized hospital ----------1 General Hospital ----------2 Primary hospital ----------3 Health center ----------4 Medium clinic ----------5 Health post ----------6

2.1 FACILITY IDENTIFICATION		
105	Please write the name of the Woreda for the health facility /admin unit:	

106	Health facility number (please enter the unit up to 10 digits, including leading zeros.	-_____
107	Please write the name of the health facility:	__ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
108	Please circle managing authority of facility /Unit	Governmental /public ----------◯

Part 2. OBAT for staff and management at all levels

Introduction:

This survey is for the assessment of routine health information systems in the illuababor zone and used to know for the partial fulfillment of Masters. The objective of the survey is to assess the routine health information system data utilization and associated Factors Among Health Facilities in illuababor Zone, Southwest Ethiopia". This research is being conducted by a master student

Amanuel Benti MPH student at Jimma University, Epidemiology department

I hope that I have clarified the purpose of the study. If you have any questions you can contact me at -**+251913938773** or email: amanuel_benti@yahoo.com. or

Prophesour Kifle W/Michael ☎ +251 935123168 or email: bethy_kifle@yahoo.com

Dawit Wolde ☎ +251 966763913 or email: dave86520@gmail.com

Please express your opinion honestly. Your response will remain confidential and will not be shared with anyone. except in aggregate formats. We appreciate your assistance and co-operation in completing this study.

Thank you.

2.1 RESPONDENT BACKGROUND

109	Title of the person completing the	Health facility head ----------4

	questionnaire	Health facility HMIS focal person /data management staff ----------5 Health care provider ----------6 Other (specify) ----------96
110	Sex`	Male ----------1 Female ----------2
	Age in year	_____
111	The highest level of education achieved (circle one)	Primary /Elementary ----------1 Secondary /high school ----------2 Post-secondary or higher ----------3
112	If formal technical/ Medical training please specify the type (circle answer)	MSC in M&E ----------1 MSC in Health Informatics ----------2 MPH or other related masters degree -------3 Physicians ----------4 Health officer ----------5 Nurse /Midwife ----------6 HIT /IT ----------7 HEW ----------8 Other (specify) ----------96
113	Year of employment	Year_____ month _____

114	Years of working with health data or RHIS/HMIS/CHIS	Year _____ Month _____
115	Have you ever received formal RHIS/HMIS/CHIS training?	Yes _____1 No _____2
116	If yes, when did you receive the training?	Yes,with in the past 12 month _____1 Yes, before past 12 month _____2
116 A	If 2 for question 116, enter the year since the training received	Year _____ Month _____
117	If **yes** to 115 questions: what type of formal RHIS training have you ever received?	Health statistics _____1 HMIS /CHIS (Data collection, transmission, storage, and or data quality assurance _____2 Data analysis and used _____3 General M&E _____4 ICT _____5 Other (specify)_____96
SECTION 2.2: INFORMATION USE CULTURE		
We would like to know your opinion (how strongly you agree or disagree) about certain aspects of his in your organization. there is no right or wrong answer. Only an expression of your opinion is based on a scale. The scale assesses the intensity of your belief and ranges from strongly disagree (1) to strongly agree (5). This information will remain confidential and will not be shared with anyone. Except presented as an		

aggregated data report. Please be frank and choose your answers honestly.

1= strongly disagree	2= disagree	3= Neither disagree Nor Agree	4= Agree	5= Strongly Agree

To what extent: do you agree with the following on a scale of 1 – 5? (circle one for each of the following)

Nº	In your organization /Department decisions are based on:					
118	Personal preference of decision-makers	1	2	3	4	5
119	Superior directives	1	2	3	4	5
120	Evidence /Facts/ data	1	2	3	4	5
121	History, what was done last year	1	2	3	4	5
122	Funding directives from higher levels	1	2	3	4	5
123	Political considerations	1	2	3	4	5
124	Official health sector strategic objectives	1	2	3	4	5
125	Health need of the catchment population as identified locally	1	2	3	4	5
126	The relative cost of interventions	1	2	3	4	5
127	Participatory by taking inputs from relevant staff	1	2	3	4	5

TO WHAT EXTENT, DO YOU AGREE WITH THE FOLLOWING, ON A SCALE OF 1 – 5?

(Circle One for each Question)

Nº	Your organization managers or supervisors:					
128	Seek inputs from the relevant staff	1	2	3	4	5
129	The emphasis that data quality procedures be followed in the complication and submission of the periodic report (Monthly report)	1	2	3	4	5
130	Promote feedback mechanism to share/present information within the team and to lower and upper levels of the system	1	2	3	4	5
131	Use RHIS data for service performance monitoring and target setting	1	2	3	4	5
132	Emphasis the need to use RHIS data to identify potential disparities in service delivery or use	1	2	3	4	5
133	Conduct routine data quality checks of points where data are captured, processed, or aggregated	1	2	3	4	5
134	Ensure that performance data are reviewed and discussed in the regular meeting	1	2	3	4	5
135	Ensure that decision are made and follow-up action identified in PMT meetings based on presented data	1	2	3	4	5
136	provide regular feedback on reported data quality (E.g, accuracy data, compilation/reporting) to the staff responsible for compiling and reporting the data	1	2	3	4	5
137	Recognize or reward staff for good work performance	1	2	3	4	5
TO WHAT EXTENT, DO YOU AGREE WITH THE FOLLOWING ON A SCALE OF 1 – 5?						

(circle one for each question)						
Nº	In the health department, staff:					
138	Complete RHIS tasks (recording, reporting, processing, aggregation, and or analysis) on time.	1	2	3	4	5
139	Display commitment to ensure data quality and evidence-based decision making	1	2	3	4	5
140	Pursue indicative national targets and set the feasible local target for essential service performance	1	2	3	4	5
141	Feel ``personal responsibililty`` for failing to reach performance targets	1	2	3	4	5
142	Use RHIS data for the day-to-day management of the facility and Woreda (E.g, service delivery, financial, commodities, and human resource management)	1	2	3	4	5
143	Use RHIS data to solve a common problem in service delivery	1	2	3	4	5
144	Use disaggregated RHIS data to identify and/or solve health equity-related problem in service delivery	1	2	3	4	5
145	Prepare data visual (graph, tables, maps, etc) showing achievement toward targets (indicators, geographic and/or temporal trends or situation data)	1	2	3	4	5
146	Can monitor whether an initiative /intervention achieved the targets or goal	1	2	3	4	5
147	Can make decisions within their scope in response to the finding of data	1	2	3	4	5

	analysis (e.g, changes in service delivery or management practices					
148	Are held accountable for poor performance (e.g, failure to meet reporting deadlines)	1	2	3	4	5
149	Admit mistakes (related to data management)if/when they occur and take corrective action	1	2	3	4	5
TO WHAT EXTENT, DO YOU AGREE WITH THE FOLLOWING ON A SCALE OF 1 - 5? (circle one for each question)						
Nº	Personal feelings:					
150	I feel discouraged when the data that I collect/ record are not used for taking action/ either for monitoring or decision making	1	2	3	4	5
151	I find collecting /recording HMIS/CHIS data tedious	1	2	3	4	5
152	Collect data if meaningful (useful for me	1	2	3	4	5
153	I feel that the data I collect or I have are important for monitoring (facility) service performance	1	2	3	4	5
154	My work of collecting data is appreciated and valued by supervisors	1	2	3	4	5
155	I feel that data collection/recording is not the responsibility of health care provider	1	2	3	4	5
SECTION 2.3: RHIS KNOWLEDGE						
156	Indicate possible reasons for collecting or using aggregated data monthly for the following data types. (circle your response either 1.yes or 2.no)				Responses	

156.1	The reason for collecting or using aggregated diseases data	
	A, to provide individual-level care	1, Yes 2, No
	B, to know changes in magnitude/burden of selected diseases	1, Yes 2, No
	C, to triage patients who need urgent care and those who can wait for some time	1, Yes 2, No
	D, to identify disease outbreaks and take action to address epidemics	1, Yes 2, No
	E, to plan preventive and promotive activities	1, Yes 2, No
156.2	The reason for collecting or using aggregated immunization data	
	A, to know the coverage of effective intervention (immunization) for improving maternal or child health	1, Yes 2, No
	B, to improve diagnosis and treatment of <5 children	1, Yes 2, No
	C, to take action for providing necessary resources (E.G staffing, equipment, vaccine, etc)	1, Yes 2, No
	D, to plan for immunization activities- developing a target for immunization	1, Yes 2, No
156.3	The reason for collecting or using aggregated age /sex of patients, clients	
	A, to ensure equitable service coverage across people of all group	1, Yes 2, No
	B, to know which group is affected by certain disease	1, Yes 2, No
	C, to gate more funding	1, Yes 2, No
	D, to calculate the workload of OPD and < 5 clinic	1, Yes 2, No

	E, to know if the appropriate group is getting the relevant service	1, Yes 2, No
156.4	The reason for collecting and using geographical data or the residence of the patient, ie where they come from	
	A, to plan preventive and promotive activities targeted to a certain geographic area	1, Yes 2, No
	B, to improve access and utilization of health services	1, Yes 2, No
	C, to determine the behavior of clients, population group	1, Yes 2, No
	D, for disease surveillance (to control epidemic)/ disease outbreak	1, Yes 2, No
156.5	Why are population data needed (E.g number of people living in the catchment area)?	
	A, to use as denominators for calculating the indicator	1, Yes 2, No
	B, to plan the provision of various health service	1, Yes 2, No
	C, to calculate the workload of the health facility	1, Yes 2, No
	D, to know the knowledge and skills of a health professional;	1, Yes 2, No
	SECTION 2.4 COMPETENCY TO PERFORM RHIS TASKS	
157	The performance monitoring team of Mettu Health Facility randomly selected 12 data elements from Yekatit monthly report and cross-checked the reported data with the recorded data from the relevant tally sheet and registers. They calculated the data accuracy using the LQAS table. The result showed that the data accuracy score is only 70% and the team felt very disturbed by it. They set up a PMT meeting to identify the reasons for the discrepancy and think about the next steps to improve the data quality. After some discussion about the potential reasons for the low percentage	

	of data accuracy, the team started preparing an action plan for their health facility.
157A	Describe possible data quality problem in this scenario. _____ _____
157B	Write potential reasons for the data quality problem.
	1.
	2.
	3.
157C	Write major activities to improve the data quality of Mettu Health Facility
	1.
	2.
	3.

158 - The table below shows pregnant women attending antenatal care for the first time, as well as the number of these women who received Iron 90+ for prevention of anemia

Indicators	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Nº of ANC	156	162	158	151	168	148	129	138	145	171	164	152
Nº of women who received iron 90+	101	110	107	106	121	105	97	109	117	144	143	138

158 A- Develop a line graph depicting the trend over one year in Iron 90+ coverage among pregnant women attending ANC for the first time.			
159	A survey in the facility catchment area found a total of 500 children (225 boys and 275 girls) under five years old that were malnourished. The total population of children less than five years old was 5,000, among them 55% were female.		
159A	What is the malnutrition rate of boys?		
159B	What is the malnutrition rate of girls?		
159C	What information do you get by disaggregating the data by sex? How does this information help you with planning/improving your service delivery?		
2.5 Supervision and mentor			
159	Do the supervisors visit your organization	1 Yes	0 No

160	Do the supervisors mentor you?	1 Yes	0 No
161	How many times do they visit you in the last 6 months?	A,1 B, 2 C,3 D,4 E,5 F,6	
162	From where the supervisors come?	1, zone 2 region 3, federal 4 donators 5 other	

Section 2.6 information use practice						
177	I often use data for the day-to-day management of health service	1	2	3	4	5
178	I often use data to identify and manage epidemics	1	2	3	4	5
179	I use data to observe the trend of health services in my catchment	1	2	3	4	5
180	I often use data for planning	1	2	3	4	5
181	I use data for drug supply and management	1	2	3	4	5
182	I often use data for disease prioritization	1	2	3	4	5
183	I often use data for resource allocation	1	2	3	4	5
184	I use data for monitoring staffs performance	1	2	3	4	5
185	I use data for decision making	1	2	3	4	5
186	I often use data for community mobilization and discussion	1	2	3	4	5

This section presents in two main parts:

Admin Unit or facility observation questionnaire: this incorporated information related to data production, data analysis, display of information, and PMT activities.

Health workers survey tool: comprised of sections such as health worker opinion about the organizational promotion of information culture, health worker`s knowledge on HMIS and health workers skill of data analysis and interpretation, practice to use the data.

Observational tool-(41)

Background information:

Date: _____/_____/_____

Health institution name: _____

Health institution type:

- Zonal health office
- Woreda health office
- Referral hospital
- General hospital
- Primery hospital
- Health center
- Health post

Woreda: _____

Use of information: facility assessment form (for facility head or concerned head only)

Routine health information system data production

85	Does this health facility compile RHIS Data?	1, Yes observed	0, No

86	Organized data production?	1, Yes observed		0, No
87	During the last three months, did the facility receive any feedback report from the district office on their performance?		1, Yes	0, No

Section 2.2 Display of Information

	Indicator	Type of display (Please tick)		Updated		
088	Related to maternal health	Table		1, Yes	0, No	
		Graph/chart		1, Yes	0, No	
		Map/other		1, Yes	0, No	
103	Related to child health	Table		1, Yes	0, No	
		Graph/chart		1, Yes	0, No	
		Map/other		1, Yes	0, No	
104	Facility utilization	Table		1, Yes	0, No	
		Graph/chart		1, Yes	0, No	
		Map/other		1, Yes	0, No	
105	Disease surveillance	Table		1, Yes	0, No	
		Graph/chart		1, Yes	0, No	
		Map/other		1, Yes	0, No	

106	Mortality data	Table		1, Yes	0, No	
		Graph/chart		1, Yes	0, No	
		Map/other		1, Yes	0, No	
107	Communicable disease	Table		1, Yes	0, No	
		Graph/chart		1, Yes	0, No	
		Map/other		1, Yes	0, No	
108	Does the facility have information about the catchment area?	Table		1, Yes	0, No	
		Graph/chart		1, Yes	0, No	
		Map/other		1, Yes	0, No	
109	Does the office display a summary of demographic information such as population by target group(s)?	Table		1, Yes	0, No	
		Graph/chart		1, Yes	0, No	
		Map/other		1, Yes	0, No	
110	Is feedback, quarterly, yearly, or any other report on RHIS data available, which provides guidelines/ recommendations for actions?			1, Yes	0, No	
111	Is an official record of management meetings maintained?				1.Yes	0.No
If yes, please check the meeting records for the last three months to see if the following topics were discussed						
111 A	Management of RHIS, such as data quality, reporting, or timeliness of reporting				1.Yes,observed	0. No

111 B	Discussion on RHIS findings such as patient utilization, disease data, or service coverage, medicine stock out	1.Yes observed	0. No
111 C	Have they made any decisions based on the above discussions?	1.Yes observed	0. No
111 D	Has any follow-up action taken place regarding the decisions made during the previous meetings?	1.Yes observed	0. No
111 E	Are there any RHIS related issues or problems that were referred to the district or regional level for actions?	1.Yes observed	0. No
111 F	Does the PMT log book put an action plan?	1.Yes observed	0. No
112	Does last year`s plan used as an input or evidence for this year's plan?	1 Yes	2 No
113	Does the organization have HMIS tools?	1 Yes	2 No
114	Does the organization have reporting tools?	1 Yes	2 No

survey facilitator:

115	Enter today date	_____/_____/_____
116	Interviewer name	_____
117	Interviewer code (please enter your 3-character identifier)	__ __ __
118	Please circle the type of facility for a health facility /admin unit	Referral/specialized hospital ----------1 General Hospital ----------2

		Primary hospital ----------3 Health center ----------4 Medium clinic ----------5 Health post ----------6

UNIT IDENTIFICATION		
119	Please write the name of zone/ woreda for the admin unit: _____	
120	Please write the admin unit name:	-_____
121	Please write to the office/department name:	_____
122	Please circle managing authority of facility /Unit	Governmental /public ----------1 Other (specify) ----------96

Part 2. OBAT for staff and management at all levels

Introduction:

This survey is part of routine health information systems in the illuababor zone and used for know to the partial fulfillment of Masters. The objective of the survey is to assess the routine health information system data utilization and associated Factors Among Health Facilities in illuababor Zone, Southwest Ethiopia". This research is being conducted by a master student

Amanuel Benti MPH student at Jimma University, Epidemiology department

I hope that I have clarified the purpose of the study. If you have any questions you can contact me through – Amanuel Benti +251913938773 or email: amanuel_benti@yahoo.com. or

Prophesour Kifle W/Michael ☎ +251 935123168 or email: bethy_kifle@yahoo.com

Dawit Wolde ☎ +251 966763913 or email: dave86520@gmail.com

Please express your opinion honestly. Your response will remain confidential and will not be shared with anyone. except in aggregate formats. We appreciate your assistance and co-operation in completing this study.

Thank you.

RESPONDENT BACKGROUND		
123	Title of the person completing the questionnaire	Regional/ Zonal/Woreda head/ deputy head----------1 Regional/ Zonal/ Woreda RHIS ME unit leads-------2 Regional/ Zonal Woreda DPC or MCH supervisors or focal persons ----------3 Other (specify)----------96
124	Sex	Male ----------1 Female ----------2
	Age in year	_____
125	The highest level of education achieved (circle one)	Primary /Elementary ----------1 Secondary /high school ----------2 Post-secondary or higher ----------3
126	If formal technical/ Medical training please specify the type (circle answer)	MSC in M&E ----------1 MSC in Health Informatics ----------2 MPH or other related masters degree -------3 Physicians ----------4

		Health officer ----------5 Nurse /Midwife ----------6 HIT /IT ----------7 HEW ----------8 Other (specify) ----------96
127	Year of employment	Year_____ month _____
128	Years of working with health data or RHIS/HMIS/CHIS	Year _____ Month _____
129	Have you ever received formal RHIS/HMIS/CHIS training?	Yes _____1 No _____2
130	If yes, when did you receive the training?	Yes,with in the past 12 month _____1 Yes, before past 12 month _____2
130A	If 2 for question 130, enter the year since the training received	Year _____ Month _____
131	If **yes** to 115 questions: what type of formal RHIS training have you ever received?	Health statistics _____1 HMIS /CHIS (Data collection, transmission, storage, and or data quality assurance _____2 Data analysis and use _____3 General M&E _____4 ICT _____5

		Other (specify)_____96

SECTION 2.2: INFORMATION USE CULTURE

We would like to know your opinion (how strongly you agree or disagree) about certain aspects of his in your organization. there is no right or wrong answer. Only an expression of your opinion is based on a scale. The scale assesses the intensity of your belief and ranges from strongly disagree (1) to strongly agree (5).

This information will remain confidential and will not be shared with anyone. Except presented as an aggregated data report. Please be frank and choose your answers honestly.

1= strongly disagree	2= disagree	3= Neither disagree Nor Agree	4= Agree	5= Strongly Agree

To what extent: do you agree with the following on a scale of 1 – 5?

(circle one for each of the following)

Number	In your organization /Department decisions are based on:					
132	Personal preference of decision-makers	1	2	3	4	5
133	Superior directives	1	2	3	4	5
134	Evidence /Facts/ data	1	2	3	4	5
135	History, what was done last year	1	2	3	4	5
136	Funding directives from higher levels	1	2	3	4	5
137	Political considerations	1	2	3	4	5
138	Official health sector strategic objectives	1	2	3	4	5

139	Health need of the catchment population as identified locally	1	2	3	4	5
140	The relative cost of interventions	1	2	3	4	5
141	Participatory by taking inputs from relevant staff	1	2	3	4	5

TO WHAT EXTENT, DO YOU AGREE WITH THE FOLLOWING, ON A SCALE OF 1 – 5?

(Circle One for each Question)

#	Your organization managers or supervisors:					
142	Seek inputs from the relevant staff	1	2	3	4	5
143	The emphasis that data quality procedures be followed in the complication and submission of the periodic report (Monthly report)	1	2	3	4	5
144	Promote feedback mechanism to share/present information within the team and to lower and upper levels of the system	1	2	3	4	5
145	Use RHIS data for service performance monitoring and target setting	1	2	3	4	5
146	Emphasis the need to use RHIS data to identify potential disparities in service delivery or use	1	2	3	4	5
147	Conduct routine data quality checks of points where data are captured, processed, or aggregated	1	2	3	4	5
148	Ensure that performance data are reviewed and discussed in the regular meeting	1	2	3	4	5
149	Ensure that decision are made and follow-up action identified in PMT meetings based on presented data	1	2	3	4	5

150	provide regular feedback on reported data quality (E.g, accuracy data, compilation/reporting) to the staff responsible for compiling and reporting the data	1	2	3	4	5
151	Recognize or reward staff for good work performance	1	2	3	4	5

TO WHAT EXTENT, DO YOU AGREE WITH THE FOLLOWING ON A SCALE OF 1 – 5?

(circle one for each question)

#	In the health department, staff:					
152	Complete RHIS tasks (recording, reporting, processing, aggregation, and or analysis) on time.	1	2	3	4	5
153	Display commitment to ensure data quality and evidence-based decision making	1	2	3	4	5
154	Pursue indicative national targets and set a feasible local target for essential service performance	1	2	3	4	5
155	Feel ``personal responsibility`` for failing to reach performance targets	1	2	3	4	5
156	Use RHIS data for the day-to-day management of the facility and Woreda (E.g, service delivery, financial, commodities, and human resource management)	1	2	3	4	5
157	Use RHIS data to solve a common problem in service delivery	1	2	3	4	5
158	Use disaggregated RHIS data to identify and/or solve health equity-related problem in service delivery	1	2	3	4	5
159	Prepare data visual (graph, tables, maps, etc) showing achievement toward targets (indicators, geographic and/or temporal trends or situation data)	1	2	3	4	5

160	Can monitor whether an initiative /intervention achieved the targets or goal	1	2	3	4	5
161	Can make decisions within their scope in response to the finding of data analysis (e.g, changes in service delivery or management practices	1	2	3	4	5
162	Are held accountable for poor performance (e.g, failure to meet reporting deadlines)	1	2	3	4	5
163	Admit mistakes (related to data management)if/when they occur and take corrective action	1	2	3	4	5

TO WHAT EXTENT, DO YOU AGREE WITH THE FOLLOWING ON A SCALE OF 1 - 5?

(circle one for each question)

#	Personal feelings:					
164	I feel discouraged when the data that I collect/ record are not used for taking action/ either for monitoring or decision making	1	2	3	4	5
165	I find collecting /recording HMIS/CHIS data tedious	1	2	3	4	5
166	Collect data if meaningful (useful for me	1	2	3	4	5
167	I feel that the data I collect or I have are important for monitoring (facility) service performance	1	2	3	4	5
168	My work of collecting data is appreciated and valued by supervisors	1	2	3	4	5
169	I feel that data collection/recording is not the responsibility of health care provider	1	2	3	4	5

SECTION 2.3: RHIS KNOWLEDGE

170	Indicate possible reasons for collecting or using aggregated data monthly for the following data types. (circle your response either 1.yes or 2.no)	Responses
170.1	The reason for collecting or using aggregated diseases data	
	A, to provide individual-level care	1, Yes 2, No
	B, to know changes in magnitude/burden of selected diseases	1, Yes 2, No
	C, to triage patients who need urgent care and those who can wait for some time	1, Yes 2, No
	D, to identify disease outbreaks and take action to address epidemics	1, Yes 2, No
	E, to plan preventive and promotive activities	1, Yes 2, No
170.2	The reason for collecting or using aggregated immunization data	
	A, to know the coverage of effective intervention (immunization) for improving maternal or child health	1, Yes 2, No
	B, to improve diagnosis and treatment of <5 children	1, Yes 2, No
	C, to take action for providing necessary resources (E.G staffing, equipment, vaccine, etc)	1, Yes 2, No
	D, to plan for immunization activities- developing a target for immunization	1, Yes 2, No
170.3	The reason for collecting or using aggregated age /sex of patients, clients	
	A, to ensure equitable service coverage across people of all group	1, Yes 2, No

	B, to know which group is affected by certain disease	1, Yes 2, No
	C, to gate more funding	1, Yes 2, No
	D, to calculate the workload of OPD and < 5 clinic	1, Yes 2, No
	E, to know if the appropriate group is getting the relevant service	1, Yes 2, No
170.4	The reason for collecting and using geographical data or the residence of the patient, ie where they come from	
	A, to plan preventive and promotive activities targeted to a certain geographic area	1, Yes 2, No
	B, to improve access and utilization of health services	1, Yes 2, No
	C, to determine the behavior of clients, population group	1, Yes 2, No
	D, for disease surveillance (to control epidemic)/ disease outbreak	1, Yes 2, No
170.5	Why are population data needed (E.g number of people living in the catchment area)?	
	A, to use as the denominator for calculating the indicator	1, Yes 2, No
	B, to plan the provision of various health service	1, Yes 2, No
	C, to calculate the workload of the health facility	1, Yes 2, No
	D, to know the knowledge and skill of health professionals;	1, Yes 2, No
SECTION 2.4: COMPETENCY TO PERFORM RHIS		
171- Ato Gemechis, Woreda health office head, read a recent report prepared by the HMIS officer after a		

supervision visit made at 10 health facilities out of 15. The supervisor cross-checked the reported data with recorded data from a source document and calculate the verification factor. The supervision report showed that the average data accuracy for the indicator, ANC 1st visit was only 60% and Ato Gemchis felt very disturbed by it. He said " I need to take action``. He set up a meeting with the entire Woreda health team to identify the reason for the discrepancy and think about the next step to improve the data quality. After some discussion with his team about the potential reason for the low percentage of data accuracy, the Woreda team started preparing an action plan for all health facilities in the Woreda.	
171 A	Describe possible data quality scenarios in this problem
171 B	Write the potential reason for the data quality problem
	1.
	2.
	3.
171 C	Major activities to improve data quality
	1.
	2.
	3.
171 D	The estimated number of pregnant mothers in the Woreda catchment area for the current period is 760. The health facility of the Woreda has registered 456 pregnant mothers for ANC's 1st visit. Calculate the percentage of pregnant mothers in the Woreda attending ANC in the same period. _____

171 E- The table below shows the HCT result for Darimu Woreda. In this Woreda, government facilities provide HCT service. During a recent review of data, it was discovered that youth <24 accounts for a significant number of new HIV infections. In response to these data health centers of darimu Woreda regularly review HCT data to inform decision-related to increasing the uptake of HCT services among youths

HCT (HIV Counseling and Testing) monthly summary of January 2020

		DupaHC		kidameHC		Alga HC		Bena HC	
		Age of client		Age of client		Age of client		Age of client	
Indicator		<24	≥24	<24	≥24	<24	≥24	<24	≥24
HCT 1	Number of counseled	341	401	61	226	501	623	108	151
HCT 2	>> tested for HIV	339	399	53	220	494	600	108	151
HCT 5	>> Who tested positive	30	41	9	63	96	141	17	19
HCT 7	>> refer to support group	30	41	4	41	84	98	4	8

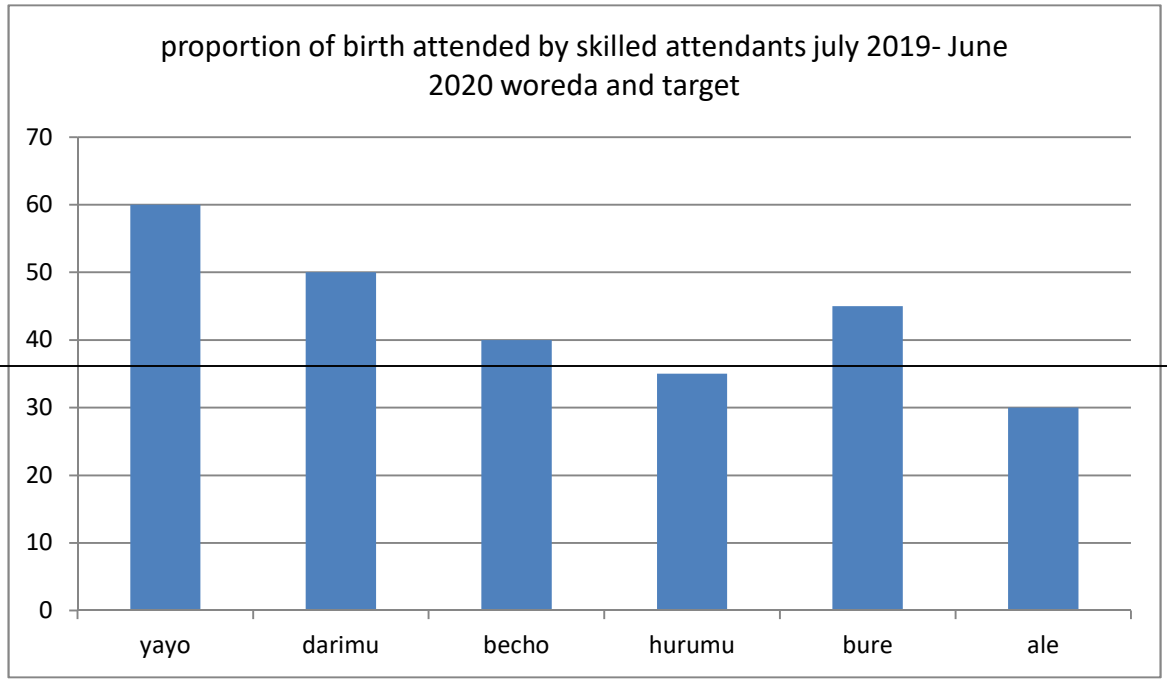
171 F- by using the above table calculate the proportion of clients who tested positive for HIV among those tested in Darimu Woreda disaggregated by age

F1- < 24 years old = _____

F2- ≥ 24 years old = _____

171 G- develop a bar chart depicting the distribution across the ages of the clients tested for HIV for the four facilities

172- Interpret the following graph



172 B- Among the woredas shown in the above graph, which of the woredas have attained the target coverage rate (40%) by the end of 2020? In general, what possible guidance could you provide to woredas that didn't meet the target based on this data? (write a minimum of four solutions:_____ _____			
172 C- A survey in the facility catchment area found 500 children under five years old that were malnourished. The total population of children less than five years old was 5,000. What is the malnutrition rate?			
Section 2.5. Supervision and mentor			
173	Do the supervisors visit your organization	1 Yes	0 No
174	Do the supervisors mentor you?	1 Yes	0 No
175	How many times did they visit you in the last 6 months?	A,1 B, 2 C,3 D,4 E,5 F,6	
176	From where the supervisors come?	1, zone 2 region 3, federal 4 donators 5 other	

Section 2.6 information use practice						
177	I often use data for the day-to-day management of health service	1	2	3	4	5
178	I often use data to identify and manage epidemics	1	2	3	4	5

179	I use data to observe the trend of health services in my catchment	1	2	3	4	5
180	I often use data for planning	1	2	3	4	5
181	I use data for drug supply and management	1	2	3	4	5
182	I often use data for disease prioritization	1	2	3	4	5
183	I often use data for resource allocation	1	2	3	4	5
184	I use data for monitoring staffs performance	1	2	3	4	5
185	I use data for decision making	1	2	3	4	5
186	I often use data for community mobilization and discussion	1	2	3	4	5

DECLARATION

I declare that this research proposal entitled **"**Routine Health Information low Utilization and Associated Factors among Public Health Institutions of Illubabor Zone, western Ethiopia" is my original work, and has not been submitted as a requirement for the award of any degree in Jimma University or elsewhere.

NAME	SIGNATURE	DATE
Amanuel Benti	_____	_____

As research Adviser, I hereby certify that I have read and evaluated this thesis paper prepared under my guidance, by Amanuel Benti entitled "Routine Health Information low Utilization and Associated Factors among Public Health Institutions of Illubabor Zone, western Ethiopia" as a fulfilling requirement for the Master of Science in General Public Health.

Advisors:			
	Prof Kifle WoldeMichael	_____	_____
	NAME	SIGNATURE	DATE
	Dawit Wolde	_____	_____
	NAME	SIGNATURE	DATE