



SEEK WISDOM, ELEVATE YOUR INTELLECT AND SERVE HUMANITY !



**COLLEGE OF HEALTH SCIENCE
SCHOOL OF PUBLIC HEALTH**

**ACCEPTANCE OF ELECTRONIC MEDICAL RECORD SYSTEM AND
ASSOCIATED FACTORS AMONG HEALTH PROFESSIONALS
WORKING AT PUBLIC HEALTH FACILITIES IN ADDIS ABABA,
ETHIOPIA: A MIXED METHODS APPROACH**

BY: AMANUEL ADISU (MPH CANDIDATE)

ADVISORS:

GIRMA TAYE (MPH, PhD)

MR. MENGISTU YILMA (MPH, PhD FELLOW)

**A THESIS SUBMITTED TO THE GRADUATE PROGRAM OF ADDIS
ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES, SCHOOL
OF PUBLIC HEALTH IN PARTIAL FULFILLMENT OF THE DEGREE
OF MASTER OF PUBLIC HEALTH WITH SPECIALTY IN
EPIDEMIOLOGY AND BIOSTATISTICS**

JUNE 2025

ADDIS ABABA, ETHIOPIA

APPROVAL SHEET
ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF PUBLIC HEALTH
APPROVAL BY EXAMINATION BOARD

This thesis by Amanuel Adisu is accepted in its present form by the board of examiners as satisfying thesis requirements for the review for the Degree of Master of Public Health (MPH) in Epidemiology and Biostatistics.

Chairperson: _____

Name of primary Advisor: Girma Taye (PhD)

Date: _____ **Signature:** _____

Name of External Examiner: Yoseph Worku (PhD)

Date: _____ **Signature:** _____

Name of Internal Examiner: Hussen Mekonnen (PhD)

Date: _____ **Signature:** _____

Declaration

I, the undersigned, declare that this thesis is my original work and has not been presented to other universities, colleges, or institutions for a similar degree or any other purposes. I have duly acknowledged all sources of the materials used in this thesis.

Name of the student: Amanuel Adisu Tadasa

Date: June 09, 2025

Signature: _____

Acknowledgment

First, I would like to express my gratitude to Addis Ababa University, School of Public Health, Department of Epidemiology and Biostatistics, for providing me with the opportunity to study in my area of interest. Next, I would like to sincerely thank my advisors, Dr. Girma Taye (PhD) and Mr. Mengistu Yilma (PhD Fellow), for their guidance, support, and ongoing enthusiasm throughout this research proposal. I am also very grateful to Dr. Zeynu Zuber (Academic & Research General Director at Alert Comprehensive Specialized Hospital), Mr. Samuel Deyasa (Director of Alem Bank Health Center), and the Digital Health and ICT Directorate for their steadfast support during the study process. I want to express my deepest gratitude to the data collectors, study participants, and respondents. Finally, I would like to thank my family and friends for their unwavering support and encouragement throughout my academic journey and this research project.

Abstract

Background: Electronic Medical Records (EMRs) can potentially enhance the overall quality of healthcare services, including the availability and reliability of health information. Health professionals' computer literacy, willingness, knowledge, and attitudes toward Electronic Health Records significantly impact the acceptance and adoption of the EMR. Examining health professionals' acceptance and identifying barriers to EMR usage can provide valuable insights for recommendations to strengthen EMR implementation in healthcare settings.

Objectives: To assess the acceptance level of EMRs and associated factors among Health Professionals working at public health facilities in Addis Ababa City Administration, Ethiopia, 2024/25

Methods: A cross-sectional study with both quantitative and qualitative approaches was carried out among 475 health professionals who worked at Addis Ababa's public health facilities during the study period. Face-to-face interviews using an electronic structured questionnaire were used to gather data, which was subsequently filtered for errors and missing values. The quantitative analysis was conducted using STATA version 17.0, and the qualitative analysis was conducted using Open Code version 4.03. Adjusted odds ratios with a 95% confidence interval were estimated using binary logistic regression and descriptive statistics. A p-value of less than 0.05 indicated that a variable was statistically significant.

Result: Among 475 health professionals, 61.47% (95% CI: 57.08-65.87%) had good acceptance of Electronic Medical Records (EMRs). Key predictors included favorable attitude, good computer skills, adequate knowledge, and willingness to use. Challenges include lack of power and connectivity, system disruption, resource limitation, inadequate training and personnel resistance of the system.

Conclusion: The findings revealed that 61.47% of respondents expressed a good level of EMR acceptance, driven by a favorable attitude, solid knowledge, strong computer skills, and a willingness to use the system. However, power outages, unstable internet connectivity, a lack of standard operating procedures, insufficient technical support, and the dual documentation burden (paper and electronic systems) hinder widespread adoption. Recommendations include infrastructure improvement, standardized guidelines, policy integration, training, and further research.

Keywords: Acceptance, Electronic medical records, Ethiopia, Health profession

Table of Contents

Contents	Page
Declaration.....	ii
Acknowledgment.....	iii
Abstract.....	iv
List of Tables	viii
List of Figures.....	ix
Abbreviations and Acronyms	x
CHAPTER ONE	1
INTRODUCTION	1
1.1. Background	1
1.2. Problem Statement	2
1.3. The Rationale of the Study	3
1.4. Significance of Study	3
CHAPTER TWO	4
LITERATURE REVIEW	4
2.1. Electronic Medical Record System in Ethiopia	4
2.2. Health Professionals' Knowledge and Attitude Towards EMR.....	4
2.3. EMR system acceptance by health professionals	5
2.4. Factors associated with EMR system acceptance.	5
2.5. Barriers and Facilitators to EMR	6
2.6. Conceptual framework.....	7
CHAPTER THREE	8
OBJECTIVES	8
3.1. General Objective	8
3.2. Specific objectives	8
CHAPTER FOUR.....	9
METHODS	9
4.1. Study Design.....	9
4.2. Study Area and Period	9
4.3. Population	9
4.3.1. Source Population for Quantitative study	9
4.3.2. Source Population for Qualitative study	9
4.3.3. Study Population for Quantitative study.....	9
4.3.4. Study Population for Qualitative study.....	10
4.4. Sample Size Determination.....	10

4.5.	Sampling Procedure	11
4.5.1.	Sampling Technique for Quantitative Study.....	11
4.5.2.	Sampling Technique for Qualitative Study.....	12
4.6.	Inclusion and Exclusion Criteria.....	13
4.6.1.	Inclusion Criteria for Quantitative study	13
4.6.2.	Inclusion Criteria for Qualitative study	14
4.6.3.	Exclusion Criteria for Quantitative study	14
4.6.4.	Exclusion Criteria for Qualitative study	14
4.7.	Data collection tool and procedure for Quantitative.....	14
4.8.	Data collection tool and procedure for Qualitative study	14
4.9.	Study variables.....	14
4.9.1.	Dependent variable	14
4.9.2.	Independent variable	15
4.10.	Operational Definition	15
4.11.	Data Management and Analysis	16
4.11.1.	Quantitative data management and analysis	16
4.11.2.	Qualitative data management and analysis	17
4.12.	Ethical Considerations	17
4.13.	Dissemination of Results	18
CHAPTER FIVE		19
RESULTS		19
5.1.	General Socio-Demographic Characteristics	19
5.2.	Socio-demographic characteristics of key informants.....	20
5.3.	Computer Skills	21
5.4.	Knowledge of EMR among Health Professionals	21
5.5.	Attitude towards EMR	21
5.6.	EMR Acceptance among Health Professionals	23
5.7.	The willingness of healthcare professionals to use the EMR	24
5.8.	Major barriers and facilitators to EMR acceptance	25
5.8.1.	Major Barriers to EMR Acceptance from Health Professionals.....	25
5.8.2.	Major Barriers to EMR Acceptance from the Key Informant Interview.....	26
5.8.2.1.	Technical Barriers	26
5.8.2.2.	Workflow and Usability Challenges	26
5.8.2.3.	Organizational Barriers	26
5.8.2.4.	Behavioral Barriers	27
5.9.	Bivariate analyses of determinant factors towards the Acceptance level of the EMR system	27

5.10. Multivariable Analysis of factors associated with User acceptance of EMR	29
CHAPTER SIX	31
DISCUSSION	31
6.1. Strengths and Limitations of the study	33
6.1.1. Strengths of the Study	33
6.1.2. Limitations of the Study	33
CHAPTER SEVEN	34
CONCLUSION	34
CHAPTER EIGHT	35
RECOMMENDATION	35
REFERENCES	36
ANNEXES	39
Annex I: Study Information Sheet and Participant Consent Form	39
Annex II: Quantitative Questionnaire in English version	40
Annex III: Key-Informant Interview Guide (Qualitative)	45
Annex IV: Quantitative Questionnaire in Amharic version	46
Annex V: Ethical Clearance Documents	52

List of Tables

Table 1: Proportional allocation of sample size among Health Professional throughout selected health facilities in Addis Ababa public, 2024/25	12
Table 2: Sociodemographic characteristics of health professionals in Addis Ababa public Health facilities, 2024/25	19
Table 3: Socio-demographic characteristics of key informants in Addis Ababa public Health facilities, 2024/25.....	20
Table 4: Proportion of Knowledge among health professionals in Addis Ababa public Health facilities, 2024/25.....	21
Table 5: Attitude of health professionals toward EMR acceptance in Addis Ababa public Health facilities, 2024/25	22
Table 6: EMR Acceptance among health professionals in Addis Ababa public Health facilities, 2024/25.....	23
Table 7: Willingness of health professionals to use the EMR at public health facilities in Addis Ababa, 2024/25	24
Table 8: Major Barriers to EMR Acceptance Ranked by Severity in Public Health Facilities in Addis Ababa, 2024/25	25
Table 9: Logistic Regression Analysis of the Association between independent variable and EMR Acceptance among Health Professionals working at public health facilities in Addis Ababa, 2024/2025	28
Table 10: Proportion of Favorable and Unfavorable Attitude by health professionals' category in Addis Ababa public Health facilities, 2024/25	29
Table 11: Summary of multivariable analysis of the factors associated with Acceptance among Health Professionals working at public health facilities in Addis Ababa, 2024/2025.	30

List of Figures

Figure 1: Conceptual framework illustrating the factors affecting the level of EMR acceptance, developed through a review of relevant literature (2024/25)	7
Figure 2: Sampling Procedure for EMR acceptance and associated factors among health professionals in Addis Ababa public facilities, 2024/25	12

Abbreviations and Acronyms

AOR: Adjusted Odds Ratio

EMR: Electronic Medical Record

HIT: Health Information Technologies

HSDP III: Health Sector Development Program III

ICT: Information Communication Technology

IT: Information Technology

PID: Patient Information Department

STATA: South Texas Art Therapy Association

TAM: Technology Acceptance Model

WHO: World Health Organization

CHAPTER ONE

INTRODUCTION

1.1. Background

For many years, patient medical records were maintained on paper, consuming huge amounts of space and greatly hindering access to prompt and effective medical care (1). However, this medical record system is now being replaced by modern health information technologies (HITs) that have transformed and improved healthcare delivery worldwide. HITs are now commonly utilized to support administrative and clinical management within healthcare systems(2). Among these technologies, electronic medical records (EMRs) are considered essential tools for advancing the quality of care provided (3, 4). An EMR is typically described as a digital system that stores health-related data about individuals, which can be created, accessed, and managed by authorized healthcare professionals within a single organization(5). These systems support various clinical functions, including test ordering, electronic prescribing, clinical decision support, digital imaging, and telemedicine. Collectively, these features contribute to not only improving the quality of care delivered to patients but also ensuring the privacy and confidentiality of their medical information(6, 7).

Electronic Medical Records (EMRs) hold significant promise for enhancing healthcare service delivery, particularly by improving the accessibility and reliability of health data (8, 9). Health professionals' computer literacy, willingness, knowledge, and attitudes toward Electronic Health Records significantly impact the acceptance and adoption of the EMR(10, 11). Globally, substantial research on EMR adoption has been conducted, particularly in developed nations like Canada, the United States, and the United Kingdom, where EMRs are recognized as essential for improving healthcare quality, safety, and efficiency(12, 13). However, despite this recognized potential, adoption rates have remained low, highlighting a gap between anticipated benefits and real-world acceptance(14).

In Ethiopia, an integrated EMR system has been introduced through a partnership between the Ministry of Health and Tulane University, targeting the capital and several regional cities(15, 16). Despite progress, challenges remain in widespread adoption and effective utilization of EMRs in Ethiopia as reported from Health Sector Transformation Plan II (HSTP II) (17). Physician adoption is crucial for a well-organized Health Information System (HIS) and to fully realize the benefits of the EMR system (18).

1.2. Problem Statement

The effective implementation of EMRs enables healthcare providers to access accurate, complete, and up-to-date patient information, thereby improving the quality, efficiency, and accessibility of care-key components in the pursuit of universal health coverage(19). Greater acceptance of EMRs among healthcare professionals, who are the primary users of these systems, is essential for achieving optimal clinical outcomes. However, Health Professionals' acceptance of EMRs is generally reported to be low(1, 11). Nationally, EMR usage is estimated at approximately 51.85%, with Addis Ababa showing a slightly higher rate of 68.5%, which is still considered suboptimal(20, 21).

For Electronic Medical Records (EMRs) to enhance the healthcare system, healthcare professionals must actively support and utilize the technology, as their acceptance is crucial for achieving the intended improvements in care quality. Despite increasing recognition of EMR benefits, numerous obstacles continue to hinder widespread adoption and utilization. Key barriers include insufficient training, limited availability of computers, poor digital literacy, inadequate knowledge of EMR systems, lack of technical assistance, absence of user manuals, negative user attitudes, unreliable internet connectivity, minimal managerial support, frequent power outages, low perceived system and information quality, unwillingness to use the system, complexity in operation, and concerns related to performance and effort expectations, as well as limited IT infrastructure and personnel qualifications(22, 23).

This study is of vital importance, as enhancing the acceptance of EMR is essential for realizing the full potential of digital health systems, including improved patient care, enhanced efficiency, and improved data management. Additionally, this finding addresses a critical gap in the field of digital health, especially within resource constrained environments such as Ethiopia, and support the sustainable expansion of EMR adoption across the country. In addition, only quantitative study design was applied in conducting this problem before. Therefore, it is important to study the health professional's acceptance and the barriers that enforce or resist the EMRs use in healthcare settings so that important recommendations will be given. This study aims to assess the acceptance of the Electronic Medical Record system and associated factors among Health Professionals working at public health facilities in Addis Ababa city Administration, Ethiopia.

1.3. The Rationale of the Study

EMRs are changing healthcare worldwide by making patient data easy to access, reducing paperwork, and improving overall care. In Ethiopia, especially in Addis Ababa, the readiness and implementation of this system in public health facilities is increasing. However, the anticipated advantages of EMRs have not been achieved in some settings, due to the challenges associated with their adoption among healthcare providers. Many healthcare professionals, including doctors and nurses, are still forced and resistant to use this system. Some even prefer going back to paper records, which they find more familiar and manageable.

A colleague from a local health center in Addis Ababa noted that “despite training, professionals often find EMR systems challenging to use, and issues like lack of support, system reliability, and familiarity with digital tools are common concerns that come up during training”(24) This resistance to EMRs means we’re missing out on the full potential of these systems to improve healthcare. By exploring what influences health professionals’ acceptance of EMRs, this study hopes to uncover ways to make these systems easier to adopt and use. If we can address the concerns and make EMRs more accessible, we can create a healthcare environment that benefits both providers and patients alike. Findings from this study will provide actionable insights for policymakers and healthcare administrators, helping them address barriers and implement strategies to promote EMR adoption

1.4. Significance of Study

Assessing user acceptance and factors hindering their EMR use will significantly benefit different bodies. Primarily, this study provides evidence-based insights and practical recommendations regarding the challenges that hinder EMR acceptance. The purpose of these findings is to assist the Ministry of Health, the Addis Ababa Health Bureau, and medical facilities in making well-informed decisions. Additionally, the study seeks to enhance healthcare quality and efficiency by reducing patient waiting times and facilitating smoother electronic communication between providers. Moreover, it addresses existing knowledge gaps and offers a foundation for future research focused on user acceptance of EMR systems.

CHAPTER TWO

LITERATURE REVIEW

2.1. Electronic Medical Record System in Ethiopia

Both high-income and resource-constrained countries have made the adoption of Electronic Medical Records (EMRs) a strategic priority (25). EMR system adoption is essential for improving clinical decision-making and protecting the confidentiality and privacy of patient data. EMRs facilitate secure access to patient information by authorized users and integrate data from multiple sources, thereby offering a comprehensive overview of a patient's healthcare history(25, 26).

In Ethiopia, the Ministry of Health, in collaboration with various non-governmental organizations, adopted the SmartCare EMR system as the national standard for hospitals and began scaling its implementation across additional facilities and regions(15, 27). Despite these efforts, several studies have indicated that EMR utilization remains low, and that the system faces ongoing challenges related to sustainability. For instance, a comprehensive evaluation conducted across five hospitals in Ethiopia revealed that only 31.7% of surveyed healthcare professionals actively used the EMR system(25).

2.2. Health Professionals' Knowledge and Attitude Towards EMR

Healthcare professionals' knowledge and attitudes toward EMRs play a critical role in influencing their acceptance and utilization of the system. A study conducted in a private hospital in the Amhara region reported that 76.8% of the healthcare workforce demonstrated a good level of knowledge regarding EMR use. Similarly, research from Gondar Comprehensive Specialized Hospital indicated that 72.2% of respondents expressed positive acceptance of EMRs, although only 30% reported a strong intention to use the system in practice(30, 31) .

A multi-center cross-sectional study conducted by Abdurehman et al. at selected hospitals in Addis Ababa found that while the general perception of EMR implementation among health professionals was favorable, only 37.8% exhibited a positive attitude toward its use(32). Furthermore, an institution-based comparative cross-sectional study at the ART clinic of the University of Gondar Hospital revealed variability in care providers' attitudes toward the importance of accurate data documentation(33). In another study conducted in Northern Ethiopia, only 56.7% of participants were found to have a favorable attitude toward EMRs(16).

2.3. EMR system acceptance by health professionals

User acceptance of technology remains critical not only during the design or immediate post-implementation stages but throughout the entire system lifecycle. The Technology Acceptance Model (TAM) is widely used in studying the adoption of Electronic Medical Records (EMRs) because it helps identify factors influencing health professionals' acceptance and use of EMRs (28). TAM emphasizes three core components: perceived usefulness, perceived ease of use, and intention to use.

Perceived usefulness refers to the extent to which an individual believes that using a particular technology will improve job performance. This belief can significantly motivate professionals to adopt EMRs if the system is seen as enhancing their work outcomes. Perceived ease of use, on the other hand, reflects the degree to which an individual believes that utilizing a system will be effortless. When a system is perceived as user-friendly, it reduces the cognitive and physical burden, thereby encouraging adoption(29).

Evidence from various studies conducted in Ethiopia highlights challenges in EMR acceptance. A cross-sectional study in five hospitals located in low-resource settings found that 67.9% of health professionals preferred traditional paper-based records over EMRs(22).

Similarly, research conducted at a referral hospital in Northern Ethiopia in March 2014 revealed that only 34.3% of respondents accepted EMRs for use in their professional tasks(16). In contrast, a separate study at Gondar Comprehensive Specialized Hospital reported a relatively favorable attitude among physicians toward EMR adoption(30).

2.4. Factors associated with EMR system acceptance.

Addressing challenges related to Electronic Medical Records (EMRs) and promoting the acceptance of digital health technologies requires a thorough understanding of the factors that influence healthcare professionals' acceptance of these systems. Findings from various studies have identified a range of determinants associated with EMR acceptance, including age, years of professional experience, the clinical department in which individuals work, computer proficiency, adequate knowledge, and a positive attitude toward EMRs(16, 30).

In particular, the knowledge, willingness, and attitudes of healthcare providers play a pivotal role in determining whether EMRs will be embraced and effectively utilized in clinical practice. However, several barriers continue to impede widespread adoption. These include limited access to computers, insufficient computer literacy, inadequate training on EMR use, a lack of technical support, and the absence of user manuals.

A cross-sectional study conducted at Gondar University further emphasized that both the length of work experience and the specific department of employment significantly influence physicians' willingness to adopt and use EMR systems(30).

2.5. Barriers and Facilitators to EMR

Additional key factors that can either hinder or facilitate the implementation and acceptance of EMRs include the presence of competent IT personnel and skilled EMR administrators, the quality of managerial support and supervision, and the availability of essential infrastructure such as computers, stable electricity, and consistent system connectivity. Other significant considerations involve legal concerns related to data privacy and security, the adequacy of human resources, ongoing maintenance costs, and system usability issues such as poor interface design (22, 23, 34).

2.6. Conceptual framework

The conceptual framework for this study was developed based on extensive review of existing literature, integrating findings from previous studies that examined factors affecting acceptance of EMRs. The interrelationships among the independent variables could be expressed as follows:

- ✓ Technical and Organizational Factors: Poor training may stem from lack of resources or poor supervision.
- ✓ Sociodemographic factors can influence individual and technical factors. For example, Education level may affect knowledge and perceived ease of use.

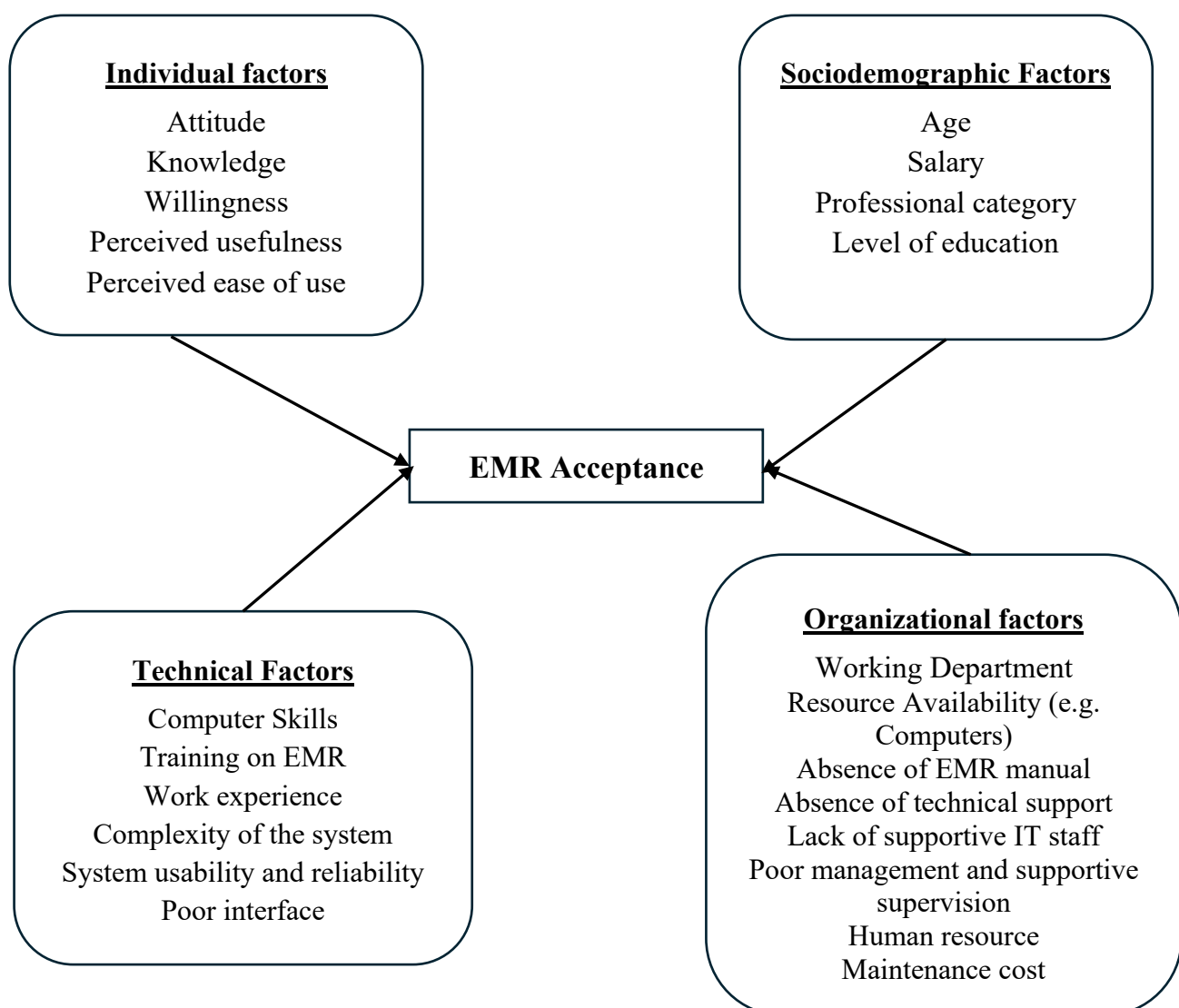


Figure 1: Conceptual framework illustrating the factors affecting the level of EMR acceptance, developed through a review of relevant literature (2024/25)

CHAPTER THREE

OBJECTIVES

3.1. General Objective

To assess the acceptance level of EMRs and associated factors among Health Professionals working at public health facilities in Addis Ababa, Ethiopia, 2024/25

3.2. Specific objectives

1. To assess the acceptance level of EMR among health professionals working at public health facilities in Addis Ababa, 2024/25
2. To identify determinant factors of EMR acceptance level at public health facilities in Addis Ababa, 2024/25
3. To explore barriers and facilitators to EMR acceptance level at public health facilities in Addis Ababa, 2024/25

CHAPTER FOUR

METHODS

4.1. Study Design

An institution-based cross-sectional study design using a concurrent triangulated study method was conducted. This mixed methods approach integrated both qualitative and quantitative data collection, carried out simultaneously to ensure a comprehensive understanding of the research.

4.2. Study Area and Period

The study was conducted in Addis Ababa, the capital city of Ethiopia, which is centrally located. The city spans approximately 527 square kilometers with a population of more than 7 million and lying at an altitude of 2,300 meters (7,726 feet) above sea level (35). Administratively, Addis Ababa is divided into 11 sub-cities and hosts a range of public healthcare facilities. As of December 2024, there are 98 health centers and 15 public hospitals, of which 9 are managed by the Federal Ministry of Health and 6 by the Addis Ababa Regional Health Bureau (AARHB) (36, 37).

The data collection for this study was carried out between February 25 to March 28, 2025, at three selected public health facilities: Alem Bank Health Center, Kolfe Health Center, and Alert Comprehensive Specialized Hospital, Addis Ababa, Ethiopia.

4.3. Population

4.3.1. Source Population for Quantitative study

The source population comprised all health professionals working in public health facilities under the Addis Ababa city administration.

4.3.2. Source Population for Qualitative study

All the key informants who gave enough information about the system working at public health facilities in Addis Ababa.

4.3.3. Study Population for Quantitative study

The study population included all health professionals working at selected public health facilities in Addis Ababa during the data collection period.

4.3.4. Study Population for Qualitative study

Key informants who gave enough information about the system working at public health facilities in Addis Ababa during the data collection period.

4.4. Sample Size Determination

4.4.1. For Quantitative Data

The sample size was determined using the single population proportion formula, based on the following statistical assumptions: a 95% confidence level, a 5% margin of error (degree of precision), and an estimated proportion of 72.2%, which was derived from a previous study conducted in Gondar assessing the acceptance level of Electronic Medical Records (EMRs) among physicians(30). Accordingly, the maximum sample size was calculated to ensure sufficient power for estimating the proportion with acceptable precision.

$$n = \frac{(Z\alpha/2)^2 Pq}{d^2}$$

Where: -

N = required sample size

α = confidence interval (95%)

p=Physician's EMR acceptance level (72.2%)

q=1-p

d= desired precision=5%

$Z\alpha/2$ = The value from the standard normal distribution corresponding to the 95% confidence level, which is 1.96

$$n = \frac{(1.96)^2(0.722)(0.278)}{(0.05)^2} = \frac{(3.8416)(0.2)}{(0.0025)}$$

$$n = \mathbf{308}$$

To account for potential nonresponse, 10% nonresponse rate was added to the initially calculated sample size.

$$\text{Final simple size (nf)} = 308 + (308 \times 0.1) = 339$$

Considering the Design effect (DEFF) of 1.5 to account for stratified sampling techniques, the final adjusted sample size was:

$$NF = 339 \times 1.5 = \mathbf{509}$$

Thus, the final sample size required for this study was 509 health professionals.

4.4.2. For Qualitative Data

Eight key informants, such as the EMR Coordinator, the medical record unit officer, and the manager or head department, were determined based on the proportion of human resources working at those facilities.

4.5. Sampling Procedure

4.5.1. Sampling Technique for Quantitative Study

A multi-stage sampling technique was employed to select;

Stage 1: Sub-city Selection:

From the 11 sub-cities within the Addis Ababa city administration, two sub-cities (Addis Ketema and Kolfe Keraniyo) were selected using simple random sampling, ensuring equal probability for each sub-city to be chosen.

Stage 2: Health Center Selection:

In Addis Ketema, only 3 out of 14 health centers had fully implemented Electronic Medical Records (EMRs), while in Kolfe Keraniyo, 4 out of 7 health centers had full EMR implementation. From these two health centers, Alem Bank Health Center and Kolfe Health Center were selected through simple random sampling.

Stage 3: Hospital Selection:

Additionally, of the 15 public hospitals in the Addis Ababa city administration, Alert Hospital was purposefully chosen due to its less congested and preferable working environment. In total, three public health facilities were selected based on feasibility, EMR implementation status, and resource constraints. The sampling strategy used to select study sites is visually represented in Figure 3.

Stage 4: Participation selection: Then, the proportional allocation of the sample size was made based on the total eligible population of each facility. In each selected facility, health professionals who were working with this system, like medical doctors, nurses, midwives, pharmacists, and others, were selected from each department. Finally, the sample size was proportionally allocated across professional strata, and participants were selected using a systematic random sampling technique to ensure representativeness within each category.

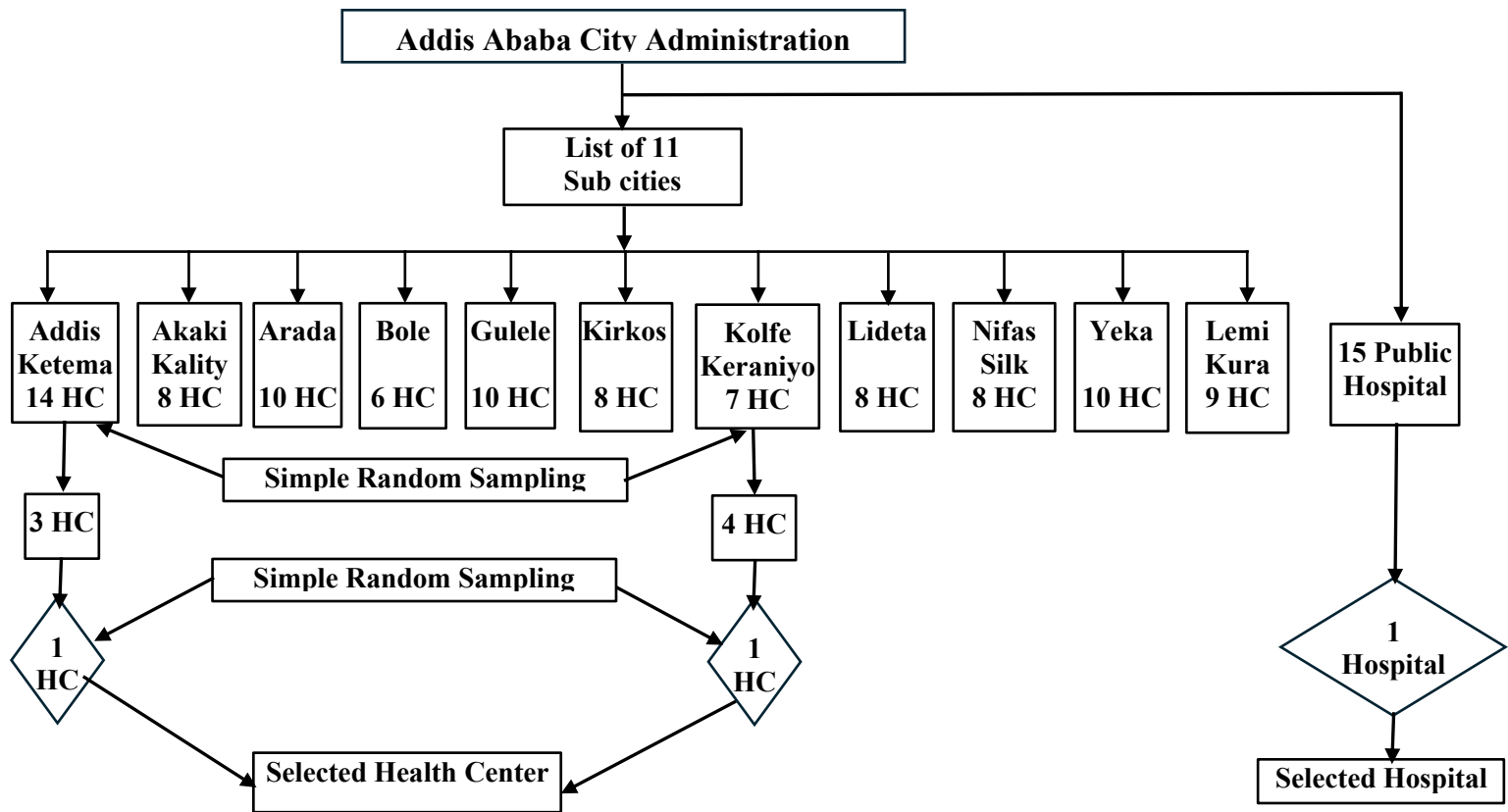


Figure 2: Sampling Procedure for EMR acceptance and associated factors among health professionals in Addis Ababa public facilities, 2024/25

4.5.2. Sampling Technique for Qualitative Study

Key informants with in-depth knowledge of the EMR system, including department heads and healthcare providers with extensive EMR experience, were selected. The purposive sampling method was employed to ensure the inclusion of information-rich participants.

Table 1: Proportional allocation of sample size among Health Professional throughout selected health facilities in Addis Ababa public, 2024/25

Health Professionals	Gender	Health Facilities			Total
		Alert CSH	Kolfe HC	Alem Bank HC	
Medical Doctors	Male	31	1	1	34
	Female	41	0	5	46
	Total	72	1	6	79
Health Officer	Male	3	3	5	11
	Female	2	4	8	14
	Total	5	7	13	25
Nurse	Male	50	5	3	58

	Female	127	10	12	149
	Total	177	15	15	207
Midwife	Male	26	2	2	30
	Female	11	4	6	21
	Total	37	6	8	51
Pharmacy professional	Male	10	1	1	12
	Female	10	3	4	17
	Total	20	4	5	29
Medical Laboratory	Male	6	3	2	11
	Female	8	3	3	14
	Total	14	6	5	25
Radiologist	Male	11	0	0	11
	Female	4	0	0	4
	Total	15	0	0	15
Anesthesiologist	Male	7	1	1	9
	Female	6	0	0	6
	Total	13	1	1	15
Optometrist	Male	1	0	0	1
	Female	1	0	0	1
	Total	2	0	0	2
Psychiatrist	Male	2	1	1	4
	Female	2	0	0	2
	Total	4	1	1	6
Others	Male	1	4	6	11
	Female	1	6	3	10
	Total	2	10	9	21
TOTAL		361	51	63	475

4.6. Inclusion and Exclusion Criteria

4.6.1. Inclusion Criteria for Quantitative study

The study included health professionals who work in public health facilities under Addis Ababa city administration and actively use the EMR system.

4.6.2. Inclusion Criteria for Qualitative study

All key-informants who had enough knowledge on EMR system working in public health facilities under Addis Ababa city administration.

4.6.3. Exclusion Criteria for Quantitative study

The study excluded healthcare professionals who were unavailable on any day off during the study period.

4.6.4. Exclusion Criteria for Qualitative study

Key informants who were unavailable on any day off during the study period.

4.7. Data collection tool and procedure for Quantitative

Data for this study was collected through face-to-face interviews using an electronic-based structured questionnaire by 3 trained data collectors. The original questionnaires were prepared in English, translated into the working language (Amharic) and translated back to English to ensure accuracy and consistency. The questionnaire has seven main sections, which includes: (1) sociodemographic characteristics, (2) computer skills, (3) perceived ease of use & perceived usefulness, (4) Attitude, (5) Knowledge, (6) willingness, and (7) factors influencing EMR acceptance.

4.8. Data collection tool and procedure for Qualitative study

Data for this study was collected through face-to-face interviews using semi-structured questionnaires. The original questionnaires were prepared in English, translated into the working language (Amharic) and translated back to English to ensure accuracy and consistency. The questionnaire has 15 items including gender and age.

To ensure the questions are clear and relevant, a pre-test was conducted with a small group (4% of the sample size) of health professionals at Kolfe Keraniyo woreda 06 health center. And then, after final adjustments, the questionnaire was used in all interviews. Data collectors (2 Health Informatics and 1 Psychiatry professionals) undergo a one-day training session to ensure they conduct the interviews consistently and accurately. All collected data were kept confidential, securely stored, and used solely for this research.

4.9. Study variables

4.9.1. Dependent variable

- EMR acceptance

4.9.2. Independent variable

- Age
- Sex
- Professional category
- Level of education
- Attitude
- Knowledge
- Willingness
- Perceived usefulness
- Perceived ease of use
- Computer Skills
- Training on EMR
- Work experience
- Complexity of the system
- System usability and reliability
- Poor interface
- Working Department
- Resource Availability (e.g., Computers)
- Absence of EMR manual
- Absence of technical support
- Lack of supportive IT staff
- Poor management and supportive supervision

4.10. Operational Definition

Health Professionals: Medical Doctors, Health Officers, Nursing Professionals, Midwifery Professionals, Pharmacists, Medical Laboratories, Radiologists, Anesthesiologists, Psychiatrists, and Optometrists.

Key informants: A person with firsthand knowledge, experience, and/or expertise on the subject matter under investigation or on a specific topic who is interviewed to collect information. This study includes the EMR Admin and manager, or head department, who offer valuable information about this system.

Health Facilities: These are institutions that provide healthcare services, including hospitals, clinics, outpatient care centers, and specialized care centers. However, this study is limited to hospitals and health centers only

Electronic Medical Records (EMR): Digital systems used within health facilities to record, store, and manage patient health information.

Barriers to EMR: refers to perceived personal or organizational constraints mitigating the effective and efficient use of EMR.

Facilitator of EMR: refers to activities or initiatives undertaken by institutions or government to promote implementation and usage of EMR.

EMR Acceptance: The intention of health professionals to use EMRs in their daily tasks, or the degree to which physicians and other healthcare professionals use electronic medical records. It was measured by assessing participants' perceptions of the usefulness and ease of use of EMRs, and their willingness to use the system consistently.

Computer Skills: refers to a person's ability to use computers and related technology efficiently and effectively for professional or personal tasks.

- ✓ **Good Computer skills:** scored composite score greater than 3
- ✓ **Poor Computer skills:** scored composite score less than 3

Acceptance level of Health Professionals: The level of EMR acceptance was measured using 12 items (4 items for Perceived Ease of Use (PEOU), 7 items for Perceived Usefulness (PU), and 1 item for Intention to Use). Each item was scored on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Total scores were calculated and dichotomized into:

- ✓ **Good acceptance:** Those health professionals who score above or equal to the mean value
- ✓ **Poor acceptance:** Those health professionals who score below the mean value.

Health Professionals' Attitude: Health professionals' attitudes toward EMR were measured using 16 items rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The total score was used to determine the respondent's attitude, categorized as:

- ✓ **Favorable attitude:** Health professionals who scored above or equal to the mean value
- ✓ **Unfavorable attitude:** who scored below the mean value (16).

Health Professionals' Knowledge: Health professionals' knowledge was measured using 10 yes/no questions. Responses were scored based on correctness, and total knowledge scores were summed for each participant. Using the mean score as a cutoff point, knowledge was categorized into:

- ✓ **Good Knowledge:** who scored above or equal to the mean
- ✓ **Poor knowledge:** who scored below the mean value (16).

4.11. Data Management and Analysis

4.11.1. Quantitative data management and analysis

After data collection, the responses were thoroughly cleaned to identify and address missing values and inconsistencies. Once cleaned, the data were exported to STATA version 17.0 for statistical analysis. Each variable was carefully defined, and the data were examined for entry accuracy to minimize errors.

Descriptive statistics were used to summarize the sociodemographic and professional characteristics of the study participants. To examine factors associated with the acceptance of Electronic Medical Records (EMRs), binary logistic regression analysis was initially performed. Variables with a p-value of ≤ 0.2 in the bivariate analysis were considered eligible for inclusion in the multivariable logistic regression model, allowing adjustment for possible confounding variables.

A stepwise forward selection approach was used to develop the final model by excluding variables that did not contribute significantly (p-value > 0.05), while also assessing for confounding.

The model's goodness-of-fit was evaluated using the Hosmer-Lemeshow test, where a p-value > 0.05 indicated a good model fit. Results from the final multivariable analysis were presented as Adjusted Odds Ratios (AORs) along with their 95% Confidence Intervals (CIs). Statistical significance was determined at a p-value less than 0.05, and the AORs were used to interpret both the magnitude and direction of associations between independent variables and EMR acceptance.

4.10.2 Qualitative data management and analysis

Qualitative data was collected through audio recordings with a voice recorder after participants' consent was taken, to ensure accurate data capture. Amharic audio was transcribed into text and then translated into English. Then imported to free and open-source software called Open-Code version 4.03 and coded after reading the text thoroughly by text. After those codes were categorized into categories, explanations were given to conceptualize the interpretation of the whole data. The analysis of qualitative data followed a thematic approach and was reviewed and refined to ensure it accurately reflects the data.

Finally, the analysis was interpreted using these themes in the context of the study's research questions, providing a comprehensive understanding of the factors influencing the acceptance of EMRs among health professionals. During this process, triangulation techniques were applied to increase the validity of this study. As we mentioned in the study design above, the quantitative data collected through the survey and qualitative data collected by in-depth interviews were compared to providing consistent findings about the acceptance rate of EMR.

4.12. Ethical Considerations

This study received ethical approval from the Ethical Review Board of Addis Ababa University. Additional ethical clearances were obtained from the Addis Ababa Health Bureau and Alert Comprehensive Specialized Hospital following a thorough review of the research

protocol. Written informed consent was obtained from all participants before their involvement in the study. Participants were thoroughly informed about the objectives, procedures, and potential implications of the research. They were also made aware of their right to withdraw from the study at any time without any consequences. Additionally, participants were assured that their answers would remain confidential and that all data collected would be used exclusively for research purposes, without any possible risks to participants.

4.13. Dissemination of Results

As part of the academic requirements, the results of this study will be submitted to the Department of Epidemiology and Biostatistics at Addis Ababa University's College of Medicine and Health Sciences. To encourage policymakers and health managers to make evidence-based decisions, the results will also be shared with the Addis Ababa Regional Health Bureau. Additionally, the research will be presented at professional conferences and academic seminars, and it will be published in peer-reviewed scientific journals to contribute to the body of knowledge on the adoption of Electronic Medical Record (EMR) systems in low-resource environments setting.

CHAPTER FIVE

RESULTS

5.1. General Socio-Demographic Characteristics

A total of 475 health professionals participated in the study, resulting in a response rate of 93.3%. Among the responders, Alem Bank health center accounted 63 (13.30%), Kolfe health center accounted 51(10.70%), while the Alert Comprehensive Specialized Hospital represented 361 (76.00%) of the total. Most respondents, 284 (59.79%), were female. The participants' ages ranged from 21 to 56 years, with a mean age of 28.69 ± 4.26 years. The majority of respondents (291; 61.26%) held a bachelor's degree, followed by diplomas (73; 15.37%), master's degrees (31; 6.53%), medical degrees (49; 10.32%), and specialized degrees (29; 6.11%). Most of them, 333 (70.11%), had less than or equal to five years of work experience, with the mean (in years) being 4.5 ± 3.47 . Below is a summary of all the respondents' general attributes (Table 2).

Table 2: Sociodemographic characteristics of health professionals in Addis Ababa public Health facilities, 2024/25

Variable	Category	Count (Percentage)
Gender	Female	284 (59.79 %)
	Male	191 (40.21%)
Age	< =30	367 (77.26)
	>30	108 (22.74)
Professional Categories	Medical Doctor	79 (16.63%)
	Health officer	25 (5.26%)
	Nurse	207 (43.58%)
	Midwife	51 (10.73%)
	Pharmacy Professional	29 (6.11%)
	Medical Laboratory	25 (5.26%)
	Radiologist	15 (3.16%)
	Anesthesiologist	15 (3.16%)
	Optometrist	2 (0.42%)
	Psychiatrist	6 (1.26%)
	Other	21 (4.42%)

Educational Status	Diploma	73 (15.37 %)
	Bachelor's Degree	292 (61.47 %)
	Medicine Degree	49 (10.32 %)
	Specialty (MD+)	30 (6.32 %)
	Master's Degree	31 (6.53 %)
Work Experience	<= 5	333 (70.11 %)
	6-10	121 (25.47 %)
	11-15	18 (3.79 %)
	>15	3 (0.63 %)

5.2. Socio-demographic characteristics of key informants

Seven (87.5%) the eight key informants that took part in the qualitative study were male. The respondents' ages ranged from 25 to 50 years old, with a mean age of 36.63 years (95% CI = 29.20-42.06). The majority (62.5%) were older than 30 years. Regarding professional roles, 2 (25%) were Medical Record unit Officer, 2 (25%) Quality Improvement Head, 1(12.5%) was Head of Patient Information Department, 1(12.5%) represented EMR Coordinator, 1(12.5%) Digital Health & ICT Directorate, and 1(12.5%) was Lab Technician. All informants were selected from selected public health facilities in (Table 3).

Table 3: Socio-demographic characteristics of key informants in Addis Ababa public Health facilities, 2024/25

Item	Category	Frequency	Percentage
Age	<=30	3	37..5%
	>30	5	62.5%
Gender	Male	7	87.5%
	Female	1	12.5%
Professions	General MPH	3	37..5%
	IT/HIT	3	37..5%
	Clinical Laboratory	1	12.5%
	Economics	1	12.5%
Position	Head of Patient Information Department	1	12.5%
	Medical Record Unit Officer	2	25%
	EMR Coordinator	1	12.5%
	Quality Improvement Head	2	25%
	Digital Health & ICT Directorate	1	12.5%
	Lab Technician, Head Department	1	12.5%

5.3. Computer Skills

Of the five main activities regarding computer skills asked turning the computer on and shutting down is one, and 431 (90.74 %) of them answered yes. 298 (62.74 %) of the respondents can manipulate basic Microsoft Office, like Excel and PowerPoint, and 375 (78.95%) were able to search and download information from the internet by themselves. 370 (77.89%) can copy and paste digital data like text, image, Audio, and video on a computer, and 406 (85.47%) were able to transfer files between computers. Of the total, 82.11% of the respondents had good computer skills, scoring a composite score greater than 3 composite score (Table 4).

Table 4: Proportion of Knowledge among health professionals in Addis Ababa public Health facilities, 2024/25

Variable	Category	Freq	Percent
Computer Skills	Poor	85	17.89
	Good	390	82.11
	Total	475	100.00

5.4. Knowledge of EMR among Health Professionals

From the total health professionals interviewed, 306 (64.42%) of the respondents (95% CI, 59.93, 68.73) had good knowledge of the EMR system, scoring at or above the mean value of 7.79 (SD = ± 2.15). The majority (72.21%) knew that EMRs are important for managing public health issues like chronic diseases. More than 90% believe EMRs enhance service quality and accessibility, and most respondents (85.89%) had good knowledge about EMRs effectively recording examinations and investigations. Nearly all respondents (95%) affirmed the compatibility of computer telecommunication technologies (e.g., EMRs) with healthcare delivery systems. Three-quarters of participants (75.37%) were aware of EMRs' role in supporting clinical decision-making processes (e.g., drug management).

5.5. Attitude towards EMR

Using 16 Likert scale items, the respondents' attitude regarding the acceptance of electronic medical records were assessed. These responses ranged from strongly disagree (1) to strongly agree (5). A composite score was calculated for each respondent, and attitudes were categorized into two groups (favorable and unfavorable) using the mean score of 60.30 (SD = ± 7.31) as a cutoff point. Health professionals with favorable attitudes (score $\geq$ mean) towards EMR acceptance comprised 57.26% (95% CI: 52.67, 61.76).

A majority (58.73%) agree or strongly agree that EMR increases practice productivity, while 67.16% believe it improves the quality of work practice. In total, 76% endorse the role of EMRs in enhancing care quality, and 74.73% believe it will improve their job effectiveness.

Additionally, 72.85% agree that EMR reduces medical errors, and 92.21% see value in further training for the system. Over half (52.84%) and 39.37% agree and strongly agree that EMR improves patient confidentiality, respectively, and 84.58% support its widespread implementation, reflecting confidence in its long-term value (Table 5).

Table 5: Attitude of health professionals toward EMR acceptance in Addis Ababa public Health facilities, 2024/25

Variables	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Freq (%)	Freq (%)	Freq (%)	Freq (%)	Freq (%)
EMR increases practice productivity (i.e., Patients/day)?	9 (1.89)	46 (9.68)	141 (29.68)	251 (52.84)	28 (5.89)
EMR can improve the quality of work practice (i.e., work-life).	7 (1.47)	34 (7.16)	115 (24.21)	252 (53.05)	67 (14.11)
EMR can improve the quality of care.	2 (0.42)	13 (2.74)	99 (20.84)	281 (59.16)	80 (16.84)
EMR will enhance my overall effectiveness in my job.	7 (1.47)	29 (6.11)	84 (17.68)	236 (49.68)	119(25.05)
EMR can reduce medical errors.	4 (0.84)	17 3.58	108 (22.74)	279 (58.74)	67(14.11)
Does EMR need more time for training?	4 (0.84)	5 (1.05)	20 (4.21)	249 (52.42)	197(41.47)
EMR benefits outweigh the costs	3 (0.63)	37 (7.79)	147 (30.95)	244 (51.37)	44 (9.26)
EMR impacts the cost of service?	9 (1.89)	62 (13.05)	160 (33.68)	201 (42.32)	43 (9.05)
EMR can improve the confidentiality of patient information.	5 (1.05)	5 (1.05)	27 (5.68)	251 (52.84)	187(39.37)
Does EMR increase patient acceptance?	11 (2.32)	49 (10.32)	114 (24.00)	254 (53.47)	47 (9.89)
EMR can decrease waiting time for patients	25 (5.26)	52 (10.95)	103 (21.68)	241 (50.740)	54 (11.37)
EMR is more complex than paper-based record	122 (25.68)	173 (36.42)	77 (16.21)	83 (17.47)	20 (4.21)
EMR improves interaction with colleagues	18 (3.79)	41 (8.63)	204 (42.95)	178 (37.47)	34 (7.16)
EMR improves clinicians' access to up-to-date knowledge	6 (1.26)	23 (4.84)	104 (21.89)	292 (61.47)	50 (10.53)

EMR helps in avoiding errors	4 (0.840)	21 (4.42)	83 (17.47)	304 (64.00)	63(13.2 6)
EMR should be implemented at large	1 (0.21)	11 (2.32)	60 (12.63)	253 (53.26)	150 (31.58)

5.6. EMR Acceptance among Health Professionals

Acceptance of EMR among health professionals was assessed using 12 Likert scale items. First, the composite score was calculated from the 12 questions and normalized to a 1-0 scale to establish a clear threshold for categorization. Based on this, EMR acceptance was dichotomized into two groups: “Good” and “Poor.” Accordingly, 292 respondents (61.47%, 95% CI: 57.08 %, 65.87 %) who scored above or equal to the mean range ($.61 \pm .02$) had a good acceptance of using the EMR.

Table 6: EMR Acceptance among health professionals in Addis Ababa public Health facilities, 2024/25

Variables	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Freq (%)	Freq (%)	Freq (%)	Freq (%)	Freq (%)
The EMR system is integrated into daily work.	8 (1.68)	14 (2.95)	108 (22.74)	283 (59.58)	62 (13.05)
Information provided by the EMR system makes me Work Easier	3 (0.63)	32 (6.74)	119 (25.05)	259 (54.53)	62 (13.05)
I have access to the information where I need it.	5 (1.05)	43 (9.05)	135 (28.42)	246 (51.79)	46 (9.68)
I can find all the information when I need it	12 (2.53)	33 (6.95)	90 (18.95)	270 (56.84)	70 (14.74)
The information is always updated.	4 (0.84)	16 (3.37)	81 (17.05)	256 (53.89)	118 (24.84)
The data I registered is important for the care of the patients	2 (0.42)	7 (1.47)	33 (6.95)	232 (48.84)	201 (42.32)
I am certain about the reliability of the data Documented	2 (0.42)	15 (3.16)	69 (14.53)	271 (57.05)	118 (24.84)
Using EMR improves my clinical performance.	7 (1.47)	38 (8.00)	85 (17.89)	266 (56.00)	79 (16.63)

It is easy to learn how to use EMR.	2 (0.42)	15 (3.16)	73 (15.37)	306 (64.42)	79 (16.63)
It is easy to use EMR	2 (0.42)	36 (7.58)	101(21.26)	253(53.26)	83 (17.47)
It is easy to know how to do your intended task.	2 (0.42)	19 (4.00)	96 (20.21)	314 (66.11)	44 (9.26)
EMR should be implemented at large	1 (0.21)	11 (2.32)	60 (12.63)	253 (53.26)	150 (31.58)

The Electronic Medical Record system is generally well received and effectively integrated into daily workflows. Over two-thirds of participants (67.58%) found that the information provided by the EMR system makes their work easier, and a similar proportion (61.47%) reported having access to information where they need it.

The system's reliability and ease of use were also highlighted, with 81.89% agreeing or strongly agreeing that the data they register is important for patient care, and 81.05% expressing confidence in the reliability of documented data. Furthermore, 64.42% of respondents agreed that learning how to use the EMR is easy, and more than half (53.26%) agreed and 17.47% agreed and strongly agreed that using the EMR is easy. These findings underscore the EMR system's overall effectiveness while highlighting opportunities to enhance accessibility, consistency, and user experience for a more universally positive impact.

5.7. The willingness of healthcare professionals to use the EMR

There is a strong willingness among healthcare professionals to accept Electronic Medical Record (EMR) systems, with clear conditions for successful adoption. The majority (90.11%) are open to computer training to help them use EMRs effectively, and even higher percentages (96.00-97.47%) would use the systems if properly trained or with full infrastructure in place. Additionally, more than three-quarters (76.6%) of healthcare workers are willing to access EMRs using their personal computers (Table 7).

Table 7: Willingness of health professionals to use the EMR at public health facilities in Addis Ababa, 2024/25

Variables	Category	Frequency	Percent (%)
Willingness to use a personal computer for the EMR system	No	111	23.37
	Yes	364	76.63
Willingness to receive computer training for	No	47	9.89

EMR usage	Yes	428	90.11
Willingness to use the EMR system for patient care with proper training	No	19	4.00
	Yes	456	96.00
Willingness to adopt the EMR system if the full infrastructure is provided	No	12	2.53
	Yes	463	97.47

5.8. Major barriers and facilitators to EMR acceptance

5.8.1. Major Barriers to EMR Acceptance from Health Professionals

Among major barriers, power and system fluctuation, with a mean score of 3.67 (95% CI=3.58-3.75), were the most severe problems for the health professionals to use the EMR at selected health facilities. The second-highest barrier was the lack of equipment and supplies, such as computers, with a mean score of 3.54 (95% CI=3.45- 3.62). Poor management & supportive supervision (mean = 3.29, 95% CI: 3.20-3.38), insufficient IT support and lack of a skilled EMR administrator (mean = 2.25, 95% CI: 3.17-3.33), shortage of human resources (mean = 3.06, 95% CI: 2.97-3.15), maintenance cost (mean = 2.87, 95% CI: 2.78-2.97), poor interface of the system (mean = 2.8, 95% CI: 2.69-2.91), and legal issues like privacy and confidentiality (mean = 2.30, 95% CI: 2.20-2.39) of the patient were other major barriers (Table 8).

Overall, these findings highlight the major barriers affecting EMR acceptance, particularly the critical need for reliable infrastructure, adequate equipment, and managerial technical support.

Table 8: Major Barriers to EMR Acceptance Ranked by Severity in Public Health Facilities in Addis Ababa, 2024/25

Major Barriers	Mean	SD	Median (p50)
Power and system fluctuations	3.67	0.96	4
Lack of essential equipment and supplies (e.g., Computers)	3.54	0.94	4
Poor management and lack of supportive supervision	3.29	1.01	3
Insufficient IT support and lack of a skilled EMR administrator	3.25	0.90	3
Shortage of human resources	3.06	1.00	3
Maintenance cost	2.87	1.07	3
The poor interface of the system	2.8	1.22	3
Legal issues like privacy	2.30	1.04	2

5.8.2. Major Barriers to EMR Acceptance from the Key Informant Interview

5.8.2.1. Technical Barriers

This subtheme highlights the most frequently encountered challenges to EMR acceptance. Reliance on uninterrupted power and network connectivity creates systemic vulnerability; occasional system glitches (e.g., difficulty registering new patients) are foundational barriers. One of the key-informant at Alert Comprehensive Specialized Hospital mentioned that;

"The EMR depends on a stable power supply. If electricity or network connection goes out, the system stops immediately, disrupting services." (KII R1)

Again, another key-informant stated that;

"Occasional interruptions occur due to power supply issues... delays of 10–20 minutes." (KII R2)

The EMR system disrupts workflows due to poor design and missing features, creating frustration and inefficiency. Also, Inaccurate reporting risks patient safety and compliance with health standards is another technical problem.

One of the key-informant at the health center mentions the incomplete ART forms: *"Incomplete ART (Antiretroviral Therapy) form functionality... disrupts clinical workflows, forcing staff to rely on workarounds."* (KII R5)

Occasional system glitches, software corruption, poor interface (e.g., difficulty registering new patients), and no feedback mechanisms undermine trust in the system.

Other key-informant stated this problem by saying *"No feedback mechanism exists to request data resubmission between departments.... delaying care coordination."* (KII R8)

5.8.2.2. Workflow and Usability Challenges

Transitioning from paper to EMR created redundancy and hindered organizations' workflows. One of the key-informant stated *"Initially, we operated EMR alongside paper records, leading to resistance.... professionals found the transition frustrating. It increases workload and makes procedures difficult to follow...Increasing pressure."* (KII R3)

The key-informant also mentioned, *"Complete adoption requires eliminating paper records, which we haven't achieved yet.... dual systems increased workload, slowing full adoption."*, (KII R1)

5.8.2.3. Organizational Barriers

Lack of standardized procedures, resource limitations, and Inadequate initial training from the organizations were other barriers to EMR adoption.

The other key-informant at Alert Hospital mentioned that "*No standard operating procedures (SOPs) exist.... despite some training materials like videos and soft copy guides prepared.*" (KII R4)

One key informant responded, "*No formal SOPs have been disseminated on using the system properly yet.*" (KII R7)

Insufficient IT/technical staff, lack of support from the administration, and an insufficient budget were other critical problems raised by key informants. The ICT directorate at Kolfe Health Center stated that "*Human resources for the system are not enough to achieve significant outcomes, especially IT/technicians.*" (KII R7)

Other key-informant states, "*We face resource limitations, for example, budget for enough computers and addressing connection interruptions is lacking... .. sought assistance from NGOs and the ministry.*" (KII R2)

5.8.2.4. Behavioral Barriers

Fear of data loss and distrust in the system's reliability, or Providers' worry about losing unsaved work during sudden power outages, resistance arose from managing both systems led to frustration for the users.

"Resistance arose from managing both systems... anxiety about system failures perpetuates reliance on paper records." (KII R8)

5.9. Bivariate analyses of determinant factors towards the Acceptance level of the EMR system

Effective use of electronic medical records (EMR) relies heavily on healthcare professionals' proficiency in basic computer skills. Professional category and fundamental computer operation skills, such as turning on and off, were statistically significantly correlated, according to chi-square test ($\chi^2 (10) = 21.25, p = 0.019$). All Medical Doctors, Psychiatrists, Pharmacists, and Optometrists (100%) can turn on/off properly. Only 80.39% of Midwives can properly turn on and shut down the computer. More than 90% of other categories, like Anesthesia, Health Officers, and Medical Lab Professionals, and 87.92% of Nurses, can be computed by turning the computer on and off properly. The majority (90.74%) of respondents reported being able to operate a computer independently. Among those with diplomas and bachelor's degrees, 86.3% and 88.36%, respectively, reported the ability to operate a computer, while all respondents with higher educational levels (Medicine Degree, MD+, and master's degree holders) reported full ability (100%). The chi-square test indicated a statistically significant association between education level and computer operating skill ($\chi^2 (4) = 14.91, p = 0.005$).

Participants with a favorable attitude had 11.25 times higher odds of acceptance (95% CI: 7.26–17.44, $p<0.001$) compared to those with unfavorable attitudes, indicating a strong and statistically significant association. Similarly, participants with "Good" knowledge had 5.45 times higher odds of acceptance (95% CI: 3.63–8.20, $p<0.001$) compared to those with poor knowledge. Advanced education also played a critical role for participants with MD+ and Master's, exhibiting 6.64 times ($p=0.004$) and 4.98 times ($p=0.006$) higher odds of acceptance, compared to those with a low educational level diploma. Younger participants (aged ≤ 30) were 2.2 times more likely to accept the EMR system compared to older participants ($p = 0.001$). However, gender differences (COR=1.02, $p=0.910$) and professional categories. Showed no statistically significant association with EMR acceptance.

Table 9: Logistic Regression Analysis of the Association between independent variable and EMR Acceptance among Health Professionals working at public health facilities in Addis Ababa, 2024/2025

Independent Variable	Category	COR	95% CI for COR	Std. Err.	Z	P-value
Computer Skill	Good	15.49	8.09-29.63	5.13	8.27	<0.001**
	Poor	1.00				
Attitude	Favorable	11.25	7.26-17.44	2.51	10.83	<0.001**
	Unfavorable	1.00				
Knowledge	Good	5.45	3.63-8.20	1.13	8.15	<0.001**
	Poor	1.00				

Note: ** Highly significant, COR; Crude Odds Ratio

Overall, 57.26% of professionals have a favorable attitude, while 42.74% hold unfavorable views. Medical Doctors (59.49% favorable), Health Officers (64%), Nurses (57.49%), and Midwives (60.78%) show moderate to strong support.

On the other hand, Medical Laboratory (76% unfavorable), Radiology (53.33% unfavorable), and Anesthesia (60% unfavorable) staff express significant resistance. Pharmacy professionals are nearly split (51.72% favorable). Smaller groups like Optometry (100% favorable) and Psychiatry (66.67% favorable) show optimism, while "Others" (e.g., HIT, HI Dentist, family health, IESO) report 90.48% favorability (Table 10). A Pearson Chi-squared test was conducted to examine the association between professional category and attitude. The results indicated a significant association between these variables, $X^2(10, N = 475) = 26.24, p = .003$.

Table 10: Proportion of Favorable and Unfavorable Attitude by health professionals' category in Addis Ababa public Health facilities, 2024/25

Professional Category	Unfavorable (%)	Favorable (%)	Total (%)
Medical Doctor	32 (40.51)	47 (59.49)	79 (100)
Health Officer	9 (36.00)	16 (64.00)	25 (100)
Nurse	88 (42.51)	119 (57.49)	207 (100)
Midwifery	20 (39.22)	31 (60.78)	51 (100)
Pharmacy	14 (48.28)	15 (51.72)	29 (100)
Medical Laboratory	19 (76.00)	6 (24.00)	25 (100)
Radiology	8 (53.33)	7 (46.67)	15 (100)
Anesthesia	9 (60.00)	6 (40.00)	15 (100)
Optometry	0 (0.00)	2 (100.00)	2 (100)
Psychiatry	2 (33.33)	4 (66.67)	6 (100)
Others	2 (9.52)	19 (90.48)	21 (100)
Total	203 (42.74)	272 (57.26)	475 (100)

5.10. Multivariable Analysis of factors associated with User acceptance of EMR

From a multivariable binary logistic regression model, health professionals' attitudes, knowledge, computer skills, and willingness remained significant predictors. Health professionals with a favorable attitude toward EMR acceptance had 7.24 times higher odds of acceptance (AOR=7.24, 95% CI: 7.24, 11.85) than those with unfavorable attitudes. Similarly, those with good knowledge of the EMR system were 2.45 times more likely to accept the EMR (AOR=2.45, 95% CI: 1.45, 4.12) than the participants with poor knowledge. Health professionals with strong computer abilities (AOR = 9.12, 95% CI: 4.10, 20.25) also had a positive association with the acceptance of EMR. However, willingness, education level, profession, and experience lost significance when adjusted for other variables (Table 11).

Table 11: Summary of multivariable analysis of the factors associated with Acceptance among Health Professionals working at public health facilities in Addis Ababa, 2024/2025

Variable	Category	Acceptance of EMR (%)		AOR	95% CI	p-value
		Poor	Good			
Age	<=30	156 (42.51%)	211 (57.49%)	1		
	≥ 30	27 (25.00%)	81 (75.00%)	2.10	0.90 - 4.89	0.087
Work Experience	<= 5 years	137 (41.14%)	196 (58.86%)	1		
	6-10 years	36 (29.75%)	85 (70.25%)	0.71	0.36 - 1.38	0.312
	11- 15 years	9 (50.00%)	5 (50.00%)	0.24	0.06 - 1.00	0.051
	>15 years	1 (33.33%)	2 (66.67%)	1.22	0.05 - 27.93	0.903
Education Level	Diploma	31 (42.47%)	42 (57.53%)	1		
	Bachelor's degree	123 (42.12%)	169 (57.88%)	0.73	0.35 - 1.50	0.388
	General Practitioner	22 (44.90%)	27 (55.10%)	0.53	0.19 - 1.43	0.207
	Specialty (MD+)	3 (10.00%)	27 (90.00%)	1.52	0.32 - 7.33	0.600
	Master's degree	4 (12.90%)	27 (87.10%)	1.23	0.30 - 4.98	0.776
Computer Skills	Poor	73 (85.88%)	12 (14.12%)	1		
	Good	110 (28.21%)	280 (71.79%)	9.12	4.11 - 20.26	< 0.001*
Willingness to use EMR	Unwilling	77 (57.90%)	56 (42.10%)	1		
	Willing	106 (30.99%)	236 (69.01%)	1.42	0.96 - 2.10	0.081
Knowledge of EMR	Poor	108 (63.91%)	61 (36.09%)	1		
	Good	75 (24.51%)	231 (75.49%)	2.45	1.46 - 4.12	0.001*
Attitude toward EMR	Unfavorable	139 (68.47%)	64 (31.53%)	1		
	Favorable	44 (16.18%)	228 (83.82%)	7.25	4.43 - 11.85	< 0.001*

Note: * significant at p<0.05; AOR-Adjusted Odds Ratio; CI-Confidence Interval

CHAPTER SIX

DISCUSSION

This study assessed the acceptance of electronic medical records and associated factors among health professionals working at public health facilities in Addis Ababa, Ethiopia, using a mixed-method design with concurrent triangulation. Quantitative data from 475 health professionals and qualitative insight from 8 key informants provided a comprehensive understanding of EMR acceptance barriers and facilitators. In addition, the findings provide the level of computer skills, knowledge of the system, willingness, and attitude toward the EMR.

The acceptance rate of EMR among health professionals was 61.47% (95% CI: 57.08 %, 65.87 %). This result was in line with the 59% found in the Ghanaian study (38).

However, the result of this finding is lower than studies conducted at Gondar University (72.2%), in Nigeria (78.1%), and in Bahirdar City, Ethiopia (85.9%) (30, 39). This disparity may stem from sample size and representativeness. Our study includes a larger and more diverse sample across multiple facilities, whereas others focused on single institutions (e.g., specialized hospitals in Gondar University). Another possible explanation is that higher patient loads and fragmented workflow among health facilities in Addis Ababa may reduce perceived EMR compared to other cities.

More than half (57.26%) with of health professionals had favorable attitudes regarding the acceptance of electronic medical record, which was consistent with research done in Addis Ababa (57.51%) and Gondar (59.6%)(21, 30). However, the study's respondents' attitude score is lower than that of research done in Malawi (71%), Norway (81%), and Ethiopia's Dire Dawa hospitals (72.8%) (25, 40, 41). A possible justification might be high technical barriers (e.g., power outage, system downtime) that can reduce confidence in using the system.

The strongly significant for the EMR acceptance was a favorable attitude toward EMRs, with odds 8.7 times higher than those with an unfavorable attitude. This is consistent with the study conducted at Gondar University (AOR=15.24 (12.06, 25.94) (30). Perceived ease of use is the main factor driving technology adoption from TAM and a favorable attitude toward EMR probably reflects high perceived usefulness (e.g. the belief that EMR reduces errors). The adoption of the EMR system is highly correlated with health professionals' knowledge, according to this study.

The Participants with good EMR knowledge had almost 3 times higher odds of acceptance than those with poor knowledge. This result is consistent with research done in Gondar, Bahir Dar, and China (30, 39, 42). Computer skills were another factor that was strongly associated with EMR acceptance. Those who have good computer skills were 9.12 times more likely to have a good acceptance of EMR than those with less computer skills, emphasizing the need for digital literacy training. This result is consistent with research done in Bahir Dar, Gondar University, and Ghana (30, 38, 39). Advanced degrees (MD+/Masters) age the ages of participants lost significance in multivariate models, suggesting their influence is mediated by knowledge or problem-solving confidence.

This study also attempted to explore the major barriers to Electronic Medical Record system acceptance from key informants and revealed technical, organizational, behavioral, workflow, and system usability challenges. From this finding, resistance to change is a critical behavioral barrier, driven by perceived inefficiencies in the EMR system. Participants reported frustration with the increased workload due to dual documentation (paper and digital) and missing features (e.g., feedback mechanisms, and incomplete ART forms). These findings align with a study conducted at Addis Ababa, where low perceived usefulness and ease of use directly hinder adoption. For instance, lab technicians' complaints about time-consuming manual data entry, which reflect poor alignment between the EMR and clinical workflows, reduce perceived efficiency.

Other major barriers that hinder the acceptance of Electronic Medical Records are systemic and operational barriers. At the forefront, unstable power supply and connection system performance emerged as the most pressing obstacles. In addition, basic tools are scarce, such as functional computers. Organizational management gaps, such as inconsistent supervision, left teams without clear guidance, while understaffed IT departments struggled to troubleshoot urgent technical problems. Financial constraints added another layer, and facilities faced challenges with the high costs of system maintenance and upgrades, often prioritizing immediate needs over long-term digital investments. The study was supported by study conducted in Addis Ababa and a systematic review conducted in Ethiopia (23, 34). The consistency of these findings suggests that challenges to EMR acceptance are not limited to the city but also regional, necessitating a multi-level approach to address all major barriers.

6.1. Strengths and Limitations of the study

6.1.1. Strengths of the Study

The study's major strengths include its mixed methods approach, which provided both quantitative data and qualitative insights for a comprehensive understanding of EMR acceptance. The large sample size (n=475) enhanced the study's representativeness and statistical reliability. Multivariable logistic regression allowed the identification of key independent predictors of EMR acceptance. Additionally, the inclusion of diverse professional categories and health facilities ensured a wide perspective, while the use of clearly defined variables strengthened internal validity.

6.1.2. Limitations of the Study

The study is limited by its cross-sectional design, which restricts causal inference between variables. It was also confined to selected public health facilities in Addis Ababa, limiting the generalizability to other regions or private sectors. Potential response bias may have occurred due to self-reporting and the face-to-face interview method. The qualitative findings could have been strengthened with more detailed thematic elaboration and participant quotes.

CHAPTER SEVEN

CONCLUSION

This study assessed the acceptance of Electronic Medical Record (EMR) systems and associated factors among health professionals in public health facilities in Addis Ababa, Ethiopia, using a mixed methods design. The findings revealed that 61.47% of respondents had a high level of EMR acceptance. Key factors significantly associated with acceptance include a favorable attitude toward EMR, good knowledge, and strong computer skills. Despite moderate levels of acceptance, significant barriers such as frequent power outages, unstable internet connectivity, lack of standard operating procedures, insufficient technical support, and the dual documentation burden (paper and electronic systems) hinder widespread adoption. Addressing these challenges is critical to optimizing EMR acceptance, which would enhance healthcare efficiency and improve patient care quality.

CHAPTER EIGHT

RECOMMENDATION

Based on the findings and the above conclusions, we suggest the following recommendations:

1. **For Health Facilities:** To improve EMR acceptance, health facilities must address core infrastructure needs by prioritizing budget allocation for uninterrupted power and stable internet connectivity. Additionally, regular and practical training should be provided to build user capacity and confidence.
2. **For Health Professionals:** Health professionals should be encouraged to foster positive attitudes through mentoring and increased awareness of EMR benefits.
3. **AAHB:** Addis Ababa Health Bureau should provide specialized IT support personnel and offer standardized EMR installation guidelines and SOPs.
4. **FMOH:** It is recommended that the Federal Ministry of Health includes EMR training in pre-service education, basic computer skills, capacity building, and allocate budgets to support digital health scale-up.
5. **For Researchers:** Future research should include longitudinal and interventional studies to better understand causality and evaluate outcomes of EMR use in diverse settings.

REFERENCES

1. Boonstra A, Broekhuis M. Barriers to the acceptance of electronic medical records by physicians from systematic review to taxonomy and interventions. *BMC health services research*. 2010;10:1-17.
2. Esdar M, Hübner U, Thye J, Babitsch B, Liebe J-D. The effect of innovation capabilities of health care organizations on the quality of health information technology: Model development with cross-sectional data. *JMIR medical informatics*. 2021;9(3):e23306.
3. Ross DS, Venkatesh R. Role of hospital information systems in improving healthcare quality in hospitals. *Indian journal of science and technology*. 2016;9(26):1-5.
4. Luna D, Almerares A, Mayan JC, 3rd, Gonzalez Bernaldo de Quiros F, Otero C. Health Informatics in Developing Countries: Going beyond Pilot Practices to Sustainable Implementations: A Review of the Current Challenges. *Healthc Inform Res*. 2014;20(1):3-10.
5. Hoyt RE. Medical informatics: practical guide for the healthcare professional: University of West Florida, School of Allied Health and Life Sciences ...; 2009.
6. Ahmadi H, Nilashi M, Almaee A, Soltani M, Zare M, Sangar AB, et al. Multi-level model for the adoption of hospital information system: a case on Malaysia. *Journal of Soft Computing and Decision Support Systems*. 2016;3(1):61-74.
7. Ohuabunwa EC, Sun J, Jean Jubanyik K, Wallis LA. Electronic Medical Records in low to middle income countries: The case of Khayelitsha Hospital, South Africa. *Afr J Emerg Med*. 2016;6(1):38-43.
8. Mohamamad A, Yunus AM. Technology acceptance in healthcare service: a case of electronic medical records (ERM). *International Journal of Academic Research in Business and Social Sciences*. 2017;7(11):863.
9. Organization WH, Union IT. National eHealth strategy toolkit: World Health Organization; 2012.
10. Kim S, Lee KH, Hwang H, Yoo S. Analysis of the factors influencing healthcare professionals' adoption of mobile electronic medical record (EMR) using the unified theory of acceptance and use of technology (UTAUT) in a tertiary hospital. *BMC Med Inform Decis Mak*. 2016;16:12.
11. Friedberg MW, Chen PG, Van Busum KR, Aunon F, Pham C, Caloyeras J, et al. Factors Affecting Physician Professional Satisfaction and Their Implications for Patient Care, Health Systems, and Health Policy. *Rand Health Q*. 2014;3(4):1.
12. Afrizal SH, Hidayanto AN, Handayani PW, Budiharsana M, Eryando T. Narrative review for exploring barriers to readiness of electronic health record implementation in primary health care. *Healthcare informatics research*. 2019;25(3):141-52.
13. Melas CD, Zampetakis LA, Dimopoulou A, Moustakis VS. An empirical investigation of technology readiness among medical staff based in Greek hospitals. *European Journal of Information Systems*. 2014;23(6):672-90.
14. Terry AL, Brown JB, Bestard Denomme L, Thind A, Stewart M. Perspectives on electronic medical record implementation after two years of use in primary health care practice. *J Am Board Fam Med*. 2012;25(4):522-7.

15. Biruk S, Yilma T, Andualem M, Tilahun B. Health Professionals' readiness to implement electronic medical record system at three hospitals in Ethiopia: a cross sectional study. *BMC Med Inform Decis Mak*. 2014;14:115.
16. Yehualashet G, Asemahagn M, Tilahun B. The attitude towards and use of electronic medical record system by health professionals at a referral hospital in northern Ethiopia: Cross-sectional study. *Journal of Health Informatics in Africa*. 2015;3(1).
17. Addise M. University in partial fulfillment of the requirements for the Degree of Master of Science in Health Informatics. 2013.
18. Esmailzadeh P, Sambasivan M. Health Information Exchange (HIE): A literature review, assimilation pattern and a proposed classification for a new policy approach. *J Biomed Inform*. 2016;64:74-86.
19. Oo HM, Htun YM, Win TT, Han ZM, Zaw T, Tun KM. Information and communication technology literacy, knowledge and readiness for electronic medical record system adoption among health professionals in a tertiary hospital, Myanmar: A cross-sectional study. *PLoS One*. 2021;16(7):e0253691.
20. Tegegne MD, Wubante SM, Kalayou MH, Melaku MS, Tilahun B, Yilma TM, et al. Electronic medical record system use and determinants in ethiopia: systematic review and meta-analysis. *Interactive Journal of Medical Research*. 2023;12(1):e40721.
21. Keleb G, Taye G, Ayele W, Tassew B, Biruk E, Habtamu T, et al. Electronic Medical Record Utilization, Determinant Factors and Barriers Among healthcare Providers at Selected Health Facilities in Addis Ababa, Ethiopia. *Ethiopian Journal of Health Development*. 2022;36(1).
22. Jimma BL, Enyew DB. Barriers to the acceptance of electronic medical records from the perspective of physicians and nurses: A scoping review. *Informatics in Medicine Unlocked*. 2022;31:100991.
23. Yehualashet DE, Seboka BT, Tesfa GA, Demeke AD, Amede ES. Barriers to the adoption of electronic medical record system in Ethiopia: a systematic review. *Journal of multidisciplinary healthcare*. 2021:2597-603.
24. Endalkachew Damise; Quality Improvement head at Kolfe Keraniyo Subcity health center(2024).
25. Tilahun B, Fritz F. Comprehensive evaluation of electronic medical record system use and user satisfaction at five low-resource setting hospitals in ethiopia. *JMIR Med Inform*. 2015;3(2):e22.
26. Dutta B, Hwang H-G. The adoption of electronic medical record by physicians: A PRISMA-compliant systematic review. *Medicine*. 2020;99(8):e19290.
27. Mengesha T. Electronic solutions for Ethiopian health sector: Electronic medical record (EMR) system. 2011.
28. Holden RJ, Karsh BT. The technology acceptance model: its past and its future in health care. *J Biomed Inform*. 2010;43(1):159-72.
29. Davis FD. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*. 1989:319-40.
30. Kasaye MD, Mengestie ND, Beyene S, Kebede N, Ngusie HS, Kalayou MH. Acceptance of electronic medical records and associated factor among physicians working in

University of Gondar comprehensive specialized hospital: A cross-sectional study. *Digital Health*. 2023;9:20552076231213445.

31. Senishaw AF, Tilahun BC, Nigatu AM, Mengiste SA, Standal K. Willingness to use electronic medical record (EMR) system and its associated factors among health professionals working in Amhara region Private Hospitals 2021, Ethiopia. *Plos one*. 2023;18(5):e0282044.
32. Mohammed AS, Wudu D, Minda Z, Diress GM. Attitudes toward implementation of electronic medical record and its associated factors among health professional workers in selected public hospitals in Addis Ababa, Ethiopia, 2023: A multi-center cross-sectional study. *Digit Health*. 2024;10:20552076241277034.
33. Abiy R, Gashu K, Asemaw T, Mitiku M, Fekadie B, Abebaw Z, et al. A Comparison of Electronic Medical Record Data to Paper Records in Antiretroviral Therapy Clinic in Ethiopia: What is affecting the Quality of the Data? *Online J Public Health Inform*. 2018;10(2):e212.
34. Bekele TA, Gezie LD, Willems H, Metzger J, Abere B, Seyoum B, et al. Barriers and facilitators of the electronic medical record adoption among healthcare providers in Addis Ababa, Ethiopia. *DIGITAL HEALTH*. 2024;10:20552076241301946.
35. Godie Y, Gebretsadkan L, Shewangizaw Z, Assefa T, Birhanu D, Kassaye F, et al. Health Professionals Commitment and its Associated Factors in Public Health Facilities of Addis Ababa, Ethiopia, 2024 Multi Center Mixed Cross-Sectional Study. 2024.
36. Meron. HMIS focal person at kolfe keraniyo sub-city health officer. 2024.
37. Yayehrad T, Getachew Y, Muluken W. Patient safety culture and associated factors of regional public hospitals in Addis Ababa. *BMC Health Serv Res*. 2024;24(1):811.
38. Essuman LR, Apaak D, Ansah EW, Sambah F, Ansah JE, Opare M, et al. Factors associated with the utilization of electronic medical records in the Eastern Region of Ghana. *Health Policy and Technology*. 2020;9(3):362-7.
39. Berihun B, Atnafu DD, Sitotaw G. Willingness to use electronic medical record (EMR) system in healthcare facilities of Bahir Dar City, Northwest Ethiopia. *BioMed research international*. 2020;2020(1):3827328.
40. Al-Azmi SF, Al-Enezi N, Chowdhury RI. Professional practice and innovation: users' attitudes to an electronic medical record system and its correlates: a multivariate analysis. *Health Information Management Journal*. 2009;38(2):33-40.
41. Oumer A. Utilization of Electronic Medical Record and Associated Factors Among Health Professionals in Public Health Facilities With Service Delivery, Eastern Ethiopia. 2020.
42. Or C, Tong E, Tan J, Chan S. Exploring factors affecting voluntary adoption of electronic medical records among physicians and clinical assistants of small or solo private general practice clinics. *Journal of medical systems*. 2018;42:1-12.

ANNEXES

Annex I: Study Information Sheet and Participant Consent Form

A questionnaire prepared by Addis Ababa University College Health Science Department of Epidemiology and Biostatistics on acceptance of EMR and its associated factors among health professionals working at public health facilities in Addis Ababa City Administration, Ethiopia, 2024/25

How are you?

My name is _____. I am here to collect information about your acceptance of the Electronic Medical Records system.

Your participation in this research is entirely voluntary. It is your choice whether to participate, and the information you provide is only used for this research. Your participation in this research may not directly provide you with a certain benefit as an individual. It may benefit all health professionals who work with this system at all. There are no side effects or known risks related to this kind of research and it takes only 20 minutes to participate.

Up to now, you have been given all the information that I feel you should know regarding the research project that you are being asked to participate in. I think you have understood the issues in detail.

Thank you for your cooperation and listening!

If you are a volunteer to take part in my study, please put your signature here.

1. Date _____ signature _____

2. Data collector name _____ signature _____

Annex II: Quantitative Questionnaire in English version

Identification				Remark
Code no				
Interviewer name				
Name of health facility				
Part one: General Socio-Demographic characteristics				
No.	Question	Response Option	Code	Skip
1.	Gender	1. Male 2. Female		
2.	Age	____ In a year		
3.	Professional categories	1. Medical Doctor 2. Health officer 3. Nurse 4. Midwifery 5. Pharmacy 6. Medical Laboratory 7. Radiology 8. Anesthesia 9. Optometry 10. Psychiatry Other ____ (Specify)		
4.	Educational Status	1. Diploma 2. Bachelor's degree 3. Medicine Degree 4. Specialty (MD+) 5. Master's Degree Others ____ (Specify)		
5.	What is your work experience (years)?	____ Years		

Part Two: Computer Skills		
Instruction: <i>Please try to answer questions by selecting the option below that best reflects your computer skills.</i> 1= Yes 2=No		
S/N	Questions	Responses
1.	Can you properly turn on and shut down a computer by yourself?	1. Yes 2. No

3.	Are you able to manipulate basic Microsoft? Office, Microsoft Office Excel, and Microsoft Office PowerPoint by yourself?	1. Yes 2. No
4.	Are you able to search, and download information from the internet by yourself?	1. Yes 2. No
5.	Can you manipulate Cut, Copy, Past digital data Like Text, Images, Audio, and Video by yourself?	1. Yes 2. No
6.	Are you able to send digital data like text images, video audio?	1. Yes 2. No

Part Three: Perceived usefulness and perceived Ease of use of EMR						
Instruction: <i>Please try to answer questions by encircling the number that best reflects your</i> Perceived usefulness and perceived Ease of use						
1= Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree						
1.	EMR system is integrated into the daily work	1	2	3	4	5
2.	Information provided by the EMR system makes my work easier	1	2	3	4	5
3.	I have access to the information where I need it	1	2	3	4	5
4.	I can find all the information when I need it	1	2	3	4	5
5.	The information is always updated	1	2	3	4	5
6.	The data I registered are important for the care of the patients	1	2	3	4	5
7.	I am certain about the reliability of the data documented	1	2	3	4	5
8.	Using EMR improves my clinical performance	1	2	3	4	5
9.	It is easy to learn how to use EMR	1	2	3	4	5
10.	It is easy to use EMR	1	2	3	4	5
11.	It is easy to know how to do your intended task	1	2	3	4	5

Part Four: Attitude towards EMR						
Instruction: Please try to answer questions by encircling the number that best reflects your attitude. 1= Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree						
1.	EMR increases practice productivity (i.e. Patients/ day)?	1	2	3	4	5
2.	EMR can improve the quality of work practice (i.e., work-life).	1	2	3	4	5
3.	EMR can improve the quality of care.	1	2	3	4	5
4.	EMR will enhance my overall effectiveness in my job.	1	2	3	4	5
5.	EMR can reduce medical errors.	1	2	3	4	5
6.	Does EMR need more time for training?	1	2	3	4	5
7.	EMR benefits outweigh the costs.	1	2	3	4	5
8.	EMR impacts the cost of service?	1	2	3	4	5
9.	EMR can improve the confidentiality of patient information.	1	2	3	4	5
10.	EMR can increase patient acceptance?	1	2	3	4	5
11.	EMR can decrease waiting time for patients	1	2	3	4	5
12.	EMR is more complex than paper-based record	1	2	3	4	5
13.	EMR improves interaction with colleagues	1	2	3	4	5
14.	EMR improves clinicians' access to up-to-date knowledge	1	2	3	4	5
15.	EMR helps in avoiding errors	1	2	3	4	5
16.	EMR should be implemented at large	1	2	3	4	5

Part Five: Knowledge of EMR
Instruction: <i>Please try to answer questions by encircling the number that reflects your level of agreement 1. Yes, 2. No</i>

No.	Question	Response question	Code	Skip
1)	Communication between patients and doctors is possible through EMRs.	3. Yes 4. No		
2)	Patients' examinations and investigations and others can be recorded through EMRs.	1. Yes 2. No		
3)	EMRs can be used to record the vital signs of the patient at any time	1. Yes 2. No		
4)	EMR service can reduce unnecessary referrals and transportation costs.	1. Yes No		
5)	EMRs are important for public health issues like chronic disease management and communicable and non-communicable.	1. Yes 2. No		
6)	Computer technology, Telecommunication technology & Health care technology can be used in EMR practice.	1. Yes 2. No		
7)	EMR application is important for remote patient care and management, especially for elders and the disabled.	1. Yes 2. No		
8)	EMRs are relevant to educate patients and health professionals on managing health problems.	1. Yes 2. No		
9)	EMRs can improve the quality and accessibility of healthcare services.	1. Yes 2. No		
10)	EMR can support decision-making features to guide patient management (e.g. drug allergy notifications and warnings	1. Yes 2. No		

Part Six: Willingness of healthcare professionals to use the EMR

Instruction: *Please try to answer questions by encircling the number that reflects your level of agreement 1. Yes, 2. No*

No.	Question	Response question	Code	Skip
1)	Willingness to avail a personal computer to use for the EMR system	5. Yes 6. No		

2)	Willingness to undergo computer training to enable EMR system usage	3. Yes 4. No		
3)	Willingness to use EMR system for patient service and if properly trained	3. Yes 4. No		
4)	Willingness to use EMR system if the full infrastructure is available	2. Yes No		

Part Seven: Major barriers and facilitators to EMR acceptance

Instruction: Please try to answer questions by encircling the number based on the degree of severity of the problem.

1= least severe problem

2=Moderate

3=Neutral

4=More

5=Most severe problem

1.	Lack of supportive IT staff and capable EMR administrator	1	2	3	4	5
2.	Poor management and supportive supervision	1	2	3	4	5
3.	Lack of equipment and supplies (e.g. Computers)	1	2	3	4	5
4.	Power and system connection fluctuation	1	2	3	4	5
5.	Legal issues like privacy and security of patient information	1	2	3	4	5
6.	Shortage of human resource	1	2	3	4	5
7.	Maintenance cost	1	2	3	4	5
8.	Poor interface	1	2	3	4	5

Annex III: Key-Informant Interview Guide (Qualitative)

Part One: Interview guide for key informants.

1. Code no_____
2. Interviewer name_____
3. Name of health facility_____
4. Age (in a year) _____
5. Gender_____
6. Professional category _____
7. Position_____
8. Has the EMR project been a success or a failure or some combination? Describe where you have realized success and where it is deemed a failure.
9. What additional features are missing in your organization's EMR?
10. Does the organization have an adequate budget for the Electronic Medical Record system?
11. Do the healthcare providers refuse to use this system (Electronic Medical Record)? Why?
12. Has the desired impact of EMR been realized? When do you expect to realize the full impact??
13. Do the organizations that introduce the EMR system provide periodic maintenance and support?
14. Is there any functionality missing in the software?
15. Is the facility able to revise its documentation screens/templates, or is this assigned to a vendor technician?
16. Does the hospital have a standard EMR manual or guidelines like SOP and enforced laws in place for continuity of care?
17. What strategies did you use to improve the use and progress of Electronic Medical Records in your hospital/health center?
18. What are the major barriers raised by healthcare providers to use EMR?
19. What workable solutions do you suggest to solve the above problems?

Thank you very much for completing the questionnaire!

Annex IV: Quantitative Questionnaire in Amharic version

I: የጥናት መረጃ ሉህ እና የተሳታፊ ስምምነት ቅጽ

በአዲስ አበባ ዩኒቨርሲቲ ጤና ሳይንስ ኮሌጅ ኤፒዲሚዮሎጂ እና ባዮስታቲስቲክስ ትምህርት ክፍል EMR ን መቀበል እና ተያያዥነት ያላቸውን ምክንያቶች በአዲስ አበባ ከተማ አስተዳደር በሕዝብ ጤና ተቋማት ውስጥ የሚሰሩ ባለሙያዎችን ለመጠየቅ የተዘጋጀ መጠይቅ ።

2024/25

ስላም፡

የኔ ስም _____ ይባላል። ስለ እርስዎ የኤሌክትሮኒክ ሕክምና ምዝገባ ስርዓት (EMR) ተቀባይነት መረጃ ለመስብሰብ እዚህ መጥቻለሁ።

በዚህ ጥናት ውስጥ ያለዎት ተሳትፎ ሙሉ በሙሉ በፈቃደኝነት ነው። መሳተፍ የእርስዎ ምርጫ ነው።

እና ያቀረቡት መረጃ ለዚህ ምርምር ብቻ ጥቅም ላይ ይውላል።

በዚህ ውስጥ የእርስዎ ተሳትፎ እንደ ግለሰብ በቀጥታ ጥቅም ላይ ስለማይውል፣ ከዚህ ስርዓት ጋር የሚሰሩ የጤና ባለሙያዎች ሁሉንም ግን ሊጠቅም ይችላል።

ከእንደዚህ አይነት ምርምር ጋር የተያያዘ ምንም የጎንዮሽ ጉዳዮች ወይም አደጋዎች የሉም።

ለመሳተፍ 20 ደቂቃ ብቻ ይወስዳል።

እስካሁን ድረስ እርስዎ እንዲሳተፉበት ማወቅ ያለብዎትን መረጃ ሁሉ በዝርዝር የተረዱት ይመስለኛል።

ስለ ትብብርዎ እና ለማዳመጥዎ እናመሰግናለን!

በጥናቴ ለመሳተፍ ፈቃደኛ ከሆኑ ፣ እባኩንን ፊርማዎትን እዚህ አድርጉ።

1. ቀን _____ ፊርማ _____

2. የ መረጃ ሰብሳቢ ስም _____ ፊርማ _____

መለያ	አስተያየት	
ቃለ ምጠይቅ ስም		
የጤና ተቋም ስም		

ክፍል አንድ፡ አጠቃላይ ሶሽዮ-ዲሞክራሲ

ቁጥር	ጥያቄ	ምላሽ አማራጭ	ኮድ	ዝላይ
1	ፆታ			
2	ዕድሜ			
3	የባለሙያ መደብሮች	1. የህክምና ዶክተር 2. የጤና መኮንን 3. ነርስ 4. አዋላጅነት 5. ፋርማሲ 6. የህክምና ላብራቶሪ 7. ራዲዮሎጂ 8. አኔስቴዝያ 9. አፕሎጂስት 10. ሥነ አእምሮ ሌላ ____		
4	የትምህርት ደረጃ	1. ዲፕሎማ 2. የባችለር ዲግሪ 3. የህክምና ዶክተር 4. ስፔሻሊቲ (MD+) 5. ማስተርስ ዲግሪ ሌላ (አስቀምጥ)		
5	የሥራ ልምድ	_____ ዓመት		

ክፍል ሁለት፡ የኮምፒውተር ክህሎቶች

መመሪያ፡- የእርስዎን በተሻለ የሚያንጸባርቀውን ቁጥር በመከብብ እባክዎን ለጥያቄዎች መልስ ለመስጠት ይሞክሩ።

1. አዎ, 2. አይደለም

1	ብቻህን በትክክል ኮምፒውተር መክፈትና መዝጋት ትችላለህ/ሽ?	1. አዎ
---	---------------------------------------	-------

		2. አይደለም
2	መሰረታዊ የማይክሮሶፍት ማዛመኛን ለምሳሌ ማይክሮሶፍት ኤክሴል፣ ፖወር ፖንቲ፣ በራስህ መጠቀም ትችላለህ/ሽ?	1. አዎ 2. አይደለም
3	ከኢንተርኔት ላይ ብቻህን መረጃ መፈለግ፣ ማግኘት፣ ማውረድ ትችላለህ/ሽ?	1. አዎ 2. አይደለም
4	ዲጂታል መረጃ ለምሳሌ ጽሑፍን፣ ምስሎችን፣ አዲሱ አናቪዲዮን በራስህ ኮቲ፣ ካት፣ ፐስት ማድረግ ትችላለህ/ሽ?	1. አዎ 2. አይደለም
5	እንደ ጽሑፍ፣ ምስሎች፣ ቪዲዮ አዲሱ የዲጂታል መረጃዎችን መላክ ትችላለህ/ሽ?	1. አዎ 2. አይደለም

ክፍል ሶስት- በኤሌክትሮኒክስ የህክምና መዝገብ(EMR) አጠቃቀም ረገድ ጠቃሚነት የተንጸባረቀበትና የተስተዋለበት						
መመሪያ:- የእርስዎንየአጠቃቀም ቀላልነት በተሻለ የሚያንጸባርቀውን ቁጥር በመከብብ እባክዎን ለጥያቄዎች መልስ ለመስጠት ይሞክሩ 1= በጥብቅ አልሰማማም 2=አልሰማማም 3=እምብዛም 4=እስማማለሁ5=በጥብቅ እስማማለዉ.						
1	የ EMR ስርዓት(የኤሌክትሮኒክስ የህክምና ምዝገባ በእለት ተግባራት ውስጥ የተዋሃደ ነው	1	2	3	4	5
2	በ EMR ስርዓት የተሰጠ መረጃ ሥራዬን ቀለል ያደርገዋል	1	2	3	4	5
3	የሚያስፈልገኝን መረጃ ማግኘት እችላለሁ	1	2	3	4	5
4	ሁሉንም መረጃ በሚያስፈልገኝ ጊዜ ማግኘት እችላለሁ	1	2	3	4	5
5	መረጃው ሁሌም የተሻሻለ(updated) ናቸው	1	2	3	4	5
6	የመዝገብኳቸው መረጃዎች በሽተኞችን ለመንከባከብ አስፈላጊ ናቸው	1	2	3	4	5
7	ስለ የተመዘገበ መረጃ አስተማማኝነት እርግጠኛ ነኝ	1	2	3	4	5
8	ኢኤምአርን(EMR) መጠቀም የሕክምና አሰራሬን ያሻሽላል	1	2	3	4	5
9	ኤሌክትሮኒክስ የህክምና መዝገብ ስርዓት(EMR) እንዴት መጠቀም እንደሚቻል ለመማር ቀላል ነው	1	2	3	4	5
10	ኤሌክትሮኒክስ የህክምና መዝገብ ስርዓት(EMR) መጠቀም ቀላል ነው	1	2	3	4	5
11	ያሰብከውን/ሸዉን ሥራ እንዴት ማከናወን እንደሚቻል ማወቅ ቀላል ነው	1	2	3	4	5
ክፍል አራት፡ ለኢኤምአር(EMR) ያለው አመለካከት						
መመሪያ:- የእርስዎንአመለካከት በተሻለ የሚያንጸባርቀውን ቁጥር በመከብብ እባክዎን ለጥያቄዎች መልስ ለመስጠት ይሞክሩ						

1= በጥብቅ አልስማማም 2=አልስማማም 3=ኢምቢዛም 4=ኢስማማለሁ 5=በጥብቅ ኢስማማለዉ.						
1	ኢኤምአር(EMR) ልምምድና ምርታማነትን ይጨምራል(ማለት) ታማሚዎች/ቀን።	1	2	3	4	5
2	ኢኤምአር(EMR) የስራ ጥራትን ሊያሻሽል ይችላል	1	2	3	4	5
3	ኢኤምአር(EMR) የህክምና ጥራትን ሊያሻሽል ይችላል	1	2	3	4	5
4	ኢኤምአር(EMR) የአኔንቦሥራዬ ውጤታማ መሆን ያሻሽላል	1	2	3	4	5
5	ኤምአር(EMR) የህክምና ስህተቶችን ሊቀንስ ይችላል.	1	2	3	4	5
6	EMR ለስልጠና ተጨማሪ ጊዜ ያስፈልገዋል?	1	2	3	4	5
7	የኢኤምአር(EMR)ጥቅሞች ከወጪዎቹ ይበልጣል	1	2	3	4	5
8	ኤምአር(EMR) በአገልግሎት ወጪ ላይ ተጽዕኖ ያሳድራል	1	2	3	4	5
9	EMR የታካሚ መረጃ ምስጢራዊነትን ማሻሻል ይችላል	1	2	3	4	5
10	EMR የታካሚን ተቀባይነት ሊጨምር ይችላል	1	2	3	4	5
11	EMR የታካሚዎችጥበቃ ጊዜን ሊቀንስ ይችላል	1	2	3	4	5
12	EMR በወረቀት ላይ የተመሰረተ የመዝገብ ስርዓት የበለጠ ውስብስብ ነው	1	2	3	4	5
13	EMR ከሥራ ባልደረቦች ጋር ያለውን ግንኙነት ያሻሽላል	1	2	3	4	5
14	EMR የጤና ባለሙያዎችን ወቅታዊ እውቀት እንዲያገኙ ያሻሽላል	1	2	3	4	5
15	EMR ስህተቶችን ለማስወገድ ይረዳል	1	2	3	4	5
16	EMR በሰፊው መተግበር አለበት	1	2	3	4	5

ክፍል አምስት: የኢኤምአር(EMR) እውቀት				
መመሪያ: እባክዎ የእርስዎን የስምምነት ደረጃ ደረጃ የሚያንፀባርቀውን ቁጥር በመክበብ ጥያቄዎችን ለመመለስ ሞክሩ።				
1. አዎ, 2. አይደለም				
ቁ	ጥያቄ	የጥያቄ ምላሽ	ኮድ	ዝለል
1	በታካሚዎች እና በዶክተሮች መካከል የሚደረግ ግንኙነት በ EMRs በኩል ይቻላል?	1. አዎ 2.አይደለም		
2	የታካሚዎች ምርመራዎች እና ሌሎችም በ EMR በኩል ሊመዘገቡ ይችላሉ	1. አዎ 2.አይደለም		
3	EMR በማንኛውም ጊዜ የታካሚ አስፈላጊ ምልክቶችን ለመመዝገብ ጥቅም ላይ ሊውል ይችላል	1. አዎ 2.አይደለም		
4	የ EMR አገልግሎት አላስፈላጊ ሪፈራሎችን እና የመጓጓዣ ወጪዎችን ሊቀንስ ይችላል	1. አዎ 2.አይደለም		

5	EMR ሥር የሰደደ በሽታ፣ ተላላፊ እና ተላላፊ ያልሆኑ በሽታዎች የህዝብ ጤና ጉዳዮችን ለመቆጣጠር አስፈላጊ ነው	1. አዎ 2. አይደለም		
6	የኮምፒውተር ቴክኖሎጂ፣ ቴሌኮሙኒኬሽን ቴክኖሎጂ እና የጤና አጠባበቅ ቴክኖሎጂ በ EMR ውስጥ መጠቀም ይቻላል	1. አዎ 2. አይደለም		
7	የ EMR መተግበሪያ ለርቀት ታካሚ እንክብካቤ በተለይ ለሽማግሌዎች እና ለአካል ጉዳተኞች አስፈላጊ ነው	1. አዎ 2. አይደለም		
8	EMRs ታካሚዎችን እና የጤና ባለሙያዎችን የጤና ችግሮችን ለመቆጣጠር ለማስተማር ጠቃሚ ነው	1. አዎ 2. አይደለም		
9	EMR የጤና አገልግሎቶችን ጥራት እና ተደራሽነት ማሻሻል ይችላል	1. አዎ 2. አይደለም		
10	EMR የታካሚ እንክብካቤ ውሳኔ አሰጣጥ ላይ ሊረዳ ይችላል። (ለምሳሌ የመድኃኒት አለርጂ ማሳወቂያዎች እና ማስጠንቀቂያዎች)	1. አዎ 2. አይደለም		

ክፍል ስድስት: EMRን ለመጠቀም የጤና ባለሙያዎች ፈቃደኝነት				
እባክዎ የእርስዎን የስምምነት ደረጃ የሚያንፀባርቀውን ቁጥር በመክበብ ጥያቄዎችን ለመመለስ ሞክሩ				
	የጥያቄ ምላሽ	የጥያቄ ምላሽ	ኮድ	ዝልል
1	ለ EMR ስርዓት የግል ኮምፒውተርን ለመጠቀም ፈቃደኝነት	1. አዎ 2. አይደለም		
2	የ EMR ስርዓት አጠቃቀም የኮምፒውተር ስልጠና ለመውሰድ ፈቃደኝነት	1. አዎ 2. አይደለም		
3	በትክክል ከሰለጠነ የ EMR ስርዓትን ለታካሚ አገልግሎት ለመጠቀም ፈቃደኝነት	1. አዎ 2. አይደለም		
4	ሙሉ ቁሳቁስ ካለ የ EMR ስርዓት ለመጠቀም ፈቃደኝነት	1. አዎ 2. አይደለም		

ክፍል ሰባት: EMR ተቀባይነት ለማግኘት ዋና ዋና መስናክሎች እና አስተባባሪዎች						
መመሪያ: እባክትን በዲግሪው መሰረት ቁጥሩን በመክበብ ጥያቄዎችን ለመመለስ ይሞክሩ የችግሩ ክብደት 1= ቀላል ችግር 2=መካከለኛ 3=ገለልተኛ 4=ይበልጥ ከባድ 5= በጣም ከባድ ችግር						
1	የአይቲ ሰራተኞች ኢናይዘር አስተዳዳሪ እጥረት እና	1	2	3	4	5
2	ደካማ አስተዳደር እና ድጋፍ ክትትል	1	2	3	4	5
3	የመሳሪያዎች እና አቅርቦቶች እጥረት (ለምሳሌ ኮምፒውተሮች)	1	2	3	4	5

4	የኃይል እና የስርዓት ግንኙነት መለዋወጥ(connection fluctuation)	1	2	3	4	5
5	እንደ ግላዊነት እና ሚስጥራዊነት ያሉ ሀጋዊ ጉዳዮች የታካሚ መረጃ	1	2	3	4	5
6	የሰው ሃይል እጥረት	1	2	3	4	5
7	የጥገና ወጪ	1	2	3	4	5
8	ደካማ በይነገጽ	1	2	3	4	5

II: ቁልፍ መረጃ ሰጪ የቃለ መጠይቅ መመሪያ

ክፍል አንድ: ለቁልፍ መረጃ ሰጪዎች የቃለ መጠይቅ መመሪያ።

1. ኮድ ቁጥር _____
2. የጠያቂ ስም _____
3. የጤና ተቋም ስም _____
4. እድሜ (በአንድ አመት) _____ ጾታ _____
5. የባለሙያ ምድብ _____
6. ደረጃ _____
7. የ EMR ፕሮጀክት የተሳካ ወይም ያልተሳካ? ወይም የተወሰነ ጥምረት ነው? ስኬትን የተገነዘቡበት እና እንደ ውድቀት የሚቆጠርበት ይግለጹ።
8. በድርጅትዎ EMR ውስጥ ምን ተጨማሪ ባህሪያት ይጎድላሉ?
9. ድርጅቱ ለኤሌክትሮኒካዊ የህክምና መዝገብ ስርዓት በቂ በጀት አለው?
10. የጤና አጠባበቅ አቅራቢዎች ይህንን ስርዓት (ኤሌክትሮኒካዊ የህክምና መዝገብ) ለመጠቀም እምቢ ይላሉ? ለምን?
11. የተፈለገው የ EMR ተጽእኖ እውን ሆኗል? መቼ ነው ሙሉ የሚጠብቁት ተጽዕኖ እውን ይሆናል ብሎ የሚጠብቁት?
12. የ EMR ስርዓትን ያስጀመሩ ድርጅቶች ወቅታዊ ጥገና ድጋፍ ይሰጣሉ
13. በሶፍትዌሩ ውስጥ የጠፋ ተግባር አለ?
14. ተቋሙ የሰነድ ስክሪኖችን/አብነቶችን ማሻሻል ይችላል ወይንስ ሻጭ ቴክኒክን ተመድቧል?
15. ሆስፒታሉ ደረጃውን የጠበቀ EMR ማንዋል እንደ SOP እናለእንክብካቤ ቀጣይነት ተፈጻሚነት ያለው መመሪያ አለው?
16. በሆስፒታልዎ/በጤና ጣቢያዎ ውስጥ የኤሌክትሮኒካዊ ህክምናን አጠቃቀም እና እድገት ለማሻሻል ምን ስልቶችን ተጠቅመዋል?
17. በጤና እንክብካቤ አቅራቢዎች EMRን ለመጠቀም የሚያነሷቸው ዋና ዋና መሰናክሎች ምንድን ናቸው?
18. ከላይ የተጠቀሱትን ችግሮች ለመፍታት ሊሰሩ የሚችሉ መፍትሄዎችን ምን ይጠቁማሉ?

መጠይቁን ስለጨረሱ በጣም እናመሰግናለን!

Annex V: Ethical Clearance Documents



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

Version January, 2025

Date: / 22 / 01 / 2025 /
Ref. No. SPH/ 452/2025

Project number / 001 /

Date of approval (D/M/Y) 22/01/2025	
Project Title: "Acceptance of electronic medical record system and associated factors among health professionals working at public health facilities in Addis Ababa, Ethiopia: a mixed methods approach"	
Name of PI Amanuel Adisu	Phone Number
Institution	School of Public Health
Department	EPI-BIO
Decision of Research and Ethics Committee:	☒ Approved ☐ Approved with Recommendation ☐ Resubmission ☐ Disapproved
Valid until	January, 2025 - July, 2025

Dean, School of Public Health

Signature

Date

for [Signature]
22 / 01 / 2025





ጥር 21 ቀን 2017 ዓ.ም
ቁጥር ኢ.ፒ.ዲ.ባዮ/273/17

ሰ: ጤና ቢሮ
አዲስ አበባ

ጉዳይ: ትብብር ስለ መጠየቅ

በአዲስ አበባ ዩኒቨርሲቲ፣ የሕብረተሰብ ጤና ት/ቤት የሁለተኛ ዓመት ኢ.ፒ.ዲ.ሚ.ዎ.ሐ.ሂ. እና ባዮስታቲስቲክስ የማስተርስ ተማሪ የሆነው አማኑኤል አዲሱ የመመረቁ ድህረ ጽሑፉን "Acceptance of electronic medical record system and associated factors among health professionals working at public health facilities in Addis Ababa Ethiopia a mixed methods approach" በሚል ርዕስ ለመስራት በገገጅት ላይ ይገኛል። ስለሆነም በትምህርት ምዕራፍ የጽሑፍ ደብዳቤ እንድንጽፍለት በጠየቀው መሰረት በክፍት በኩል እስኪገኝው ትብብር አገልግሎት ስጧል እጠየቃለሁ። ለሚደረግለት ትብብር ከወዲሁ እናመሰግናለን።

ከወላም

P/C ሰይጣን
የትምህርት



+251-11-1-8553827

Public.health@aaau.edu.et

aaau.edu.et

SEEK WISDOM, ELEVATE YOUR INTELLECT, AND SERVE HUMANITY



በኮልፌ ቀራንዮ ክፍለ ከተማ አስተዳደር ጤና ጽ/ቤት

KOLFE KERANIO SUB-CITY HEALTH OFFICE



ቁጥር፡ኮ/ቀ/ጤ/ጽ/ቤ/---177/8

ቀን፡10/6/2017 ዓ.ም

በኮልፌ ቀራንዮ ክፍለ ከተማ ጤና ጽ/ቤት

- ለወረዳ 4 ጤና ጣቢያ/አለም ባንክ
- ለወረዳ 6 ጤና ጣቢያ

አዲስ አበባ

ጉዳዩ፡ለጥናታዊ ጽሁፍ የመረጃ ትብብርን ይመለከታል፡፡

አዲስ አበባ ከተማ አስተዳደር ጤና ቢሮ በቁጥር 051/17 በቀን 10/6/2017 በዓፈላን ደብዳቤ ለ አማኑኤል አዲሱ «ACCEPTANCE OF ELECTRONIC MEDICAL RECORD SYSTEM AND ASSOCIATED FACTORS AMONG HEALTH PROFESSIONALS WORKING AT PUBLIC HEALTH FACILITIES IN ADDIS ABABA, ETHIOPIA: A MIXED METHODS APPROACH» በሚል ርዕስ ጥናት ለማድረግ ወረዳችሁ በጥናቱ ስለተመረጠ ለሚመጣው አጥኝ ቡድን አስፈላጊውን ትብብር እንድታደርጉላቸው እንጠይቃለን፡፡



ከሰላምታ ጋር

ስዩም ወንዳፍራሽ
ስለ ሪሰርች ፎካል

ግልባጭ፡

- ለ አማኑኤል አዲሱ
- ጤና ጽ/ቤት



በአዲስ ከተማ ክፍለ ከተማ አስተዳደር
ADDIS KETEMA SUB-CITY ADMINISTRATION
የጤና ፅ/ቤት
HEALTH OFFICE



ቁጥር አ/ከ/ከ/ጤ/ጽ/ቤት 1550-2017 ዓ.ም

ቀን 25/6 2017 ዓ.ም

አዲስ ከተማ ክ/ከተማ ጤና ፅ/ቤት

ሰነድ ጤና ጣቢያ

ጉዳዩ፡- ትብብር እንዲደረግላቸው ስለመጠየቅ

ከላይ በርእሱ ለመግለፅ እንደተሞከረው አማካኝነት አዲስ (acceptance of electronic medical record system and associated factors among health professional workers at public health facility in ADDIS ABABA HEALTH INSTITUTION) በሚል ርዕስ ለጥናታዊ ጽሑፍ የሚረዳ መረጃ እንዲሰጠው ከአዲስ አበባ ጤና ቢሮ በደብዳቤ A/A/128/17 በተጻፈ ደብዳቤ ስለጠየቁ በአንገት በኩል ትብብር እንዲደረግላቸው እንጠይቃለን፡፡

ግልባጭ

➤ ለ አማካኝነት አዲስ



መከተለው አዲስ አበባ
የጤና አገልግሎት ጽ/ቤት
Mekot Misumale
Medical Services

መልስ ሲጽፉልን ይህን ኢሜል አድራሻ ይጠቀሙ addisketemaho@gmail.com



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

REF.N.O. 212/10/12/054/17

DATE 10-6-2017

TO:

- KOLFE KERANIYO SUB CITY HEALTH OFFICE

Subject: Request to access Facilities to conduct approved research

This letter is to support AMANUEL ADISU to conduct research which is entitled as "ACCEPTANCE OF ELECTRONIC MEDICAL RECORD SYSTEM AND ASSOCIATED FACTORS AMONG HEALTH PROFESSIONALS WORKING AT PUBLIC HEALTH FACILITIES IN ADDIS ABABA, ETHIOPIA: A MIXED METHODS APPROACH ." The study proposal was duly reviewed and approved by the Addis Ababa Health Bureau procedures, and submit an activity progress report to the Ethical Committee as required. Therefore, we request the facility and staffs to provide support to the principal investigator.



Cc

- AMANUEL ADISU
- ETHICAL CLEARANCE COMMITTEE

With Regards
Ethical Clearance Committee
212/10/12/054/17
የህብረተሰብ ጤና ፖርትፖል
ቡድን መ/ሪ



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

REF.N.O. 24/12/128/17

DATE 25-6-2017

TO:

- ADDIS KETEMA SUB CITY HEALTH OFFICE

Subject: Request to access Facilities to conduct approved research

This letter is to support AMANUEL ADISU to conduct research which is entitled as "ACCEPTANCE OF ELECTRONIC MEDICAL RECORD SYSTEM AND ASSOCIATED FACTORS AMONG HEALTH PROFESSIONALS WORKING AT PUBLIC HEALTH FACILITIES IN ADDIS ABABA, ETHIOPIA: A MIXED METHODS APPROACH ." The study proposal was duly reviewed and approved by the Addis Ababa Health Bureau procedures, and submit an activity progress report to the Ethical Committee as required. Therefore, we request the facility and staffs to provide support to the principal investigator.



With Regards

Ethical Clearance Committee

- AMANUEL ADISU
- ETHICAL CLEARANCE COMMITTEE



AMANUEL ADISU

HEALTH INFORMATICS
PROFESSIONAL
MPH STUDENT SPECIALIZING IN
EPIDEMIOLOGY & BIOSTATISTICS

PERSONAL INFORMATION

Full Name

→ Amanuel Adisu Tadasa

Date of birth

→ February 26, 2000

Place of birth

→ Dale Sadi

Gender

→ Male

Nationality

→ Ethiopia

Health Status

→ Healthy

CONTACT

 **Address:** Addis Ababa, Ethiopia
 **Phone Number:** +251934019201
 **P.O. BOX:** 22372
 **E-mail:** amanueladisu17@gmail.com

PROFILE

My name is Amanuel Adisu. I graduated with a Bachelor of Science in Health Informatics from Mattu University on July 2, 2022, G.C. I am a young, passionate, dedicated, and energetic graduate who is eager to get a job and be committed to accomplishing all duties with honesty and bearing responsibility.

I would love to help the institution to achieve its mission with great interest. I am highly numerate, and computer literate, ensuring increased team productivity and I can learn and adapt quickly to new tasks.

OBJECTIVE

- To find a position to meets my competencies, capabilities, skills, and education.

EDUCATION BACKGROUND

Year	School	Institution	Certification
2018-2022	Undergraduate	Mettu University	BSc. Degree
2016-2018	Preparatory	Dalle Sedi Preparatory School	EUEE Certificate
2014-2016	High School	BESS	EGSE Certificate
2007-2014	Primary school	If a Haro Primary School	G-8 RE Certificate

QUALIFICATION

- Bachelor of Science (BSc.) in Health Informatics from Mattu University with CGPA 3.97 in 2014 E.C.

WORK EXPERIENCE

- 6 months of work experience at Bonga University as a Graduate Assistant (one of Ethiopian higher education).

RESEARCH/PROJECT EXPERIENCE

RESEARCH TITLE

- **Acceptance Of Electronic Medical Record System and Associated Factors Among Health Professionals Working at Public Health Facilities in Addis Ababa, Ethiopia, 2024/25**

→ Currently working in Partial fulfillment of the requirement for the master's degree.

PROJECT TITLE

- **Web-based Vital Event Registration System for Mettu Town Vital Event Registration office, Mettu, Southwestern, Ethiopia, 2022**

→ My Original work in Partial fulfillment of the requirement for the bachelor's degree.

PERSONAL SKILLS

- ✚ **Computer Skills:** MS Word, MS Excel, MS PowerPoint
- ✚ **Analytical Skills:** Statistical Software like SPSS, Stata, EPI info, and Data collection tools like ODK and Kobo Toolbox.
- ✚ **Basic Programming language:** C++, Java, SQL and JavaScript
- ✚ **Creative and technical skills:** video Editing and Graphics Design
- ✚ **Good Interpersonal skill**

LANGUAGE SKILLS

Language	Listening	Writing	Reading	Speaking
English	Excellent	Excellent	Excellent	Excellent
Afaan Oromo	Excellent	Excellent	Excellent	Excellent
Amharic	Excellent	Very Good	Excellent	Very Good

HOBBIES

- ✚ **Reading books**
- ✚ **Listening to Music**
- ✚ **Video Editing**
- ✚ **Graphics Designing**
- ✚ **Helping and motivating others**

REFERENCES

1. **Mr. Shuma Gosha (MPH)** Head Department, Mettu University
Mobile: +251935054730
Email: shumagosha22@gmail.com
2. **Mr. Diriba Kumera (MPH)** My mentor and Advisor, at Mettu University
Mobile: +251935806734
Email: dkumar45210@gmail.com
3. **Mr. Mathewos Alemu (MPH)** Dean, College of Health Science, Bonga University
Mobile: +251917784364
Email: alemumathewos2017@gmail.com

Amanueal_thesis.docx

ORIGINALITY REPORT

19%	17%	12%	4%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	etd.aau.edu.et Internet Source	4%
2	www.researchsquare.com Internet Source	1%
3	Mulugeta Desalegn Kasaye, Nebyu Demeke Mengestie, Sara Beyene, Natnael Kebede, Habtamu Setegn Ngusie, Mulugeta Hayelom Kalayou. "Acceptance of electronic medical records and associated factor among physicians working in University of Gondar comprehensive specialized hospital: A cross-sectional study", DIGITAL HEALTH, 2023 Publication	1%
4	www.researchgate.net Internet Source	1%
5	assets.researchsquare.com Internet Source	1%
6	www.frontiersin.org Internet Source	1%
7	pmc.ncbi.nlm.nih.gov Internet Source	1%
8	Submitted to Dire-Dawa University Student Paper	<1%
9	Submitted to Addis Ababa University Student Paper	<1%
10	bmcmedinformdecismak.biomedcentral.com Internet Source	