ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

ASSESMENT OF ROUTINE HEALTH INFORMATION UTILIZATION AND ASSOCIATED FACTORS AMONG PUBLIC HEALTH CENTERS IN ADDIS ABABA, ETHIOPIA, 2020

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DEPARTMENT OF PUBLIC HEALTH

COLLEGE OF HEALTH SCIENCES, ADDIS ABABA UNIVERSITY

APPROVED BY THE EXAMINING BOARD

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Acronyms and Abbreviations

AAU	Addis Ababa University
BSc	Bachelor of Science
$DHIS_2$	District Health Information System Version – 2
EFY	Ethiopian Fiscal Year
FMOH	Federal Ministry of Health
HIS	Health Information System
HMIS	Health Management Information System
HSDP	Health Sector Development Plan
HSTP	Health Sector Transformation Plan
LMICS	Low and Middle Income Countries
MAT	Management Assessment Tool
MPH	Masters of Public Health
OBAT	Organizational and Behavioral Assessment Tool
PRISM	Performance of Routine information system Management
REC	Research Ethical Committee
RHIS	Routine Health Information System
SDGs	Sustainable Development Goals
SNNPR	Southern Nation, Nationalities and Peoples' Region
VIF	Variance Inflation Factor
WHO	World Health Organization

Abstract

Background: - The health management information system produces data about health service provision and population health status to inform decision making and program planning at all levels of the health system. Like other developing countries, the practice of utilizing health information is low in Ethiopia especially at the local level. Lack of adequate and up-to-date information regarding routine health information utilization in Addis Ababa led to this study.

Objectives:-To assess routine health information utilization and associated factors in public health centers in Addis Ababa.

Methods: - An institution based cross-sectional study using quantitative method was conducted in randomly selected 49 public health centers found in Addis Ababa from August-September, 2020. To collect data, 441 health managers were selected using simple random sampling technique. Self-administered structured questioner was used to collect data. EPI-info version 7 and SPSS version 20 software were used for data entry and analysis respectively. Binary logistic regression model was used to identify factors that have significant association with routine health information utilization. Variables with p-value less than 0.2 in bi-variable analysis were selected and exported in to multi-variable analysis. Finally p-value less than 0.05 at 95% confidence interval was used to determine the level of significance.

Results: - A total of 416 study participants involved in the study and a response rate of 94% was achieved. The study revealed that routine health information utilization among health managers was 66.6%. Use of computer software for data analysis (AOR = 3.76, 95% CI; 1.84 - 7.65, p<0.001), having training on data analysis and interpretation (AOR = 3.03, 95% CI; 1.31 – 6.99, p=0.009), receiving feedback of supervisory visits from higher levels (AOR = 3.07, 95% CI; 1.34 - 7.02, p = 0.008) and good culture of information utilization (AOR = 2.16, 95% CI, 1.11-4.21, p = 0.024) were significantly associated with routine health information utilization.

Conclusion and recommendations: - Routine health information utilization was found to be low compared to the national expectation level. Promoting use of computer software for data analysis, training of health professionals on data analysis and interpretation, providing regular supportive supervision along with written feedback and improving promotion of culture of information are highly recommended to improve routine health information utilization.

1. INTRODUCTION

1.1. Background

Globally, fostering of health systems to improve health outcomes has become a primary health agenda. While all building blocks of the health system are essential to reinforce the health system and ultimately to improve health outcomes, health information systems are the base of the overall system by generating timely and quality data to inform decision making for the remaining five building blocks of the health system (1).

An effective health information system should ensure the generation, analysis, communication and utilization of sound and timely information on the performance of the health system, determinants and status of health (2). Information use is essential at all levels of the health system. At individual and community level, health information is vital for managing clinical issues effectively and for evaluating the extent to which services are attaining the essentials and desires of communities. At district level, health information is important to make decisions that can achieve sound running of health institutions and the entire health system by health planners and managers. At higher levels, health information is necessary for policy development and resource allocation (3).

The routine Health Management Information System (HMIS) is an integral part of the health information system and its purpose is to routinely generate quality health information that offers information support for decision making at all levels of the health system for improving the performance of health services delivery (4). HMIS is also termed as routine health information system (RHIS) (5).

Worldwide, a considerable amount of financial and human resources have been allocated to collect data on facilities, communities and populations (6). However, use of information to inform decision making especially data produced by RHIS is still very low in most low and middle income countries (LMICs) (7).

Moreover, health information systems are very crucial to the health care systems found in developing countries due to more resource scarcity and health inequity compared to developed

nations (8). However, the existing health information systems in most developing countries are weak to provide the necessary information support for managers to make sound decisions (9).

Most health care workers in developing countries equate health information systems as collecting data, compiling of information and sending out reports periodically to the next higher level (9). As a result, data is remained unused or not adequately utilized by decision makers and health care workers(1,10). They have based their decision based on intuition, political opportunism, expediency or donor demand (11).

In Africa, routine health information is under-utilized(12). It has ranged from 44.1% to 58 % (13–16). Like other developing countries, routine health information utilization in Ethiopia is also low which has ranged from 32.9% to 69% (17–24).

The reasons for poor health information utilization include weak analysis of data, scarcity of trained staff, poor quality of data, lack of information culture, and consideration of HIS tasks as a burden as a result of high workloads particularly at the health facility level (25). It also includes irrelevance of the information gathered for the task at hand, ill-defined information needs, and presence of fragmented and centralized health information systems (9,26).

Recognizing the problem in evidence based decision making in the health sector, the ministry of health of Ethiopia introduced and implemented the Information Revolution Agenda which was one amongst the four transformation agendas of the Health Sector Transformation Plan (HSTP) of the country. Its intention was reforming the methods and practice of collecting, analyzing, presenting and disseminating information. It also aimed at bringing about fundamental cultural and attitudinal change regarding perceived value and practical use of information (27).

Assessing the changes brought by the implementation of the information revolution agenda regarding information use in the past five years particularly in Addis Ababa is essential to identify gaps which ultimately enable to design and implement interventions that can fill the gaps observed in the future. Therefore, this study intended to assess routine health information utilization and its associated factors among public health centers in Addis Ababa.

1.2. Statement of the problem

In Ethiopia, the transformative role of routine health information in advancing national efforts to achieve quality and equity in health service delivery is recognized. The FMOH has implemented various interventions to improve the collection and use of high-quality routine health information guided by the information revolution road map (28).

In spite of the extensive effort to enhance the efficiency of health information systems in the past few years in Ethiopia, the prevailing practice in terms of effectively utilizing information is not satisfactory especially at the local level (29). The utilization of routinely produced information in policy and strategy formulation and in planning and decision making, especially at the lower levels, is not widely Practiced (27,29).

According to a joint study of Ministry of Health and WHO, information utilization level in Ethiopia was only 37% (24). Similar studies conducted in Jimma Zone, Western Amhara, East Gojam Zone, Eastern Ethiopia, East Wolega Zone and Hadya Zone, revealed that routine health information utilization rate was 32.9%, 38.4%, 45.8%, 53.1%, 57.9% and 69.3% respectively (17–22). This indicates that utilization of health information is much lower than the national expectation which is 90 % (30).

Likewise a study conducted in Addis Ababa also reported that utilization of routine health information in public health centers is low which was 41.7 % (31).
This very low usage of data/information to make informed decisions has led to inequity in allocation of resources and poor planning for provision of essential healthcare services (32) and compromises the capability of the health system to retort to priority needs throughout its levels (33).

The main objective of the information revolution agenda of the HSTP is to maximize the use of health information for decision-making at all levels. Therefore investigating how far this goal is achieved in public health centers is necessary. In addition to this, there is lack of adequate and updated studies on routine health information utilization among public health centers of Addis Ababa. To the best of the researcher's knowledge, only a single study inquired about routine health information utilization among public health centers of Addis Ababa in 2011(31). So this

study aimed to assess the current status of routine health information utilization and its associated factors in public health centers found in Addis Ababa.

1.3. Significance of the study

The findings of this study will be primarily useful for health center managers by informing routine health information utilization status and factors that determine its utilization. It will also improve their knowledge and help them to design and implement appropriate interventions to enhance evidence-based practice. Furthermore the findings of this study will be essential to advocate for possible solutions and policy change by health center managers for issues outside their control. In addition to those immediate benefits of the study, it will also significantly help health centers to improve their performance, to provide quality health services and ultimately to improve the health status of the served population under the health centers by strengthening the overall health system.

This study will be also valuable for the Ministry of Health, Regional Health Bureaus, Sub City Health Offices and other stakeholders by providing up to date information about the status of routine health information utilization and by informing appropriate recommendations to fill the gaps identified. Furthermore, it will add value to existing literatures and can be used as a source of information for other similar studies to be conducted in the future.

2. LITERATURE REVIEW

2.1. Overview of HMIS and its implementation in Ethiopia

Health Information System (HIS) is a system which is devised to amalgamate data collection, processing, reporting, and utilization of the information essential for enhancing the effectiveness and efficiency of health services at all levels through good management (34).

It is extremely important for monitoring and evaluation, providing an alert and early warning capability, supporting patient and health facility management, enabling planning, supporting and stimulating research, permitting health situation and trends analysis, supporting global reporting, and underpinning communication of health challenges to diverse users (35).

There are different sources of health data and information. Population - based sources, such as censuses, vital registration, and household surveys, and institution-based sources, such as facility surveys, facility records, and individual records are the common sources of health data and information (25).

Generally, there are two types of health information systems according to the data collection methods: routine and non-routine. Routine health information is the data collected at regular intervals at public, private, and community-level health facilities and institutions and health programs through mechanisms designed to meet predictable information needs. Routine health information includes health service statistics for routine service reporting, administrative data, epidemiological and surveillance data and data on community-based health actions. Conversely, non-routine health information is usually acquired from data collected through surveys and special purpose studies conducted on an ad hoc or non-repetitive basis. Large demographic and health surveys, program level baseline and impact studies, facility surveys and national health accounts are categorized in to non-routine health information systems (6).

HMIS is an information system designed to support planning, management, and decision making in health facilities and organizations through adequate data collection and analysis (34). Among the seven components of the Health Sector Development Plan III of Ethiopia, the Health Management Information System and Monitoring and Evaluation component was the one which was aimed to develop and implement a comprehensive and standardized national HMIS and

M&E System in order to ensure utilization of information for planning and management of health services. It also aimed to harmonize the donor-government efforts in planning, reporting, monitoring and evaluation (36).

It is recognized as the backbone for decision-making, resource allocation and strategy development (37). It also has significant importance for monitoring service delivery, patient management, and underlying health system functions at the district and facility levels (25).

In 2007 HMIS reform was implemented through conducting situational analysis, selecting of indicators that can adequately address the monitoring requirement of different health programs, designing of data recording and reporting tools as well as developing of training materials and guidelines (38). Setting standard indicators, designing data collection and reporting forms and procedures were the focus areas of this reform. The reform was also emphasized on institutionalizing of HMIS data quality assurance and information use mechanisms (39).

In the year 2017, ministry of health of Ethiopia undertaken revision of HMIS indicators to respond to the changes in health system organization, epidemiological pattern, service delivery modality, focus on maternal health and quality of services and the need to align and track the progresses of the Health Sector Transformation Plan (HSTP) and the Sustainable Development Goals (SDGs) as well as other new program initiatives. A total of 131 indicators were selected, out of which 33 are new, 29 indicators are modified, and 69 indicators remain unchanged from the previous set of indicators (40).

2.2. Overview of PRISM Framework and tools

2.2.1. PRISM Framework

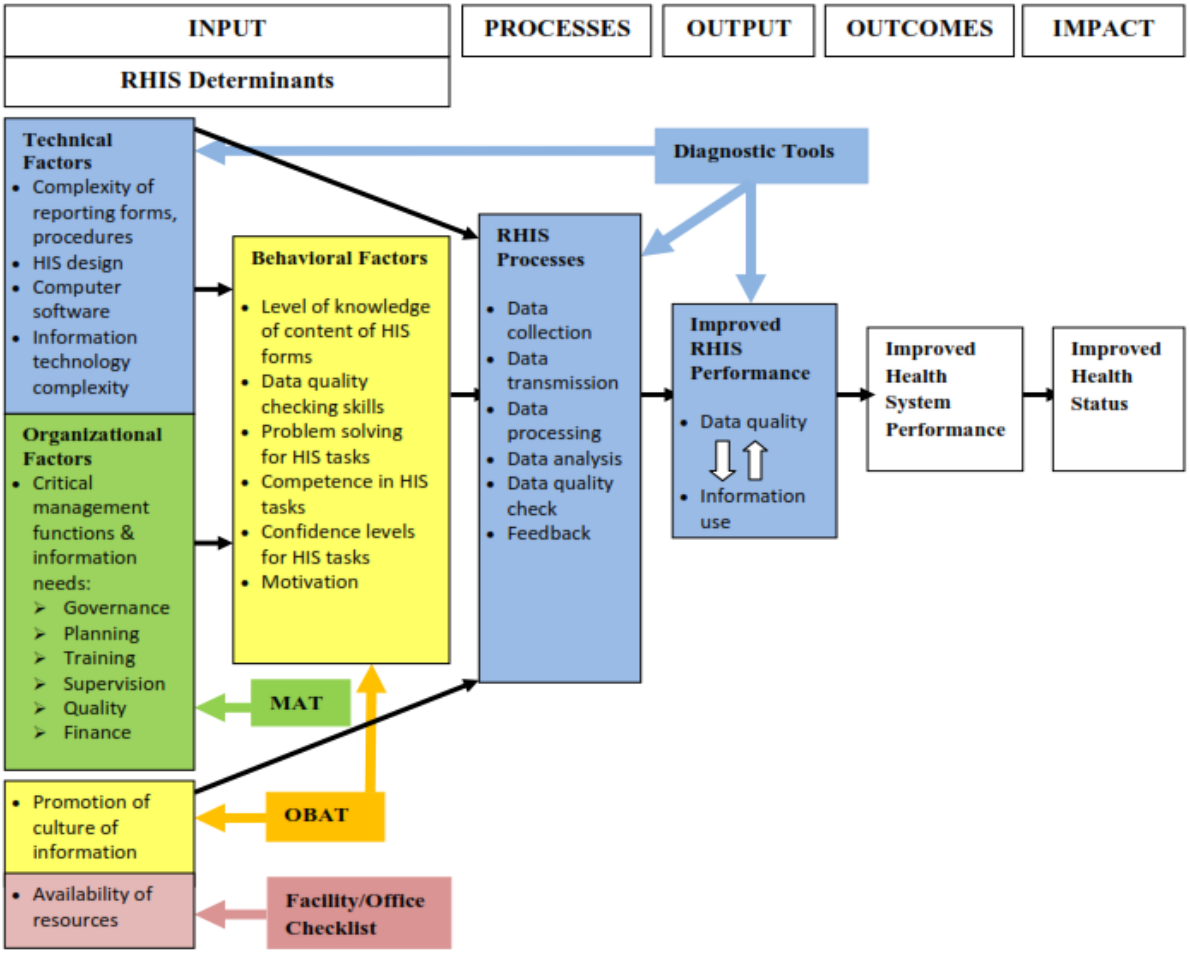
Performance of Routine Information System Management (PRISM) Framework was designed by MEASURE Evaluation in 2011 for global use to achieve the purpose of making evidence-based decisions, assessing the quality of an RHIS, and identifying and addressing gaps in an RHIS (41). It describes that organizational, technical and behavioral determinants and processes influence RHIS performance (improved data quality and continuous use of information). Information needs or indicators, data, data transmission, data processing, data analysis, data display, data quality checking and giving feedback are processes that influence RHIS performance. This implies that examining the function of each of these determinants is necessary to address determinants that influence RHIS performance negatively and ultimately results in continuous improvement of RHIS performance. According to the PRISM framework, organizational, technical and behavioral determinants directly influence RHIS processes and performance. However, organizational and technical factors can also influence RHIS processes and performance indirectly via behavioral factors (5).

2.2.2. PRISM tools

Four tools have been developed and standardized for the purpose of measuring RHIS performance, processes and determinants and their relationships described under the PRISM framework. The tools are RHIS performance diagnostic tool, RHIS overview tool, RHIS management assessment tool (MAT) and RHIS organizational and behavioral assessment tool (OBAT) (5)**.**

RHIS performance diagnostic tool is intended to determine the overall level of RHIS performance: the level of data quality and use of information. The RHIS Overview tool examines technical determinants, such as information flows, the structure and design of existing information systems, and interaction of different information systems. MAT is designed to assess RHIS management practices and to support the formulation of action plans for better management. OBAT tool is designed to identify organizational and behavioral determinants, such as motivation, RHIS task competence, self-efficacy, problem-solving skills, and the organizational environment promoting a culture of information (41).

Figure 1 PRISM Conceptual Framework



Source: - Belay H , Lippeveld T. Inventory of PRISM Framework and Tools: Application of PRISM Tools and Interventions for Strengthening Routine Health Information System Performance. 2013

2.3. Routine health information utilization

A study from India reported that 78 % of respondents use HMIS data for day-to-day program management, formulating plans, human resources management, and identification of emerging issues, budget preparation, medical supply, drug management, and budget reallocation (42).

Compared to the above study, low utilization of health information among health care workers was indicated by a study from Kenya which was 51.9% (13). Similar results of inadequate use of routine health information to inform decisions were also reported from studies conducted in South Africa and Tanzania. The findings indicated were 53%, and 58% respectively (14,15).

An investigation on quality and use of routine data conducted in Rwanda described that, 44.1% of the in-charges/data managers reported use of HMIS data for requesting funds, procurement of drugs, ordering mosquito nets, assigning tasks and payment of community health workers (16).

A study done in Ethiopia to assess the level of HMIS implementation and use of data produced in public hospitals found that 221 (43.8%) of the participants used the output of HMIS generated information for different purposes. 138 (62.4%), 30 (13.6%), and 53 (24.0%) of the health professionals used HMIS information for reporting to next level, planning, and decision making respectively (43).

Another study which revealed a similar result with the above findings is a study conducted in Addis Ababa to assess the HMIS utilization of public health centers which indicated that the general HMIS utilization rate was 41.1% (31). A similar study done in Western Amhara observed poor health information utilization. Only 96 (38.4%) of health workers regularly utilized HMIS information for two or more purposes besides for reporting purposes (18).

However a research conducted in Hadiya Zone of Southern Ethiopia reported a higher result of HMIS utilization, 242(69.3%) (23).

2.4. Technical factors influencing use of health information

Technical determinants are factors that are associated with the knowledge, skills and technology to design, manage and enhance RHIS processes and performance. Technical determinants include indicator development, data collection forms development and procedural manuals preparation. It also includes types of information technology, and software development for data processing and analysis (44).

A study conducted in India noted that concern for poor data quality, simplifying formats, removing redundancies, and avoiding duplication and using ICT to encourage health systems to generate and use data (45).

Similar study from Kenya on HMIS information utilization in government health facilities found that only 1 (4.8%) information producers was trained in data collection, analysis and processing.it also showed that 20 (95.2%) of the respondents had no computers and were not IT compliant, 21 (100%) respondents stated that HIS tools were not user friendly and time

consuming. This study pointed out lack of staff competence on collecting, analyzing and processing data, lack of computer to handle data and multiple data collection tools are the technical factors that influence information use (46).

In Kenya findings from another study showed that availability of standard indicators, manuals, reporting forms and data analysis and presentation forms were a major part of the technical factors affecting performance of HMIS (47).

A similar study in Nigeria revealed that information generated was not adequate to support an informed decision-making and health planning because some of these reports are not precise and out of date-incomplete, inaccurate, and untimely reporting. In addition to this, problem of large and unnecessary data as well as extreme and unnecessary reporting requirements from numerous and weakly coordinated subsystems affected data quality and information use (48).

Another study which is conducted in Western Amhara, Ethiopia to assess routine health information utilization and its determinants among health centers revealed similar finding regarding knowledge on data management and use. The odds of good information use among respondents who had knowledge on data management and utilization were 2.71 times compared to their counterparts (OR = 2.71, 95% CI = [1.41, 5.21]) (18).

According to a study conducted in Eastern Ethiopia, availability of trained staff to fill format, friendly reporting format, standard set of indicators, skilled man power, well designed format and data analysis technology were the technical factors that determine HIS utilization (20).

2.5. Organizational factors influencing use of health information

These are factors which referred to organizational resources, structure, support services, procedures, and culture to design, manage and enhance RHIS processes and performance. The organizational factors influence RHIS performance directly or indirectly through behavioral factors (44).

According to a study conducted in India, investing in training and capacity development of human resources at each level of the government improves health information systems. However, the capacity for data analysis is often lacking thereby hindering the ability of health staff to analyze, interpret and use data for planning and management (49).

Finding from Uganda ,indicated that lack of access to information and communication technology facilities like internet , soft wares and computer hardware has a multiplicity effect and limits health information dissemination, information sharing among experts and decision making (50).

A similar study from Nigeria pointed out lack of attention for training in data processing, analysis, interpretation and problem solving as well as poor quality of training, poor information culture and insufficient staff affects use of information (48).

Findings from Papua New Guinea, training and provision of tools for data analysis are important to change the way staff use information. The study also indicated that the demand and use of information openly by senior managers makes importance of information to be reinforced throughout the health system (51).

According to the study in South Africa, incapacity of managers to analyze, interpret, and utilize information, distrust in the data, owing to insufficient skills and, poor culture of information-utilization at the facility and district levels were the organizational factors attributable to inadequate use of information (14).

A study conducted in Kenya found 38 (92.7%) of information producers and health managers lack support on facts-based decision making ,39 (95.1%) lack support supervision on health information use and 40 (97.6%) lack promotion of information use culture. This implies that lack of support supervision on health information use, lack of support on staff training in skills on facts-based decision making, lack of support on prioritization and information use in decision making and lack of a culture supporting use of information considered as the organizational factors influencing use of health management information (46).

The actual use of data for making decisions is affected by governance structures, human capacity, and commitment to use health data to make informed decisions. Pre-service and in-service training, continuing education, and supervisory visits are important ways to transfer knowledge and skills for HIS improvement (52).

The finding of a study conducted in Mekelle, Ethiopia to evaluate the HMIS implementation indicated lack of focal person and budget allocation for HMIS unit. The study also observed

unavailability of basic HMIS manuals; communication means like telephone, internet and printing device in the HMIS unit. In addition to this there was no performance monitoring team and regular monthly /quarterly data evaluation (53).

A study conducted to examine the level of HMIS implementation and use of data produced among public hospitals of western Oromia, Ethiopia indicated that higher odds of HMIS information utilization among health professionals who have regular feedback. Availability of adequate HMIS reporting formats, presence of regular monitoring and evaluation, and being aware of presence of annual budget for HMIS were also the most important organizational factors that influence routine health information utilization (43).

Availability of supervision and regular feedback were factors that showed significant association with good HMIS information utilization in a study done in East Gojjam, Ethiopia (19). Availability of regular and effective supportive supervision and mentorship are powerful methods to address issues of health care workers in real time since they involve direct interactions with health care workers at their work place (54).

A similar study done in Western Amhara, Ethiopia which aimed to assess routine health information utilization and its determinants among health centers also found that computer access and skills, supportive supervision and follow-up, HMIS training, graph paper/marker access, availability of data presentation and data management guideline were factors that influence routine health information utilization at public health centers (18).

Another study conducted in East Wollega, Ethiopia to explore routine health information utilization and its determinants factors among health facilities also reported that availability of performance monitoring meeting by health professionals (AOR=4.07, 95% CI = 1.29, 12.83) and decisions based on superior directives (AOR = 2.46,95% CI=1.10,5.49) were significantly associated with HMIS data utilization (21).

A study which aimed to examine the level of routine health information utilization and its associated factors among health workers in Hadiya zone, Ethiopia revealed that availability of supportive supervision, training and good perceived culture of information use were factors significantly associated with good level of routine health information utilization (55).

According to another study done in Hadya zone, Ethiopia to determine the utilization of community health information systems and associated factors in health posts, monthly supportive supervision (AOR = 1.72; CI=1.02, 2.91), written feedback (AOR=5.33; CI = 3.27, 8.69) and compiled and send additional parallel reports (AOR = 4.41; CI =2.35-8.30) were factors that determine good utilization of community health information system (30).

Similarly, another finding from Hadiya zone, Ethiopia showed that those who had claimed consistency of data with register book, tally sheet and reporting formats and those who filled data formats completely were more likely use routine health information (23).

2.6. Behavioral factors influencing use of health information

RHIS processes and performance including data collection, transmission, processing, analysis, presentation, data quality check and feedback are directly influenced by RHIS users' confidence, demand, competence and motivation to carryout RHIS activities. The PRISM framework postulates that people complete RHIS tasks effectively if they understand the tasks utility, perceive confident and competent in executing the task as well as feel that the task is tough but not extremely hard (5).

A study from South Africa showed that inadequate use of information has been attributed to insufficient skills to analyze, interpret and use of data by managers (14).

The study conducted in Kenya on routine health management information use in public sectors revealed that lack of recognition systems for well-done job and lack of staff motivation and incentive mechanism to generate quality data are behavioral factors influencing use of health management information (46).

A study which was intended to evaluate routine health information utilization and its determinant factors among health facilities in East Wollega Zone, Ethiopia reported that staff motivation is significantly associated with utilization of HMIS data(AOR = 2.07, 95% CI = 1.12, 4.29) (21).

A similar study conducted in East Gojam, Ethiopia to assess routine health information utilization among health workers stated favorable attitude towards health information utilization [AOR = 2.85, 95% CI: 1.78, 4.54] was a determinant factor(19). Around half (47.0%) of the health extension workers had favorable attitude towards community health information design in

a study conducted in Hadya Zone. Moreover, the study revealed that 59.2% of the respondents had high self-confidence to perform CHIS tasks (30).

Lack of problem identification and solving skills and limited RHIS task competencies regarding data quality check, data analysis and information use are the common problems observed among health workers. Findings from Cote d'Ivoire, Dominican Republic, Ecuador, Ethiopia, Gabon, Honduras, Mexico, Peru, South Africa, and Uganda revealed that only 37% of the health workers were able to demonstrate skills to identify and solve problems related to information use (44).

A study conducted in South Ethiopia, indicated that the self-efficacy of study participants for plotting, calculation, and use of data were above 75%, but confidence levels were around 70% for checking data quality and interpretation of data which indicates that respondents felt more confident in collecting data than interpreting data (39).

3. Conceptual Framework

The conceptual framework of this study is developed by adapting from the PRISM Framework and based on the literature review conducted. According to the framework, there are four factors which determine routine health information utilization. The first one is socio-demographic factors which influence routine health information utilization directly or indirectly through the technical factors. The second one is the technical factors which influence the outcome variable directly or indirectly through the behavioral factors. The third one is the behavioral factors which determine the outcome variable directly and the fourth one is the organizational factors which influence the outcome variable directly or indirectly through the behavioral factors.

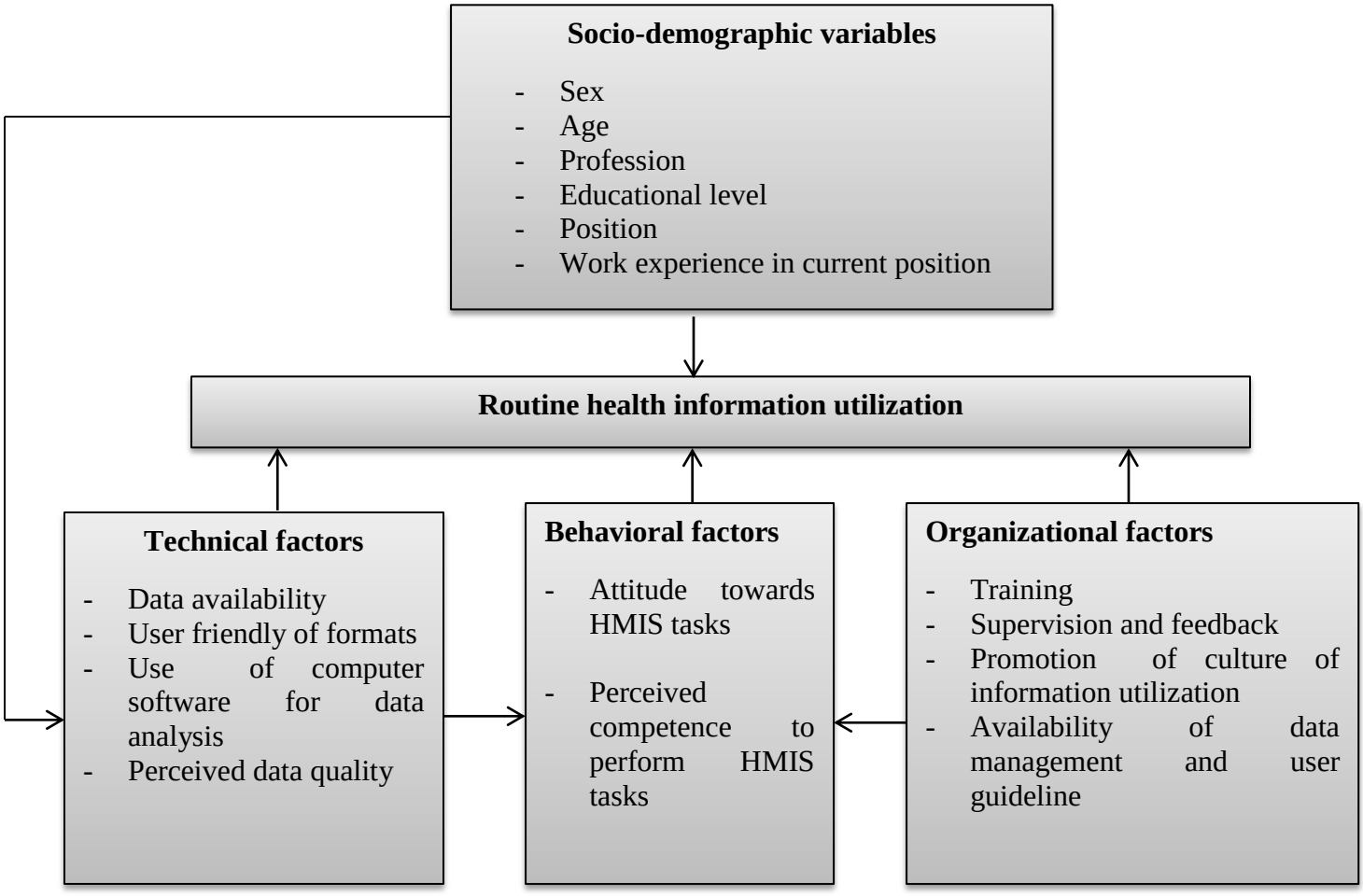


Figure 2 Conceptual Framework for assessment of routine health information utilization and associated factors among public health centers in Addis Ababa, Ethiopia, 2020

4. OBJECTIVES

4.1. General objective

- To assess routine health information utilization and associated factors in public health centers of Addis Ababa in 2020.

4.2. Specific Objectives

- To assess the routine health information utilization among public health centers of Addis Ababa.
- To identify the technical factors associated with utilization of routine health information among public health centers of Addis Ababa.
- To identify the organizational factors associated with utilization of routine health information among public health centers of Addis Ababa.
- To identify the behavioral factors associated with utilization of routine health information among public health centers of Addis Ababa.

5. METHODOLOGY

5.1. Study Area

The study was carried out in Addis Ababa City which is the capital and the biggest city of Ethiopia. Addis Ababa is a chartered city having three layers of government; city government at the top, 11 sub city administrations in the middle and 126 woredas at the bottom. The total population of the city for the year 2020 is estimated to be 4,793,699 according to the latest revision of the UN-World urbanization prospects (56). According to Addis Ababa regional health bureau, six governmental hospitals and 98 health centers are currently providing comprehensive health services to the population of the city.

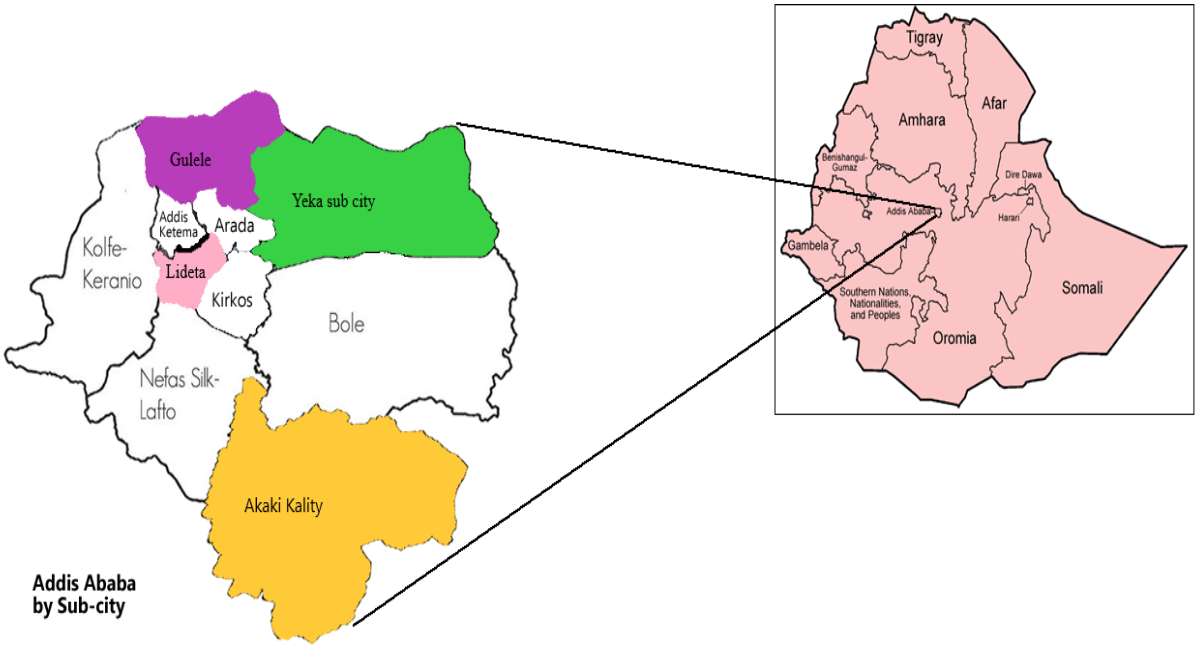


Figure 3 Map of Addis Ababa City Administration (source: - Addis Ababa city administration website **http://www.addisababa.gov.et/web/guest/city-map)**

5.2. Study period

The study period was from August – September, 2020.

5.3. Study Design

Institution based cross sectional study design using quantitative method was conducted to assess routine health information utilization and associated factors in public health centers of Addis Ababa.

5.4. Study population source

All health workers working in functional public health centers found in Addis Ababa City.

5.5. Study population.

The study population was health managers (Medical Directors, Core Process Owners, Sub Core Process Owners and Case Team Coordinators) who were working in randomly selected public health centers of Addis Ababa.

5.6. Sample size

Sample size was calculated using a single population proportion formula for each of the four objectives of the study using Epi Info version 7 stat calc software. P = 45.8%, P = 74.9% and P = 46.5% from a study conducted in East Gojjam Zone (19) were used to calculate the sample size for the 1st , 2nd and 3rd objectives of the study respectively. The study conducted in East Gojjam Zone was selected as a reference because it has reported a higher proportion (P) near to 50% and used a higher sample size (668 health care workers) compared to other studies. Due to lack of evidence for the 4th objective, P = 50% was considered to calculate the sample size. Confidence level (95%), margin of error (5%) and non-response rate (10%) were assumed to calculate the sample size for each of the four objectives.

The sample size calculation for each objective is demonstrated in the table below.

Sample size is determined as follows;-

$$\boldsymbol{n} = \frac{(\boldsymbol{z}\,\boldsymbol{\alpha}\,/\mathbf{2})\;\mathbf{2}\;.\boldsymbol{p}\;(\mathbf{1}-\boldsymbol{p})}{\boldsymbol{d}^{\mathbf{2}}}$$

Where: - n = Sample size

$z\,\alpha\,/2$ = 1.96

p = proportion

d = degree of precision 0.05

Table 1 Summary of sample size determination

Objective 1. To assesses the routine health information utilization among public health centers of Addis Ababa.			
Factors	**P**	**Non – response rate**	**n**
Routine health information	45.8%	10%	420

Utilization			
Objective 2. To identify the technical factors associated with utilization of routine health information among public health centers of Addis Ababa.			
Factors	**p**	**Non – response rate**	**n**
Standard reporting formats	74.9%	10%	318
Objective 3. To identify the organizational factors associated with utilization of routine health information among public health centers of Addis Ababa			
Factors	**P**	**Non – response rate**	**n**
Availability of regular feedback	46.5%	10%	421
Objective 4. To identify the behavioral factors associated with utilization of routine health information among public health centers of Addis Ababa			
Factors	**P**	**Non – response rate**	**n**
-	50%	10%	422

Therefore, the maximum sample size, 422 was considered for the study.

5.7. Sampling procedures

Due to budget and time constraints, it is difficult to cover all 98 public health centers found in Addis Ababa. According to WHO, taking 30% of health facilities/districts is adequate to draw conclusion (57). So, 49 health centers (50%) were selected using simple random sampling technique. Since the number of health center managers is similar among health centers, the sample size was allocated equally to those 49 health centers. Then the study participants were selected using simple random sampling technique from health managers working in each public health center.

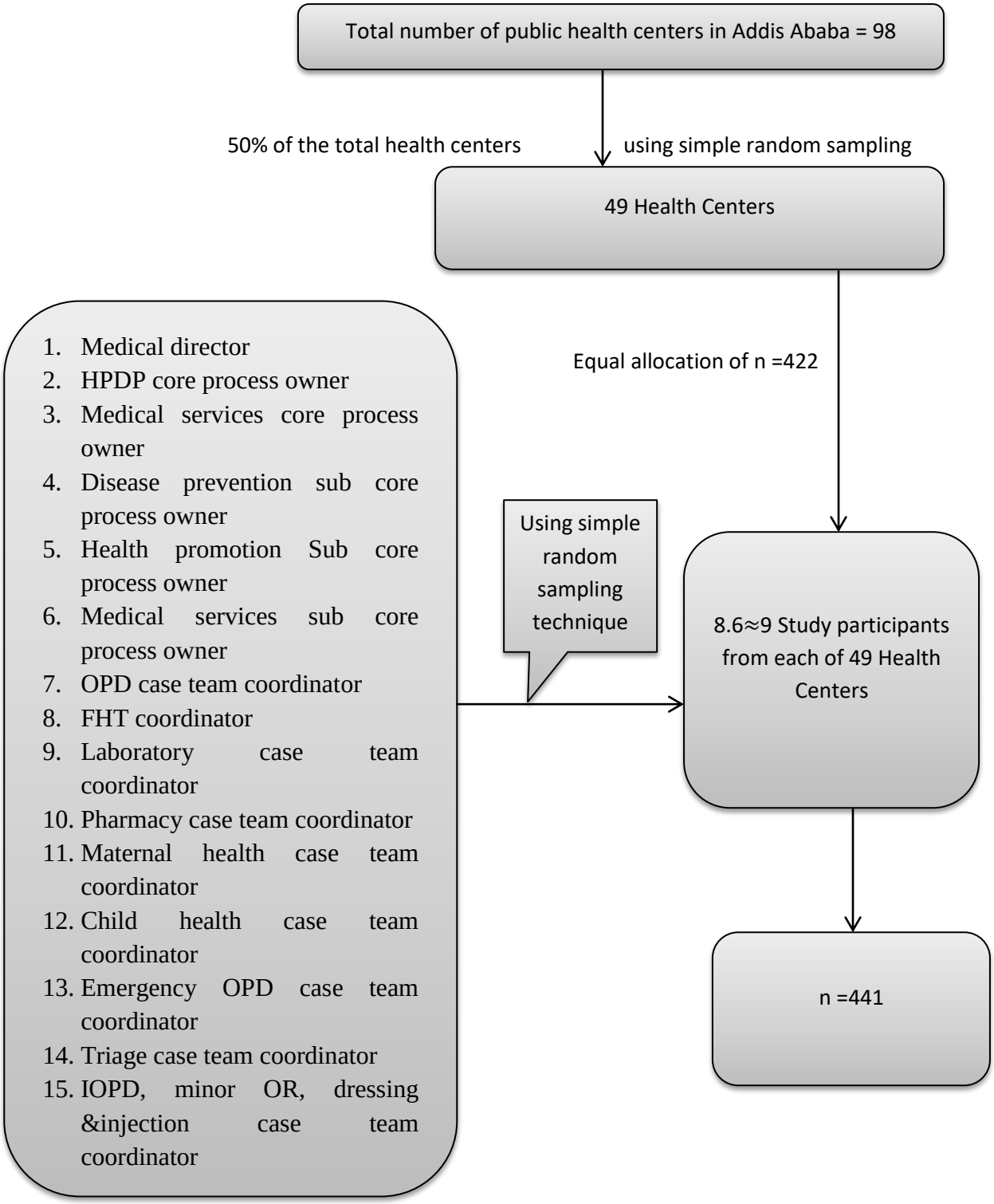


Figure 4 Schematic presentation of sampling procedures for study facilities and respondents, Addis Ababa, Ethiopia, 2020

5.8. Inclusion criteria

Health managers who were working in randomly selected public health centers were included in the study.

5.9. Exclusion criteria

Health managers who had less than six month work experience on their respective position and health managers who were not available during data collection due to training, sick leave, maternity leave and vacation were excluded.

5.10. Data collection procedures

A self-administered structured questionnaire adapted from Performance of Routine Information System Management (PRISM) toolkit (41) and other similar literature (18–20,31,58–60) was used to collect the data. Among the four PRISM tools, organizational and behavioral assessment tool (OBAT) was used to adapt the questionnaire to assess some of the organizational and behavioral factors. The questionnaire had five sections which include questions about socio-demographic factors, routine health information utilization, technical factors, organizational factors and behavioral factors. The questionnaire was prepared in English. Before collecting the actual data, a pre-test was conducted in 10% of the total sample size to ascertain the comprehensibility, order, coherence and time needed to fill the questionnaire. Gaps in sequencing and wording of the questions were observed during the pre-test. So the questionnaire was revised to improve the sequencing of the questions and the comprehension of wordings.

Seven health professionals who have Bachelor of Science (BSc.) degree in nursing and health officer were recruited and deployed to collect data and to supervise the data collection process. Five of them deployed to collect data while the rest two health professionals to supervise the data collection process. Except one data collector who was from health center, the remaining data collectors and supervisors were from sub city health offices and all have experience on data collection. One day training was given to the data collectors and supervisors by the principal investigator. The training was focused on the objective of the study, content of the questioner, data collection methods and procedures as well issues concerning on confidentiality, informed consent and respecting the right of respondents to participate or refuse in the study. The supervisors were oriented how to ensure completeness, consistency and reliability of data.

Data collectors were provided the list of randomly selected respondents in advance using random number generator mobile application to save time and to avoid selecting of respondents arbitrarily. Nine respondents per health center were interviewed per day by data collectors.

5.11. Operational definitions

Routine health Information utilization

It is the use of health information generated from HMIS for formulation of plans, budget preparation/budget reallocation, client management and follow up, medicine supply and drug management, human resource management, involvement of the community and local government, service delivery improvement, prediction and detection of outbreaks, identification of gaps and priority areas, and monitoring and evaluation of performance.

Those dimensions which are used to measure routine health information utilization were adopted from PRISM toolkit (41) and studies conducted in Ethiopia (19,58,60) and Kenya (59).

Good and poor routine health information utilization practice: - Mean score was used to dichotomize health managers' routine health information utilization practice in to 'Good' if equal or above the mean score and 'Poor' if less than the mean score.

Promotion of culture of information utilization: - was assessed using five dimensions: evidence based decision making, use of information, emphasize on data quality, sense of responsibility and empowerment/accountability. Each of those dimensions was in turn assessed with a minimum of three and a maximum of five questions. Totally 20 likert-scale questions were used to assess culture of information. Mean score was used to dichotomize culture of information in to 'Good' if equal or above the mean score and 'Poor' if less than the mean score.

Perceived Data quality:-It was measured by asking study participants about their perception on the completeness, reliability and timeliness of HMIS data. Mean score was used to dichotomize perceived data quality into 'Good' if equal or above the mean score and 'Poor' if less than the mean score.

Attitude towards HMIS tasks: - It is the belief of the respondents regarding HMIS tasks which was measured using 7 likert scale questions. Mean score was used to dichotomize attitude

towards HMIS tasks into ‘Positive’ if equal or above the mean score and ‘Negative’ if less than the mean score.

Perceived competency to perform HMIS tasks: - It is the capacity of the study participants to carry out HMIS tasks which was measured using 6 likert scale questions. Mean score was used to dichotomize perceived competency to perform HMIS tasks into ‘Good’ if equal or above the mean score and ‘Poor’ if less than the mean score.

Health managers: - are medical directors, core process owners, sub core process owners and case team coordinators who are working in health centers.

5.12. Data management

After checking the collected data for completeness and performing of coding of data, it was entered in to Epi- info version 7.2. Data cleaning was done to address missing values, outliers and other inconsistencies by using frequency to identify missed values and sort to observe the outliers. Cleaned data was then exported into Statistical Product and Service Solutions (SPSS) version 20.0 for data analysis purpose. To test how well the logistic regression model explains the data Hosmer-Lemeshow Goodness of fit test was used. Variance Inflation Factor (VIF) and Pearson Correlation Coefficient (r) were also applied to check multicollinearity of independent variables. Variance Inflation Factor (VIF) less than 10 /VIF < 10/ and Pearson Correlation Coefficient (r) less than 0.7 / r < 0.7/ were used as a cut off points to check the absence of multicollinearity between the independent variables.

5.13. Data analysis procedures

After data was exported from Epi-Info version 7.2 to Statistical Product and Service Solutions (SPSS) version 20.0, coding of variables was carried out. The data was checked for missed values, consistency and outliers by using frequency and sort. Descriptive statistics (mean, frequencies, tables, and graphs) was used to summarize and describe the data. Mean scores were used as a cut-off points to split the data collected in a likert scale measure to dichotomize variables. Binary logistic regression model was used to observe the association between the independent variables and the outcome variable. Variables with the result of p - value of less than 0.2 in the bi-variable analysis were entered in to the multivariable logistic regression model in order to control the effects of potential confounders. Both crude odds ratio (COR) and

adjusted odds ratio (AOR) using 95% confidence intervals were computed to see the strength of associations. A probability (p) value of less than 0.05 in the multivariable logistic regression analysis was used to identify the variables which are significantly associated with routine health information utilization.

5.14. Study variables

5.14.1. Dependent variables

Routine health information utilization

5.14.2. Independent variables

Socio-demographic variables (Age, sex, profession, education level, position and work experience in current position)

Technical variables (Data availability, user friendly of formats, use of computer software for data analysis and perceived data quality)

Organization variables (Training, supervision and feedback, promotion of culture of information utilization, availability of data management and user guideline)

Behavioral factors (Attitude towards HMIS tasks, perceived competence to perform HMIS tasks)

5.15. Data quality assurance

Before data collection, pretesting and modifying of the questionnaire, and recruiting of experienced data collectors and supervisors were done to ensure the quality of data. Moreover, training was provided to the data collectors and supervisors on data collection tool, methods and procedures by the principal investigator. During data collection, data collectors were supervised and provided onsite technical assistance both by the supervisors and the principal investigator to assure the quality of data. In addition to this, data completeness and consistency was checked on daily basis and corrective measures were taken timely. After data collection, each questionnaire was coded and checked for completeness and consistency prior to data entry. Checking of data for missed values, inconsistencies and outliers were also done after data entry in to EPI-Info version 7.2 and after exporting into SPPS version 20.

5.16. Ethical considerations

To conduct this study, ethical approval was obtained from Institutional Review Board (IRB) of Addis Ababa University, college of health sciences, school of public health and Health Research and Emergency Management Directorate of Addis Ababa regional health bureau, respectively. Letters of support to collect data was obtained from sub-city health offices in the study area. Informed consent was obtained from the participants, after providing information about the purpose, procedures, benefits, risks and confidentiality of the study. The right of study participants to refuse to answer any questions or stop the interview at any time was also respected.

5.17. Dissemination of result

The final report of this study will be submitted to Addis Ababa University, college of health sciences, school of public health. The finding of the research will be communicated to all relevant institutions and bodies who can make use of the study findings including Sub City Health Offices and Addis Ababa Health Bureau. In addition to this, efforts will be made to disseminate results through publication.

6. Results

A total of 441 health managers were selected from 49 public health centers to involve in this study, of which 416 were participated in the study with a response rate of 94%.

6.1. Socio-demographic characteristics of respondents

Out of the 416 study participants, 213 (51.2%) were females. The mean age of respondents was 31 (SD ± 4.96) with a range of 23 and 52 years. Nearly 40 % (164) of respondents were in the age group of 25-29 years. Almost three-fourth of the study respondents (74%) were BSc degree holders. One hundred seventy respondents (40.9%) were nurses. Regarding to position, half of the study participants (49.8%) were case team leaders. Concerning the experience of respondents on their current position, more than half of them (56%) had a work experience of less than three years. (**Table 2**)

Table 2 Socio - demographic characterstics of study participants in public health centers of Addis Ababa,Ethiopia, 2020 (n = 416)

Variables	Frequency	Percent
Sex		
Male	203	48.8
Female	213	51.2
Age		
≤ 24 years	9	-
25-29 years	164	39.4
30-34 years	146	35.1
35-39 years	61	14.7
> 39 years	36	8.7
Level of education		
Diploma	41	9.9
BSc degree	308	74.0
Master's degree	67	16.1
Profession		
Medical Doctor	2	-

Health Officer	135	32.5
Nurse	170	40.9
Midwife	45	10.8
Pharmacist	29	7.0
Laboratory Technologist	29	7.0
Others *	6	-
Position		
Medical director	30	7.2
Core process owner	78	18.8
Sub core process owner	101	24.3
Case team coordinators	207	49.8
Years in current position		
≤ 3 years	233	56.0
4-6 years	130	31.3
≥ 7 years	53	12.7

*- MPH

6.2. Routine health information utilization

Routine health information utilization was assessed using 10 questions. Out of all the total respondents, 395 (95.1%) of them used HMIS data for reporting purpose.

A higher routine health information utilization was observed for the purposes of monitoring and evaluation of performance (92.5%), client management and follow up (90.9%), formulation of plans (88.7%), improvement of service delivery (87.5%), identification of gaps and priority areas (86.8%) and medical supply and drug management (85.3%).

A lower routine health information utilization was observed for the purposes of budget preparation/budget reallocation (63%), involvement of the community and local government (63%), human resource management (65.9%) and prediction and detection of outbreaks (74%).

Table 3 Routine health information utilization of respondents in public health centers of Addis Ababa, Ethiopia, 2020 (n = 416)

Variables	Frequency	Percent
Used HMIS data		
For reporting purpose*	395	95.1
For formulation of plans	369	88.7
For budget preparation/budget reallocation	262	63.0
For client management and follow up	378	90.9
For medical supply and drug management	355	85.3
For human resource management	274	65.9
To involve the community and the local government	262	63.0
For service delivery improvement	364	87.5
For identification of gaps and priority areas	361	86.8
To predict and detect outbreaks	308	74.0
To monitor and evaluate performance	385	92.5

***- not considered to calculate the mean score of routine health information utilization**

The mean score of routine health information utilization was 80.0%. Out of the total respondents, 277 (66.6%) of study participants had good routine health information utilization. **(Figure 5)**

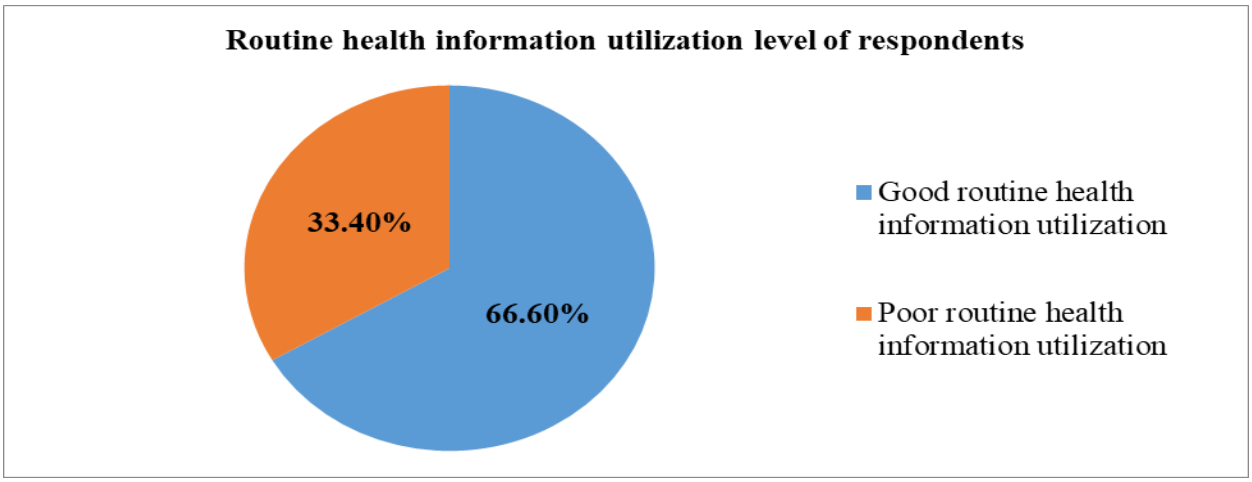


Figure 5 Routine health information utilization level of respondents in public health centers of Addis Ababa, Ethiopia, 2020 (n = 416)

6.3. Technical determinants of routine health information utilization

Three hundred sixty nine respondents, 369 (88.7%) reported that HMIS data is available on time for decision making. Among the reasons of data unavailability, lack of capacity to manipulate electronic systems and lack of electronic system to enter and analyze data were stated by 46.8% and 40.4% of the study participant respectively. Regarding user friendly of reporting formats, 375 (90.1%) of the respondent reported that reporting formats are user friendly. More than half of the respondents 214 (51.4%) did not use computer software for data analysis. Regarding to perceived data quality, the mean score was 11.75 and the majority of the respondents 285 (68.5%) had good perception on HMIS data quality**. (Table 4)**

Table 4 Technical determinants of routine health information utilization in public health centers of Addis Ababa, Ethiopia, 2020 (n = 416)

Variables	Frequency	Percent
Availability of HMIS data for decision making		
Yes	369	88.7
No	47	11.3
Reasons for HMIS data unavailability (N = 47)		
Synthesis of data using non-understandable formats	8	-
Lack of electronic system to enter and analyze data	19	40.4
Lack of capacity to manipulate electronic systems	22	46.8
No way to access data	11	23.4
Lack of channels to communicate findings of data analysis	13	27.6
User friendly of formats		
Yes	375	90.1
No	41	9.9
Use of computer software for data analysis		
Yes	202	48.6
No	214	51.4
Perceived data quality		
Good	285	68.5
Poor	131	31.5

6.4. Organizational determinants of routine health information utilization

6.4.1. Training

From the total respondents, 272 (65.4%) of them received training on HMIS. Only 106 (25.5%) of study participants were trained on data analysis and interpretation. Regarding DHIS training, only 89 (21.4%) of the respondents trained. Similarly, only 88 (21.2%) study participants received training on data utilization as shown in Figure 6.

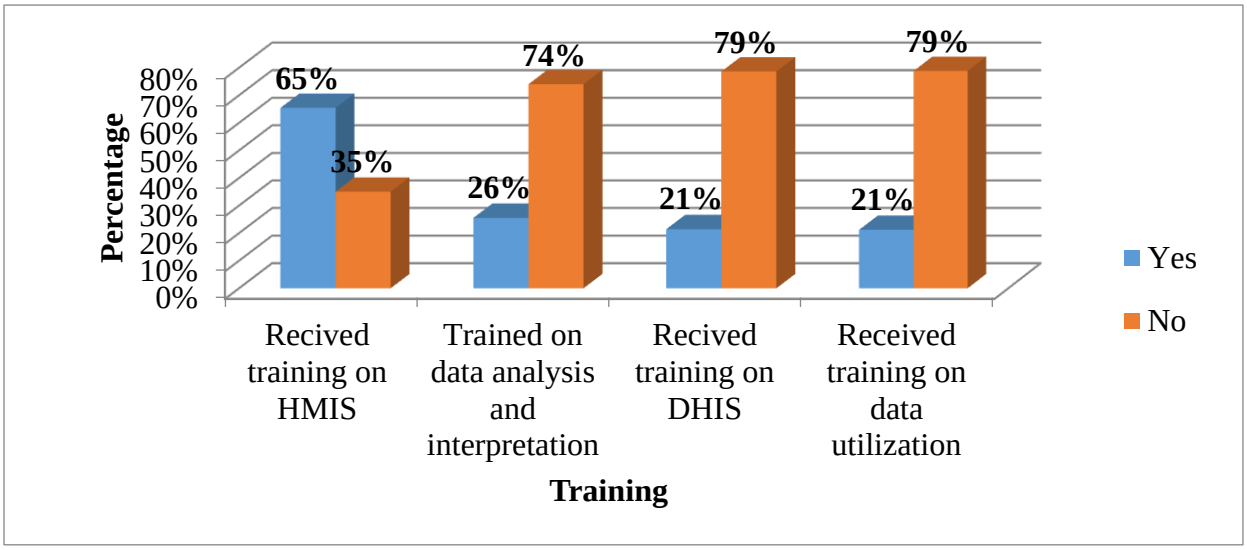


Figure 6 Training received by health managers in public health centers of Addis Ababa, 2020. (n = 416)

Among those trained on HMIS, the majority of study participants 187 (68.8%) replied that they received the training before two years. Similarly, 58 (54.7%) of respondents from those trained on data analysis and interpretation reported that they trained before two years. Among those trained on DHIS, 53 (59.6%) of them received the training within the past two years. Regarding respondents who trained on data utilization, 51 (58%) of them received the training before two years**. (Figure 7)**

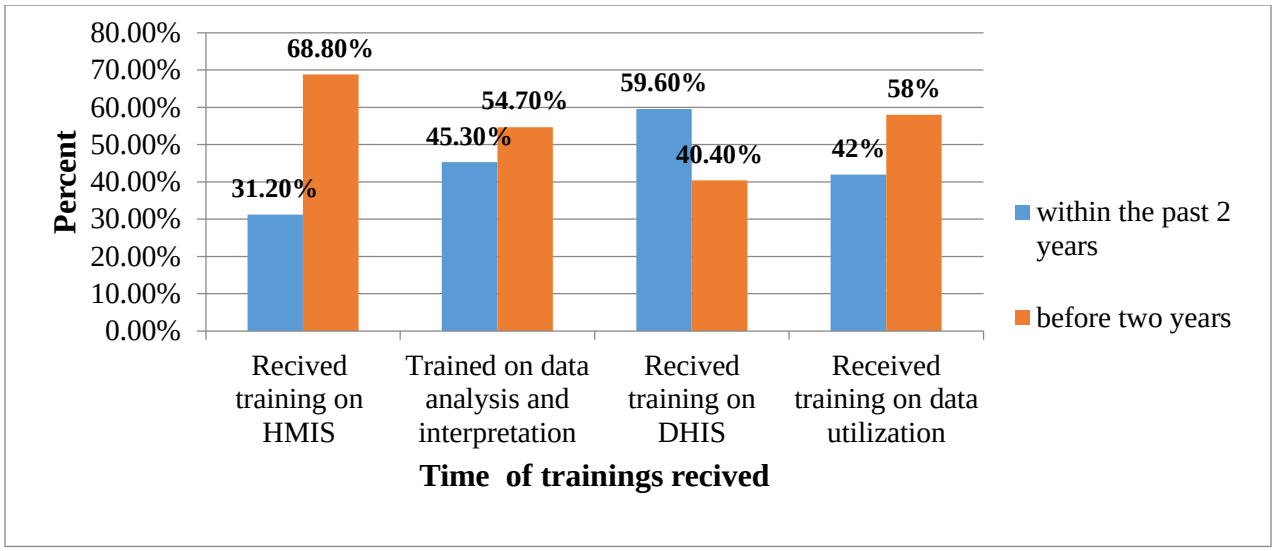


Figure 7 Time of trainings received by health managers of public health centers of Addis Ababa, Ethiopia, 2020 (n = 416)

Regarding the distribution of training by the position of study participants, only 17% of sub core process owners and case team leaders received training on DHIS. Similarly, only 15% of sub core process owners and case team leaders trained in data utilization. **(Figure 8)**

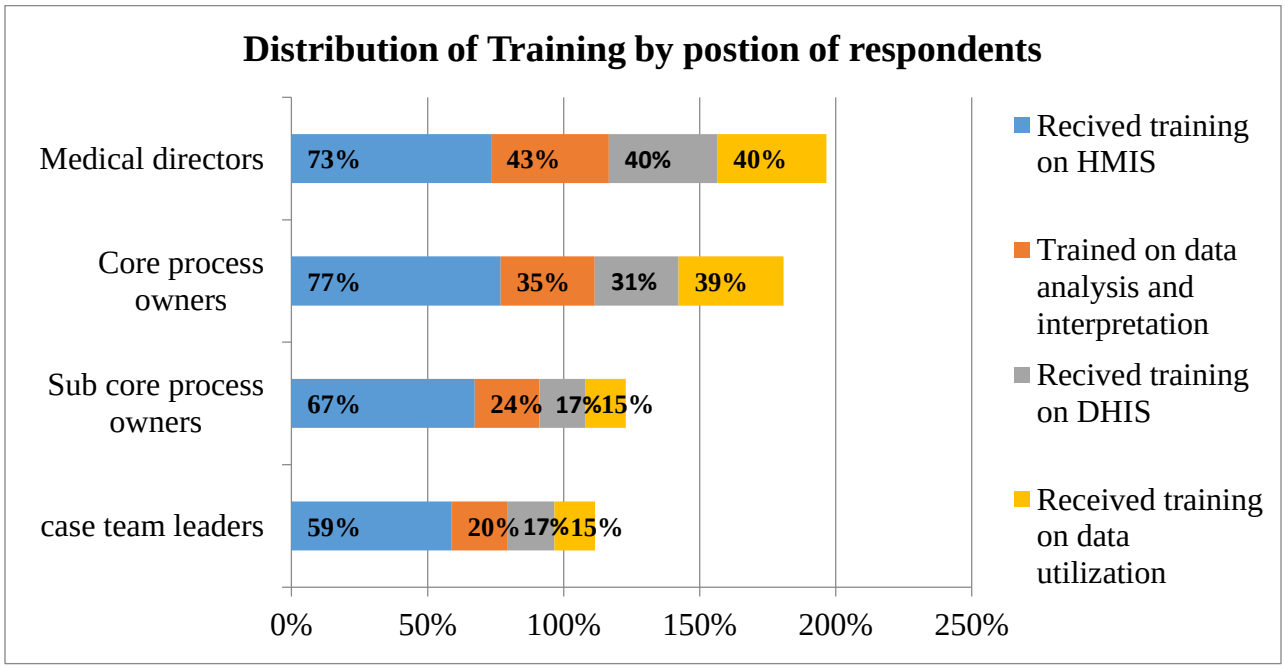


Figure 8 Distribution of training by the position of respondents, Addis Ababa, Ethiopia, 2020 (n = 416)

6.4.2. Availability of supervision, feedback and data management and information user guideline

Two hundred forty nine (60%) respondents received supportive supervision on routine health information utilization and the majority of them 136 (54.6%) reported that the frequency of supervision is every 3 month. Among those who received supportive supervision, 227 (91.2%) study subjects reported that the supervisory visits are conducted by sub city health office. Regarding feedback, 211 (84.7%) of the respondent replied that they receive feedback of the supervisory visits and among these 135 (64%) of them reported that they receive feedback quarterly. Nearly, three-fourth of the study participants (73.6%) reported that the availability of data management and information user guideline in the health center**. (Table 5)**

Table 5 Availability of supervision, feedback and data management and information user guideline in public health centers of Addis Ababa, Ethiopia, 2020 (n = 416)

Variables		Frequency	Percent
Receive supportive supervision on utilization of HMIS information	Yes	249	59.9
	No	167	40.1
Frequency of supportive supervision	Every month	37	14.9
	Every 3 month	136	54.6
	Every 6 month	58	23.3
	Every year	18	7.2
Name of the institution providing supportive supervision	Ministry of health	5	-
	Regional health bureau	17	6.8
	Sub city health office	227	91.2
Receive feedback of supervisory visits	Yes	211	84.7
	No	38	15.3
Frequency of feedback	Monthly	13	6.2
	Quarterly	135	64.0
	Bi-annually	52	24.6
	Annually	11	5.2
Name of the institution providing feedback	Sub city health office	195	92.4
	Regional health bureau	14	3.4
	Ministry of health	2	-

Availability of data management and information user guideline	Yes	306	73.6
	No	110	26.4

6.4.3. Promotion of culture of information utilization

Promotion of culture of information utilization by public health centers was assessed using five dimensions. These dimensions were promotion of evidence based decision making, promotion of use of information, promotion of emphasize on data quality, promotion of sense of responsibility and promotion of empowerment/accountability. Each of those dimensions was in turn assessed with a minimum of three and a maximum of five questions.

Of the respondents, 232 (55.8%) had good promotion of evidence based decision making. 65% of the study participants reported good promotion of use of information and emphasize on data quality. Similarly, good promotion of empowerment/accountability was observed among 253 (60.8%) of the study participants.

Table 6 Promotion of culture of information utilization by public health centers of Addis Ababa, Ethiopia, 2020 (n = 416)

Variables		Frequency	Percent
Promotion of evidence based decision making	Good	232	55.8
	Poor	184	44.2
Promotion of use of information	Good	269	64.7
	Poor	147	35.3
Promotion of emphasize on data quality	Good	270	64.9
	Poor	146	35.1
promotion of sense of responsibility	Good	285	68.5
	Poor	131	31.5
promotion of empowerment/ accountability	Good	253	60.8
	Poor	163	39.2

The mean score of promotion of culture of information utilization was 74.65. Good promotion of culture of information utilization was reported among 225 (54.1%) of the respondents. However, poor promotion of culture of information utilization was reported by 191 (45.9%) of the study participants. **(Figure 9)**

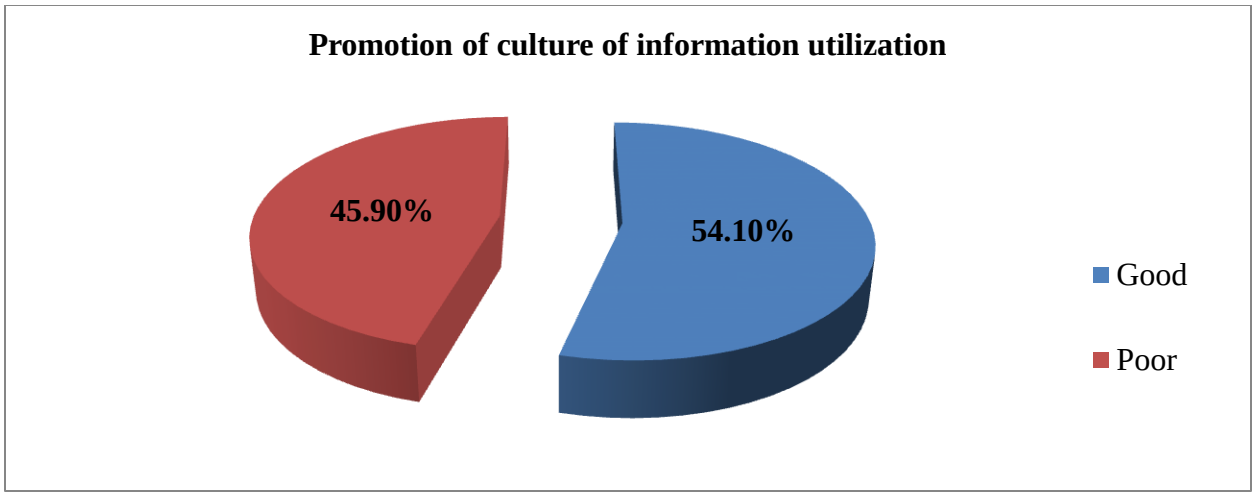


Figure 9 Promotion of culture of information utilization among public health centers of Addis Ababa, Ethiopia, 2020 (n = 416)

6.5. Behavioral characteristics of respondents

6.5.1. Attitude towards HMIS tasks

Attitude of study participants towards HMIS tasks was assessed using six questions. The majority 248 (59.6%) of the respondents believed that collecting data which is not used for decision making discourages them. Similarly 223 (53.6%) of the study participants replied that collecting data is a tedious task. The majority of the respondents 218 (52.4%) also believed that collecting data increase their workload. Most of the respondents 328 (78.8%) replied that collecting data is meaningful for them. Similarly, 386 (92.8%) of the study participants believed that the data they collected are important for performance monitoring. Regarding the statement "Collecting data is appreciated and valued by coworkers and managers", the majority of the respondents 337 (81%) replied that collecting data is appreciated and valued by coworkers and managers. However, almost one-fourth of the respondents (24%) believed that data collection is not the responsibility of health professionals.

Table 7 Attitude of respondents towards HMIS tasks in public health centers of Addis Ababa, Ethiopia, 2020 (n = 416)

Variables	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Collecting data which is not used for decision	60(14.4%)	81(19.5%)	27(6.5%)	153(36.8%)	95(22.8%)

making discourages me.					
Collecting data is a tedious task.	41(9.9%)	113(27.2%)	39(9.4%)	184(44.2%)	39(9.4%)
Collecting data increase my workload	40(9.6%)	121(29.1%)	37(8.9%)	169(40.6%)	49(11.8%)
Collecting data is meaningful for me	35(8.4%)	30(7.2%)	23(5.5%)	177(42.5)	151(36.3%)
The data I collect are important for performance monitoring	6(1.4%)	9(2.2%)	15(3.6%)	212(51.0%)	174(41.8%)
Collecting data is appreciated and valued by coworkers and managers	10(2.4%)	39(9.4%)	30(7.2%)	205(49.3%)	132(31.7%)
Data collection is not the responsibility of health professionals	137(32.9%)	144(34.6%)	35(8.4%)	71(17.1%)	29(7.0%)

The mean score of respondents' attitude towards HMIS tasks was 17.84. The majority of study participants 216 (51.9%) had positive attitude towards HMIS tasks whereas the rest 200 (48.1%) had negative attitude.

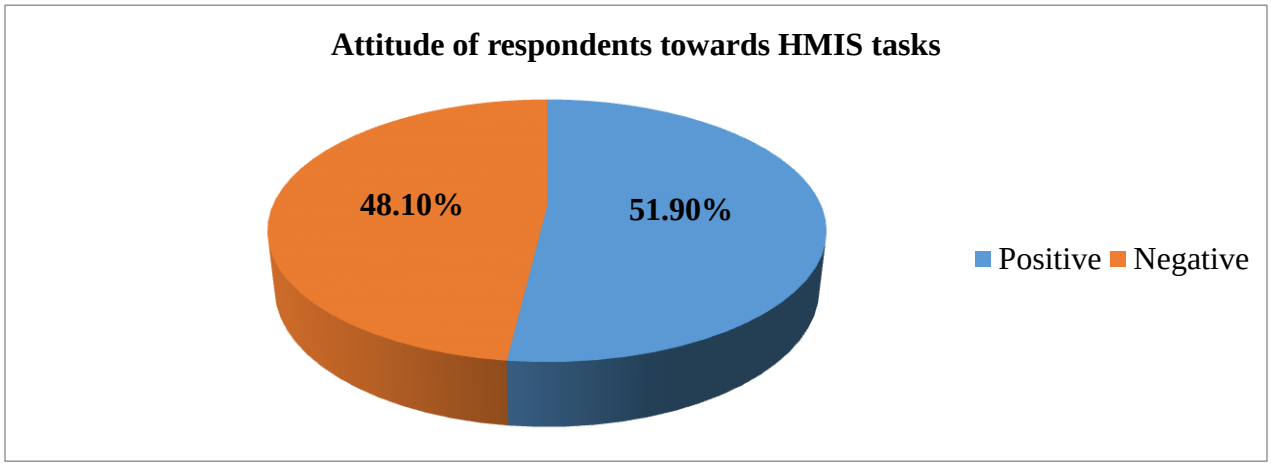


Figure 10 Attitude of respondents towards HMIS tasks in public health centers of Addis Ababa, Ethiopia, 2020 (n = 416)

6.5.2. Perceived competency to perform HMIS tasks

Confidence levels of health managers to perform a particular HMIS task were assessed using six indicators on a scale of 0 to 100% from no confidence to full confidence. The results showed that the average confidence level of respondents was 82.3% for explaining of the implication of the results of data analysis, 83.1% for using data for making management decisions, 83.6% for identifying gaps and setting target, 83.6% for plotting data by month or year, 84.3% for calculating percentages/ rates correctly and 84.3% for checking data accuracy.**(Figure 11)**

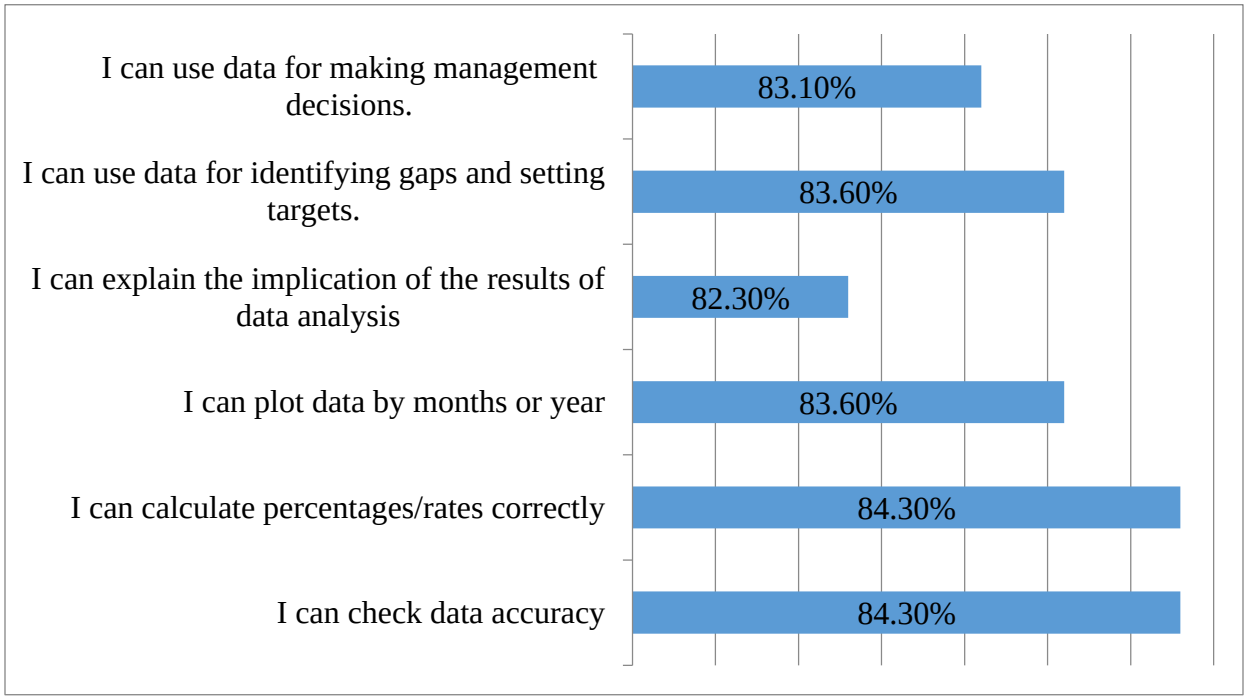


Figure 11 Perceived competency of respondents to perform HMIS tasks in public health centers of Addis Ababa, Ethiopia, 2020 (n = 416)

The mean score of perceived competency of study participants to perform HMIS tasks was 83.78%. Good competency level to perform HMIS tasks observed among 263 (63.2%) of the respondents. **(Figure 12)**

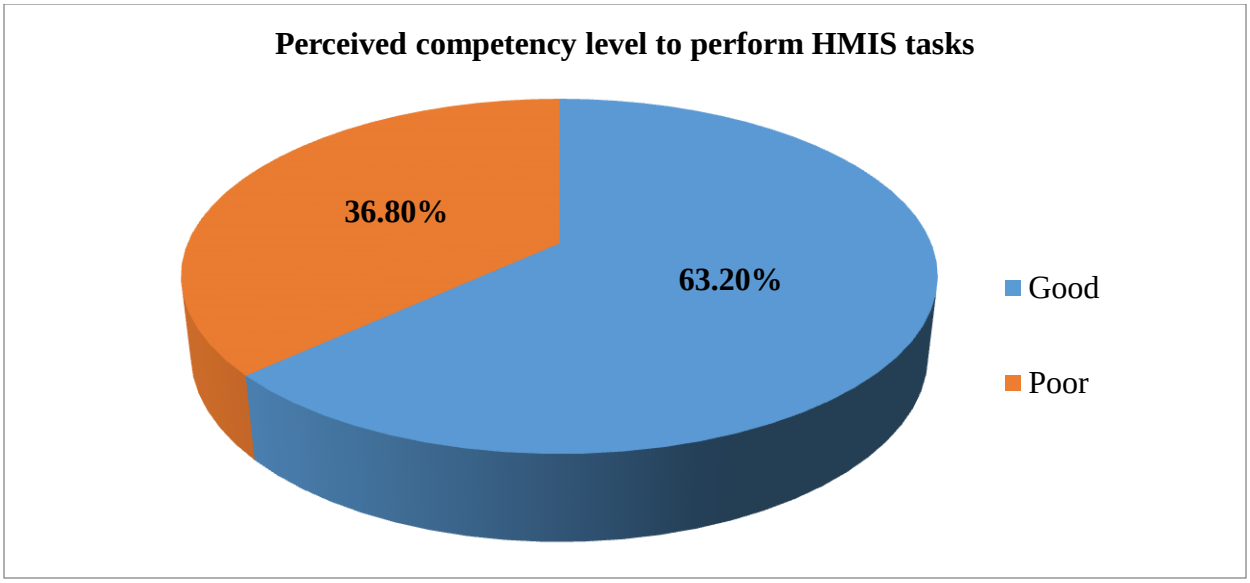


Figure 12 Perceived competency level of respondents to perform HMIS tasks in public health centers of Addis Ababa, Ethiopia, 2020 (n = 416)

6.6. Factors associated with routine health information utilization:

6.6.1. Bi-variable Analysis

Among the socio-demographic variables, level of education, and profession of study participants had p-value less than 0.2 ($p < 0.2$) with routine health information utilization in the bi-variable analysis.

All the technical factors, availability of HMIS data for decision making, user friendliness of formats, use of computer software for data analysis and perceived data quality of respondents had p-value of less than 0.2 ($p < 0.2$) with routine health information utilization in bi-variable analysis.

Training (received training on DHIS, trained on data analysis and interpretation, trained on data utilization), feedback of supervisory visits, availability of data management and information user guideline and good promotion of culture of information utilization were among the organizational factors with a p-value less than 0.2 ($p < 0.2$)with routine health information utilization in bi-variable analysis.

Among the behavioral factors, both attitude towards HMIS tasks and perceived competency to perform HMIS tasks had p-value less than 0.2 ($p < 0.2$) with routine health information utilization in bi-variable analysis.

6.6.2. Multivariable Analysis

Four variables were found statistically significant with routine health information utilization in the final model after controlling the possible cofounders.

Among the technical factors, only use of computer software for data analysis (AOR = 3.76, 95% CI; 1.84 - 7.65, p < 0.001) was significantly associated with routine health information utilization. Concerning the organizational factors, having training on data analysis and interpretation (AOR = 3.03, 95% CI; 1.31 – 6.99, p = 0.009), receiving feedback of supervisory visits (AOR = 3.07, 95% CI; 1.34 - 7.02, p = 0.008) and good promotion of culture of information utilization (AOR = 2.16, 95% CI, 1.11-4.21, p = 0.024) were significantly associated with routine health information utilization.

Table 8 Multivariable analysis: Routine health information utilization and associated factors among public health centers of Addis Ababa, Ethiopia, 2020 (n = 416)

Variables	Routine health information utilization		COR (95% CI)	AOR (95% CI)	p-value
	Good	Poor			
	n (%)	n(%)			
Level of education					
Diploma	22(53.7%)	19(46.3%)	1[R]		
BSc degree	204(66.2%)	104(33.8%)	1.69(0.88-3.27)	1.18(0.37-3.78)	0.781
Master's degree	51(76.1%)	16(23.9%)	2.75(1.19-6.33)	1.56(0.35-7.00	0.563
Profession					
Health Officer	108(78.8%)	29(21.2%)	1.68(0.69-4.07)	1.52((0.28-8.29)	0.629
Nurse	104(61.2%)	66(38.8%)	0.71(0.31-1.65)	0.49(0.94-2.59)	0.404
Midwife	23(51.1%)	22(48.9%)	0.47(0.18-1.25)	0.64(0.10-4.01)	0.630
Pharmacist	16(55.2%)	13(44.8%)	0.55(0.19—1.62)	0.64(0.09-4.23)	0.641
Laboratory Technologist	20(69%)	9(31%)	1[R]		
Availability of HMIS data for decision making					
Yes	256(69.4%)	113(30.6%)	2.81(1.52-5.19)	1.04(0.30-3.56)	0.950
No	21(44.7%)	26(55.3%)	1[R]		
User friendly of formats					

Yes	254(67.7%)	121(32.3%)	1.64(0.85-3.16)	1.71(0.51-5.79	0.387
No	23(56.1%)	18(43.9%)	1[R]		
Use of computer software for data analysis					
Yes	166(82.2%)	36(17.8%)	4.28(2.73-6.71)	3.76((1.84-7.65)	**<0.001***
No	111(51.9%)	103(48.1%)	1[R]		
Perceived data quality					
Good	132(76.3%)	41(23.7%)	2.18(1.41-3.36)	0.92(0.44-1.94)	0.831
Poor	145(59.7%)	98(40.3%)	1[R]		
Received training on DHIS					
Yes	70(78.7%)	19(21.3%)	2.14(1.23-3.72)	0.56(0.23-1.37)	0.206
No	207(63.3%)	120(36.7%)	1[R]		
Trained on data analysis and interpretation					
Yes	86(81.1%)	20(18.9%)	2.68(1.57-4.59)	3.03(1.31-6.99)	**0.009***
No	191(61.6%)	119(38.4%)	1[R]		
Trained on data utilization					
Yes	72(81.8%)	16(18.2%)	2.70(1.50-4.85)	1.13(0.36-3.51)	0.831
No	205(62.5%)	123(37.5%)	1[R]		
Receive feedback of supervisory visits					
Yes	165(78.2%)	46(21.8%)	3.59(1.76-7.33)	3.07(1.34-7.02)	**0.008***
No	19(50%)	19(50%)	1[R]		
Availability of data management & information user guideline					
Yes	225(73.5%)	81(26.5%)	3.09(1.97-4.87)	1.81(0.82-3.99)	0.144
No	52(47.3%)	58(52.7%)	1[R]		
Promotion of culture of information utilization					
Good	172(76.4%)	53(23.6%)	2.66(1.75-4.04)	2.16(1.11-4.21)	**0.024***

Poor	105(55%)	86(45%)	1^R		
Attitude towards HMIS tasks					
Good	128(59.3%)	88(40.7%)	0.49(0.33-0.766)	0.55(0.28-1.07)	0.078
Poor	149(74.5%)	51(25.5%)	1^R		
Perceived competency to perform HMIS tasks					
Good	197(74.9%)	66(25.1%)	2.72(1.78-4.15)	0.80(0.37-1.72)	0.571
Poor	80(52.3%)	73(47.7%)	1^R		

Note: 1^R -reference value ***- Significant at $p < 0.05$**

7. Discussion

The proportion of health managers who had good routine health information utilization, in this study, was higher compared to the result of previously conducted study in public health centers of Addis Ababa (31). It is also higher compared to findings of studies done in East Gojam zone (19), Eastern Ethiopia (20) and East Wollega zone (21). The possible reasons for this might be access to frequent and better quality trainings, and availability of regular supervision and feedback by sub city health office and Addis Ababa regional health bureau. Regular supportive supervision, feedback and training by non-governmental organizations such as CDC may also have positive impact (61). Similarly cultural and attitudinal change regarding perceived value and practical use of health information as a result of the implementation of information revolution agenda which was one of the four agendas of HSTP may have played a significant role (55,60). The result of this study is also higher when compared to findings of studies conducted in Kenya, South Africa, Tanzania and Rwanda (13–16). However, the result of this study was lower when compared to findings of a study conducted in India (42). These contrasting results might be because of the difference in the structures of health information system and health professionals attitude towards routine health information system (1,19). However, a comparable rate of routine health information utilization was reported from Hadya Zone, Southern Ethiopia (22).

In this study, health managers who received training in data utilization were very low. This is in agreement with a study conducted in Western Amhara, Ethiopia (18). However, this result is higher compared to the result of a study done in East Gojam Zone, Northwest Ethiopia (19). The possible reasons for this could be difference in study period, facility type and study population. In addition to health centers, health posts and hospitals were included and the study population was health professionals in the case of East Gojam Zone. In contrast to this, the result was lower when compared to a finding from India (49). This may be due to the difference in study facilities and respondents. Policy makers, district heads and health staffs from national, state, district, primary health centers, community health centers and sub centers were participated in the case of India.

Similarly, few study participants were trained in $DHIS_2$. The DHIS enhances use of data for decision making by increasing the quality of data and accessibility of information (62,63).

However, training of users on how to operate the system is one of the key challenges (63). A study conducted in Uganda revealed that inadequate training in DHIS made users not to utilize the system to generate important information for use at facility level (64).

According to this study, the number of respondents who were trained in data analysis and interpretation are also very low. This result is higher when compared to a result of a study conducted in East Gojam Zone, Northwest Ethiopia (19). The possible reasons for this could be difference in study period, facility type and study population. In addition to health centers, health posts and hospitals were included and the study population was health professionals in the case of East Gojam Zone. The result is also higher when compared to a finding from Kenya (13). The possible explanation for this could be variations in study period, study facilities and study population. In the case of Kenya, dispensaries and hospitals were included in the study in addition to health centers and the study participants were health workers including non-health professionals. In contrast to this, the result was lower when compared to a finding from India (49). This may be due to the difference in study facilities and respondents. Policy makers, district heads and health staffs from national, state, district, primary health centers, community health centers and sub centers were participated in the case of India.

This study also tried to assess the technical, organizational and behavioral factors that are associated with routine health information utilization.

Among the variables which showed significant association with routine health information utilization, higher odds of routine health information utilization was found among health managers who had use computer software to analyze routine health data. The odds of routine health information utilization among health managers who used computer software for data analysis was 3.76 times that of health managers who did not used computer software for data analysis. This result was supported by a finding from India which noted that use of ICT technologies encourage health systems to generate and use health data (45). Similarly a study conducted in Uganda revealed that lack of access to information and communication technology facilities like computer software has a multiplicity effect and limits health information dissemination, information sharing among experts and decision making (50). The result was also supported by a finding from Pakistan which reported that developing and installing data entry and analysis software and databases improved information use (44). The finding was also in line

with a study conducted in Eastern Ethiopia (20). This may be due to that, use of computer software to analyze data saves time, reduce errors and enhances the timeliness and reliability of the data.

This study also noted that having training on data analysis and interpretation is strongly associated with use of routine health information. The odds of routine health information utilization among health managers who were trained on data analysis and interpretation was 3.03 times that of health managers who did not trained on data analysis and interpretation. This result is supported by a study conducted in Kenya (13), Nigeria (48), Papua New Guinea (51) and India (49). This is because pre-service and in-service trainings are important ways to transfer knowledge and skills (52). Investing in training and capacity development of human resources at each level of the government improves health information systems. However, the capacity for data analysis is often lacking thereby hindering the ability of health staff to analyze, interpret and use data for planning and management (49). According to Measure Evaluation,2010 (33) lack of skill in data analysis and interpretation affects use of data for decision making and specific training in data analysis and interpretation is critical.

Receiving feedback of supervisory visits from higher levels was found as another determinant factor of routine health information utilization among health managers. Respondents who received feedback of supervisory visits were 3.07 times more likely to use routine health information as compared to their counter parts. This result is in agreement with findings from East Gojam Zone (19) ,Hadya Zone (30) ,and Western Oromia (43). The finding is also supported by a study conducted in Jimma Zone, Ethiopia which indicated that sustained efforts for supportive supervisions with timely and concrete feedbacks are required to improve routine health information utilization by health workers (17). This is because, availability of regular and effective supportive supervision and mentorship are powerful methods to address issues of health care workers in real time since they involve direct interactions with health care workers at their work place (54). Health care workers who receive feedback of the supervisory visits regularly might obtain productive and appropriate advice to use their data for enhancing their service delivery (19).

This study also revealed that a good promotion of culture of information utilization improves routine health information utilization. The odds of routine health information utilization among

health managers who had good promotion of culture of information utilization was 2.16 times higher compared to health managers who had poor promotion of culture of information utilization. This result is in line with a study conducted in Hadya Zone, Southern Ethiopia (55). The result is also supported by findings from Nigeria (48), South Africa(14) and Kenya (46) which showed that lack of information use culture influences routine health information utilization. This is because the demand and use of information openly by senior managers makes importance of information to be reinforced throughout the health system (51).

8. Strength and Limitations

Strengths

- Sample size was calculated for each objectives of the study and the maximum sample size was considered to increase the validity of the study.
- Simple random sampling technique was used to achieve representativeness of the sample.

Limitations

- The study design used does not show the temporal relationship.
- The study did not include hospitals and private health facilities.
- Routine health information utilization was assessed by self-reporting of the study participants which may affect the outcome.

9. Conclusion

The study indicated that health managers especially core process owners and case team coordinators lack training in data utilization, DHIS software and data analysis and interpretation. The study also demonstrated that, among those few health managers who were trained, most of them trained before 2 years and need to be updated.

Moreover, use of computer software for data analysis, training on data analysis and interpretation, receiving feedback of supervisory visits and good promotion of culture of information utilization were found to be the determinant factors that enhance routine health information utilization among health managers.

Generally, higher level of routine health information utilization was observed in Addis Ababa compared to previous studies conducted in Ethiopia. There is also improvement in routine health information utilization in Addis Ababa although; it is still far below the national expectation.

10. Recommendations

Based on the finding of this study, the following important measures are recommended to improve routine health information utilization among health managers.

For public health centers

- Making sure that health managers use available computer software for data analysis through follow up, mentorship and training to enhance routine health information utilization.
- Continuous training and updating of health managers especially core-process owners and case team coordinators on data utilization, DHIS software and data analysis and interpretation through on-job training, seminars and workshops.
- Enhancing good culture of information utilization through demonstrating evidence based decision making, emphasizing on data quality, making staffs accountable and promoting their sense of responsibility to demand and use routine health information.

For Sub City Health Offices and Addis Ababa City Administration Health Bureau

- Providing data analysis tools to health centers to improve routine health information utilization
- Building the capacity of health managers in data utilization, DHIS software and data analysis and interpretation through training, supportive supervision and feedback.
- Providing feedback of supervisory visits regularly for health centers regarding routine health information utilization.
- Enhancing good culture of information utilization through demonstrating evidence based decision making, emphasizing on data quality, making staffs accountable and promoting their sense of responsibility to demand and use routine health information.

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Annexes

Annexes I: - Participants information sheet

Dear respondent

My name is _____. I am here to interview you on behalf of Alem Sebsbie who is a post graduate student of Addis Ababa University, College of Heath Sciences School of Public Health. He is conducting a study for the purpose of partial fulfillment of Masters of Public Health. I kindly request you to give me few minutes to explain you about the research.

The title of my study is routine health information utilization and associated factors among public health centers of Addis Ababa. The objective of the study is to assess routine health information utilization and to identify factors that are associated with routine health information utilization among public health centers of Addis Ababa.

In order to achieve the objective of the study, I will provide you a self –administered questioner which addresses socio demographic factors, technical factors, organizational factors behavioral factors and routine health information utilization. Approximately, 30 to 35 minutes are required to complete the questioner.

Your Participation in this study does not involve any direct risk because it does not require taking any samples that pose risks on participants. Participating in this study also would not have direct benefit however, findings of the study will be useful in informing the current status of routine health information utilization and to identify factors that determine routine health information utilization among public health centers of Addis Abba. This will in turn help to design intervention strategies that can improve routine health information utilization.

Please be assured that all information collected will be stored strictly confidential and you do not required to mention your name on any part of the questionnaire. Only the principal researcher has the access of the information and used it for the study purpose only.

Your participation in this study is voluntary and you have the right to refuse or participate. If you are willing to participate you can withdraw from the study at any time you want or not to respond for all or parts of the questions of the study when you feel uncomfortable.

If you have any question about the research you may contact Alem Sebsbie (Principal Investigator) Addis Ababa University, College of Health Sciences, School of Public Health (Tel +251-911-07-78-40) or Dr. Mesfin Addise (Tel +251-911-40-67-90) or Mr. Mengistu Yilma (Tel +251-913-59-32-41) (Advisors) Addis Ababa University, College of Health Sciences, School of Public Health or School of Public Health ethical review committee (Tel +251-11-515-77-01).

Annexes II. Consent Form

Dear respondent

My name is _____. I am here to interview you on behalf of Alem Sebsbie who is a post graduate student of Addis Ababa University, College of Heath Sciences School of Public Health. He is conducting a study for the purpose of partial fulfillment of Masters of Public Health. The main purpose of the study is to assess routine health information utilization and associated factors in public health centers of Addis Ababa. To achieve this objective, your involvement is essential and highly appreciable. I, therefore, kindly request you to participate in this study by providing accurate responses as much as possible. All the information forwarded will be stored strictly confidential and you do not required to mention your name on any part of the questionnaire. Only the principal investigator has the access to the information and used it for the study purpose only. Your Participation in this study does not involve any direct risk or benefit for you. Your participation is very useful because your answers will help to identify and address the factors related to routine health information utilization in your facility. It may take approximately 30 to 35 minutes to complete the questioner. Your participation is voluntary and you can choose to decline to answer any questions you are not comfortable with.

Thank you for your assistance and cooperation!

Address of principal investigator:-

Name:-Alem Sebsbie **Phone No.** +251-911-07-78-40 **Email:-**alemsebsbie5@gmail.com

Are you willing to participate in this study? Yes [ ] No [ ]

If yes, proceed to self-administered questionnaire below; If No, thank you!

Witness: signature certifying that the informed consent has been given

Data collector name _____

Signature _____date _____

Annexes III:-English version Questionnaire

A QUESTIONNAIRE TO ASSES ROUTINE HEALTH INFORMATION UTILIZATION AND ASSOCIATED FACTORS AMONG PUBLIC HEALTH CENTERS OF ADDIS ABEBA, 2020

Individual questionnaire identification number_____

Date of data collection_____

Name of the Sub-city _____

Name of the Health Center _____

Part 1.Socio-Demographic Data

Please circle the number representing your response.			
No.	Questions	Answers	Skip
101	Sex	Male ----------1 Female----------2	
102	What is your age?	_____years	
103	What is your highest level of education attained?	Diploma ----------1 Undergraduate degree----------2 Postgraduate(Masters)degree---3	
104	What is your profession/field of study?	Medical Doctor----------1 Health Officer----------2 Nurse----------3 Midwife----------4 Pharmacy----------5 Laboratory technologist---------6 Environmental health ----------7 Health Extension worker--------8 Other(specify)----------9 _____	
105	What position do you hold in the health	Medical director----------1	

	center?	Core process owner----------2 Sub core process owner---------3 Case team leader----------4	
106	How long did you work in this position?	_____years	

Part 2.Assessment of Routine Health Information Utilization

Please circle your answer for the following questions regarding HMIS data			
No.	Questions	Answer	Skip
201	Do you use the data collected for reporting purpose?	Yes----------1 No ----------0	
202	Do you use the data collected for formulation of plans?	Yes----------1 No ----------0	
203	Do you use the data collected for budget preparation/budget reallocation?	Yes----------1 No ----------0	
204	Do you use the data collected for client management and follow up?	Yes----------1 No ----------0	
205	Do you use the data collected for medical supply and drug management?	Yes----------1 No ----------0	
206	Do you use the data collected for human resource management?	Yes----------1 No ----------0	
207	Do you use the data collected for the Involvement of the community and local government?	Yes----------1 No ----------0	
208	Do you use the data collected for service delivery improvement?	Yes----------1 No ----------0	
209	Do you use the data collected for identification of gaps and priority areas?	Yes----------1 No ----------0	
210	Do you use the data collected to predict and detect outbreaks?	Yes----------1 No ----------0	
211	Do you use the data collected to monitor and evaluate	Yes----------1	

	performance?	No ----------0	

Part 3.Technical Factors that influence Routine Health information Utilization

3.1.Data Availability, user friendliness of formats and use of computer software for data analysis

Please circle your answer for the following questions			
No.	Questions	Answer	Skip
301	Are HMIS data available on time for decision making?	Yes----------1 No ----------0	If YES, skip to question 303
302	If NO for the above question, what are the reasons of unavailability?	Multiple responses are allowed Data are synthesized in formats that are not understandable by users----------1 Lack of electronic database/system to enter & analyze data----------2 Lack of capacity to manipulate electronic systems to generate data-----3 There is no way to access data----------4 Lack of channels to systematically communicate data analysis findings---5 Other(specify)----------6 _____	
303	Are reporting formats user	Yes----------1	

	friendly?	No ----------0	
304	Do you use computer software for data analysis?	Yes----------1 No ----------0	

3.2.Data quality

To what extent you rate the quality of HMIS data in terms of the following dimensions? Please circle your answer						
No.	Questions	Very Poor	Poor	Neutral	Good	Very good
305	Completeness	1	2	3	4	5
306	Reliability	1	2	3	4	5
307	Timeliness	1	2	3	4	5

Part 4.Organizational Factors that influence Routine Health information Utilization

4.1.Training

Please circle your answer			
No.	Questions	Answers	Skip
401	Have you ever received training on HMIS?	Yes----------1 No ----------0	If NO, skip to question 403
402	If yes, when?	Within the past 2 years------1 Before 2 years----------2	
403	Have you received training on DHIS?	Yes----------1 No ----------0	If NO, skip to question 405
404	If yes when?	Within the past 2 years------1 Before 2 years----------2	
405	Have you ever been trained on data analysis and interpretation?	Yes----------1 No ----------0	If NO, skip to question 407
406	If yes, when?	Within the past 2 years------1 Before 2 years----------2	
407	Have you ever received training on data utilization?	Yes----------1 No ----------0	If NO, skip to question 409
408	If yes, when?	Within the past 2 years------1	

		Before 2 years----------2	

4.2.Availability of Supervision , feedback ,and data management and use guideline

Please circle your answer for the following questions			
No.	Questions	Answers	Skip
409	Do you receive supportive supervision on utilization of HMIS information?	Yes----------1 No ----------0	If NO, skip to question 415
410	If yes for the above, how frequently?	Every month----------1 Every 3 month----------2 Every 6 month----------3 Every year----------4	
411	If yes for question 409, by whom?	Ministry of health----------1 Regional health bureau-----2 Sub city health office-------3 Others(specify)----------4	
412	Do you receive feedback of the supervisory visits from higher levels?	Yes----------1 No ----------0	
413	If yes for the above, how frequently?	Monthly ----------1 Quarterly----------2 Bi-annually----------3 Annually----------4	
414	If yes for question 412, by whom?	Sub city health office-------1 Regional health bureau-----2 Ministry of health----------3 Others(specify)----------4	
415	Does your facility have data management and information use guideline?	Yes----------1 No ----------0	

4.3.Promotion of culture of information use

4.3.1. Promotion of evidence based decision making

To what extent do you agree with following statement on a scale of 1 to 5? Please circle your answer						
No.	In the health center you are working , decisions are based on:	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
416	Personal preference of decision makers	1	2	3	4	5
417	Superiors' directives	1	2	3	4	5
418	Evidence/data	1	2	3	4	5
419	Political considerations	1	2	3	4	5
420	Donor demands	1	2	3	4	5

4.3.2. Promotion of use of information

To what extent do you agree with following statement on a scale of 1 to 5? Please circle your answer						
No.	In the health center you are working, managers	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
421	Use HMIS data for performance monitoring and target setting	1	2	3	4	5
422	Display data for monitoring their target	1	2	3	4	5
423	Conduct regular meetings where data and information are presented, discussed and decisions are made	1	2	3	4	5
424	Use HMIS data for day to day management of the facility	1	2	3	4	5

4.3.3. Promotion of emphasis on data quality

To what extent do you agree with following statement on a scale of 1 to 5? Please circle your answer						
No.	In the health center you are working, managers	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
425	Conduct regular data quality checks	1	2	3	4	5
426	Provide regular feedback on reported data quality to the staff	1	2	3	4	5
427	Emphasize in data quality of regular reports	1	2	3	4	5

4.3.4. Sense of responsibility

To what extent do you agree with following statement on a scale of 1 to 5? Please circle your answer						
No.	In the health center you are working, staffs	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
428	Know their responsibilities regarding HMIS tasks	1	2	3	4	5
429	Complete HMIS tasks in a timely manner	1	2	3	4	5
430	Are committed to generate and use data for decision making	1	2	3	4	5
431	Display data for monitoring their set target	1	2	3	4	5

4.3.5. Promotion of Empowerment/Accountability

To what extent do you agree with following statement on a scale of 1 to 5? Please circle your answer						
No.	In the health center you are working, staffs	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
432	Are empowered to make decisions	1	2	3	4	5
433	Are able to say NO to superiors for decisions not supported by evidence.	1	2	3	4	5
434	Are held accountable for poor performance of HMIS tasks	1	2	3	4	5
435	Admit mistakes when they occur and take corrective action	1	2	3	4	5

PART 5.Behavioral Factors that influence Routine Health information Utilization

5.1.Attitude on HMIS tasks

To what extent, do you agree with the following statements, on a scale of 1-5? Please circle your answer						
No.	**Statement**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
501	Collecting data which is not used for decision making discourages me.	1	2	3	4	5
502	Collecting data is a tedious task.	1	2	3	4	5
503	Collecting data increase my workload	1	2	3	4	5
504	Collecting data is meaningful for me	1	2	3	4	5

505	The data I collect are important for performance monitoring	1	2	3	4	5
506	Collecting data is appreciated and valued by coworkers and managers	1	2	3	4	5
507	Data collection is not the responsibility of health professionals	1	2	3	4	5

5.2.Self-perception of competency to perform HMIS tasks

Rate your competence in accomplishing the following HMIS tasks on a scale from 0 to 100% **Please circle your answer**												
508	I can check data accuracy	0	10	20	30	40	50	60	70	80	90	100
509	I can calculate percentages/rates correctly	0	10	20	30	40	50	60	70	80	90	100
510	I can plot data by months or year	0	10	20	30	40	50	60	70	80	90	100
511	I can explain the implication of the results of data analysis	0	10	20	30	40	50	60	70	80	90	100
512	I can use data for identifying gaps and setting targets.	0	10	20	30	40	50	60	70	80	90	100
513	I can use data for making management decisions.	0	10	20	30	40	50	60	70	80	90	100

Annexes IV. List of selected public health centers for assessment of routine health information utilization and associated factors among public health centers of Addis Ababa, 2020

S. No.	Name of the health center	S. No.	Name of the health center
	Lideta Sub City		**Akaki Kality Sub City**
1.	Abnet health center	26.	Saris health ceneter
2.	Beletishachewu health center	27.	Kality health ceneter
3.	Teklehaymanot health center	28.	Gelan health center
4.	Lideta health center		**Addis Ketama Sub City**
5.	Dagim Hidassie health center	29.	Addis Ketema health center
	Kirkos Sub City	30.	Abebe Bikila health center
6.	Meshaualekia health center	31.	Felege-Meles health center
7.	Kirkos health center	32.	kuasMeda health center
8.	Feresmeda health center		**Gulele Sub City**
9.	Gotera Masalecha health center	33.	Selam health center
10.	Kazanchis health center	34.	Addisu Gebya health center
	Arada Sub City	35.	Hdassie health center
11.	Arada health ceneter	36.	Shiro Meda health center
12.	Cherchil health center	37.	Tibeb Bekechene health center
13.	Afnchober health center		**Nifas Silk Lafto Sub City**
14.	Semen health ceneter	38.	Woreda 03 health center
	Yeka Sub City	39.	Woreda 05 health center
15.	Yeka health center	40.	Woreda 06 health center
16.	Korya Zemachoch health center	41.	Woreda 09 health center
17.	Kotebe health center	42.	Woreda 10 health center
18.	Woereda 8(Chefe) health center	43.	Woreda 12 health center
19.	Woreda 6 health center		**Bole Sub City**
20.	Woreda 11(Raey) health center	44.	17 health center
21.	Woreda 14(Hdassie) health center	45.	Dilfire health center
	Kolfe Keranyo Sub City	46.	Amorawu health center
22.	Kolfe health center	47.	Goro health center
23.	Lomimeda health center	48.	Semmit health center
24.	Phlipos health center	49.	Meri health center
25.	Woreda 9 health center		

Annexes V. Supporting letters for different organizations

ADDIS ABABA UNIVERSITY
College of Health Sciences
School of Public Health
Ethical Clearance Form

Version June 24, 2020

Date: /____/____/____/
Ref. No. SPH/ /2012

Project number /____001____/

Date of approval (D/M/Y) /__/ / /	
Project Title: Assessment of routine Health Information Utilization and Associated factors among Public Health Centers of Addis Ababa, Ethiopia.	
Name of PI: Alem Sebsbie	**Phone Number:** _____
Institution	**School of Public Health**
Department	**General Public Health**
Decision of Research and Ethics Committee:	☑ **Approved** ☐ **Approved with Recommendation** ☐ **Resubmission** ☐ **Disapproved**
Valid until	**June 21. 2020 – June.23. 2021**

Dean, School of Public Health

Signature: _____

Date: /13/07/2020/

ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF PUBLIC HEALTH
DEPARTMENT OF REPRODUCTITVE
HEALTH & HEALTH SERVICE MGT

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አገልግሎት አመራር ት/ ክፍል

ቁጥር/ሪ/ሔማ/ 440 /12
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አዲስ አበባ

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⊠ 9086
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Fax: 251-11-5517701
Email: publichealth@aau.edu.et

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☎ 251-11-5157701
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ኢ-ሜል: publichealth@aau.edu.et

አዲስ አበባ ከተማ አስተዳደር ጤና ቢሮ
City Government of Addis Ababa Health Bureau

Ref.No. A/A/H/B/HG/227

Date 22/11/2012

TO:

- **Addis Ketema Sub- city Health Office**
- **Arada Sub- city Health Office**
- **Bole Sub- city Health Office**
- **Akaki-kality Sub- city Health Office**
- **Kirkos Sub- city Health Office**
- **Gulelle Sub- city Health Office**
- **Nefas Silk Lafto Sub- city Health Office**
- **Kolfe Keranio Yeka Sub- city Health Office**
- **Lideta Sub- city Health Office**
- **Yeka Sub- City Health Office**

Addis Ababa

Subject: Request to access Facilities to conduct approved research

The letter is to support **ALEM SEBSBIE** to conduct research, which is entitled as **"ASSESMENT OF ROUTINE HEALTH INFORMATION UTILIZATION AND ASSOCIATED FACTORS AMONG PUBLIC HEALTH CENTERS OF ADDIS ABEBA, ETHIOPIA,2019.''** The study proposal was duly reviewed and approved by Addis Ababa Health Bureau IRB, and the principal investigator is in formed with a copy of this letter to report any changes in the study procedures and submit an activity progress report to the Ethical Committee as required. Therefore we request the facility and staffs to provide support to the principal investigator.

With Regards

Ethical Clearance Committee

ዶ/ር ዮሐንስ ወ/ኪዳን
የህብረተሰብ ጤና ምርምር
ቡድን መሪ

Cc

- **ALEM SEBSBIE**
- **To Ethical Clearance Committee**

በአዲስ አበባ ከተማ አስተዳደር
የቂርቆስ ክፍለ ከተማ ጤና ጽ/ቤት

Government of Addis Ababa
Kirkos Sub City Health office

ቁጥር፡- ቂ/ክ/ክ/ጤና ጽ/ቤት/2502/05/12 ዓ.ም
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ስ ቂርቆስ ጤና ጣቢያ
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ስ ካዛንችስ ጤና ጣቢያ
አዲስ አበባ

ጉዳዩ፡- ትብብርን ይመለከታል

ከላይ በርዕሱ እንደተጠቀሰው አስም ሰብስቤ ከአዲስ አበባ ከተማ አስተዳደር ጤና ቢሮ በቁጥርአ/አ/ጤ467/227 በቀን 22/11/2012 በተፃፈ ደብዳቤ በ 'Assesement Of Routine Health Information Utilization And Associated Factors Among Public Health Centers Of Addis Ababa Ethiopia ,2019 " በሚል ርዕስ የጥናት ስራቸውን እንዲሰሩ ድጋፍ እዲደረግላቸው አሳውቆናል፡፡ ስለሆነም አስፈላጊው ድጋፍ እንዲደረግላቸው እናሳስባለን፡፡

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መስፍን በየነ
ጽ/ቤት ኃላፊ
Office Head

ግልባጭ፡-
➢ ስ አስም ሰብስቤ
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AKAKI -KALITY SUB-CITY
ADMINSTRATION HEALTH OFFICE

ቁጥር፡- አቃ/ቃ/ክ/ከ/ጤ/ጽ/ 1353 /2012

ቀን 11/12/2012

በአቃቂ ቃሊቲ ክ/ከተማ አስተዳደር ጤና ጽ/ት

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ጉዳዩ፡- ትብብር ስለመጠየቅ

አለም ሰብስቤ በ<< ASSESMENT OF ROUTINE HEALTH INFORMATION UTILIZATION AND ASSOCIATED FACTOR AMONG በሊቸ HEALTH CENTERS OF ADDIS ABEBA ,ETHIOPIA,2019>> ላይ በጤና ጣበቢያችሁ ጥናት እንዲያደርጉ ከአዲስ አበባ ከተማ አስተዳደር ጠየና ቢሮ በቁጥር A/A/H/B/467/227 ቀን 22/11/12 በተጻፈ ደብዳቤ ተገልጾልናል፡፡፡፡

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ግርማ ጅማ ሆራ
Girma Jima Hora
የሚዲካል አገልግሎት ቡድን መሪ
Medical Service Team Leader

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In replying please quote our Ref. No.

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ADDIS KETEMA SUB-CITY ADMINISTRATION
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ADDIS KETEMA SUB-CITY HEALTH OFFICE

ቁጥር አ/ክ/ክ/ክ ጤናጽ/ቤት 2416

ቀን 25/12/12

ለአዲስ ክተማ ጤ/ጣቢ.ያ (ወረዳ 4)

ለአበበ ቢቂላ ጤና ጣቢ.ያ (ወረዳ 5)

ለፈለገ መለስ ጤና ጣቢ.ያ (ወረዳ 6)

ለኳስ ሜዳ ጤና ጣቢ.ያ (ወረዳ 9)

ጉዳዩ፡- ትብብርን ይመለከታል

ከላይ በርዕሱ ለመግለፅ እንደተሞከረው ከአዲስ አበባ ጤና ቢሮ በተጻፈ ደብዳቤ **አለም ሰብስቤ** (assessment of routine health information utilizasion and associated factors among public health center of addis abeba Ethiopia ,2019) የጥናታዊ ፅሁፍ የመረጃ ዳሰሳ ለማድረግ ስለተፈቀደላቸው በእናንተ በኩል ተገቢው ድጋፍ እንዲደረግላቸው እንጠይቃለን ::

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KOLFE KERANIO SUB-CITY HEALTH OFFICE

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አዲስ አበባ

ጉዳዩ፡ ትብብር እንዲደረግላቸው ስለማሳወቅ

ከላይ በርዕሱ ለመግለጽ እንደተሞከረው የአዲስ አበባ ከተማ አስተዳደር ጤና ቢሮ በቁጥር A/A/H/B/467/227 በቀን 22/11/2012 ዓ.ም በጻፈልን ደብዳቤ አለም ሰብስቤ "Assessment of Routine Health Information Utilization and Associated Factors Among Public Health Centers of Addis Ababa, Ethiopias." በሚል ርዕስ ጥናት እንዲያደርጉ ፕሮፖዛላቸውን በቢሮው የምርምር የስነ ምግባር አጣሪ ኮሚቴ (Ethical Review Committee) ታይቶ ተፈቅዶላቸዋል። በመሆኑም ጤና ተቋማችሁ ለጥናቱ የተመረጠ በመሆኑ አስፈላጊውን ትብብር ታደርጉላቸው ዘንድ እናሳውቃለን።

ከሰላምታ ጋር!

ፈቃደ ደጉ
ሪሰርች ፎካል

City Government of Addis Ababa Kolfe Keranyo Sub-city Health Office

ግልባጭ:
- ለአለም ሰብስቤ
- ለበሽታ መከላከልና መቆጣጠር ቡድን
ጤና ጽ/ቤት

☎ 0118 - 285136

በአዲስ አበባ ከተማ አስተዳደር
የየካ ክፍለ ከተማ አስተዳደር ጤና ጽ/ቤት

ቁጥር የካ/ክ/ከ/ጤ/ጽ/ቤት/[illegible] /2012

ቀን 11 / 12 /2012

በየካ ክ/ከተማ ጤ/ጽ/ቤት

ለየካ ጤና ጣቢያ

ለኮሪያ ዘማቾች ጤና ጣቢያ

ለኮተቤ ጤና ጣቢያ

ለወረዳ ጨፌ 8 ጤና ጣቢያ

ለወረዳ 6 ጤና ጣቢያ

ለወረዳ 11(ራእይ) ጤና ጣቢያ

ለወረዳ 14 (ሀዳሴ) ጤና ጣቢያ

<u>አዲስ አበባ</u>

<u>ጉዳዩ፡- ሪሰርችን ይመለከታል</u>

የአዲስ አበባ ከተማ አስተዳደር ጤና ቢሮ በቀን 1/12/12 ዓ.ም በቁጥር አ/አ/ጤ/651/227 በፃፈው ደብደቤ Alem Sebsbie 'ASSESEMNT OF ROUTINE HEALTH INFORMATION UTILIZATION AND ASSOCIATED FACTORS AMONG PUBLIC HEALTH CENTERS OF ADDIS ABABA, "ላይ ጥናት እንዲያደርጉ አሳውቆናል፡፡

በዚሁ መሰረት ጥናቱን እስከ ሚጨርሱ ድረስ የተለመደውን ትብብር እንድታደርጉላቸው ስንጠይቅ ለሚደረግላቸው ትብብር ሁሉ ከወዲሁ እናመሰግናለን፡፡

ከሠላምታ ጋር!

<u>ግልባጭ//</u>

- ለጤና ጽ/ቤት
- ለ Alem Sebsbie

<u>አዲስ አበባ</u>

E-mail yekahealthoffice@gmail.com ☎011-8-677888

የአራዳ ክፍለ ከተማ አስተዳደር ጤና ጽ/ቤት

አዲስ አበባ፤

Arada Sub-City Administration

Health Office

ቁጥር አ/ከ/ከ/ጤ/ጽ/ቤት [illegible] 2012

ቀን [illegible]/01/2013 ዓ/ም

- ለአራዳ ጤና ጣቢያ
- ለቸርችል ጤና ጣቢያ
- ለአፍንጮ በር ጤና ጣቢያ
- ለሰሜን ጤና ጣቢያ

<u>አዲስ አበባ፤</u>

ጉዳዩ፡- <u>ትብብር እንዲደረግላቸው ስለመጠየቅ</u>

ከላይ በርዕሱ ለመጥቀስ እንደተሞከረው ከአዲስ አበባ ጤና ቢሮ በቁጥር A/A/H/B/467/227 በቀን 22/11/2012 ዓ/ም በተጻፈ **ደብዳቤ ALEM SEBSBIE** "ASSESMENT OF ROUTINE HEALTH INFORMATION UTILIZATION AND ASSOCIATED FACTORS AMONG PUNLIC HEALTH CENTERS OF ADDIS ABABA, ETHIOPA, 2019." በሚል ርዕስ ጥናት ለማድረግ ወደ ማዕከላችሁ ስለሚመጡ ይህንን በተመለከተ አስፈላጊውን ትብብር እንድታደርጉላቸው እንጠይቃለን፡፡

ከሰላምታ ጋር !

ብርሃኑ [illegible] ጊሶ
የአራዳ ክፍለ ከተማ ጤና
ጽ/ቤት ኃላፊ

☎0111 58 09 61/0111 58 09 12
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ጥራቱን የጠበቀ የጤና አገልግሎት ለሁሉም!!

በንፋስ ስልክ ላፍቶ ክፍለ ከተማ
ጤና ጽ/ቤት

አዲስ አበባ

Nefais Silk Lafto Sub City
Health Office

Addis Ababa

ቁጥር፡- ንስላክ/ከ/ 209 / 2012
Ref.No.

ቀን 27 / 12 /2012
Date

በን/ስ/ላ/ክ/ከተማ አስተዳደር ጤና ጽ/ቤት

ለወረዳ 03 ጤና ጣቢያ

ለወረዳ 05 ጤና ጣቢያ

ለወረዳ 06 ጤና ጣቢያ

ለወረዳ 09 ጤና ጣቢያ

ለወረዳ 10 ጤና ጣቢያ

ለወረዳ 12 ጤና ጣቢያ

<u>አዲስ አበባ</u>

ጉዳዩ፡- <u>*የመመረቂያ ጥናት ለመስራት ፈቃድ መስጠትን ይመለከታል፡፡*</u>

የአዲስ አበባ ከተማ አስተዳደር ጤና ቢሮ በቁጥር አ/አ/ጤ/467/227 በቀን 22/11/2012 ዓ.ም በተፃፈ ደብዳቤ ተማሪ አለም ሰብስቤ ASSESMENT OF ROUTINE HEALTH INFORMATION UTILIZATION AND ASSOCIATED FACTORS AMONG PUBLIC HEALTH CENTERS OF ADDIS ABEBA ETHIOPIA,2019; በሚል ርዕስ የመመረቂያ ፅሁፋቸውን እንዲሰሩ ፈቃድ የሰጠናቸው መሆኑን ያሳወቅን ስለሆነ አስፈላጊው ትብብር ይደረግላቸው ዘንድ እንጠይቃለን፡፡

ከሰላምታ ጋር

S/ likie H/mariam
Quality improvement Service officer

☎ 0114710121

✉120746
Addis Ababa
አዲስ አበባ

እባክዎን መልስ ሲጽፉልን የእኛን ቁጥር መጥቀስና የባለጉዳዩን ስም ከነአያቱ ይግለፁ
In Replying Please Mention our Ref. No. and Full Name of the Employee

በልደታክፍለከተማአስተዳደር
ጤና ጽ/ቤት

Lideta Sub City Health Office Administration

ቀን 11/12/2012 ቁጥርል/ክ/ከ/ጤ/ፅ/ቤት 1681/12

Date:-Ref.NO:-

ለአብነት ጤና ጣቢያ

ለወ/ሮ በለጥሻቸው ጤና ጣቢያ

ለተክለሀይማኖት ጤና ጣቢያ

ለልደታ ጤና ጣቢያ

ለዳግም ህዳሴ ጤና ጣቢያ

<u>አዲስ አበባ</u>

ጉዳዩ፡- <u>ለጥናት ጹሁፍ የመረጃ ትብብር እንዲደረግላቸዉ ስለመጠየቅ</u>

የአዲስ አበባ ጤና ቢሮ በደብዳቤ ቁጥር A/A/H/B/467/227ቀን 22/11/2012 በተጻፈዉ ደብደቤ አለም ሰብስቤ " ASSESMENT OF ROUTINE HEALTH INFORMATION UTILIZATION AND ASSOCIATION FACTORS AMONG PUBLIC HEALTH CENTERS OF ADDIS ABABA ETHIOPIA,2019",ላይ ምርምር እንዲያደርጉ የተፈቀደላቸዉ ስለሆነ አስፈላጊዉን ትብብር እንዲደረግላቸዉ እናሳስባለን ፡፡

ከሰላምታ ጋር

ጌታቸዉ ጁፋሬ ዋሪዮ
Getachew Jufare Waryo
የሜዲካል አገልግሎት ቡድን መሪ
Medical Service Team leader

<u>ግልባጭ</u>

ለፋይል

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በቦሌ ክፍለ ከተማ አስተዳደር

ጤና ጽ/ቤት

Bole sub city Adminstration

Health office

ቁጥር ቦ/ክ/ከ/ጤ/ጽ/1.5ሐ 2865/13

ቀን .18/01/13

በቦሌ ክፍለ ከተማ አስተዳደር

ለ 17 ጤና ጣቢያ

ለ ድልፍሬ ጤና ጣቢያ

ለ አሞራው ጤና ጣቢያ

ለ ጎሮ ጤና ጣቢያ

ለ ስሚት ጤና ጣቢያ

ለ መሪ ጤና ጣቢያ

<u>አዲስ አበባ</u>

ጉዳዩ፤- <u>ትብብር እንዲደረግላቸው ስለመጠየቅ፤</u>

ከላይ በርዕሱ ለመግለጽ እንደተሞከረው አለም ሰብስቤ ከአዲስ አበባ ከተማ አስተዳደር ጤና ቢሮ በቁጥር A/A/H/B/467/227 ቀን 22/11/12 በተፃፈ ደብዳቤ መሰረት **"ASSESMENT OF ROUTINE HEALTH INFORMATION UTILIZATION AND ASSOCIATED FACTORS AMONG PUBLIC HEALTH CENTERS OF ADDIS ABEBA,** ETHIOPIA,2019." በሚል ርዕስ ጥናታቸውን ለማድረግ ዝግጅት ላይ ይገኛሉ። በእናንተ በኩል አስፈላጊውን መረጃ እንዲያገኙ ትብብር ታደርጉላቸው ዘንድ እንጠይቃለን።

ከሠላምታ ጋር

የጤና ኤክ/የመ/ዳ/ጤክ/ኢን/ቡድን
መሪ

<u>**ግልባጭ፤-**</u>

ለቦሌ ክ/ከተማ አስተዳደር

- ለ ጤና ጽ/ቤት
- ለ አለም ሰብስቤ

<u>አዲስ አበባ</u>

አዲስ አበባ ቦሌ ቢሮ ቁ. ☎ 116 -61-32-80

አዲስ አበባ ከተማ አስተዳደር የጉለሌ ክፍለ ከተማ ጤና ጽ/ቤት
CITY GOVERNMENT OF ADDIS ABABA GULELE SUB-CITY HEALTH OFFICE

ቀን፡- 28/12/2012 ዓ.ም

ቁጥር፡-ገ/ክ/ክ/ጤ/ጽ/ቤት/በሸ/መክ/1076/12

ለስላም ጤና ጣቢያ

ለአዲሱ ገበያ ጤና ጣቢያ

ለሀዳሌ ጤና ጣቢያ

ለሸሮ ሜዳ ጤና ጣቢያ

ለጥበብ በቀጨኔ ጤና ጣቢያ

አዲስ አበባ

ጉዳዩ፡- ትብብር እንዲደረግላቸው ስለመጠየቅ

ከላይ በርዕሱ ለመግለጽ እንደተሞከረው አለም ሰብስቤ ከ አ.አ ጤና ቢሮ በቁጥር አ/አ/ጤ/467/227 በቀን 22/11/2012 በተጻፈ ደብዳቤ በክፍለ ከተማችን በሚገኙ ጤና ጣቢያዎች ላይ ‹‹ASSESMENT OF ROUTINE HEALTH INFORMATION UTILIZATION AND ASSOCIATED FACTORS AMONG PUBLIC HEALTH CENTERS OF ADDIS ABABA ETHIOPIA, 2019." በሚል ርዕሰ ጥናት እንዲያካሂዱ የተፈቀደላቸው መሆኑ ተገልጾልናል በመሆኑም በጤና ጣቢያችሁ ላይ መረጃ ለመሰብሰብ በሚመጡበት ጊዜ ትብብር እንድታደርጉላቸው እንገልጻለን፡

ከሰላምታ ጋር

ፍጹም በላይ
የሪሰርች ፎካል

ግልባጭ፡-

-ለጤ/ጽ/ቤት
-ለአለም ሰብስቤ
አዲስ አበባ

Annexes VI. Declaration

I, the undersigned declared that this is my original work, and has not been presented for degree in this or other university and that all sources of materials used for this thesis has been fully acknowledged

Name of principal investigator: Alem Sebsbie Tebeka

Signature: _____

Date: _____

Place: Addis Ababa University, College of Health Science, School of Public Health

This thesis has been submitted for approval to:

Advisor: Dr. Mesfin Addise (MD, MPH)

Signature: _____

Date: _____