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COLLEGE OF MEDICINE AND HEALTH SCIENCE

SCHOOL OF PUBLIC HEALTH DEPARTMENT OF HEALTH Informatics

Utilization Of Electronic Medical Record And Associated Factors Among Healthcare Providers In Public Health Facilities Of Bahirdar City Administration, Northwest Ethiopia

BY Abebech Tareke (BSc)

A THESIS RESEARCH SUBMITED TO DEPARTMENT OF HEALTH INFORMATICS, COLLEGE OF MEDICINE AND HEALTH SCIENCE BAHIR DAR UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DGREE OF MASTER OF PUBLIC HEALTH IN HEALTH INFORMATICS

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Duration of project	May 1 to 30, 2024
Study area	Public health facilities of Bahir Dar city administration, northwest Ethiopia
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Acronyms/ Abbreviations

EHRs	Electronic health records
EMRs	Electronic medical records
e-PHR	Electronic personal health record

HIS	Health information system
HIT	Health information technology
ICTs	Information communication technologies
IT	Information technology
SPSS	Social package for social science
WHO	World Health Organization

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ABSTRACT

Background: Electronic Medical Records are systems to store patient information. Despite the effort to digitize the health system in Ethiopia, that can be manipulated to analyze information on a patient's history and derive information.

Objective: To assess the utilization of electronic medical records and associated factors among healthcare providers in public health facilities of Bahir Dar city administration, northwest Ethiopia by 2024.

Methods: An institutional based cross-sectional study design was conducted from May1 to 30, 2024 among healthcare providers at public health facilities of Bahir Dar City Administration. Simple random systematic sampling technique was used and data were collected using self-

administered questionnaire on 527 health care providers. The data were entered in to Epi data version 4.6, the data were cleaned and any errors were corrected by revision of the original data using the code numbers given to questionnaire and was exported to social package for social science (SPSS) version 23 for analysis. Variables having a p-value less than 0.2 at the bi variable were included in multivariable logistic regression analysis. An adjusted odds ratio with a 95% confidence interval used to determine strength and direction of association. Variables of p-value less than 0.05 considered as significant association with the outcome variable.

Result: Good Electronic Medical Record Utilization in this study was found 28.5% (95% CI= 24.1, 32.8). Attitude towards EMR, (AOR = 2.7; 95%CI: 1.6, 4.6) Knowledge on EMR Utilization (AOR = 1.8, 95%CI:1.06, 3.01), workplace Internet Access (AOR = 0.446; 95%CI: 0.29, 0.68) and age (AOR = 2.5; 95% CI: 2.3, 4.9) of participants found to be significantly associated with EMR Utilization.

CONCLUSION AND RECOMMENDATION: - Good EMR utilization in this study was relatively low compared with other previous studies. Special attention must be given, on improvement of knowledge and attitude of Health Care providers towards EMR utilization. Ensure up on proper Internet utilization of health care providers, Give EMR utilization responsibility for young age health care providers than older ages.

Key words: utilization, Electronic medical record, Health professional, Ethiopia

1. Introduction

1.1 Background

Electronic Medical Records (EMRs) are systems to store patient information like medical histories, test results, and medications electronically. It helps to give quality service by improving data handling and communication in healthcare settings. EMR implementation in developing countries is increasing exponentially. But, only a few of them are successfully implemented, The EMR systems are used for the proper care of patient information and have become essential for the proper management of patients' information. Electronic medical record systems are on the rise in developing countries due to the need to ensure improved quality of healthcare (1, 2)

Electronic medical record (EMR) is a longitudinal collection of patient information that can be created and managed by authorized clinicians (3)

The Ethiopian Ministry of Health has declared the information revolution as part of the health sector transformation plan. Digitalization and scale-up of priority health information systems (HIS) is one of the two pillars of the information revolution. Digitalization of the medical record unit is important to capture basic socio-demographic data of patients and to store electronic medical data coming from different departments in the facility forever and access it when needed (4).

The highly personal and sensitive nature of health care data and the associated concerns about privacy impede even the most efficient and technologically perfect system (5).

The massive use of electronic and wireless technologies to manage, distribute and share health-related information has resulted in new opportunities for patients in both developing and developed countries. This is typically due to the recent movement of healthcare providers towards ensuring sufficient utilization of modern Information and Communication Technology (ICT) for delivering health services to patients with limited access to care(6).

Electronic medical record (EMR) systems have become essential for the proper management of patients' information. Electronic medical record systems are on the rise in developing countries due to the need to ensure improved quality of healthcare (2).

Electronic Health Records (EHRs) are electronic records of health-related information a patient encounter with a heath provider during episodes of patient care. They are sometimes called

electronic medical records or computer-based patient records. The EHRs are also defined as a repository of patient data in an electronic format or digital form, securely shared and stored and where it is accessed by multiple authorized medical staff or personnel. It is used to support continuing efficient and quality integrated health care (7). The adoption of electronic medical record (EMR) systems in healthcare delivery has the potential to transform healthcare in terms of saving costs, reducing medical errors, and data quality(8).

EHR data present significant challenges as a result of not having been collected specifically for research purposes and are subject therefore to considerable missing data. Improper handling of missing data can result in significant bias. The use of an EHR overcomes all of these obstacles, Electronic health records (EHRs) present a wealth of data that are vital for improving patient-centered outcomes, although the data can present significant statistical challenges (9).

Globally, electronic information and communication technology has been applied and much expanded in the healthcare industry. However, in developing counties including Ethiopia, EMR system adoption and utilization for medical practice are still inconsistent, and healthcare institutions that started utilization currently have also failed to sustain (10).

Electronic health records (EHR) facilitate the integration of patient health history for planning safe and proper treatment. Combined with data analytics, aggregate-level EHR enables the examination and development of effective medicines and therapies for chronic diseases (11).

Institutions all want electronic medical record (EMR) systems. They want them to solve their record movement problems, improve the quality and coherence of the care process, and to automate guidelines and care pathways to assist clinical research, outcomes management, and process improvement (12).

The electronic medical record (EMR) is an enabling technology that allows physician practices to pursue more powerful quality improvement programs than is possible with paper-based records. However, achieving quality improvement through EMR use is neither low-cost nor easy. (13). Health information technologies (HIT) show promising positive effects on a nation's health systems in terms of efficiency, safety and effectiveness. A significant improvement on patient safety can be reached by using Computerize Physician Order Entry (CPOE) systems, both in inpatient and ambulatory settings(14) World Health Organization (WHO) encourages developing countries to invest in

HIS, citing evidence that they improve patient management, clinic efficiency and health outcomes in Sub-Saharan Africa (15).

1.2 Statement of the problem

Globally, there is a rising demand for an efficient and trustworthy healthcare delivery system, such as eHealth and its subcategory electronic medical records (EMRs) system, which offers an infinite potential to cut back costs, advance health information exchange, and improve healthcare access(2)

The implementation of EMR remains a major challenge in the healthcare systems of low-income countries(16). In developing nations, the adoption of EMR is extremely slow, and the fundamental barriers are not addressed.(3) In developing countries including Ethiopia, EMR system utilization for medical practice is still inconsistent, and healthcare institutions that started utilization currently have also failed to sustain(10).

Health care data management systems are facing key challenges in terms of data transparency, traceability, immutability, audit, data provenance, flexible access, trust, privacy, and security. Also, a large portion of existing healthcare systems leveraged for managing data is centralized which poses potential risks of a single point of failures in case of natural disasters (17).

Perhaps the biggest obstacle facing EMR interoperability is not technological but cultural. As in other industries, interoperability in health care requires the close coordination and collaboration of various stakeholders, including patients, providers, software vendors, legislators, and health information technology (IT) professionals (18). The implementation of EMR in developing countries is very slow, and the major factors that hinder the utilization of EMR are not addressed (3)

1.3 Significance of the study

EMR based clinical data provides many advantages over manual paper-based medical records and has become essential for the proper management of patients' information (19)

Knowing the level of EMRs utilization and associated factors has many significances for peoples seeking health care and for health care providers by providing recent information on EMR

utilization and associated factors and to health managers and stake-holders to design proper implementation on EMR system utilization and to solve hinder factors for EMR utilization.

It may also be used for planning and intervention purposes for non-governmental organizations that are interested in working on the health system. In addition, the findings of this study was be used as a reference for researchers in the future. Furthermore, the findings will help to suggest interventions to be designed in order to improve the level of EMR utilization and quality of health care and treatment.

2. LITERATURE REVIEW

2.1. Utilization of electronic medical record system

A study conducted in Gondar revealed that 72% of physicians working in the University of Gondar comprehensive specialized hospital have good acceptance for EMR use (20). A Study conducted in Addis Ababa the overall rate of EMR utilization was 68.5% (3). Study in Ethiopia, (75.6%) of health care providers showed willingness to use the electronic medical record system (21).

Research done in Dire Dawa showed that 26.6% of health professionals were using electronic medical records (22). Research conducted in Eastern Ethiopia showed that 66% of respondents prefer EMR instead of paper based system(8) A study conducted in Harari Eastern Ethiopia revealed that 42.3% of health care workers were using the electronic medical recording system (23). Another study conducted in the Harari region of Ethiopia showed that, 42.3% of respondents were using the electronic medical recording system.(24).

The study in Kenya revealed that 89.6% of the healthcare workers utilize the EMRs system. (25). Other study in Kenya and Nairobi revealed that 58% of the respondents used EMR data (26). Study done in China, EMR data utilization was poor The frequency per capita gradually slowed (27).

2.2. Factors associated with electronic medical records utilization

2.2.1 Socio Demographic factors

Studies conducted in Harari Eastern Ethiopia, revealed that Female health professionals were more likely to use the EMR system compared to males professionals (23, 24). Studies done in Gondar(20), Addis Ababa(3), eastern Ethiopia(28), and Saudi Arabia(29) revealed that the age of health-care providers was significantly associated with electronic medical record utilization. A

study done in Malawi revealed that, health care providers level of education and employment levels have a positive association with EMR usage (30).

2.2.2 Health care providers related Factors

A study done in Bahir Dar, north west Ethiopia, Adis Ababa, Harari, Dire Dawa, Sidama Reagion, Arba Minch, Kenya, Nigeria, Ghana, Myanmar and India showed that health professionals having good knowledge of EMR and positive attitudes towards Electronic medical records technology were more likely to use EMR system (3, 10, 22, 24, 25, 31-38)

Health professionals with more than five years of experience had higher odds of using the EMR service than early-career workers(8, 22, 27, 28, 36). A study done in Gondar showed that the health professionals working department was a factor in to use of electronic medical recording(20). A study conducted in Addis Ababa revealed that being pharmacists more likely to use electronic medical record systems(3).

Studies in Bahir Dar(2), northwest Ethiopia(34), Gamo zone(33), Malawi(30) and Saudi Arabia(29) showed that health care providers having computer literacy and training on the electronic medical recording were positively associated with utilization of electronic medical records.

2.2.3 organizational related factors

A study conducted in Ethiopia showed that interruption of electric power in health facilities was a barrier to electronic medical record system utilization by health care providers(39). A study done in Ethiopia(39) , Kenya(25), Ghana(40) and Jordan(41) revealed that, inadequate technical help and lack of management support were significantly associated with poor health care providers' utilization of electronic medical record systems. Electronic medical record utilization was significantly associated with a type of health institution (3).

2.2.4 Technological related factors

Many studies revealed that limited internet access, adequate computer access, and lack of EMR manuals or guidelines, were barriers to health care providers, EMR utilization (10, 24, 39).

3. CONCEPTUAL FRAME WORK

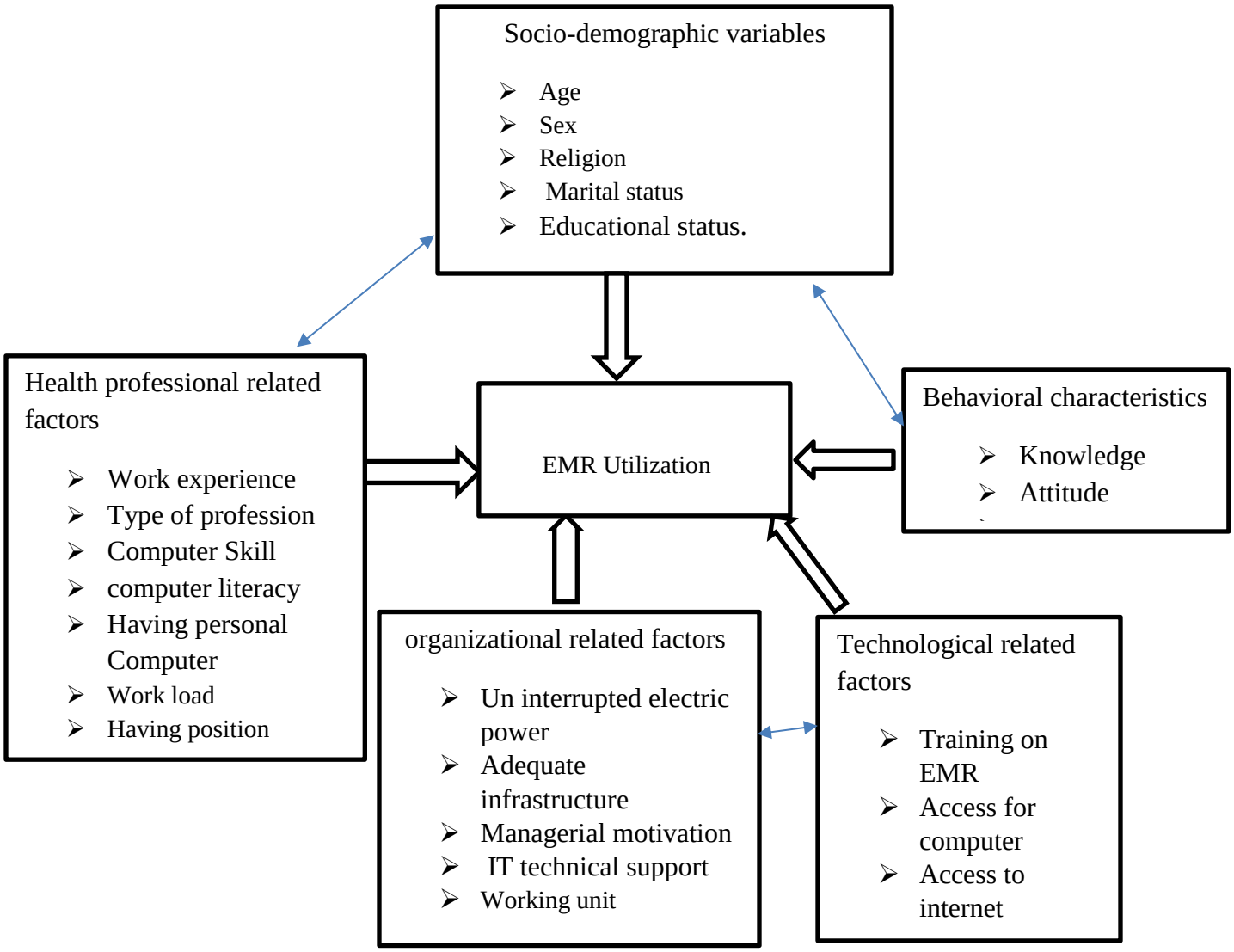

Figure 1.conceptual frame work of utilization of electronic medical record and associated factors ([3](), [10](), [22](), [24](), [25](), [31-38]()).

4. Objectives of the study

4.1. General objective

To assess utilization of electronic medical records and associated factors among healthcare providers in public health facilities of Bahir Dar city administration, Northwest Ethiopia 2024.

4.2. Specific objectives

- To determine the utilization status of electronic medical records among healthcare providers in public health facilities of Bahir Dar city administration, northwest Ethiopia.
- To identify factors associated with the utilization of electronic medical records among healthcare providers in public health facilities of Bahir Dar city administration, northwest Ethiopia.

5.Methods and Materials

5.1 study area

The study was conducted in public health facilities of Bahir Dar city administration. Bahir Dar is the capital city of Amhara Regional state in Ethiopia, which is located at the southern side of Lake Tana (where the Blue Nile River get out) with an altitude of about 1801 meters above mean sea level, 55 minutes air flight and 365 kilometers away from Addis Ababa, the capital city of Ethiopia, in northwest Ethiopia. Based on the 2023 population projection, the total estimated population of the city was 406,666 with a male: 199,266 and female: 207,400 and Administratively the city administration is structured into 6 sub-cities and five satellite towns (Tiss Abay, Meshentie, Zegie, Sebatamit, and Zenzelma) and 10 rural kebeles.

The city administration has three public hospitals (Felege hiwot referral hospital, Adis Alem primary hospital and Bahir Dar university Tibebe Ghion specialized teaching hospital) and 10 health centers (Han, Bahir Dar, Abay, Dagmawi Minilik, Shimbit, Shumabo, Meshenti, Tis Abay, zegie and Zenzelima). The study facilities were one hospital (Felegehiwot Referral Specialized Hospital) and three health centers (Bahirdar Health Center, Han Health Center, and Shimbit Health Center

5.2 Study design and period

An institutional based cross-sectional study design was conducted among health care providers of Bahir Dar city administration and was conducted from May 1 to 30, 2024.

5.3 population

5.3.1 Source population

The Source population was health care providers who are working in public health facilities of Bahir Dar city administration during the study period.

5.3.2 Study population

The study population was health care providers who worked in selected public health facilities of Bahir Dar city administration during the study period.

5.4 Eligibility criteria

5.4.1 Inclusion criteria

Health-care providers in selected public health facilities of Bahir Dar city administration in the study period, were included in the study.

5.4.2 Exclusion criteria

Health-care providers who have less than 6 months of work experience, Annual Leave and Maternity leave were excluded from the study.

5.5 Variables

5.5.1 Dependent variable

EMR Utilization (utilize =1\ not utilize =0).

5.5.2 Independent variables

1. Socio-demographic characteristics (age in years, sex, marital status, religion, educational status).

2. Health-care provider-related factors (work experience, computer skill, type of profession, computer literacy, having personal computer, work load, having position)

3. Technological related factors (EMR training, access to computer, access to internet,) .

4. Organizational related factors (Managerial motivation, working unit Un interrupted electric power, Adequate infrastructure).

5. Behavioral characteristics related factor (knowledge, Attitude)

5.6 Operational definition

Electronic Medical Records (EMR): A real-time digital version of a patient's paper chart with applications that can be manipulated to analyze information on a patient's history and derive information instantly and securely to authorized users(3)

EMR utilization: - healthcare providers who were using half and above half of the 12 core functionalities of the EMR system use-related questions were considered as EMR system users otherwise not (3, 28).

Knowledge: - a respondent has a good knowledge level when his or her total knowledge Questions are ≥ mean of the cumulative knowledge scores towards the EMR utilization otherwise poor(1, 2)

Positive Attitude: - a respondent has a positive perception when his or her total score on attitude Questions are ≥ mean of the cumulative scores on attitude towards the EMR system utilization (3).

5.7 Sample size determination

For the first objective

The minimum required sample size of this study using a single population proportion formula with the assumption of a 95% confidence level of certainty, 5% margin of error (level of sig nificance two-sided), 68.5% proportion of EMR

P= Proportion of EMR = 68.5% (3).

d=precision (marginal error) = 0.05

$Z_{\alpha/2}$ = 1. 96

n = $[1.96^2 \times 0.685(1-0.685)]/ 0.05^2$ = 332 and add 10% non-response rate and 1.5 design effect which gives 548 total study participants**.**

For second objective

Sample size determination for the second objective (associated factors to EMR system utilization) by using Epi Info version 7 Stata Calc table cross-sectional study with the assumption of confidence level 95%, power 80%, unexposed to exposed ratio 1:1. With considering 10% non-response rate.

Table 1.Sample size calculation based on associated factors

Variables		Adjusted odds ratio	%outcome unexposed	%outcome exposed	Sample size	References
Work experience	<5 years	1	52	70	258	(28)
	>5 years	2.22				
EMR training	No	1	60.5	83	154	(3)
	Yes	3.23				
Access to computer	No	1	38.7	72	88	(24)
	Yes	4.12				
Knowledge	Poor	1	30.5	63	93	(24)
	Good	3.9				

From the above sample size determinations by using objective 1 and objective 2 the largest sample size was 548 obtained from the first objective using single population proportion formula by considering non-response rate at both objectives. Therefore, the final minimum required sample size for this study was 548.

5.8 Sampling technique and procedure

The study facilities were one hospital (Felegehiwot Referral Specialized Hospital) and three health centers (Bahirdar Health Center, Han Health Center, and Shimbit Health Center) which are launched for full EMR System. Finally, the number of study participants was obtained from each selected health facility with proportion to size allocation based on their number of Health professionals, and proportional allocation also considered the departments, using systematic random sampling technique, 1032/548, the first respondent was selected by using simple lottery method from 1 to 3 then study participants was selected every 3rd interval based on their order of human power register list until the required sample size of each selected health facilities obtained.

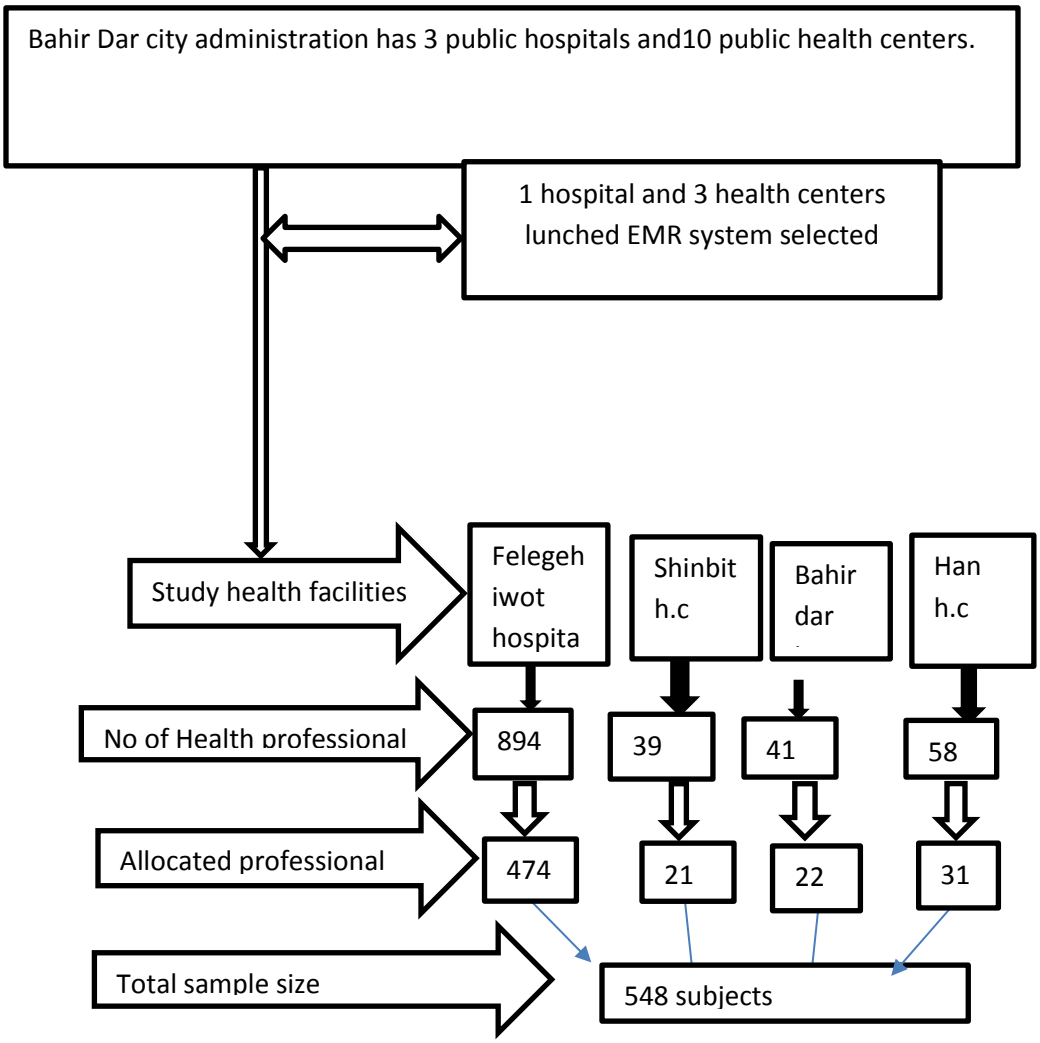

Figure 2. Schematic Sampling procedure in diagram.

	Bahirdar HC	Han HC	Shinbit HC	Felegehiwot Hospital
Medicin/doctors	0	0	0	93
Nurses/Public health	14	16	12	237
Midwife	0	4	2	34
Pharmacy	3	4	2	27
Laboratory	3	4	3	38
Others	2	3	2	45

Allocation based on department

5.9 data collection tools and Methods

Data were collected by using self-administered questionnaire. The questions variables adopted from the review of similar literatures.

The outcome variable was measured by calculating the utilization rate based on professionals' self-report questions. Data were collected by 4 trained health professionals data collectors and 2 health professionals supervisors after taking 2 days of training prior to data collection on the objective of the study, the significance of the study, how to get informed consent from the study participants and method of data collection and tools.

5.10 Data quality assurance

The questionnaire was adapted from similar studies and prepared in English and translated into Amharic language then back to English to check for consistency of the two versions.

Two days of training was given to supervisors and data collectors by the principal investigator. The questionnaires were pre-tested and was checked on 5% of the sample size for completeness and clarity by the supervisors in Bahir Dar city health facilities which are not actual study facilities and correction was taken as the result of apre-test. The supervisors and principal investigator performed immediate supervision on a daily basis. Each and every completed questionnaire was checked for completeness and the overall data collection process was controlled by the principal investigator.

5.11 Data processing and analysis

After data collection each questionnaire was cleaned, coded and the responses were entered in to Epi data version 4.6. Any errors were corrected by revision of the original data using the code numbers given to questionnaires and exported to the Social Package for social science (SPSS) version 23 for analysis.

After data cleaning for inconsistencies and missing values, analysis was done using SPSS version 23. Descriptive analysis was used to describe the percentage and number distributions of the respondents by socio-demographic characteristics and other relevant variables in the study. Logistic regression was used in order to identify factors associated with EMR utilization. To assess the association between the different predictor variables of EMR utilization with the

outcome variable, first bi variable relationship between each independent variable and outcome variable was investigated using bi-variate binary logistic regression. All explanatory variables in bi-variate analysis with a p-value of less than 0.2 was a candidate and included in the multivariable logistic regression for controlling confounding variables . The goodness of-fit model was checked by the Hosmer-Lemeshow goodness - of - fit statistic and a p-value greater than 0.05 was considered as a fit model. The crude and adjusted odds ratio together with their corresponding 95% confidence intervals was computed and an adjusted odds ratio with a corresponding 95% confidence interval was used to assess the strength and direction of the association. A p-value of < 0.05 was considered statistically significant association with outcome variable in this study.

5.12 Ethical consideration

The study was conducted after approval by the institutional review board of the college of Medicine and Public Health Then, the letter was given to Amhara Public Health Institution (APHI), Bahir Dar town administration health department and other concerned bodies before the period of the study to get permission to conduct study. After permission was from concerned bodies the questionnaires were given to data collectors to collect data. Prior to interview, data collectors informed of the participants and requested verbal consent. The information and consent form was read to the participants and verbal informed consent was gained from each study subjects before the interview but after the purpose of the study explained to the participants. Participants response was kept confidential and the right to refuse to answer for questions was respected. The confidentiality of information was also assured by not recording the identification information.

6. RESULT

6.1 Socio demographic Characteristics of participants

A total of 527 health care providers participated in the final study which makes a 96% response rate. The mean age of the participants was 35.8±7 standard deviation (SD) years. Two hundred fifty-five (48.4%) of participants lay in the age group of 26-35 years.

About half 258 (49%) of the participants were females, 385(73%) of the participants were Orthodox Tewahido religion followers and 312 (60%) of them were married.

Table 2 Socio Demographic Characteristics

Variables	Frequency	Percent %
Age group in years		
18-25	23	4.4
26-35	255	48.4
36-45	194	36.8
>=46	55	10.4
Marital status		
Single	174	33
Married	312	59.2
Divorced	30	5.7
Widowed	11	2.1
Educational status		
Diploma	161	30.6
Degree	304	57.7
Master and above	62	11.8
Educational status		

6.2. Health care providers related Factors

Two hundred forty-five (46.5%) of participants have five years and above work experience. Over half 300 (56.9) % of the participants had computer skills. One hundred twenty-two (23.1%) of the participants had to Information technology (IT) professional assistance in their working department.

*T*able 3 Health care providers related Factors

Variables	Frequency	Percent %
Work Experience		
Less than 2 years	68	12.9
2-3 years	96	18.2
4-5 years	118	22.4
>5 years	245	46.5
Computer Skill		
Yes	300	56.9
No	227	43.1

IT Technical Support		
Yes	122	23.1
No	405	76.9
EMR Training		
Yes	187	35.5
No	340	64.5
Computer Literacy		
Yes	281	53.3
No	246	46.7
Personal Computer		
Yes	198	37.6
No	329	62.4

6.3 Technological and organizational related Factors

Two hundred fifty-two (47.8%) of the participants had computer access in their working place and 157 (29.8%) of the participants had internet access in the work-place. Two hundred seventy-seven (43.1%) of the participants responded that there is un- interrupted electric power in their work place. Over a third, 216 (41%) of the participants responded that there is adequate budget allocation in their current working facility. Among the participants 238 (45.2%) of them used the internet for once or less, 223 (42.3%) of them used for two times or more and 66 (12.5%) of them used it daily or several times per a month. While using a computer, 155 (29.4%) were not perceived as comfortable, 70 (13.3%) perceived very comfortable and others perceived some extent comfortable. Over a third 211 (40%) of the participants responded that there were motivational mechanisms in their working facility. Three hundred sixty-eight (69.8%) of the participants had workload of 150 and below clients per day.

Table 4 Technological and organizational related Factors

Variables	Frequency	Percent %
Duration in Current facility		
Less than 2 years	68	12.9
2-3 years	96	18.2
4-5 years	118	22.4
>5 years	245	46.5

Computer Access		
Yes	300	56.9
No	227	43.1
Internet access		
Yes	122	23.1
No	405	76.9
Adequate infrastructure		
Yes	187	35.5
No	340	64.5
Management Support		
Yes	281	53.3
No	246	46.7
Un interrupted electric power		
Yes	198	37.6
No	329	62.4

Table 5 Current Working department

Variables	Frequency	Percent %
Outpatient department	202	38.3
Inpatient department	128	24.3
Emergency	41	7.8
MCH	47	8.9
Pharmacy	23	4.4
Laboratory	22	4.2
Plan	22	4.2
Triage	13	2.5
Card rom	9	1.7
Others	20	3.9

6.4 Behavioral characteristics

One hundred ninety- seven (37.4%) and (36.8%) of the participants had good Knowledge and positive Attitude towards EMR Utilization, respectively. The mean of knowledge and Attitude was 10.12±4.4 standard deviation (SD) and 8.7±3.9 standard deviation (SD), respectively.

6.5. Utilization of Electronic Medical Record

Of the total 527 study participants, 150 of them had good EMR Utilization. On the other hand, 377 of them had poor EMR Utilization. In this study, good EMR Utilization among the Health Care providers was 28.5% (95% CI= 24.1, 32.8).

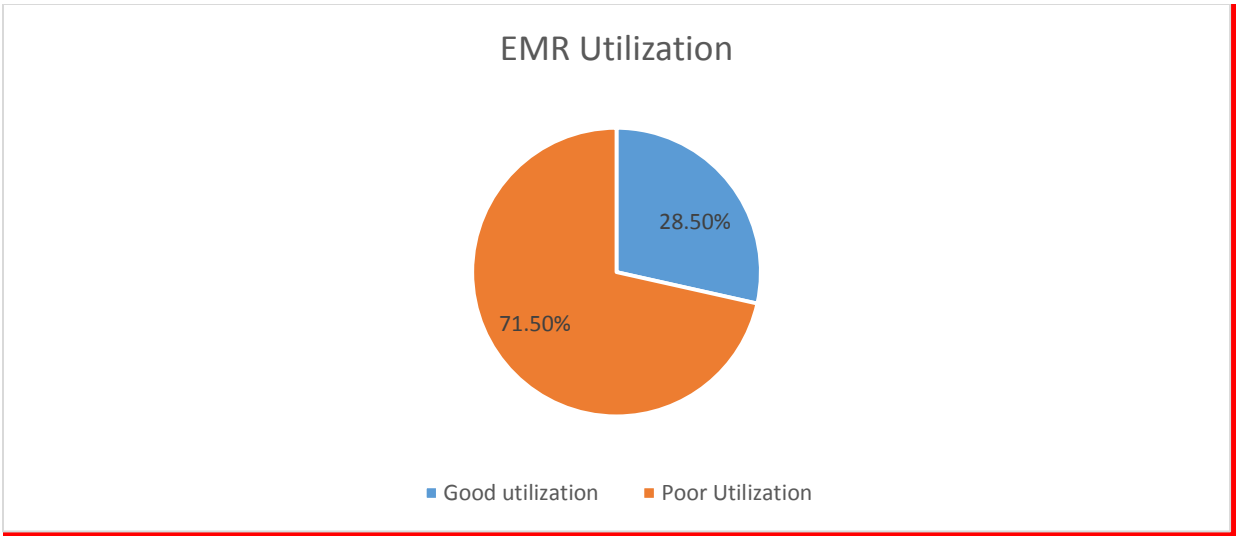

Figure 3 pie chart on EMR Utilization

6.6 Factors associated with EMR Utilization

Among the total variables in the bi-variable logistics regression analysis, ten variables (sex, level of education, Computer skill, workplace internet access, management Support, adequate budget allocation, facility motivation mechanism, age, attitude, and knowledge) were associated with EMR utilization at p-value < 0.20. Based on the Hosmer-Lemeshow goodness of fit statistic p-value was 0.4 which is greater than 0.05 indicating that the model good fit. Then multivariable binary logistics regression analysis was performed using those candidate variables. In the multivariable binary logistics regression analysis, attitude towards EMR, Knowledge of EMR Utilization, and workplace Internet access and age of participants found to be significantly associated with EMR Utilization.

Participants who had positive attitude towards EMR Utilization were 2.7 times (AOR = 2.7; 95%CI: 1.6, 4.6) more likely to use the Electronic Medical Recording system as compared with those who had poor attitudes.

Those participants having Internet access in their work place were 45% (AOR = 0.446; 95%CI: 0.29, 0.68) less likely to use Electronic Medical Recording Systems compared to those no access

.

Participants whose ages were between 26-35 years were 2.5 times (AOR = 2.5; 95% CI: 2.3, 4.9) more likely to use EMR as compared with those aged 46 and above.

Participants who were knowledgeable about electronic medical record utilization were 1.8 times (AOR = 1.8, 95CI:1.06, 3.01) more likely to use Electronic Medical recording systems as compared with those who were not knowledgeable.

Table 6 Bivariate and multivariable analysis between explanatory and EMR Utilization among Health Care Providers in Public health facilities of Bahir Dar City Administration North West Ethiopia.

Variables		EMR Utilization		COR (95% CI)	AOR (95% CI)
		Good	Poor		
		No. (%)	No. (%)		
Sex	Female	62 (24)	196 (76)	1.5 (1.2.2)	1.4 (0.9.2.16)
	Male	88 (32.7)	181 (67.3)	1	1
Educational status	Diploma	40 (24.8)	121 (75.2)	2 (1.09,3.8)	1.3 (0.65,2.54)
	Degree	85 (28)	219 (72)	1.7 (0.98,3.06)	1.1 (0.6,2.0)
	Master	25 (40.3)	37 (59.7)	1	1
Computer Skill	Yes	100 (33.3)	200 (66.7)	1.67 (1.13,2.50)	0.73 (0.47,1.1)
	No	50 (22)	177 (78)	1	1
Internet Access	Yes	66 (42)	91 (58)	2.4 (1.68,3.68)	0.45 (0.29,0.68) *
	No	84 (22.7)	286 (77.3)	1	1
Management support	Yes	73 (36.5)	127 (63.5)	1.86(1.27,2.70)	0.88 (0.54,1.4)
	No	77 (23.5)	250 (76.5)	1	1
Budget allocation	Yes	76 (35.2)	140 (64.8)	1.73(1.2,2.54)	0.9 (0.55,1.35)
	No	74 (24)	237 (76)	1	1
Facility motivation mechanism	Yes	71 (33.6)	140 (66.4)	1.52(1.03,2.23)	0.9 (0.57,1.4)
	No	79 (25)	237 (75)	1	1
Age	18-25 years	7 (30.4)	16 (69.6)	1.52 (0.53,4.30)	1.4 (0.45,4.27)
	26-35 years	59 (23)	196 (77)	2.2 (1.2,4)	2.5 (2.3,4.9) *
	36-45 years	62 (32)	132 (68)	1.4 (0.76,2.63)	1.3 (0.7,2.6)
	>=46 years	22 (40)	33 (60)	1	1
Attitude	Good	28 (14.4)	166 (85.6)	0.29 (0.18,0.46)	2.7 (1.6,4.6) *
	Poor	122(36.6)	211(63.4)	1	1
Knowledge	Knowledgeable	32 (16.2)	165 (83.8)	0.35 (0.22,0.54)	1.8 (1.06,3.01) *
	Not Knowledgeable	118(35.8)	212 (64.2)	1	1

7. DISCUSSION

The main aim of this study was to assess the utilization of electronic medical record and associated factors in public health facilities of Bahir Dar city administration, northwest Ethiopia. on multivariable analysis, Attitude towards EMR, Knowledge of EMR Utilization, workplace Internet Access found to be significantly associated with EMR Utilization.

Electronic Medical Record Utilization in this study was found at 28.5% (95% CI= 24.1, 32.8). It is in line with the study done in Dre Dawa 26.6% (22).

It is higher than 58% based on the study done in China (27) It is also Lower than Studies done in Addis Ababa 68.5%(3), Dire Dawa at 54% (8, 28), Eastern Ethiopia 42.37% (24) Kenya Nairobi(26). This difference might be due to the differences in the time of study and demographic characteristics.

Internet access at the working place was negatively associated with EMR Utilization. The possible explanation could be health care providers having internet access may wait more on social media and other online access rather than Electronic medical recording system. This finding is opposite of studies conducted in Bahir Dar, Harari Region which revealed that limited internet access was as a barrier to EMR Utilization (10, 24), This difference might be due to the differences in the time of study socio demographic characteristics .

Those participants who were knowledgeable about EMR Utilization as compared to poor knowledge had higher odds of good EMR Utilization. This is comparable with studies done in Bahi Dar (10), Addis Ababa (3), North West Ethiopia (22, 34), Harari Region (24), South East Ethiopia (33), and Kenya (25). The possible reason could be health care providers knowledge of EMR utilization could be on EMR system utilization.

Those health care providers who had a Good Attitude towards EMR utilization as compared to poor attitude had higher odds of good EMR Utilization. This is comparable with studies done in Addis Ababa (3), Sidama Region(35), in a resource-limited setting in Ethiopia (31), four selected primary hospitals in Ethiopia (32). The possible justification could be that health care providers having positive attitude towards EMR utilization may exercise EMR system as their routine trained.

Health Care providers whose age between 26-35 years were more likely to EMR utilization as compared with those whose age lay in >= 46 years. This is comparable with studies done in Gonader (20), Addis Ababa (3), Eastern Ethiopia (28) and Saudi Arabia (29). The possible justification could be that young age health care providers may preferred modern technologies for health record rather than paper based.

8. LIMITATION OF THE STUDY

In this study, measurement of EMR utilization was based on self-report EMR utilization Core functions of daily usage, might be exposed to social desirability bias. However, the participants stayed adequately informed about the relevance of the study and the importance of genuineness that makes the limitation may not be inflict the major impact on the validity of the finding.

9. CONCLUSION

In general, Good EMR utilization in this study was relatively low compared with many other previous studies. According to this study, Attitude towards EMR, Knowledge on of EMR Utilization, and workplace Internet Access and age of participants found to be significantly associated with EMR Utilization. Generally, there should be measures to improve the knowledge and attitudes of healthcare providers towards the benefits of the implementation of EMR.

10. RECOMMENDATION

Based on the findings of this study the following recommendations were forwarded.

For Ministry of Health, Regional Health Bureau, Zonal health department: - Since EMR utilization was low, special attention must be given, to improvement of knowledge and attitude of HealthCare providers towards EMR utilization. Strict Follow up on proper Internet utilization of healthcare providers that may they concerned on social media only. ensure experience sharing for old age care providers with younger ages on EMR utilization.

For Health Care providers - To maintain the success of EMR utilization they shall be aware of the EMR utilization system and exercise it.

For researchers: - Further studies are required on the level of EMR utilization and its associated factors with multiple EMR utilization measurement tools and methods such as to resolve the barriers to EMR utilization.

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8. Appendices

Annex 1. English version participant consent and information sheet

A. English version participant information sheet

Dear Madam/Sir, Good morning\ afternoon?

My name is ----------currently I am working as data collector with a post graduate HI student, Abebech Tareke from Bahir Dar university school of public health department of Health Informatics.

Now we are conducting research as per course requirement of master degree of public health in health informatics at Bahir Dar University health professionals' utilization to implement electronic medical recording system and associated factors in public health facilities of Bahir Dar city administration, northwest Ethiopia.

The result of the study will contribute to help health care managers to improve quality of service for health program and provide necessary information which inspire further intervention. Your information in this study is completely voluntary. You have full right to participate or not depend on your decision. In this regard, your decision will be respected and it will make no difference in your life. You have also the right to stop or with draw from the study at any time without any reason. All information you will provide will be kept strict confidential. Your identity will not be reflected in any part of the document. If you have any question regarding this study, please feel free to contact the principal investigator with bellow address. Your participation and genuine response will help a lot. This may take around 15 minutes.

Thank you for your patient listening

B. English version Verbal informed consent agreement form

It has been read to you in the language you understand all conditions stated above. Therefore, are you willing to participate in this study?

Yes, I agree ☐ I don't agree ☐

If respondent does not agree to be interviewed thanks him/her and go to the next respondent.

Interviewer, Name----------Signature_____

Date of interview_____

Supervisor Name _____Date_____ Signature _____

Name of principal investigator----------date----------signature____

Please direct any questions or problems you may encounter during this study to principal investigator, Abebech Tareke, Department of Health Informatics, College of Medicine and Health Science, Bahir Dar University

Mobile+251918233839
Email- abebecht0918@gmail.com

Aneex 2. English version questionnaires

Part-1 Socio demographic characteristic

Instruction: - circle the responses for questions with alternatives and write for open ended questions on the space provided.

S.no.	Questions	Responses and code	Skip
101	Age in years	----------	
102	Sex	1. Male 2. Female	
103	Marital status	1. Single 2. Married 3. Divorced 4. Widowed	
104	Religion	1. Orthodox 2. Muslim 3. Protestant 4. Others	
105	Educational status	1. Diploma 2. Degree 3. Master and above	

Part-2 Health professionals related Factors

s.no.	Questions	Responses and code	Skip
201	Work experience in years?	1. Less than 2 years 2. 2–3 years 3. 4–5 years 4. >5 years	
202	Did you have Computer skills?	1. Yes 2. No	
203	Did you have Personal computer?	1. Yes 2. No	
204	Did you have IT technical person support in your work room?	1. Yes 2. No	

205	Did you have EMR training?	1. Yes 2. No	
206	Did you have Computer Literacy?	1. Yes 2. No	

Part-3 Technological and organizational related factors

s.no.	Questions	Responses and code	Skip
301	Duration of service in current institution?	1. 12 months 2. 13–24 months 3. >=24 months	
302	Did you have Workplace Computer access?	1. No 2. Yes	
303	Did you get Workplace internet access?	1. No 2. Yes	
304	Did you have Adequate infrastructures in your health facility?	1. No 2. Yes	
305	Did you have Adequate management support in your health facility?	1. No 2. Yes	
306	Did you have Uninterrupted electric power in your health facility?	1. No 2. Yes	
307	Did you have Adequate budget allocation in your health facility?	1. No 2. Yes	
308	How often your Frequency of using the internet?	1. Once a month or less 2. Two times or more a week 3. Daily or several times a day	
309	How your Perceived level of comfort of using computer?	1. Not comfortable 2. Comfortable to some extent 3. Very comfortable	
310	Motivation mechanism in the institution	1. No 2. Yes	
311	Your current work department?	1. OPD 2. IPD	

		3. Emergency 4. MCH 5. Dispensary 6. Laboratory 7. plan 8. triage 9. card rom 10. other specify----------	
312	Workload Your current work department?	1. 150 & below patients 2. Above 150 patients	

Part 4: - **Knowledge on Electronic medical record system**

No.	Questions	Responses and code
401	Electronic medical record used for Review patient problem?	1. Yes 2. No
402	Electronic medical record used for Seeking out specific advice?	1. Yes 2. No
403	Electronic medical record used for Follow patient results?	1. Yes 2. No
404	Electronic medical record used for Entering daily notes?	1. Yes 2. No
405	Electronic medical record used for Ordering laboratory?	1. Yes 2. No
406	Electronic medical record used for Obtain test result?	1. Yes 2. No
47	Electronic medical record used for Report Patient status?	1. Yes 2. No
408	Electronic medical record used for Writing prescription?	1. Yes 2. No
409	Electronic medical record Had role-based interface?	1. Yes 2. No
410	Electronic medical record Had registered codes?	1. Yes

		2. No
411	Electronic medical record Improve quality?	1. Yes 2. No
412	Electronic medical record Improve data handling?	1. Yes 2. No
413	Electronic medical record used to Perform clinical decision?	1. Yes 2. No
414	Electronic medical record Facilitate transparency?	1. Yes 2. No

Part 5: - Attitudes of health professionals towards use of EMR

No.	Questions	Responses and code
501	Electronic medical record Easy to enter data?	1. Agree 2. Dis agree
2	Electronic medical record Improve service quality?	1. Agree 2. Dis agree
3	Electronic medical record Saves cost?	1. Agree 2. Dis agree
4	Electronic medical record Saves time?	1. Agree 2. Dis agree
5	Electronic medical record Increase patient satisfaction?	1. Agree 2. Dis agree
6	Electronic medical record Increase health of patient?	1. Agree 2. Dis agree
7	Electronic medical record Support Information?	1. Agree 2. Dis agree
8	Electronic medical record Support clinical decision?	1. Agree 2. Dis agree
9	Electronic medical record Increase timely decision?	1. Agree 2. Dis agree
10	Electronic medical record Needs training?	1. Agree 2. Dis agree
11	Electronic medical record Reduce medical error?	1. Agree 2. Dis agree
12	Electronic medical record has Acceptable by professionals?	1. Agree 2. Dis agree

Part 6: - health care providers EMR utilization.

No.	Questions	Responses and code
601	Did you use EMR To order lab tests?	1. Yes 2. No
602	Did you use EMR To View lab result?	1. Yes 2. No
603	Did you use EMR For e-prescribing?	1. Yes 2. No
604	Did you use EMR For history and physical examination?	1. Yes 2. No
605	Did you use EMR For financial billing system?	1. Yes 2. No
606	Did you use EMR To display radiology result?	1. Yes 2. No
607	Did you use EMR To order radiology tests?	1. Yes 2. No
608	Did you use EMR for patient referral to departments?	1. Yes 2. No
609	Did you use EMR For reporting to HMIS and others?	1. Yes 2. No
610	Did you use EMR For-patient Scheduling?	1. Yes 2. No
611	Did you use EMR To provide and receive Electronic Feedback?	1. Yes 2. No
612	Did you use EMR For Administrations decision support?	1. Yes 2. No

Annex: III Amharic version participant consent and information sheet

የህ/ሰብ ጤና ትምህርት ቤት፣ የህክምና ኮሌጅ፣ባህር ዳር ዩኒቨርሲቲ የመረጃና የስምምነት ፎርም

ሀ. የተሳታፊዎች መረጃ መሰጫ ቅጽ

ጤና ይስጥልኝ ውድ የዚህ ጥናት ተሳታፊዎች የእኔ ስም ----------ሲሆን እዚህ የተገኘሁት በባህርዳር ከተማ አስተዳደር የመንግስት ጤና ተቋማት በጤና ባለሙያዎች የኤሌክትሮኒክስ የጤና መረጃ አያያዝና ተያያዥ ጉዳዮች በሚካሄደው ጥናት የመረጃ ስብሰባ አባል በመሆንና መረጃ ለመሰብሰብ ነው፡፡ ይህ ጥናት የሚካሄደው በባህርዳር ዩኒበርሲቲ የማህበረሰብ ጤና አጠባበቅ ትምህርት ቤት በጤና መረጃ ተመራቂ ተማሪ ነው፡፡እርስዎ የዚህ ጥናት ተሳታፊ እንደመሆንዎ ስለጥናቱ ያለውን ሁኔታ እንደሚከተለው እገልጻለሁ፡፡

የዚህ ጥናት ዋና አላማ :- **በባህርዳር ከተማ አስተዳደር የመንግስት ጤና ተቋማት በጤና ባለሙያዎች የኤሌክትሮኒክስ የጤና መረጃ አጠቃቀምና ተያያዥ ጉዳዮች ጥናት ለማድረግ ሲሆን ተቋማቱም በጤና ባለሙያዎች የኤሌክትሮኒክስ የጤና መረጃ አያያዝና ተያያዥ ጉዳዮች በኩል ያለበትን ሁኔታም የሚያሳይ ይሆናል፡፡ እርስዎ የዚህ ጥናት ተሳታፊ ለመሆን በእድል የተመረጡ ስለሆነ ጥያቄውን በትክክልና በአግባቡ እንዲመልሱ በአክብሮት እጠቃለሁ፡፡በዚህ ጥናት ላይ ተሳታፊ በመሆንዎት የሚፈጅብዎት ሰዓት እስከ 35 ደቂቃ ይሆናል፡፡ በእርስዎ ላይ ምንም አይነት አደጋ የለውም፡፡ የእርስዎን ስም በዚህ መጠየቅ ላይ አይጠቀስም፡፡ እነዲሁም ማንኛውም የሚሰጡት መረጃ ሙሉ በሙሉ በሚስጥር የሚጠበቅ ይሆናል፡፡ የእርስዎ ተሳትፎ በፈቃደኝነት ላይ የተመሰረተ እስከሆነ ድረስ ማንኛውም ያልተመቸዎት ወይም አስቸጋሪ ነገር ከገጠመዎት ቃለመጠየቁን ማቋረጥ ይችላሉ፡**

ለ. የተሳታፊዎች ስምምነት መጠየቂያ ቅጽ

ከላይ ከተገለጸልዎ መረጃ ተነስተው በጥናቱ ለመሳተፍ ፈቃደኛ ነዎት? አዎ ☐ የለም ☐

መልሱ አዎ ከሆነ መጠየቁን ይቀጥሉ.

ተሳታፊው ፈቃደኛ ካለሆኑ አመስግነው ወደ ሚቀጥለው ተሳታፊ ይለፉ.

የመረጃ ሰብሳቢው ስም----------ፊርማ----------

የአስተባባሪው ስም----------ፊርማ----------ስልክ---------

ስለጥናቱ እና ተያያዥ ጉዳዮች ማንኛውም ጥያቄ ካለዎት አስተባባሪውን ወይም የጥናቱን ባለቤት ከዚህ በታች በተቀመጠው አድራሻ መጠየቅ ይችላሉ፡፡

ጥናቱን የሚያካሂደው ሰው አድራሻ, ስም አበበች ታረቀ ስልክ ቁጥር +251918233839, Email: - abebecht0918@gmail.com

መረጃ የተሰበሰበበት ቀን-----/------/-----

Annex IV: Amharic version questionnaires

የአማረኛ መጠይቆች:- ምርጫ ያላቸውን መልሱን ያክቡ፣ ምርጫ ያልተሰጣቸውን ደግሞ በክፍት ቦታው መልሱን ይጻፉ።

ክፍል-1 ማህበራዊና ኢኮኖሚያዊ ሁኔታዎችን በተመለከተ

ተ.ቁ	ጥያቄዎች	መልሶችና ኮድ	ማለፍ
101	እድሜ በዓመት	----------	
102	ጸታ	1. ሴት 2. ወንድ	
103	የጋብቻ ሁኔታ	1. ያላገባ/ች 2. ያገባ/ች 3. የፈታ/ች 4.የሞተበት/ባት	
104	ሐይማኖት	1.ኦርቶዶክስ 2. ሙሰሊም 3. ፕሮቴስታንት 4. ሌላ ይገለጽ---------	
105	የትምህርት ደረጃ	1. ዲፕሎማ 2. ዲግሪ 3. ማስተር እና በላይ	

ክፍል-2 ከጤና ባለሙያዎች ጋር የተያያዙ መጠይቆች

ተቁ.	ጥያቄዎች	መልሶችና ኮድ	ማለፍ
201	የስራ ልምድ	1. ከ 2 ዓመት በታች 2. 2—3 ዓመት 3. 4—5 ዓመት 4. ከ 5 ዓመት በላይ	
202	የኮምፒተር ችሎታ አለዎት	1. አዎ 2. የለም	
203	የግል ኮምፒተር አለዎት	1. አዎ 2. የለም	
204	የኢንፎርሜሽን ቴክኖሎጂ ባለሙያ አብሮዎት የተመደበ አለ	1. አዎ 2. የለም	
205	የኤሌክትሮኒክ መዲካል ረከርዲንግ ስልጠና ወስደው ያቃሉ	1. አዎ 2. የለም	
206	የኮምፒተር ትምርት ወስደዋል	1. አዎ 2. የለም	

ክፍል-3 **የቴክኖሎጂ፣ የህክምና እና የጤና ተቋማት ሁኔታ በተመለከተ**

ተ.ቁ	ጥያቄዎች	መልሶችና ኮድ	ማለፍ
301	በዚህ ተቋም ያለዎት የስራ ቆይታ	1. < 12 ወራት 2. 13—24 ወራት 3. >=24 ወራት	
302	በስራ ክፍልዎ ኮምፒተር አለ	1. አዎ 2. የለም	
303	በስራ ክፍልዎ ኢንተርኔት አለ	1. አዎ 2. የለም	
304	በስራ ቦታዎ በቂ መሰረተ ልማት አለ	1. አዎ 2. የለም	
305	በስራ ቦታዎ በቂ የተቋሙ ሃላፊዎች ክትትልና ድጋፍ አለ	1. አዎ 2. የለም	
306	በስራ ቦታዎ የማይቆራረጥ ኤሌክትሪክ አለ	1. አዎ 2. የለም	

307	በስራ ቦታዎ በቂ በጀት ይመደብልታል	1. አዎ 2. የለም	
308	ምን ያህል ጊዜ ኢንተርኔት ይጠቀማሉ	1. በወር አንድና በታች 2. በሳምንት አንድና በታች 3. በቀን አንድና በላይ	
309	ኮምፒተር ሲጠቀሙ ሚሰማዎት ስሜት	1. ምቾት አይሰማኝም 2. በመጠኑ ይመቸኛል 3. በጣም ይመቸኛል	
310	በስራ ቦታዎ የሰራተኛ ማበረታቻ መንገዶች አለ	1. አዎ 2. የለም	
311	በዚህ ወቅት እርስዎ የሚሰሩበት ክፍለ	1. ተመላላሽ ህክምና 2. ተኝቶ ህክምና 3. ድንገተኛ ህክምና 4. እናቶች ክፍለ 5. መድሃኒት ቤት 6. ላቦራቶሪ 7. እቅድና መረጃ ጥንክር 8. ህሙማን ቅበላና ሪፈራል 9. ካርድ ቤት 10. ሌላ ይገለጽ----------	
312	በአማካኝ በቀን የሚያዩት ታካሚ ብዛት	1. 150 እና በታች 2. ከ 150 በላይ	

ክፍል 4= የጤና ባለሙያዎች ስለ ኤሌክትሮኒክ ሜዲካል ሪከርድ ያላቸው ዕውቀት (ትክክለኛ መልስ)

ተ.ቁ	ጥያቄዎች	መልሶችና ኮድ
401	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ የታካሚዎችን ችግር በቀላሉ ለማየት ያግዛል	1. አዎ 2. የለም
402	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ ለታካሚዎች የጤና ምክር ለመስጠት ያግዛል	1. አዎ 2. የለም
403	የኤሌክትሮኒክ ሜዲካል ረከርዲንግየታካሚን የህክምና ውጤት እንድንከታተል ይረዳናል	1. አዎ 2. የለም
404	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ የእየለት ማስታወሻ ለመያዝ ይጠቅማል	1. አዎ 2. የለም

405	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ የላቦራቶሪ ምርመራ ለመላክ ይጠቅማል	1. አዎ 2. የለም
406	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ የህክምና ውጤት ለመቀበል እንጠቀምበታለን	1. አዎ 2. የለም
407	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ የታካሚን የጤና ሁኔታ ሪፖርት ለማድርግ ይጠቅማል	1. አዎ 2. የለም
408	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ መድሃኒት ወይም ምርምራ ለማዘዝ ይጠቅማል	1. አዎ 2. የለም
409	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ አገልግሎትን ለማቀላጠፍ ሚና አለው	1. አዎ 2. የለም
410	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ የምዝገባ መለያ ቁጥር አለው	1. አዎ 2. የለም
411	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ የህክምና ጥራትን ያሻሽላል	1. አዎ 2. የለም
412	የኤሌክትሮኒክ ሜዲካል ረከርዲንግመረጃ አያያዝን ያሻሽላል	1. አዎ 2. የለም
413	የኤሌክትሮኒክ ሜዲካል ረከርዲንግይህክምና ውሳኔ ለመስጠት ያስችላል	1. አዎ 2. የለም
414	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ ግልጸኝነትን ያሰፍናል	1. አዎ 2. የለም

ክፍል 5: -- የጤና ባለሙያዎች ስለ ኤሌክትሮኒክ ሜዲካል ሪከርድ ያላቸው ዝንባሌ (ትክክለኛ መልስ)

ተ.ቁ	ጥያቄዎች	መልሶችና ኮድ
501	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ መረጃ ለማስገባት ቀላል ነው	1. እስማማለሁ 2. አልስማማም
502	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ የአገለግሎት ጥራትን ይጨምራል	1. እስማማለሁ 2. አልስማማም

503	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ ወጭ ቆጣብ ነው	1. እስማማለሁ 2. አልስማማም
504	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ ጊዜ ቆጣቢ ነው	1. እስማማለሁ 2. አልስማማም
505	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ የታካሚዎችን እርካታ ይጨምራል	1. እስማማለሁ 2. አልስማማም
506	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ የታካሚዎችን ጤና እንዲሻሻል ያግዛል	1. እስማማለሁ 2. አልስማማም
507	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ መረጃን በቀላሉ ያስገኛል	1. እስማማለሁ 2. አልስማማም
508	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ ለህክምና ውሳኔ ያግዛል	1. እስማማለሁ 2. አልስማማም
509	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ የውሳኔ መዘግየትን ይቀንሳል	1. እስማማለሁ 2. አልስማማም
510	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ ስልጠና ይፈልጋል	1. እስማማለሁ 2. አልስማማም
511	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ የህክምና ስህተትን ይቀንሳል	1. እስማማለሁ 2. አልስማማም
512	የኤሌክትሮኒክ ሜዲካል ረከርዲንግ በባለሙያዎች ተቀባይነት አለው	1. እስማማለሁ 2. አልስማማም

ክፍል 6: -- የጤና ባለሙያዎች የኤሌክትሮኒክ ሜዲካል ሪከርድ መጠቀም ሁኔታ በተመለከተ.

ተ.ቁ	ጥያቄዎች	መልሶችና ኮድ
1	በኤሌክትሮኒክ መዲካል ረከርዲንግ የላቦራቶሪ ምርመራ ለማዘዝ እጠቀማለሁ	1. አዎ 2. የለም
2	የኤሌክትሮኒክ መዲካል ረከርዲንግ የላቦራቶሪ ውጤት ለማየት	1. አዎ 2. የለም

	እጠቀማለሁ	
3	በኤሌክትሮኒክ መዲካል ረከርዲንግ መድሃኒት ወይም ምርመራ አዝዛለሁ	1. አዎ 2. የለም
4	የኤሌክትሮኒክ መዲካል ረከርዲንግ የታካሚን ታሪክና አካላዊ ምርመራን ለመያዝ እጠቀማለሁ	1. አዎ 2. የለም
5	የኤሌክትሮኒክ መዲካል ረከርዲንግ የክፍያ ደረሰኝ ለመስጠት እጠቀማለሁ	1. አዎ 2. የለም
6	የኤሌክትሮኒክ መዲካል ረከርዲንግ የራጅ ምርመራ ውጤት ለማሳየት እጠቀማለሁ	1. አዎ 2. የለም
7	የኤሌክትሮኒክ መዲካል ረከርዲንግ የራጅ ምርመራ ለማዘዝ እጠቀማለሁ	1. አዎ 2. የለም
8	የኤሌክትሮኒክ መዲካል ረከርዲንግ ታካሚዎችን ሪፈር ለመላክ እጠቀማለሁ	1. አዎ 2. የለም
9	የኤሌክትሮኒክ መዲካል ረከርዲንግ ለስራ ሪፖርት እጠቀማለሁ	1. አዎ 2. የለም
10	የኤሌክትሮኒክ መዲካል ረከርዲንግ ለታካሚ ቀጠሮ እጠቀማለሁ	1. አዎ 2. የለም
11	የኤሌክትሮኒክ መዲካል ረከርዲንግ ግብረመልስ ለመስጠትና ለመቀበል እጠቀማለሁ	1. አዎ 2. የለም
12	የኤሌክትሮኒክ መዲካል ረከርዲንግ አስተዳደራዊ ውሳኔ ድጋፍና ክትትል እጠቀማለሁ	1. አዎ 2. የለም

DECLARATION OF ADVISOR

This is to certify the thesis is carried out by Abebech Tareke on the topic perimeter:

"Utilization of electronic medical record and associated factors among healthcare providers in public health facilities of bahirdar city administration, northwest ethiopia"

is his original effort and is suitable for submission for the award of masters of department of health informatics.

Advisor

1. Mulusew Andualem (phD and associate professor)

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2. Mr Getachew Stotaw

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