ASRAT WOLDEYES HEALTH SCIENCE CAMPUS SCHOOL OF PUBLIC HEALTH

ASSESSMENT OF ROUTINE HEALTH INFORMATION UTILAZATION AND ASSOCIATED FACTORS AMONG HEALTH PROFESSIONALS WORKING AT PUBLIC HEALTH FACILITIES IN DEBRE BERHAN Town, NORTH SHOA, AMHARA, ETHIOPIA

A THESIS REPORT SUBMITTED TO DEBRE BERHAN UNIVERSITY, ASRAT WOLDEYES HEALTH SCIENCE CAMPUS, DEPARTMENT OF PUBLIC HEALTH, AS PARTIAL FULFILLMENT OF THE REQUIREMENT FOR MASTER'S DEGREE OF PUBLIC HEALTH IN EPIDEMIOLOGY

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Assessment of routine health information utilization and associated factors among health professionals in Debre Berhan Town public health facilities, North shoa, Amhara, Ethiopia, 2022.

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Abstract

Background: Routine health information system (RHIS) is a system whereby health data are recorded, stored and processed to improve decision-making in the health sector. It is vital for acquisition of data for health sector planning, monitoring and evaluation. However, in developing countries, especially in Ethiopia routine health information utilization is still low and is not utilized for program decisions especially at lower levels of health care and it remains as a major challenge.

Objective:-To assess routine health information utilization and associated factors among health professionals in Debre Berhan Town health facilities, North shoa, Amhara, Ethiopia, 2022.

Methods:
A facility-based cross-sectional study was conducted among 383 randomly selected health professionals from May to June 2022. A self-administered pretested structured questionnaire was used to collect data from participants. Data were cleaned, coded and entered into EpiData version 3.1 and exported into SPSS version 22 for further statistical analysis. Descriptive statistics were used to characterize the participants. Multivariable logistic regression was conducted to identify factors associated with routine health information utilization. Variables with a p-value <0.05 were considered statistically significant factors for the utilization of health information system.

Result: From the total health care professionals participated in the study, more than half 197(51.4%) of the study participants were male. Among the respondent 127(33.16%) were within the age range of 30- 34 years with a mean age of 32.08 and SD of (±5.23). The overall good utilization routine health information among health professionals was 42.6% (95% CI: 37.6%, 47.8%). Type of institution (AOR=2.10; 95%CI: 1.26, 2.98), Complexity of RHIS (AOR =2.19, 95% CI: 1.23, 3.88), taking training on HMIS (AOR=8.94; 95% CI: 1.77, 18.55), and feel guilty if not accomplish their target performance (AOR = 2.96, 95% CI: 1.33, 6.60) were found significantly associated with routine health information utilization.

Conclusion: The overall good utilization of routine health information among the health professionals was low. Type of institution, Complexity of RHIS, taking training on HMIS and feel guilty of not accomplish their target performance were factors related to routine health information system utilization. Therefore, reduce complexity of RHIS, improve habit of accomplishing target performance are highly recommended for improving routine health information utilization among health workers at government health facilities.

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LIST OF ABBRIBIAVATIONS

- AOR Adjusted odd ratio
- COR Crud odd ratio
- CI Confidence interval
- DHIS District Health Information System
- HCPS Health care professionals
- HIS Health information system
- HMIS Health Management Information System
- HFs Health Facilities
- HSTP Health Sector Transformation Plan
- M & E Monitoring and Evaluation
- MOH Ministry of Health
- MAT Management Assessment Tool
- OBAT Organizational and Behavioral Assessment Tool
- PMT Performance Monitoring Team
- RHIS Routine Health Information System
- RHIU Routine health information utilization

1. INTRODUCTION

1.1 Background

Routine health information system (RHIS) is a system purposed for regular collection, processing, use and dissemination of health-related data to improve the management of programs, resources and health care outcomes (1). Routine health information utilization is vital for the day-to-day patient management, disease prioritization, health education, resource allocation and decision making as well as for the planning, monitoring and evaluation of health care activities(2). It is one of the six building blocks of a health care system designed for the generation and use of information for other functions of health system, which includes health information system resources, indicators, data sources, data management, information products, dissemination and use. The purpose of a health information system is to originate quality health data that contribute specific evidence support to make decisions on health issues (3).

RHIS is cost-effective in reducing work burden and improve the quality of patient care. It is effective in identifying problems and gaps in the health care system and also helps to resolve the identified problems and improving of health care system(4). Ethiopia has also produced its potentials for DHIS utilization that deploy user-friendly DHIS versions to the whole region. The Federal Ministry of Health (FMOH) is deploying and implementing DHIS to enhance decision making among public health facilities(5) .

Routine Health Information System (RHIS) is expected to produce effective and reliable information for decision-making and planning in the health care system(6). Sound and reliable information is the foundation of decision-making across all health system building blocks, and is essential for health system policy development and implementation, health research, human resources development, health education and training, service delivery and financing. The health information system provides the four key functions: data generation, compilation, analysis and synthesis, and dissemination and use(17).

Despite this, use of routine health data for evidence-based decision making is still very weak in most low-and middle-income countries (LMICs) including Ethiopia, particularly for data produced by health facility. Furthermore, the low information use among health care professionals at the study setting remains a problem.

1.2. STATEMENT OF THE PROBLEM

One critical weakness across Africa was lack of capacity to effectively use data to monitor patterns of service use through time so that the impacts of changes in policy and service delivery cannot evaluated and this contributes to inefficient and ineffective use of resource(10). However, developing countries are reported to have a large amount of unreliable health data, poor human resources, and poor information technology infrastructure, hence effective HISs are needed to improve these problems. Besides government health facilities are meant to employ health workers who routinely record and document data on a daily, weekly monthly, quarterly and annual basis but such records are either not complete or nonexistent, meaning that they cannot effectively be used a yardstick for effective utilization of routine health data by government health facilities for decision making, planning and evaluations (8) .

Hence use of data for evidence-based decision making is still very weak in most low and middle income countries and particularly for data produced by health facility. Routine health information utilization in low and middle income countries ranges from 30%-53% of which Ethiopia deserves 35%(11).

The value of health information is determined by its utilization in decision-making, public health decision-making is critically dependent on the timely availability of sound data. Overall utilization routine health information among health workers in Ethiopia is 57.42% which is found to be below the national expectation level (2). Similarly another study conduct in East Gojjam revealed that only 45.8% of the health workers have a good level of routine health information utilization(12). Another study in South Region of Ethiopia the overall utilization of routine health information is 63.1%(13) and also in Hadiya zone utilization of health management information is 69.3% in all the study units/departments of health centers(14).

Having organizational, technical and behavioral factors as the main reasons for not using data, due to this lack of reliable health information is one of the major obstacles to the effective planning of health services in Ethiopia. Technical factors relate to the ease of data collection, collation, analysis and reporting while behavioral factors include individuals' knowledge, attitude and skills related to RHIS processes. Organizational factors focus on availing human capital, infrastructure and a functional control system. These factors directly affect RHIS utilization (7).

The management information system is an essential tool for strengthening planning and management in the health facilities. But in developing countries due to resource limitation, HMIS implementation is at its infant age. Many of health professionals focus on treatment due to lack of training there is no awareness on the importance of patient record. Consequently, decision-makers cannot identify problems and needs, track progress, evaluate the impact of interventions and make evidence-based decisions on health policy, programmed design and resource allocation(16).

The main obstacle to applying the primary health care (PHC) approach in most developing countries is the use of inadequate information by health professionals for the health managerial process. The problem, therefor, was assess the management and utilization of routine health information in Debre Berhan town governmental health facilities and this study was look at how well the health information management system was functioning and how a system, health professionals and organizational factors influence the utilization of the health information management system by health workers and use the data at an individual level in the governmental health facilities and addressing the bridge between the data generator, decision-maker and the community at large. Low utilization of routine health information in Debre Berhan town public health facilities makes informed health decision making and implement solution to the problem are difficult and compromised.

1.3. Significance of the study

Sound and reliable data is the foundation of the decision-making across all health system building blocks. The finding of the study was used by the health professionals, health care manager and other health stakeholders to reflect on the performances of routine health information systems and identify factors affecting performances of routine health information systems utilization. The study finding was used to inform the planning and allocation of resources to priority action, aimed at improving performances of routine health information systems.

The ultimate objective of a routine health information system (RHIS) is to produce data for taking action in the health sectors. Therefore, this study was designed to greatly signal the current status of RHIS in study area. RHIU assessment in RHIS is an important mechanism to identify gaps in the management of the health system and to resolve them to maintain and improve performance. Further, in line with these, it was also contribute to policy decision making in the direction of making. RHIS more amenable for better improvement of the health services among health professionals, at primary health care facilities level, at Amhara health bureau level and Federal ministry of health level.

Therefore the study was strength the health information systems functioning of health care providers/workers in use of routine health data in evidence based decision making and established areas of the health information system, which needs to be strengthened and supported for routine data to be utilized in decision making in health facilities. The study was act as a source of literature for scholars who wish to do further studies about health information utilization or in other fields related to the factors that affect the effective utilization of routine health data both in private and public health facilities. The study identified gaps and gives solutions to the existing gap of RHIU in Debre Berhan town public health facilities. The expected beneficiaries of this study were health centers and hospital in Debre Berhan health facilities plus other similarly structured health facilities.

The study was also be a base and add knowledge for the Ministry of health, Amhara health bureau, North shoa health departments, Woreda health offices to see ways of ensuring that government health facilities health workers effectively utilize routine health information. Lastly, since such service-based works require a continuous update of information the study was come up with updated information. Finally, these studies were improved and strengthen the utilization of information for decision-making at health centers.

2. LITRATURE REVIEW

2.1. RHIS utilization

Globally the development and origin of RHIS are in the late 1950s. At 2010, a situation analysis of HMIS/M&E is conduct in Ethiopia reveals that availability of resources for implementation of the new system in majority of health facilities are inadequate. Health management information system (HMIS) is a process in which health data are recorded, stored and processed for policy-making, implementation and evaluation of health programs for appropriate use of resources at all levels of the health system and utilization rate of HMIS at health centers are about 41.7%. But the current HMIS/M&E core process is weak at the national level [(18, 19, 20, 21)].

According to studies done in Kenya and Coted'vorie only 34% and 38% of health professionals use routine data for decision making respectively[(19), (20)]. Besides to this in studies done in different part of Ethiopia such as Gondar, Addis Ababa public health centers, East Wollega, East Gojjam, Jimma, Dire Dawa, and Hadia zone showed that overall routine health information utilization was 78.5%, 57.9%, 45.6%, 32.9%, 57.7%, 62.7%[(1), (4) (21), (12), (22), (23), (24)]. Another study conducted at Illuba Bora zone and in Amhara national regional state in Ethiopia found that the overall utilization of DHIS 57.3% and 85% of the respondents reported they believe the RHIS is important respectively[(5) (6)].

Another study conducted in Dire Dawa, Ethiopia, oromia special Zone and western Amhara the overall utilization of routine health information was found to be 53.1%, 57.6%, 52.8% and 46% (25, 28, 29, 30, 31] .

In addition to the above study the study done in Gondar 94% of respondents use routine data for treatment of patients, 90% for disease periodization, 85% for drug procurement, 89.6% for monitoring day to day activities, 86.5% for resource allocation, 89% for planning, 86.5% for evaluation of staff performance, 87.8% for decision making, 87.1% for community mobilization and 85% for best experience selection [(1), (14)].

2. 2. Factors affecting routine health information system utilization

2.2. 1. Socio-demographic factors

According to the studies which were done in Gondar, Addis Ababa, East Gojjam, being male is 2.19 times more likely to use data than females, as age reaches to 30 years and above giving attention and utilization be comes 1.91 times more likely than they youngers, those whose educational status is a degree and above are 2.31 times more likely for data technology

utilization and proper utilization of data and respondents in rural were 5.1 times less likely to use routine health data than respondents in urban health centers ((1), (24), 12)).

A study in North Gondar, type of institution is significant association with routine health information utilization. Health professionals those who working at health centers were 3.57 times more likely to utilize routine health data when compared with those health professionals working at hospital(1). From the total health professionals participated in the study, more than half of the respondents are males (11). Health professionals those who working at health centers were 2.35 times more likely to utilize routine health data when compared with those health professionals working at hospital(10).

2.2.2. Technical factors

Technical factors are referred to as the development of indicators, designing data collection forms, and preparing procedural manuals. The complexity of IT infrastructures is a key determinant for the adaption of new information systems (24). Another study conducted in south region, Ethiopia, routine health information utilization was significant association with availability of HMIS personnel, training on HMIS, receive feedback, and data transfer policy(11). Health professionals who had received supportive supervision 2.6 times more likely utilize routine health data where compared with health works who had no received supportive supervision. A cross-sectional study conducted in Hadia zone health professionals who have standard set of indictors in there office were 2 times more likely utilize routine health data when compared with those who had no standard set of indictors.

A cross-sectional study conducted in East Wollega Zone revealed that HMIS data utilization were significant associated with staff motivation, performance monitoring by health professionals and decision based on superior directives were found to be determinants of HMIS data utilization(19). Another study conducted in Dire Dawa, RHIU was significant association with standard set of indicators, trained staffs to fill format, regular feedback and supportive supervision (23). A study conducted outside of Ethiopia, in Ghana on the use of DHIMS2 in decision-making was significantly associated with staff training and the provision of training manuals for the use of DHIMS2 (25).

2.2.3. Organizational determinants

A study in North Gondar from the total participants, 52, 57.6 and 57% of had no culture of information utilization, had supervision and have good governance for RHIU(1). A systematic review study routine health information utilization were significant associated with supportive supervision, regular feedback, availability of standard indictors and training

on health information(2). A study conducted at Illuba Bora zone, southwest of Ethiopia the RHIU were significantly associated with skills related to use DHIS, motivations to use DHIS, training, feedback and supervision supports (5).

Research conducted by Atsede mazengia 2017, state that, HMIS training, supervision and regular feedback towards health information utilization were found significantly associated with a good level of routine health information utilization. Health professionals who had taking training on HMIS were 6.4 times more likely utilize routine health data when compared with those who not taking training on HMIS. Health professionals who had received supportive supervision 2.6 times more likely utilize routine health data where compared with health works who had no received supportive supervision. Health professionals who have receiving regular feedback 2.2 times more likely utilize routine health data when compared with health workers who had no regular feedback(10).

Another study conducted in Hadiya Zone showed that Utilization of routine health information significant association with training, supportive supervision, good perceived culture of health information and having a standard set of indicators on routine health information tasks. Health professionals who had trained on HMIS were 8.12 times more likely utilize routine health data when compared with those who not taking training on HMIS. Health professionals who had received supportive supervision 2.34 times more likely utilize routine health data where compared with health works who had no received supervision (22).

A study done in Amhara national regional sate, showed that Utilization of routine health information significant association with supportive supervision and regular feedback. The odds of HMIS data utilization were 2.84 times more likely among health professionals who had received supportive supervision as compared to those who didn't supportive supervision and the odds of HMIS data utilization were 2.29 times more likely among health professionals who had receiving regular feedback as compared to those who didn't receiving regular feedback(26).

According a mixed-methods study on use of the routine health information system in Ethiopia showed that lack of supportive supervision and reporting to please the next level, trained staff to fill format, decision based on supervisor directives and department heads seek feedback are significantly associated with routine health data utilization [(27), 31)].

A study conduct in western Amhara, Ethiopia shows that maintaining performance monitoring team, receiving senior management directives, supervision, and using HMIS data for target setting are associated with routine health information use (29). A study conducted in East Wollega zone revealed that health professionals who get support supervision were

2.46 times more likely to use HMIS data for various decision-making purposes than their counterparts. Health workers who have got a reward for good work on information use were 2.07 times more likely to use HMIS/CHIS information than those who haven't got a reward (30).

2.2.4. Self-efficacy determinants

The study in Uganda the results reveled that a promotion of a culture of information influences RHIS tasks, RHIS tasks motivation, and the presence of health information technician have a direct influence on the use of RHIS information(7). A study in East Wollega revealed that staff motivation and performance monitoring by health professionals were significantly associated with HMIS data utilization. The odds of HMIS data utilization was four times more likely among health professionals who regularly monitor their performance as compared to those who didn't monitor their performance (19).

Another study conducts in North Wollo shows that routine health information utilization was significant association with motivation toward HMIS. Health professionals who had good motivation toward HMIS were 4.42 times more likely utilize routine health information when compared with those who lack of motivation toward HMIS(33). A study conduct in North Shewa Zone of Oromia Regional State shows that the level of RHI use for decision-making was 71.6% (34).

2.2.4. Summary

The review also showed the multiple methods used in assessing utilization of routine health information. A variety of results have also emerged from previous studies on utilization of routine health information systems. This variety is largely borne out of the multiplicity of the ways in which the utilization of information can be evaluated as well as the different factors that can influence the utilization of routine health information based on systems. Therefore, this study pursued to assess the routine health information utilization and associated factors to the use of routine health information for decision- making among health professionals working in Debre Berhan health facilities in North Shewa of Amhara Regional State, Ethiopia. The finding would help to change policy and improve the programs' effectiveness, to allocate resources for interventions of health information use, and effectively implement different health sector programs and strategies.

2.1. Conceptual Frame Work

A conceptual framework was developed after referring to different literature that was done in different area concerning routine health data utilization by health professionals. RHIU determinants were technical, organizational, and self-efficacy.

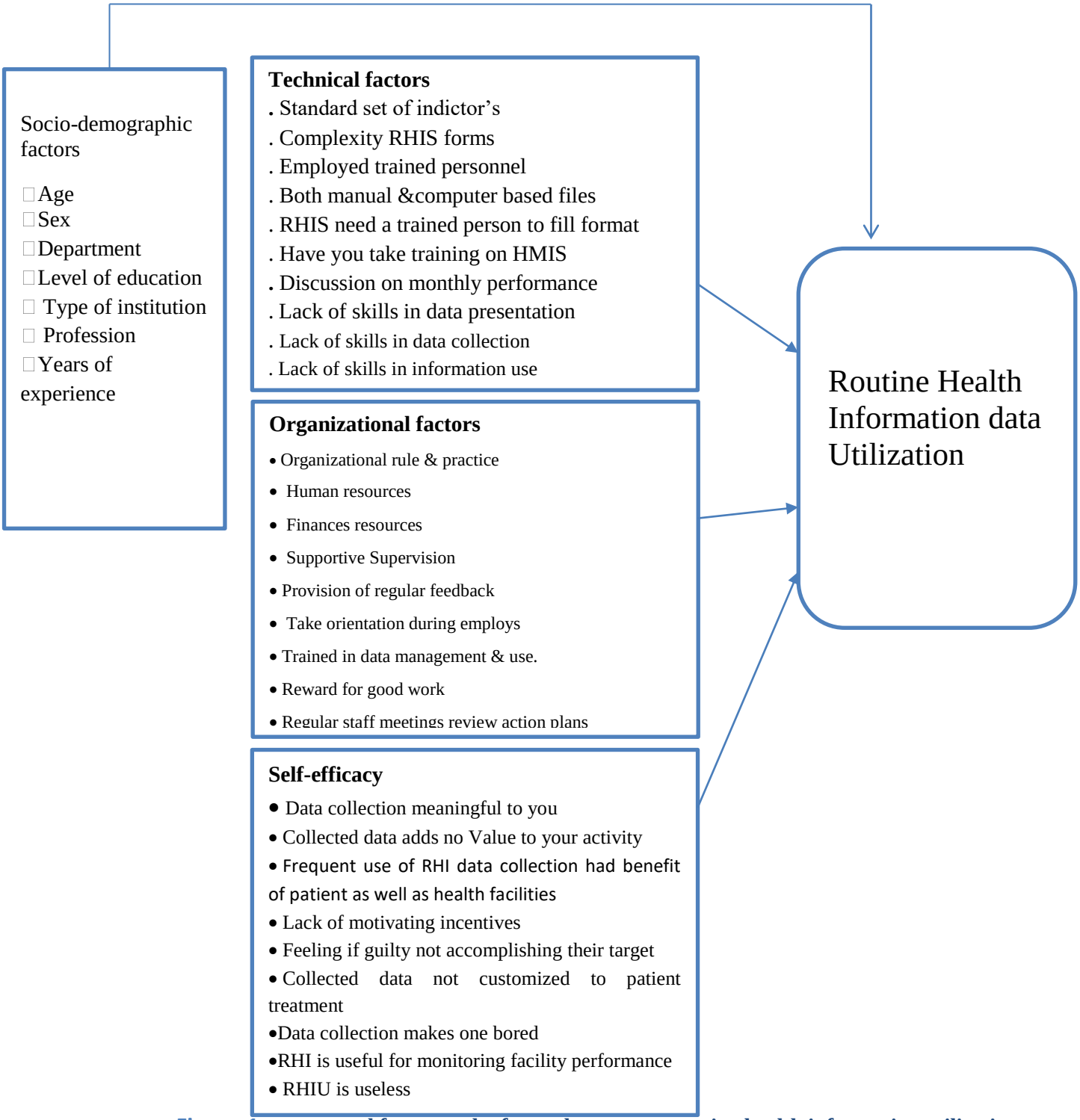

Figure 1: conceptual framework of a study to assess routine health information utilization and its associated factors among health professionals in Debre Berhan District Town, north shoa, Ethiopia, 2022

3. OBJECTIVE

3.1. GENERAL OBJECTIVE

To assess the routine health information utilization and associated factors among health care professionals working at public health facilities in Debre Berhan Town, North Shoa, Amhara, Ethiopia, 2022.

3.2. SPECIFIC OBJECTIVES

- To determine routine health information use among Health care professionals working at public health facilities in Debre Berhan Town, North Shoa, Amhara, Ethiopia, 2022.
- To identify factors affecting routine health information utilization among health care professionals working at public health facilities in Debre Berhan Town, North Shoa, Amhara, Ethiopia, 2022.

4. METHODS

4.1. Study area

The study was conducted among Health care professionals working at public health facilities in Debre Berhan town, North Shoa, Amhara, Ethiopia. Debre Berhan is the capital city of North Shoa, one of the 13 zones of Amhara regional state which is located 130 km from Addis Ababa, the capital city of Ethiopia. The town has one recognized comprehensive specialized hospital, 1 private primary hospital, 3 health centers and 9 health posts. Currently there are 504 health professionals in Debre Behan hospital and 54, 45, and 47 health professionals in 04, 07 and 08 health centers of different disciplines respectively. Regarding health service coverage, there is highest patient follow which is around 15580 patients monthly that attend in Debre Berhan hospital. The study was conducted from May 25 to June 24 2022 G.C.

4.2. Study design and study period

An institution-based cross-sectional study was conducted from May 25 to June 24 to assess the routine health information utilization and associated factors among health care professionals of in Debre Berhan Town public health facilities.

4.3. Source of population

The source population for the study was all health professionals who were working in Debre Berhan Town public health facilities.

4.4. Study population

Health professionals who were working in Debre Berhan Town public Health Facilities during the study period were study population.

4.5. Inclusion and exclusion criteria

4.5.1 Inclusion criteria

All health care professionals who were working in Debre Berhan town public health facilities more than six-month experience during data collection were included in to the study.

4.5.2 Exclusion criteria

Health care professionals who were not satisfying the above criteria and who were on leave during data collection period will be excluded.

4.6. SAMPLE SIZE DETERMINATION

The sample size was determined by using a single population proportion technique using the following assumptions (95% confidence interval and $Z_{\alpha}/2$ with a significant level of alpha

(α) of 0.05, which is 1.96. A 5% margin of error (d=0.05), design effect of 1.5 and P=79% which is the study conducted in North Gondar(1). The sample size becomes 255. So with adjustment for 1.5 design effect the subjects were chosen by using probability proportional to sample size. A z-value of 1.96 was used at 95% CI and d of 5%.

$n = Z\frac{\alpha}{2}^2 \frac{p(1-p)}{d^2}$, n=sample size, $Z_\alpha/2$ of (α) of 0.05=1.96, p= probability, d= margin of error.

$n = (1.96)^2 \frac{0.79(1-0.79)}{(0.05)^2} = 255$. Then, final sample size $n = (1.96)^2 \frac{0.79(1-0.79)}{(0.05)^2}$ x $1.5 = 383$.

The final sample size was **383**.

4.7. Sampling technique

All Debre Berhan town public health facilities (one hospital and 3 health centers) were included. Stratified sampling technique was used. The study participants for self-administered questionnaire were selected by using simple random sampling technique. First, applied stratified sampling technique to select health professionals. First, the sample size was proportionally allocated to each health centers and hospitals. Than after health professions were selected from each health centers and hospital by using simple random sampling. Then, the sample size was proportionally allocated to each selected health profession based on the actual numbers of registered health professionals serving in hospital and health centers during the last six months before the interview.

Then I prepared a separate sampling frame for each health professionals using their actual numbers of (permanently) hired health professionals in 2022 and recruited participants using a simple random sampling technique. Then, simple random sampling was done within each category in terms of the composition of health workers (MD/Doctor, HO/Health Officer, Midwifery, Nurse, Pharmacist/druggist professional, Laboratory professional, Psychiatrist, Health informatics, Environmental Health, radiologist).

Lastly, a simple random sampling method was used to select study participants by using lottery methods from each selected health professions.

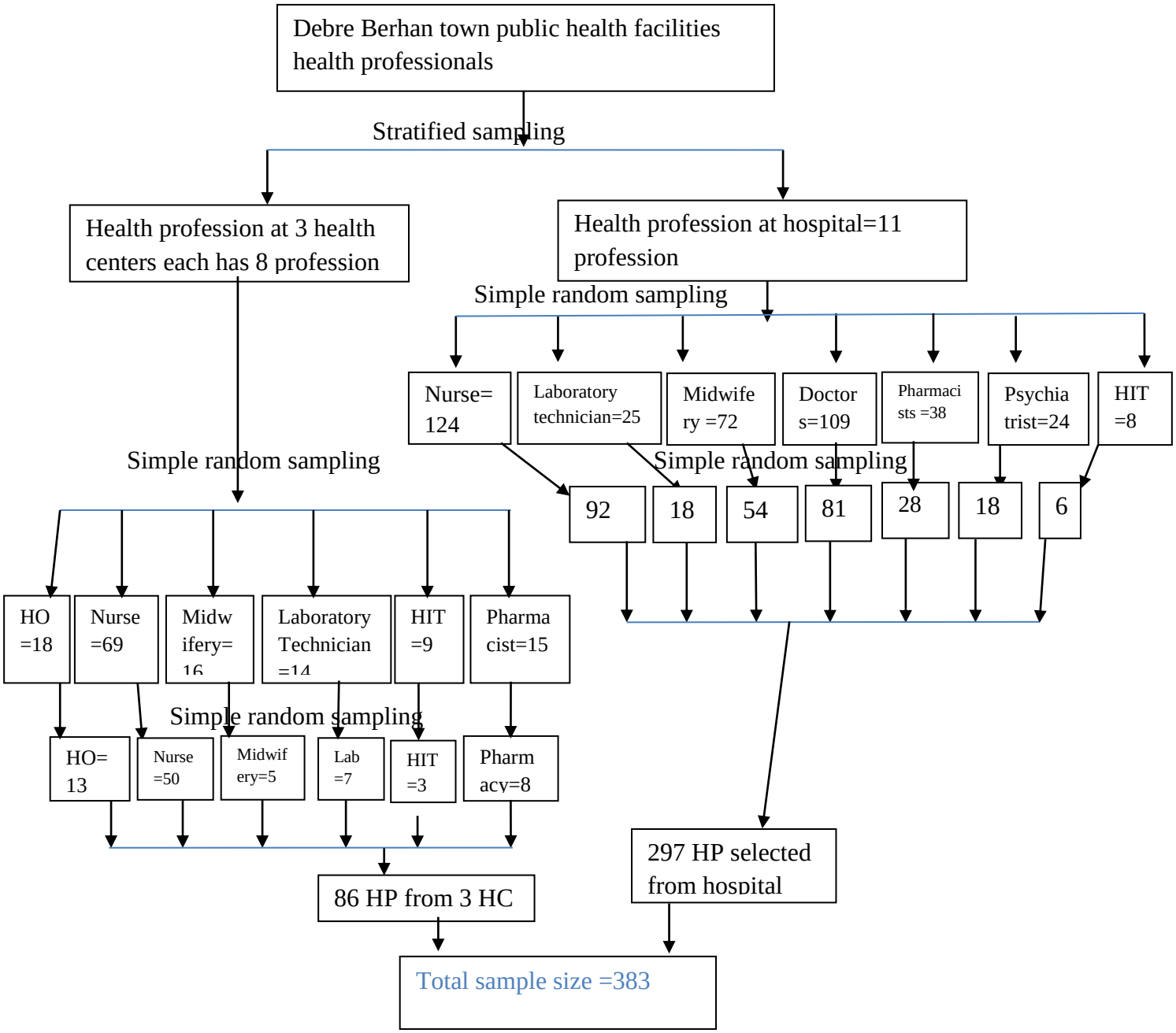

Figure 2: Sampling procedure **for the level of routine health information utilization and associated factor among public health facilities, Debre Berhan, Ethiopia.**

4.8. DATA COLLECTION

4.8.1. Data collection methods

The data were collected using a pre-tested, structured and self-administered questionnaire. The pre-test was conducted in the (5% of the sample size) to ensure that the questions elicited the information needed, checked the clarity, sequencing and wording of the question. The questionnaire was developed based on the revision and findings of the above relevant literature review and technical, behavioral and organizational factors are the major determinants of utilization of routine health information system. First, the questionnaires was prepared in English and then translated to local language (Amharic version) by language experts. To check whether the translation was consistent with the English version the questionnaire were back translated to English by another language expert. Three individuals who were trained as data collectors were conducted the interview.

Two trained BSC holders (HIT) were assigned to supervise and monitor the data collection processes. During data collection, participants were informed about the objective and processes of the study and the confidentiality of the information. The data collectors were responsible to distribute the questionnaire as well as help the subjects, fill the form. The data collectors were trained on how to help the subjects while filling the form and responsible for collecting back the questionnaires that was distributed. The questionnaire consists of five main parts. Part 1 includes socio-demographic factors (measured with 7 items), part 2 is related to technical factors (measured with 10 items), part 3 assessed organizational factors (measured with 10 items), part 4 were about behavioral factors (measured with 10 items), and part 5 was about the outcome variable /RHIU (measured with 15 items).

Self-efficacy factors affecting level of knowledge of routine health data of the respondents were assessed using 5-point Likert scale questions that ranged from ‘1=strongly disagree’ to ‘5=strongly agree’.

4.9. Study Variables

Dependent variable: Routine health information utilization was the dependent variable of the study (Yes/No)

Independent variables include:

-Socio-demographic characteristics- age, sex, type of profession, educational status and years of experience.

-Technical factors:-lack of skills in information presentation, information use, data collection, and presence of standard indicators, Complexity of HIS report formats, HIS require employ

trained personnel, have you take training on HMIS, use both manual and computer based files and need trained person to fill format.

-Organizational factors:-organizational rules, values, financial & human resources, regular feedback, supportive supervision, reward for good work, take orientation on HIS data collection during employment, meeting review action plans, and use HMIS data day to day management.

-Self-efficacy:-collected information not customized patient treatment, lack of motivation incentives, collecting information adds no value for RHIU activities, RHIS data collection had benefit of patient, collecting information gives a feeling burden, understand and appreciate my roles and responsibilities, data collection is meaningful for you, feeling guilty if not accomplishing their target, RHIU is useless, RHI is useful for monitoring facilities performances.

4.10. Operational definition of variables

Routine health information utilization: The use of routine health information for treating patients, disease prioritization, drug procurement, the day-to-day monitoring of health service activities, planning, department performance evaluation, evaluation of staff performance, selection of best experience within the health facility, decision making and community mobilization and discussion (1). It defined by scoring above and below the mean of the 15 items of routine data utilization-focused questions. Outcome variables assessed through yes or no question, finally, health workers' mean scores were used to label health professionals' health information utilization as "has good routine health information utilization" If above means, good utilization of routine health information and if below means, poor utilization of routine health information.

Self-efficacy have a 5-point Liker scale measure, ranging from '1=strongly disagree' to '5=strongly agree'. After data collection the likers scale questioners changed in to Yes/No form for analysis purposes. First each 10-item likers scale questions ranging from '1=strongly disagree' to '5=strongly agree' recodes in to 0 and 1. If the health professional respond this likers scale questions ranging from 1=strongly disagree to 3=neutral labeled as 0 whereas value from 4=agree to 5=strongly agree labeled as 1 (or 0 denoted as No and 1 denoted as Yes).

The mean score of health professionals was calculated by summing up of respondent's response for each item first (rated from 1 to 5). First each 15-item likers scale questions ranging from '1=strongly disagree' to '5=strongly agree' grouped in to Yes/no. After that

recoded variable computed in to one aggregated variable of behavioral factors then health professionals who scored greater than or equal to the mean score were labeled as having good behavioral factors of health information. On the other hand, health professionals who scored less than the mean score were considered as having poor behavioral determinants of health information.

Health care professionals were defined as those employees who have at least a diploma certificate in the health profession and who were collecting health data in order to utilize the information for the improvement of health care services incudes medical doctors, health officers, nurses, pharmacists, midwives, laboratory technicians, radiology technicians and health information technician (36) .

Routine Health information system: A mechanism by which ongoing information/data collection, analysis, utilization and communication of data on health status, morbidity, mortality, health services deliveries, resources and uses that include community health information system(CHIS), patients abstract, service registration books, tally sheets, diseases code lists, performance monitoring charts, graphs, and mapping of the problems in a health facilities.

Training on routine health information system: The updated training taken with in the last 12 months was considered.

Feeling guilty if not accomplishing their target/works: It is a signal that things are not going the way they think they should.

Standard set of indictors:-It is a given priority over alternatives wherever a particular standard indictor would be applicable.

4.11. Data processing and analysis

The collected data was checked for the completeness and coded before entry, cleaned and entered to EPI-data version 3.1 then exported to SPSS version 22 for further statistical analysis. Incomplete, inconsistent and invalid data was refined properly to get maximum quality of data before, during and after data entry. Percentage, frequency distribution tables and figures were used to describe the study variable for assessment of RHIS. The dependent variable was routine health information utilization.

Bi-variable logistic regression was used to identify the association between the dependent (routine health information utilization) and independent variables (factors). Bi-variable analysis were conducted and variables with $p<0.25$ selected as candidate variables for multivariable analysis. Finally variables with $p<0.05$ with 95% confidence level, during

multivariable analysis was considered as significant. A multivariable logistic regression was used to explore relevant association between routine health information utilization and associated factors using SPSS version 22.

4.12. Data quality control issues

To ensure the quality of data, before applying the questionnaire/instrument to the actual study participant's pre-test was done and then questionnaire was standardized or necessary adjustment was made. Three days training was given to data collectors and supervisor on how approach the study subject and the importance of informed consent of study subject and on how to assist participants when filling the questionnaires. Data collectors were strongly supervised by assigned supervisors and correction were made on spot of questionnaire. The completeness, consistency, and quality of data were checked on the daily basis by the principal investigator and supervisors. This quality checking was done daily after data collection and amendments was made before the next data collection time. In addition, data cleanup and cross checking was done before analysis.

4. 13. ETHICAL CONSIDERATIONS

The study was approved by the Ethical Review Committee (ERC) of Debre Berhan University, Asrat Woldeyes Health since campus before starting the actual work and permission was obtained from Debre Berhan comprehensive specialized hospital and health centers. Moreover, informed verbal consent was obtained from participants who are involved in the study, following an explanation about the purpose of the study and on what was expected from them. Issues related to confidentiality and any potential risk and benefits from participation in the study was discussed. In addition, participants were informed that participation was voluntary and that they can withdraw at any time without any precondition. For getting the necessary data from participants of the study acknowledgement was forwarded.

4. 14. Dissemination and utilization of results

The result of the research was disseminated to Asrat Woldeyes Health Science Campus, School of Public Health. The results of the study were also presented to the health centers and hospital and significant to other who need these results and was request the management of health centers and hospital to take action accordingly using the result/finding of the study.

5. Result

5.1. Socio-demographic Characteristics of Health professionals

A total of 377 health professionals were involved in the study, giving a response rate of 98.4%. Their mean age was 32.08 with SD of (±5.23) with minimum age 20, maximum age 53, more than half (51.4%) of the study participants were male. 127(33.16%) were within the age range of 30- 34 years, regarding level of education, from the total interviewed individuals, shows that 90(23.5%) were diploma holders, majority (61.9%) of the study participants were bachelor degree holders. About 142 (37%) of the participants were nurses (Table 1).

Table 1: Socio-demographic characteristics of respondents in Debre Berhan Town health facilities, Ethiopia, 2022[n=383]

Variables	Frequency	Percentage
Sex of respondents		
• Male	197	51.4%
• Female	186	48.6%
Age of respondents		
• 20-24	14	3.66%
• 25-29	104	27.15%
• 30-34	127	33.68%
• 35-39	113	29.50%
• 40 and above	22	5.49%
Working department		
• OPD/IP	138	34.3%
• Dispensary	55	13.7%
• Maternity	70	17.4%
• Laboratory	43	10.7%
• Emergency	49	12.2%
• HMIS room	23	5.7%
• Core processor unit	24	6%
Educational status		
• Diploma	90	20.5%
• Degree	237	61.9%
• Masters and above	56	14.6%
Type of institution		

Hospital	297	77.5%
Health centers	86	22.5%
Job title		
• Doctors	81	21.1%
• Health officers	13	3.4%
• Pharmacy	36	9.4%
• Midwifery	59	15.4%
• Nurse	142	37%
• Psychiatry	18	4.7%
• HIT	9	2.5%
• Laboratory	25	6.5%
Experience year		
7 month-5 years	63	16.4%
6-10 years	201	52.5%
11 and above	119	31%

5.2. Technical factor

Among total respondents, 329(89.3%) of them were reported that they had standard set of indicators in there working offices for routine health data use. Out of 383 health professionals in the study, 228(59.5%) of the respondents were reported that the perceived complexity of routine health information systems makes it hard for them to utilize the system. Only 137 35.8% health workers perceived HIS require employment of trained personnel for data entry. More than half (57.7%) health professionals were use of both manual paper and computer-based files for recording information. About 362 (94.5%) of the participants received training on HMIS in the last 6 months. Generally, the overall technical factors yield good routine health data among health professionals to be 181 (47.3%) (Table2)

Table 2: Technical factors among health professionals in DB town, Ethiopia, 2022.

Variable	**Frequency**	**Percentage**
Did you have standard set of indictors in your working office?		
• Yes	329	85.9
• No	54	14.1
Complexity of RHIS makes hard to utilize HIS system		
• Yes	228	59.5

• No	155	40.5
HIS require employment of trained personnel for data entry		
• Yes	137	35.8
• No	246	64.2
Use both manual and computer-based files for recording data		
• Yes	221	42.3
• No	162	57.7
Did you attend Training on HMIS the last 12 months		
• Yes	362	94.5
• No	21	5.5
Do you agree that trained person able to fill format		
• Yes	319	83.3
• No	64	16.7
Discussion on monthly performance using standard indicators.		
• Yes	308	80.4
• No	75	19.6
Lack of skills in data collection		
• Yes	97	25.3
• No	286	74.7
Lack of skills in information presentation		
• Yes	136	35.5
• No	247	64.5
Lack of skills in information use		
• Yes	147	38.4
• No	236	61.6
Aggregate technical factors		
• Good	181	47.3
• Poor	202	52.7

5.3. Organizational factors

Among the study participants, 302(78.92%) of health professionals reported that the presence of organizational rules, and practices affect RHIS positively, 342(89.3%) of the respondents

reported receiving supervision from the next higher health authority and 358 (93.5%) of the respondents had received regular feedback from the next higher health authority. About 80.9% health workers were take starting orientation during employ, 84.1% of health professionals agreed that regular staff meeting important for review action plans of health facility. Generally, the overall organizational factors yield good routine health data utilize among health professionals to be 180(47.0%) (Table3).

Table 3: Aggregate organizational factor for RHIU among health professionals in DB town Ethiopia, 2022.

Variables	Frequency	Percentage
Organizational rules and practices		
• Yes	302	78.9
• No	81	21.1
Inadequate human resource impact on RHIU?		
• Yes	311	81.2
• No	72	18.8
Lack of financial resource impact on RHIU?		
• Yes	312	81.5
• No	71	18.5
Supportive supervision in last 6 months?		
• Yes	342	89.3
• No	41	10.7
Have you received regular feedback on RHIU		
• Yes	358	93.5
• No	25	6.5
Take orientation on HIS during employ		
• Yes	310	80.9
• No	73	19.1
Regular staff meetings to review action plans		
• Yes	322	84.1
• No	61	15.9
Are you trained in data management & use		
• Yes	201	52.5
	182	47.5

• No		
Staff are reward for their good work		
• Yes	167	43.6
• No	216	56.4
Use HMIS data for day to day management HFs		
• Yes	189	49.3
• No	194	50.7
Aggregate organizational factors		
• Good	180	47.0
• Poor	203	53.0

5.4. Self-efficacy factors

Regarding self-efficacy factors, more than half participants 79.1% of health professionals had perceived that routine health information was useful for monitoring facilities performances. Majority (95.8%) of respondents understands and appreciates their roles and responsibilities regarding health information management. About 43.9% of health professional's perceived that collecting information adds no value for their activities. About 323(84.3%) of the participants feel guilty if not accomplishing their targets and performance and majority (78.1%) of health professionals were reported that frequent use of routine health data collection had benefit of patient as well as HFs.

Table 4: Aggregated self-efficacy factors for level of knowledge on routine health data among health professionals in DB town, Ethiopia, 2022.

Variables	Frequency	Percentage
Routine health information utilization is useless.		
• Yes	342	89.3
• No	41	10.7
Data collection meaningful to me		
• Yes	326	85.1
• No	57	14.9
Lack of motivating incentives		
• Yes	304	79.4
• No	79	20.6

Collecting data adds no value for my activities		
• Yes	168	43.9
• No	215	56.1
Routine health data is useful for monitoring facilities performances.		
• Yes	303	79.1
• No	80	20.9
Collected data is not customized to patient treatment		
• Yes	179	46.7
• No	204	53.3
Feel guilty if not accomplishing targets performance		
• Yes	323	84.3
• No	60	15.7
Frequent use of routine health data collection had benefit of patient as well as HFs		
• Yes	299	78.1%
• No	84	21.9%
Collecting information gives a feeling burden		
• Yes	241	52.9%
• No	142	47.1%
Understand & appreciate you roles & responsibilities		
• Yes	367	95.8%
• No	16	4.2%

5.5 Routine health data utilization

In this study, the majority (93.7%) of the respondents frequently used routine health data for treating patients, 94% for patient utilization, 92.4% for disease data and drug stock out, 87.2% for getting feedback on monthly reports, 86.7% for resource allocation based on evidence based gaps, 86.9% for improve services delivery based on evidence, 86.5% for reviewing strategy by examining target performance and 51.7% of the respondents used collected data for decision making timely (Table 5).

Table 5: Summery of routine health information utilization among health care professionals in DB town, Ethiopia, 2022.

Variables	Frequency	Percentage
Use of RHI data collection had benefit to patient		
• Yes	359	93.7
• No	24	6.3
Data used for Checking data quality		
• Yes	334	87.2
• No	49	12.8
Routine health data used for decision making in HFs		
• Yes	198	51.7
• No	185	48.3
Decision made based on RHI findings disease data		
• Yes	226	59
• No	157	41
The collected data had changed to information in office		
• Yes	360	94
• No	23	6
Data used for drug stock out & procurement		
• Yes	354	92.4
• No	29	7.6
Data routinely used to monitor indicator performance		
• Yes	347	90.6
• No	36	9.4
Information users seek feedback		
• Yes	344	89.8
• No	39	10.2
Data used for monitoring a day to day health services activities	162	42.3
• Yes	221	57.7
• No		
Resource allocation, community mobilization, &		

discussion		
• Yes	226	59
• No	157	41
Action plan showing decision based on RHI		
• Yes	318	83
• No	65	17
Review strategy by examining target performance		
• Yes	277	86.5
• No	106	13.5
Allocation resources based on evidence based gaps		
• Yes	332	86.7
• No	51	13.3
Stakeholders rely on data for planning service		
• Yes	144	37.6
• No	239	62.4
Decision based on evidence improve services delivery		
• Yes	333	86.9
• No	50	13.1
Level of knowledge on routine health data		
• Good	163	95%CI:
• Poor	220	37.6%,47.8%

The good level of knowledge on routine health data was 42.6% (Figure 3).

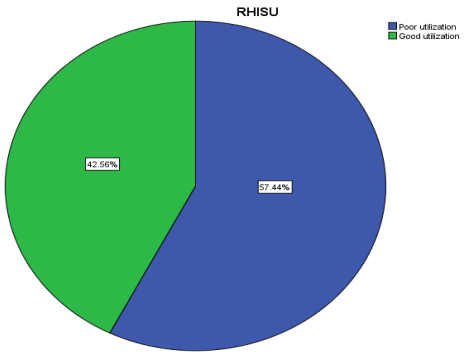

Figure 4: Summary of routine health data utilization among health professionals in Debre Berhan Town health facilities, Ethiopia, 2022

Table6: Bi-variable and Multivariable logistic regression analysis of factors associated with utilization of RHIS among HCPS in DB town, Ethiopia, 2022.

Variables	RHIU		Crud OR (95%CI)	AOR(95%CI)	p-value
	Good	Poor			
Level of education					
• Diploma	39	51	1.21;95%CI:	1.14;95%CI:0.85,1.5	0.374
• Degree	92	145	0.96, 1.54	1	
• Masters and above	32	32			
Type of institution					
• Hospitals	138	159	2.12;95%	2.10;95%CI:1.26,2.98	0.042
• Health centers	25	61	CI:1.11,4.65	1	
Years of experience					
7 month-5 years	23	40	1.27;95%CI:	1.10;95%CI:0.83,1.46	0.514
6-10 years	81	120	1.020, 1.58	1	
>=11years	59	60			
Standard set of indicators					
• Yes	145	24	1.58;95%CI:	0.62;95%CI:0.28,1.41	0.255
• No	136	36	0.860, 2.89	1	
Complexity of RHIS					
• Yes	120	108	2.89;95%CI:	2.24;95%CI:1.23,3.94	0.005
• No	43	112	1.869, 3.16	1	
HIS require employment of trained personnel					
• Yes	69	68	1.64;95%CI:	0.82;95%CI:0.43,1.56	0.549
• No	94	152	1.076, 2.50	1	
Use both manual paper & computer files for record					
• Yes	104	117	1.55;95%CI1	1.35;95%CI:0.76,2.39	0.311
• No	59	103	.025, 2.50	1	
Did you starting orientation					
• Yes	137	173	1.43;95%CI:	0.91;95%CI:0.46,1.83	
• No	26	47	0.844, 2.43	1	0.799

Discussion on monthly performance progress					
• Yes	138	170	1.62;95%CI:	1.09;95%CI:0.55,2.18	0.806
• No	25	50	0.956, 2.76	1	
Provision of feedback					
• Yes	158	200	3.16;95%CI:	1.33;95%CI:0.36, 4.95	0.672
• No	5	20	1.160, 8.36	1	
trained in data management					
• Yes	99	102	1.79;95%CI:	1.51;95%CI:0.89, 2.56	0.128
• No	64	118	1.186, 2.20	1	
Reward for good work					
• Yes	77	90	1.29;95%CI:	0.99;95%CI:0.57,1.72	0.981
• No	86	130	0.860, 1.95	1	
Collected data is useful for monitoring performance					
• Yes	134	169	1.34;95%CI:	0.78;95%CI:0.40, 1.52	0.464
• No	29	51	0.838, 2.32	1	
Use HMIS data for day to day facilities management					
• Yes	96	132	1.57;95%CI:	1.21;95%CI:0.71, 2.04	0.490
• No	67	88	1.047, 2.37	1	
Did take training on HMIS					
• Yes	161	201	7.61;95%CI:	8.94;95%CI:1.77,18.55	0.005
• No	2	19	1.747, 23.15	1	
Lack motivation incentives					
• Yes	140	164	2.018;95%CI	1.15;95%CI:0.57, 2.30	
• No	23	56	:1.217, 3.55	1	0.695
Feel guilty if not accomplishing their targets					
• Yes	129	169	1.97;95%CI:	2.77;95%CI:1.26, 6.09	0.012
• No	34	24	1.127, 3.43	1	
Understand & appreciate					

roles & responsibilities				2.66;95%CI:0.57,	
• Yes	157	207	3.35;95%CI:	12.35	0.063
• No	6	13	0.939, 11.95	1	
Technical factors computed					
• Yes	84	101	1.09;95%CI:	0.58;95%CI:0.28, 1.20	0.144
• No	79	119	1.012, 1.16	1	
Organizational factors computed	75	87	1.097;95%CI	0.77;95%CI:0.40, 1.46	0.420
• Yes	88	133	:1.014, 1.19	1	
• No					
Self-efficacy factors competed	74	89	1.14;95%CI:	1.12;95%CI:0.67,88	0.654
• Yes	89	131	1.02, 1.19	1	
• No					

5.7. Factors associated with good utilization routine health data

In the bi-variable logistic regression factors associated with good utilization of routine health data: type of institution, standard set of indictors, perceived complexity of RHIS hard to utilize the system, HIS data entry require trained personnel, use of both manual paper and computer-based files, feel guilty if not accomplishing their targets performance, orientation on data collection during employ, discussion on monthly performance, lack of information use skills, supportive supervision, provision of regular feedback, trained on data management & use, reward for good work, RHIU data is useful for monitoring performance, use HMIS data for day to day management of facilities, taking training on HMIS, motivation incentives, and understand & appreciate roles and responsibilities were factors associated with good level of knowledge on routine health data utilize at a p-value of less than 0.25. These variables were selected as candidate for multivariable logistic regression for further analysis.

5.8. Results of Multivariable Logistic Regression Analysis

Consequently, these variables were subjected to the multivariable logistic regression analysis, and in adjusted model, it was noted that type of institution, perceived complexity of RHIS makes hard to utilize the system, taking training on HMIS and feeling guilty if not accomplishing their target were significantly associated with good utilization of routine health data at a p-value of less than 0.05. In this study, higher odds of good utilization of

routine health data were noted among health professionals who had working at hospitals (AOR=2.10; 95% CI: 1.26, 8.98), perceived complexity of RHIS makes hard to utilize the system (AOR=2.18; 95% CI: 1.23, 3.88), taking training on HMIS(AOR=8.94; 95% CI:1.77,18.55) and feel guilty if not accomplishing their target (AOR= 2.96; 95% CI: 1.33, 6.60).

As the result indicates, type of institution was found to be significantly associated with RHI use (AOR=2.10; 95% CI: 1.26, 2.98). Those health professionals who work in hospitals were 2.10 times more likely to good level knowledge on routine health data than those who work in health centers. Complexity of RHIS makes hard to utilize the system was found to be significantly associated with good utilization of routine health data (AOR=2.19; 95%CI: 1.23, 3.88). The odds of good utilization of routine health data on RHIS were Health professionals who had low perceived complexity of RHIS were 2.18 times (AOR=2.18; 95% CI: 1.23, 3.88) more likely utilize routine health information when compared than who perceived complexity of RHIS. Taking training on HMIS was found to be significantly associated with good utilization of routine health data (AOR=8.94; 95% CI: 1.77, 18.55). Health professionals who had taken training on HMIS were found to be 8.94 times more likely to utilize RHIS at their health facilities than those not taken HMIS training.

Feel guilty if not accomplishing their target performances were found to be significantly associated with good utilization of routine health data (AOR= 2.96; 95% CI: 1.33, 6.60). Health professionals who feel guilty of not accomplishing their target and performances were 2.96 times (AOR=2.19; 95% CI: 1.23, 3.88) more likely utilize RHIS when compared with these who perceived not feeling guilty of not accomplishing their target performance. It justify that health professionals have good habit of accomplishing their target performance. So they are feeling guilty if not accomplishing their target performance.

6. Discussion

This study aimed to assess good utilization of routine health data and its associated factors among health care professionals in Debre Berhan Town public health facilities, North shoa, Ethiopia. This study found the overall good utilization routine health information among health care professionals was 42.6% (95% CI: 37.6%, 47.8%). It was low and below the national expectation level which was 57.42% (2). The possible reason for the low good RHIU in this study might be due to the health professionals were perceived complexity of RHIS formats, lower HMIS training. This finding was almost in line with a study finding in Addis Ababa city in which odd of utilization of RHIS was 37.3%(6), East Gojjam zone 45.8% (10), another study conducted in Addis Ababa health centers where utilization of HMIS at health facilities was 41.7% (36), in Western Amhara in which good utilization of RHIS was 38.4%(37), Cote'dvorie (38%)(17).

However, this finding is higher than that of a study conducted in, Kenya (34%) (18), Jimma zone 32.9% (20). The possible explanations for this variation might be due to differences in study period and recent governmental concern for RHIU. It justify that in the former study there is no information technician at each institution but nowadays more than 80% of health facilities has such technician. This variation might be the study conducted only in health center and Department or Unit heads, In my study in which all health care professional working in hospital and health centers.

In contrast, the result of this study was lower than the study conducted in Ghana (25). The possible explanations for this variation could be due to the extent of the study area and scope of the study. The study in Ghana included district, community and other health offices, but the present study focused only on the public health facilities. In addition to this, the development of DHIS in Ghana has counted longer time than Ethiopia. This result was also lower than a study done in North Gondar (78.5%), East Wollega, southwest Ethiopia 57.3%, Dire Dawa (53.1%), in resource limited setting, Ethiopia 53.1%, North Wollo 58.4% (1)(5)(21),(23),(33). This might be due to good governance, good data analysis skills, good staff motivation, regular supervision, regular feedback, decision based on superior directives, good perceived culture of health information use and available standard set of indictors. This justifies that complicity of RHIS formats in my study hard to utilize RHIS.

In this study, good utilization of routine health data of health professionals was lower than a study done in Hadiya zone 69.3% (12) This variation might be due to this study conducted

only health centers and also good data handling skills, data analysis skills, information presentation skills of health professionals, But in my study both health center and hospital. Similarly, the finding was lower than those of studies reported from outside Ethiopia that is Uganda (59%) (35),Tanzania (60%) (38). This might be due to the difference in health information system structures and health professional attitude for routine health information system.

Based on a multivariable logistic regression analysis type of institution was significant association with good utilization of routine health data. In this study health professional working at hospital were 2.10 times higher (AOR=2.10; 95% CI: 1.26, 2.98) to utilize routine health information system when compared with those working at health centers. The proportion of good health information utilization was 29.07% at health centers and 46.46% at hospital. In contrast, a study conducted in North Gondar and East Gojjam the odds of utilization routine health information was higher among health workers at health centers 84.9% when compared with those at hospital [(1,12)]. This might be due to the fact that there were well established RHIS and presence of better organizational support at hospital encourages staff to use routine health information for evidence based decision than health centers.

Complexity of RHIS was another determinant factor of RHIU. Health professionals who had low perceived complexity of RHIS were 2.18 times (AOR=2.18; 95% CI: 1.23, 3.88) more likely utilize routine health information when compared than who perceived complexity of RHIS. This result supported by a study conducted in Addis Ababa city administration, 2022, Dire Dawa, eastern Ethiopia Health professionals who had low perceived complexity of RHIS were 2.20 times more likely (AOR=2.20, 95% CI: 1.23, 3.97) utilize routine health information when compared than their counterpart (21). This is might be due to complexity of routine health information system makes hard to utilize the system.

The odds of utilization routine health data were about 8.94 times higher (AOR=8.94; 95% CI: 1.77, 18.55) among trained health professionals when compared with health professionals who are not trained on routine health information. This study supported by a study conducted in Illu Aba Bora zone, southwest Ethiopia, Hodiya zone, a systematic review and meta-analysis study in Ethiopia, oromia special zone Amhara, North Wollo zone, [(5), (22), (2), (39), (40), (33),]. This result also supported by a study conducted in East Gojjam, HMIS training [AOR = 2.72, 95% CI: 1.60, 4.62) were significant association with

routine health information utilization.

In contrast, a study conducted in North shoe zone, oromia region ,Ethiopia, the odds of routine health information utilization were 0.28 times less likely utilize health information system among health professionals who had taken training on health information system when compared with health workers who are not trained on routine health information (AOR = 0.28, 95% CI: 0.08–0.98) (34).

Health professionals perceived feeling guilty if not accomplished their target performance timely in my study. The odds of RHIU among health professionals were 2.96 times (AOR=2.96; 95% CI: 1.33, 6.60) more likely to utilize routine health information system among health professionals who had perceived feeling guilty if not accomplishing their target performance on time when compared with those who not feeling guilty of not accomplishing their target performance.

7. Conclusion

This study found that the overall good utilization of routine health information among health professionals was low. Type of institution, complexity of RHIS, taking training on HMIS in the last one years and feeling guilty not accomplishing there target performance were found to have significant associations with routine health information utilization. The study suggested further investigation on culture of health information utilization among health care providers where routine data are generated.

8. Recommendations

To improve the utilization rate of the health information system

1. **Recommendations to Zone health department and Woreda health offices**

Comprehensive HMIS training should be provided to increase the knowledge and skills of the health workers about the health information system.

2. **Recommendations to policies maker**

Efforts have to be made to reduce complexity of RHIS for Health Professionals in the facilities by giving training on HMIS.

3. **Recommendations to health facilities**

Health facilities should promote health professionals for the habit accomplishing their targets and work performance timely to run and facilitate RHIS utilization.

4. **Recommendations to health service provider**

Health professional should improve their habit of accomplishing their target performance.

9. Strength and Limitations of the study

7.1 Strength of the study

The data was collected by trained data collectors who have exposure to DHIS2 systems

7.2 Limitation of the study

The study attempted to show the level and the predictors of RHIS utilization, particularly among health professionals. However, this study was not including qualitative methods to measure health professional's culture of health information utilization. This study was not able to include health professionals working in the health posts and private health facilities due to scarcity of the resource.

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11. ANNEXES

11.1 Annex-I: Participant Information Sheet and Informed Consent Form

My name is _____. I am working as a data collector for the study being conducted in this health facility by MRS. Negash Addise who is studying for his master's degree at Debre Berhan University, Asrat Woldeyes health sciences campus. I kindly request you to give me your attention to explain you about the study and being selected as a study participant.

1. Study title: Level of routine health information utilization and associated factors among health care professionals working on public health facilities of Debre Berhan Town health facility, Ethiopia, 2022.

2. Aim of study: The finding of this study will have a paramount merit for the zone health department to plan and implement activities that can motivate the health professionals to give attention to improve the health status of community. It can also provide important baseline information for further studies. Moreover the aim of this study is to write a thesis as a requirement for the partial fulfillment of Master's degree.

3. Procedure and duration: I will be interviewing health professionals using a questionnaire to provide me with pertinent data that is helpful for the study. There are 61 questions (open ended, closed ended) to answer where I will fill the questionnaire by interviewing you. The interview will take about 60 minutes I kindly request you to spare me this time for the interview. The interview will take 30 minutes, so kindly request you to give attention this time for the interview.

4. Risks and benefits: The risk of being participating in this study is very minimal, but only taking your time. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for the local health planners.

5. Confidentiality:

The information you will provide us will be confidential. There will be no information that will identify you in particular. The findings of the study will be general for the study community and will not reflect anything particular of individual persons. No reference will be made in oral or written reports that could link participants to the research directly.

6. Rights: Participation for this study is fully voluntary. You have the right to declare to participate or not in this study. If you decide to participate, you have the right to withdraw from the study at any time and this will not label you for any loss of benefits which you

otherwise are entitled. You do not have to answer any question that you do not want to answer.

7. Contact address: If there are any questions any time about the study, please contact in this address. Principal investigator: **Negash Addise**: email; **negashaddise@gmail.com**. Mobile: 0943258770.

Declaration of informed voluntary consent: I have read to me the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the right of participating and the contact address for any queries. I was informed that I have the right to withdraw from the study at any time or not to answer any question that I do not want. Therefore, I declare my voluntary consent to participate in this study with my initials (signatures) as indicated below.

Signature of the participant_____ Signature of the data collector _____

Thank you for your cooperation!!!!

12.1 Annex II. English version data collection questionnaires

SECTION A: BACKGROUND INFORMATION

In the section below, tick the most appropriate option that best describes you

1. Age of the respondent _____

2. Gender of the respondent (a). Male □ (b). Female □

3. Department/Division of affiliation

a) OPD/IP □
b) Dispensary □
c) Maternity □
d) Laboratory □
e) Emergency □
f) IT room & Core processor unit □
g) ART □
h) Other, specify _____

4. Level of education

Diploma □
Degree □
Postgraduate □
Masters and above □

5. Institution

Hospital □
Health centers □

6. What is your Job Title?

Medical Doctor □
Health officer □
Pharmacy □
Midwifery □
Nurse □
Environmental health □
Psychiatry □
Information Technologist □
Laboratory technician □
Other, specify _____

7. For how long have you been at the this facility _____ years

SECTION B: INDEPENDENT VARIABLES

Hint; HIS=Health Information System

HMIS=Health Management Information System

RHIS=Routine Health Information System

i) TECHNICAL FACTORS

Statement	Yes	No
7.1. Did you have standard set of indictors in your working office?		
7.2. The complexity of routine health information systems makes it hard for health workers to utilize the system?		
7.3. Most health information systems require the employment of trained personnel for entry of data		
7.4. Use of both manual paper and computer-based files for recording information		
7.5. Did you ever attend Training on Health Information System (HIS) the last 12 months		
7.6.Do you agree that RHIS need a trained person to fill format		
7.7. Have you the discussion on Monthly performance progress using standard indicators.		
7.8. Lack of skills in data collection		
7.9. Lack of skills in information presentation		
7.10. Lack of skills in information use		

(ii) ORGANIZATIONAL FACTORS

Statements to assess organizational level	Yes	No
9.1. Organizational rules, values and practices		
9.2. Inadequate human resource		
9.3. Lack of sufficient financial resources		
9.4. Routine health information supportive supervision		
9.5. Provision of regular feedback on routine health information utilization		
9.6. Do you take starting orientation on routine data utilization during your employment?		
9.7. Regular staff meetings to review action plans		
9.8. Are you trained in data management and use		
9.9. Staff are the reward for their good work		
9.10. Use HMIS data for day to day management of the facility		

(iii) BEHAVIORAL FACTORS

I would like to know your opinion about how strongly you agree with certain statements. There are no right or wrong answers, only expressions of your opinion on a scale from 1 (strongly disagree) to 5 (strongly agree). You have to determine first whether you agree or disagree with the statement. Second, decide about the intensity of agreement or disagreement. If you disagree with statement then use left side of the scale and determine how much disagreement that is – strongly disagree (1), or disagree (2) and circle the appropriate answer. If you are not sure of the intensity of belief or neither disagree nor agree then circle 3. If you agree with the statement, then use right side of the scale and determine how much agreement that is – agree (4), or strongly agree (5) and circle the appropriate answer. Please be frank and choose your answer how do you rate your agreement on the following statement in terms of the following factors (Make a tick (√) mark).

11. Indicate your level of agreement on the following statements regarding how self-efficacy factors influence the utilization of Routine health data.					
Statement	(1)	(2)	(3)	(4)	(5)
11.1. Feel guilty if not accomplishing their targets and performance					
11.2. Lack of motivating incentives to staff during the data collection					
11.3. Routine health data utilization is useless.					
11.4. Routine health data is useful for monitoring facilities performances.					
11.5. The collected data in not customized to patient treatment					
11.6. Understand and appreciate my roles and responsibilities regarding managed routine health data					
11.7. The Collecting data that adds no value to your activity.					
11.8. Collecting data gives a feeling that is a burden on me					
11.9. Data collection meaningful to me					
11.10. Frequent use of routine health data collection had benefit of patient as well as health facilities					

SECTION C: DEPENDENT VARIABLE

ROUTINE UTILIZATION OF HEALTH DATA

15. Indicate your level of agreement on the following statements regarding the effective utilization of Routine health data in the public health facilities		
Statement	Yes	No
15.1. The tools for data collection filled correctly and completely by you		
15.2. The data had reported for higher officials in the last 3 months		
15.3. The collected data had changed to information in your offices		
15.4. Decisions made based on routine health data findings		
15.5. Data used for Patient utilization		
15.6. Data used for disease prioritization		
15.7. Health facility data routinely used to monitor health facility indicator performance		
15.8. Data used for drug procurement and stock out		
15.9. Routine health data had been used for decision making in my organization		
15.10. Information based decision made at all levels of facility management		
15.11. Existence of action plan showing decision based on routine health data		
15.12. Review strategy by examining performance target and actual performance from month to month		
15.13. Priority allocation of resources based on the evidenced data-based gaps		
15.14. The data collection tools filled correctly and completely by professionals		
15.15. Decisions based on evidence improve services delivery		

Thanks for your time and cooperation!

11.3 Annex III: Declaration

I, the undersigned, hereby declare that the work entitled of "Assessment of routine health data utilization and its associated factors among health professionals in Debre Berhan Town health facilities, North shoa, Ethiopia, 2022" presented in this research thesis is original. It has not been presented to any other university or institution. Where, the work of other people has been used, reference has been provided. In this regard, I declare this work to be my unique work.

Principal Investigator

Name: **NEGASH ADDISE (BSC)** **Signature**_____ **Date**: **29/2/2015**

Approval of Advisors

1. Name of the Major advisor: **Mr. Behailu T. (MSC, Assistant Professor)**
   Date 29/02/15_____ Signature _____
2. Name of co advisor: **Ms. Muluken T. (BSC, MPH)**
   Date 29/02/2015 Signature _____