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Addis Ababa University
College of Health Sciences
School of Medicine
Department of Family Medicine

Exploring Patient Perspectives On Telehealth Services And Barriers To Access Among Patients With Chronic Medical Conditions Attending Follow-Up Clinics At ALERT Comprehensive Specialized Hospital, Addis Ababa, Ethiopia.

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A final thesis to be submitted to the Department of Family Medicine, School of Medicine, College of Health Sciences, Addis Ababa University, in partial fulfillment of the requirement for the specialty certificate in family medicine

January 2025.

Approval sheet

This thesis by Wendu Mitiku Ebba has been approved by the examiners as meeting the requirement for the specialty certificate in family medicine.

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Declaration Of The Author

I, Wendu Mitiku Ebba, hereby declare that my thesis work titled "Exploring Patient Perspectives on Telehealth Services and Barriers to Access among Patients with Chronic Medical Conditions Attending Follow-Up Clinics at ALERT Comprehensive Specialized Hospital, Addis Ababa, Ethiopia" is entirely my original work. No part of this research work has been used to obtain any other degree or award. The sources of information consulted for this study are appropriately acknowledged. I have also followed the ethical guidelines throughout the research procedure.

Signature: _____ January 2025.

Acknowledgment

I would like to thank the Department of Family Medicine at Addis Ababa University for the opportunity to conduct such interesting research. Next, I should humbly express my appreciation to my mentors and advisors, Dr. Assegid Geleta and Dr. Eden Habtemariam, for their support and guidance. I would also like to extend my appreciation to the research participants for devoting their time and providing valid information for this study. Last but not least, I would like to thank my friends and family for their unwavering support throughout my training and completion of this thesis work.

Abstract

Background: Telehealth service has become a game-changing development in the management of chronic diseases. It allowed consultations, monitoring, and increased access to health services remotely. Evidence on the perspective of patients and barriers to telehealth use among patients with chronic medical illnesses, however, is scant in Ethiopia.

Objective: The aim of this study, therefore, is to assess patients' perceived views about the telehealth service, barriers to access, and the factors affecting its understanding, utilization, and satisfaction among patients attending follow-up clinics for chronic medical conditions in ALERT Comprehensive Specialized Hospital, Addis Ababa, Ethiopia.

Methods: The design adopted is a mixed-method cross-sectional study in which the structured quantitative survey is combined with qualitative, in-depth interviews. The overall sample included 280 stratified randomly selected patients with chronic conditions. Quantitative data analysis was done through descriptive statistics and logistic regression, whereas thematic analyses were carried out for qualitative data.

Results: The use of telehealth services was high, with 81.8% of the respondents using the service, and it was done mainly by phone consultations at 55%. Satisfaction was strong, with 82.1% rating their experience positively. Qualitative findings identified the value of telehealth in avoiding travel, saving time, and improving access, especially for rural and low-income participants. The critical barriers included a lack of awareness, followed by limited access to technology and digital literacy. Occupation and income have turned out to be strong predictors of understanding, utilization, and satisfaction regarding telehealth. The category with the highest odds in the usage of telehealth was self-employed (AOR = 46.919, 95% CI: 8.724–252.349). Younger age and urban residence are positively associated with better understanding. Income, education, and employment significantly affect satisfaction, where higher socioeconomic classes are associated with more satisfaction.

Conclusion: Although telehealth shows potential to improve chronic disease management in Ethiopia, some huge barriers do stand in its way. Digital literacy, affordability, and technological infrastructure, along with promotion and patient education, must be considered as targeted approaches to ensuring equal access to telehealth.

Keywords: Telehealth, Patient perspectives, Barriers, Satisfaction

Table Of Contents

Approval sheet.....	1
Declaration Of The Author.....	2
Acknowledgment.....	3
Abstract.....	4
Table Of Contents.....	5
List of Tables and Figures.....	7
List Of Acronyms.....	8
1. Introduction.....	9
1.1. Background.....	9
1.2. Statement of the Problem.....	9
1.3. Significance of the study.....	10
2. Literature Review.....	12
2.1. Introduction.....	12
2.2. Telehealth in Chronic Disease Management.....	12
2.3. Barriers to Telehealth Adoption in Chronic Disease Management.....	13
2.4. Telehealth and its Implementation in Ethiopia.....	14
2.5. Patient Perspectives and Satisfaction with Telehealth Services.....	15
Conceptual Framework.....	16
3. Objectives.....	17
3.1. General objective.....	17
3.2. Specific objectives.....	17
4. Methods.....	18
4.1. Study area and period.....	18
4.2. Study design.....	18
4.3. Source population.....	18
4.4. Study population.....	18
4.5. Inclusion and exclusion criteria.....	19
4.6. Variables.....	19
4.7. Sample size determination.....	20
4.8. Sampling procedure.....	22
4.9. Data collection instrument.....	22
4.10. Data analysis and processing.....	22
4.11. Data quality management.....	23
4.12. Operational definitions.....	23
4.13. Ethical consideration.....	24
4.14. Dissemination plan.....	24
5. Results.....	25
5.1. Socio-demographic profile of the respondents.....	25
5.2. Awareness of participants regarding telehealth services.....	25

5.3. Participants' rating of their understanding of telehealth services.....	28
5.4. Participants' satisfaction with the telehealth services.....	28
5.5. Trends in the use of telehealth services.....	29
5.6. Attitude and perception towards telehealth services.....	32
5.7. Barriers and concerns against the use of telehealth services.....	33
5.8. Factors affecting understanding, use, and satisfaction with telehealth.....	36
5.9. Suggested Improvements.....	40
6. Discussion.....	42
7. Strengths and Limitations.....	45
8. Conclusion.....	46
9. Recommendations.....	47
References.....	48
Annex-1: Consent and Information Sheet.....	50
Annex-2: Questionnaire.....	51
Annex-3: Interview Guide.....	57
Annex-4: የግንዛቤ እና ፈቃደኝነት መጠየቂያ ቅጽ.....	59
Annex-5: የአማርኛ መጠይቅ.....	60
Annex-6: የቃለ መጠይቅ መመሪያ.....	66
Annex-7: Ethical Clearance.....	68

List of Tables and Figures

Figures

<u>Figure 1: Illustration of the conceptual framework for the patient perspectives on telehealth services and the barriers to access</u>	16
<u>Figure 2: Respondents' rating of their own understanding regarding telehealth</u>	28
<u>Figure 3: Participants' satisfaction with telehealth services they accessed</u>	29
<u>Figure 4: Compelling reasons for telehealth services use</u>	31
<u>Figure 5: Attitude and perceptions towards telehealth services</u>	32
<u>Figure 6: Cost and Language as barriers to telehealth service use among respondents</u>	34
<u>Figure 7: Barriers to telehealth services use reflected by respondents</u>	35
<u>Figure 8: Concerns regarding the use of telehealth services</u>	35
<u>Figure 9: Suggested improvements by respondents regarding telehealth services</u>	41

Tables

<u>Table-1: Socio-demographic profile of respondents</u>	26
<u>Table 2: Chronic conditions and awareness of telehealth services among respondents</u>	27
<u>Table 3: Pattern of telehealth services used by respondents</u>	30
<u>Table 4: Factors affecting telehealth use among respondents</u>	37
<u>Table 5: Factors affecting understanding and satisfaction with telehealth services</u>	38

List Of Acronyms

ALERT: Africa Leprosy, Tuberculosis, Rehabilitation, and Training

NCD: non-communicable diseases

CVD: cardiovascular diseases

COPD: Chronic obstructive pulmonary disease

COVID-19: Coronavirus Disease 2019

DM: Diabetes Mellitus

ICT: Information and Communication Technology

IRB: Institutional Review Board

mHealth: Mobile Health

PI: Principal Investigator

SDGs: Sustainable Development Goals

SPSS: Statistical Package for the Social Sciences

UHC: Universal Health Coverage

WHO: World Health Organization

1. Introduction

1.1. Background

Telehealth services are a subset of health services that are delivered, accessed, and managed through digital information and communication technologies. Generally, these interventions are equivalent to in-person care, but their impact on other service uses is not well understood.[\[1\]](#)

Telehealth consultations mean having a flexible platform in the management of chronic diseases; follow-up sessions are possible regarding patient progress due to new diets, medications, or changes in treatment. They also include telebehavioral care and therapy, which will be very useful in the regular follow-up of patients with chronic conditions such as cancer, rheumatological diseases, diabetes, and migraines. Furthermore, telehealth allows healthcare practitioners to explain laboratory or imaging results, assist patients in the use of remote monitoring equipment, and conduct diet and fitness coaching—all enhancements to patient care and access.

There is no clinical difference between synchronous telemedicine and in-person therapy for chronic conditions like congestive heart failure and type 2 diabetes. Several studies have used telehealth as an alternative to in-person care, implying its potential benefits. A recent comprehensive study found that NCDs affect about one-third of Ethiopians, with cardiovascular disease being the most common. Respiratory problems are very prevalent, and the frequency of diabetes mellitus is increasing. There is increased evidence that the use of digital technologies could improve the management of these conditions. [\[2,3\]](#)

The large number of patients and the wide range of communities that chronic follow-up clinics at hospitals like ALERT Comprehensive Specialized Hospital must address put a considerable strain on their capabilities and resource demands. Several patients have had to travel a long way to attend these clinics, often merely to get a prescription refill. Telehealth might help ease this burden by providing remote monitoring, follow-ups, and consultations. This could potentially help reduce patient loads in physical clinics and improve treatment accessibility, helping to improve chronic illness management.

1.2. Statement of the Problem

With increasing chronic medical conditions in our country, there is a lot of difficulty faced by patients in getting consistent and effective care. The large number of patients seen coupled

with the wide geographical region taken in has overburdened the chronic follow-up clinics of institutions like ALERT Comprehensive Specialized Hospital. This leads to many patients having to travel quite frequently over long distances for basic treatment, such as medication refills.

Telehealth services can help solve these problems by allowing consultations and monitoring from a distance, saving patients from travel and easing the pressure on healthcare facilities. However, little is known about patients' experiences of telehealth and the challenges they face while accessing these services. The aim of this study is to address the existing lack of understanding of the acceptability, accessibility, and effectiveness of telehealth among our patients for the management of chronic illness in settings like ours. This study will, therefore, establish patient views about telehealth services and barriers to the use of the services among patients with chronic diseases attending follow-up clinics at ALERT Comprehensive Specialized Hospital. These are the crucial factors to understand if we are to improve telehealth interventions and healthcare delivery enhancement regarding chronic illness management in Ethiopia.

1.3. Significance of the study

Recently, there has been a growing presence of electronic health platforms in the Ethiopian healthcare industry, which have major potential to transform service delivery. A few of them, like the WeCare ET, currently offer teleconsultation services that enable their clients to schedule consultations with physicians of their choice from the comfort of their houses using mobile devices. This is a giant leap in healthcare access, especially for those far away or with an inability to see medical facilities. The platforms offer not only direct access to the practitioners but also give the professional an avenue to showcase his practice and knowledge, expanding their reach. Besides teleconsultations, several other services have been introduced: ambulance services, homecare support, and counseling services, hence reflecting the expanding scope of digital health in the country.

Despite rapid uptake and potential for these services, there is a considerable lack of data on costs, accessibility, and convenience for Ethiopians. Hardly anything is known about the acceptance of such services by the general public, if indeed such services meet different socioeconomic group needs, for example. The capturing of the experiences and perspectives of models of care by patients and their families is crucial in understanding the current barriers and possibilities for change. Such data collected may inform the development of future

innovations and regulations to ensure that these digital health platforms continue to develop in a way that advances equity, increases access, and leaves no one behind in the transition to digital health.

This study holds immense value on several counts. Primarily, it seeks to add to the literature on perceptions of telehealth services among patients with chronic medical conditions. By determining the barriers and facilitators to accessing telehealth, the research provides critical insights into how these services can be optimized to better meet patient needs, thus improving patient care and accessibility.

For healthcare providers, the study offers valuable information on the effectiveness of telehealth in reducing patient load at physical clinics and managing chronic diseases more efficiently. The findings could help streamline healthcare delivery, reduce patient travel burdens, and alleviate pressure on healthcare facilities, particularly in resource-limited settings.

In terms of contributing to existing knowledge, this study addresses the current gap in understanding the impact of telehealth in the Ethiopian context. It provides empirical evidence on patient experiences and barriers, informing policy and practice to enhance the implementation of telehealth services. The results may have broader implications for healthcare systems across similar settings in Ethiopia and other low-resource environments, potentially guiding future telehealth interventions and improving public health outcomes.

Overall, this research contributes to a more comprehensive understanding of how telehealth can be leveraged to improve chronic disease management, support healthcare infrastructure, and advance healthcare equity in Ethiopia.

2. Literature Review

2.1. Introduction

This section intends to provide an extensive review of the literature on telehealth services, with a particular focus on the management of chronic diseases. The review has focused on the role of telehealth in chronic disease management, patients' perspectives on telehealth, barriers to access telehealth, and implementation of telehealth in low-resource settings. In addition, the review identifies gaps in the literature that this study tries to address.

2.2. Telehealth in Chronic Disease Management

Telehealth is one of the most transformative approaches in the management of chronic diseases and offers substantial benefits in primary care settings. Some of the main advantages of telehealth include improved patient-reported outcomes. According to Saleh et al., interventions with telehealth have been found to be promising for the management of long-term conditions, enhancing patient engagement and satisfaction, which consequently leads to better health outcomes [4].

Furthermore, telehealth is an effective alternative to in-person care for chronic illnesses. Lewinski et al. found that synchronous telehealth consultations produce clinical outcomes as good as those achieved with conventional in-person consultations, particularly for chronic illnesses such as congestive heart failure and type 2 diabetes mellitus [5]. This equivalence means that telehealth can be integrated into chronic disease management without compromising the quality of care.

Self-management is an important aspect of chronic disease management, and telehealth has been shown to be very effective in assisting patients in this respect. Hanlon et al. also found that telehealth interventions enable the safe and effective management of a wide range of conditions, including diabetes, heart failure, asthma, COPD, and cancer [6]. However, they also noted that larger trials were necessary to assess the long-term benefits and possible risks of such interventions.

Marginalized populations often face great barriers to achieving high-quality medical access, and telehealth technology greatly helps in reducing this disparity. Parker et al. did a realist synthesis and systematic review that proved the very significant influence electronic, mobile, and telehealth tools had on the care of chronic diseases within these populations. The

application of these technologies yields increased health outcomes as well as more satisfying patient experiences by making health services convenient and tailored to meet their needs [7]. Nutritional care is another essential component of chronic disease care, and telehealth has been demonstrated to be effective in the delivery of nutritional interventions. Kelly et al. showed that a telehealth-mediated nutrition program can improve dietary quality, increase fruit and vegetable consumption, and reduce dietary sodium intake among adults with chronic diseases. These improvements are particularly critical when managing conditions like hypertension and cardiovascular diseases, and the potential reach of telehealth can thus be considered as far as chronic disease management goes [8].

In summary, the inclusion of telehealth in chronic disease management is a move in a good direction to improve patient care. It facilitates self-management, provides outcomes equal to traditional face-to-face care, and benefits vulnerable populations. With the evolution of telehealth, more studies, especially on a greater scale, are required to maximize its application and advantages.

2.3. Barriers to Telehealth Adoption in Chronic Disease Management

By facilitating remote care and support, telehealth has proven to be a potential method for managing chronic conditions. Nonetheless, several barriers to adoption are present that limit its widespread application and effectiveness. This section outlines the most significant challenges recognized in a number of studies.

There are many challenges to the wide spread of telehealth in the long-term management of chronic illness. These include technological challenges, the relatively impersonal touch of telehealth, a lack of relevance of the content, opposition from healthcare professionals, implementation, and policy issues, as well as challenges related to language and cultural differences, in addition to the hesitancy of patients. Mitigating these barriers through enhanced digital literacy, better-crafted content, education of the providers, long-term funding, and awareness through culturally relevant resources can widely enhance the uptake of telehealth and improve chronic disease patient outcomes.

Challenges in Digital Literacy and Technology

Most patients face technological barriers in the form of limited exposure to digital devices, poor internet connectivity, and a lack of digital literacy. The use of telehealth services is significantly reduced when older adults and individuals with fewer financial resources face challenges around technological familiarity and accessibility [9].

Impersonal Nature of Telehealth

The engagement of patients and their satisfaction with the healthcare they receive may be influenced by their attitudes towards telemedicine. Certain qualitative meta-syntheses infer that ethical issues, shifting interpersonal dynamics, and reorganization of work processes can all have significant effects on the experiences of telehealth users in treating COPD with both desired and undesirable outcomes. Patients become less involved and less satisfied with their care due to their attitude that telemedicine lacks a personal touch [10].

Resistance by Healthcare Providers

Enabling acceptance among staff and overcoming barriers is essential for successful telehealth service implementation. Owing to issues on the effectiveness of telemedicine, professional role changes, and lack of training, frontline staff and healthcare providers might show resistance to using telehealth practices [11].

Implementation and Policy Challenges

Challenges to the integration of telehealth into the traditional status of practice include poor reimbursement mechanisms, the transient nature of funding, and the need for continual financial investment [9].

Language and Culture Barrier

It is reasonable that barriers to telemedicine—unrestricted cell phone usage, easy-to-use technology, and awareness of the idea—may seriously reduce the adoption of telehealth usage for low-income people with chronic diseases and who may have gaps in their care. In addition, a lack of preferred language and cultural modalities in materials related to telehealth could decrease access and effectiveness for patients [12].

Patient Hesitance

Patients sometimes may not have the required knowledge to use these technologies properly and might, initially, resist learning new skills associated with telehealth [9].

2.4. Telehealth and its Implementation in Ethiopia

The improvement of healthcare provision in Ethiopia can potentially gain much from telehealth, specifically by the introduction of telemedicine, especially in rural areas that have limited access to modern medical care. However, there are some barriers to the use of telemedicine in Ethiopia, including organizational, human resource, and infrastructure-related concerns. In spite of these challenges, telemedicine has proven pragmatic usefulness and

benefits, such as reducing congestion in hospitals, saving time and money, and improving the quality of healthcare services.

The primary constraints to the adoption of telemedicine in Ethiopia are insufficient infrastructure and high expenses. These consist of inadequate internet access, a deficiency of required gear, and budgetary limitations. Awareness and preparedness on the part of healthcare professionals play critical roles in integrating telemedicine effectively. Preparation is greatly influenced by elements including computer literacy, internet and computer access, and favorable views on telemedicine [13, 14]. Many health professionals lack the knowledge and skills necessary for the proper application of telemedicine technologies.

Another major factor that prevents telemedicine from sustaining long-term use is the problem of medical staff resistance to change. This encompasses resistance to providing new technology and altering old practices. Multisectoral engagement and e-government preparedness are necessary for the successful deployment of telemedicine. There are two major barriers that prevent or inhibit the uptake of telemedicine: insufficient organizational management and inadequate conducive policies. To ameliorate the barrier, there is a need for adequate organizational frameworks and policies to further operationalize telemedicine initiatives. [15].

2.5. Patient Perspectives and Satisfaction with Telehealth Services

The use of telehealth services has grown, particularly since the COVID-19 epidemic. To improve telehealth delivery and make sure it fits patient needs, it is essential to understand patient opinions and satisfaction with these services.

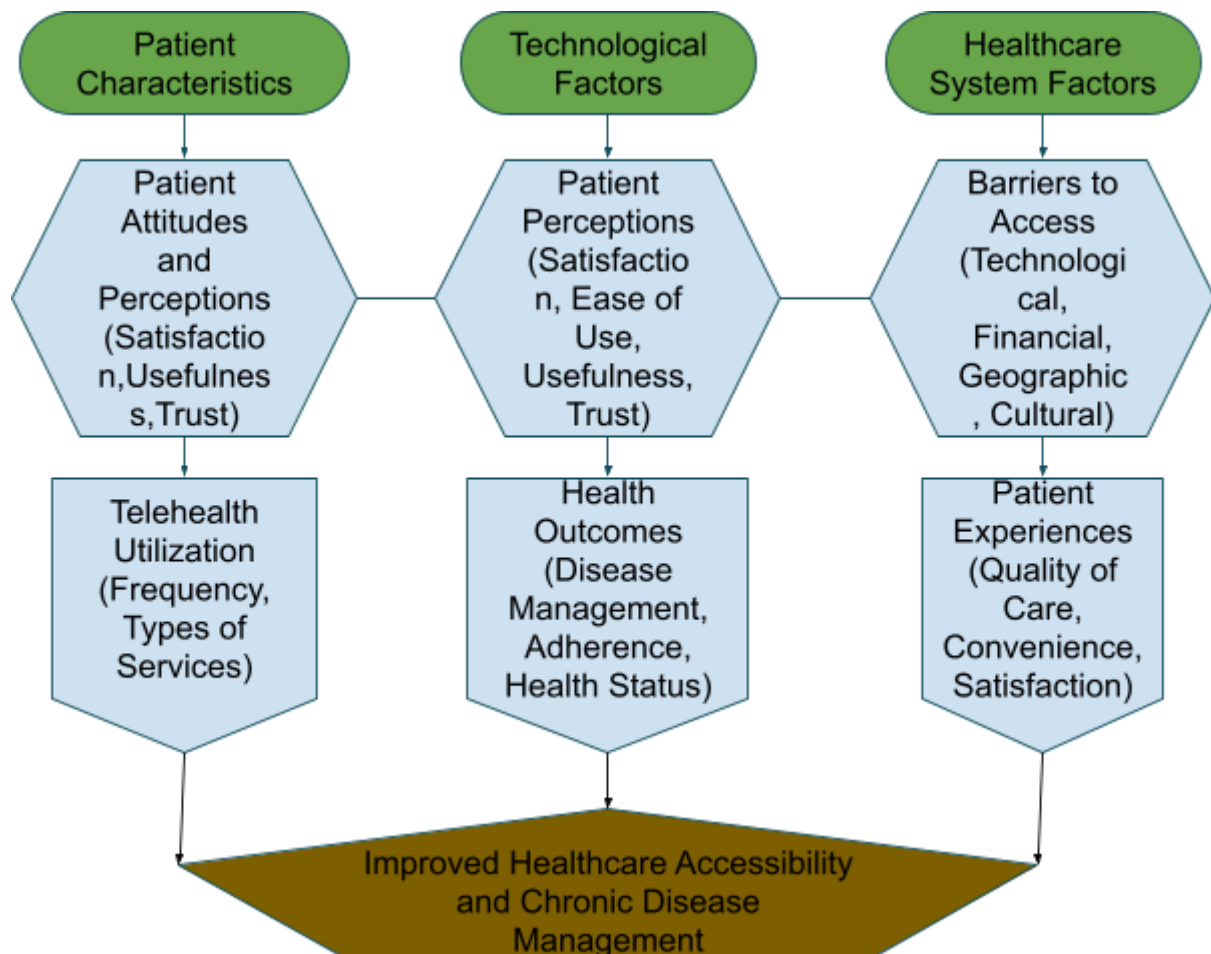
Convenience and perceived quality of treatment are important elements that contribute to patients' high satisfaction with telehealth visits in several Western countries, indicating that telehealth may make care more accessible. Effective communication plays a major role in patients' happiness with telehealth therapy, which they generally view as having high quality [16].

People living in rural and remote areas express high satisfaction with telehealth services, mostly because of eliminating travel and increased access to received care. The factors of convenience, comparative reduction in time commitment, and reduced travel distances are three major reasons for the high regard in which telehealth is held and illustrate its impact on patient satisfaction. Investigating technological hurdles and demographic characteristics will

also assist in achieving equitable access and satisfaction among various patients. Also, exploring patient attitudes in such settings as Ethiopia is vital.

Conceptual Framework

Figure 1: Illustration of the conceptual framework for the patient perspectives on telehealth services and the barriers to access



3. Objectives

3.1. General objective

- ➔ To explore patient views on telehealth service, such as awareness, satisfaction, perception of benefit and challenge, and the barrier to access, while examining the influence of the socio-demographic factors, in order to gather actionable recommendations to improve telehealth services for managing chronic medical conditions at ALERT comprehensive specialized hospital.

3.2. Specific objectives

- ➔ To assess awareness and knowledge about telehealth services in patients with chronic medical conditions attending follow-up clinics in ALERT comprehensive specialized hospital.
- ➔ To measure patient satisfaction with telehealth in treating their chronic medical conditions.
- ➔ To investigate the benefits and challenges of telehealth services as perceived by the patients.
- ➔ Evaluate the barriers to gaining access to telehealth services among patients with chronic medical conditions.
- ➔ To analyze the influence of socio-demographic factors (e.g., age, gender, education level, and socioeconomic status) on the understanding, use, and satisfaction with telehealth services.
- ➔ To collect patient recommendations on ways to improve telehealth services with an emphasis on enhancing access and effectiveness in managing chronic medical conditions.

4. Methods

4.1. Study area and period

Study Area

The study was conducted in the ALERT Comprehensive Specialized Hospital located in Addis Ababa, Ethiopia. The hospital operates as a leading medical institution that offers continuous follow-up care for patients with chronic conditions, among many other services, hence providing a proper place from which to assess the impact of telehealth services.

Study Period

The study was conducted between July and January 2024, which allowed seven months to collect, analyze, and report the data, ensuring the patient perspectives and barriers to utilization of telehealth services were fully assessed.

4.2. Study design

For this research, a cross-sectional mixed-methods design was employed. While focusing mostly on the quantitative part, a structured survey was administered to a sample of patients with chronic medical conditions attending follow-up clinics at ALERT comprehensive specialized hospital. The qualitative aspect involved in-depth interviews of a select group of such patients to explore their experiences and perspectives of the telehealth service in more detail.

4.3. Source population

The source population was all patients with chronic medical conditions who were attending follow-up clinics at ALERT Comprehensive Specialized Hospital in Addis Ababa, Ethiopia. The conditions include, but are not limited to, diabetes, cardiovascular diseases, respiratory conditions, and all other long-term illnesses that require ongoing management and follow-up care.

4.4. Study population

The study population included a subset of the source population that meets the study's inclusion criteria. Specifically, the study population consists of adult patients with chronic

medical conditions who attended follow-up clinics at ALERT comprehensive specialized hospital during the study period and provided informed consent to participate in the study.

4.5. Inclusion and exclusion criteria

Inclusion Criteria

- Patients with chronic illnesses: individuals diagnosed with a chronic medical condition, such as diabetes, cardiovascular disease, respiratory conditions, or other long-term illnesses, and are attending follow-up clinics at ALERT Comprehensive Specialized Hospital.
- Willingness to Participate: Patients who provided informed consent to participate in the study.

Exclusion Criteria

- Acute Medical Conditions: Patients who were attending the hospital for acute conditions or emergencies and were not being managed for a chronic condition.
- Cognitive Impairment: Patients with cognitive impairments that could affect their ability to understand the study or provide reliable information during interviews.
- Non-Consenting Patients: Individuals who did not consent to participate in the study.
- Inability to Communicate: Patients who were unable to communicate effectively in the languages used for the study, unless an interpreter was available.

4.6. Variables

Dependent Variable

- Awareness of telehealth services
- Utilization of telehealth services
- Satisfaction with telehealth services

Independent Variables

Socio-Demographic Characteristics:

- Age
- Gender
- Educational level
- Income level
- Occupation
- Marital status

- Place of residence (urban vs. rural)

Clinical Characteristics:

- Type of chronic condition (e.g., diabetes, cardiovascular disease, respiratory conditions)
- Duration of the chronic condition
- Frequency of hospital visits
- Presence of comorbidities

Access to Technology:

- Availability of a smartphone, tablet, or computer
- Internet access
- Digital literacy (ability to use technology)

Patient perceptions and attitudes:

- Perceived usefulness of telehealth
- Perceived ease of use of telehealth platforms
- Concerns or barriers related to privacy and security

Health System Factors:

- Availability of telehealth services at the healthcare facility
- Support from healthcare providers for using telehealth
- Training or guidance provided on how to use telehealth services

Geographical Factors:

- Distance from the healthcare facility and whether living in rural or urban areas
- Travel time to the healthcare facility
- Transportation costs

Cultural and social factors:

- Social support for using telehealth (e.g., family encouragement)
- Cultural beliefs or norms regarding technology and healthcare

4.7. Sample size determination

Sample size determination for this study would go by the formula for estimating a proportion in a population, as normally used in cross-sectional studies. The following are the parameters incorporated in its calculation:

Estimated Proportion (p): Since the proportion of patients with chronic medical conditions using telehealth services was unknown, an assumption of 50 percent ($p = 0.5$) was made. This is the standard assumption for cases where prevalence is unknown—the one that maximizes sample size to ensure maximum variability.

Margin of Error (d): A margin of error of 6% ($d = 0.06$) was selected to maintain precision while allowing a feasible sample size for the study's timeframe.

Confidence Level (Z): A 95% confidence level was chosen, corresponding to a Z-value of 1.96.

The sample size was calculated using the formula:

$$n = (1.96)^2 \times 0.5 \times (1 - 0.5) / (0.06)^2$$

$$n = 267$$

Given the finite population of patients attending follow-up clinics over three months (estimated at 5363), the sample size was further adjusted using the finite population correction formula:

$$n_{\text{adj}} = n / (1 + (n - 1) / N)$$

where

N is the population size. This adjustment yielded an effective sample size of approximately 254 patients.

To account for potential non-response or incomplete data, 10% possible non-response was added, resulting in a final sample size of:

$$n_{\text{final}} = 254 + (0.1 \times 254) \approx \underline{\underline{280}}$$

Thus, the quantitative component of this study was composed of 280 patients with chronic medical conditions who attended follow-up clinics at ALERT Comprehensive Specialized Hospital. For the qualitative component, a purposive sampling technique was employed to select a subset of participants from the 280 patients included in the quantitative survey. Typically, qualitative research seeks depth over breadth, so a smaller, focused sample was selected based on the principle of data saturation, where additional data no longer yielded new insights. To capture diverse perspectives, the recorded opinions of 11 quantitative sample participants were gathered following in-depth follow-up interviews.

4.8. Sampling procedure

Participants for the quantitative component were selected using a stratified random sampling technique. Patients with chronic medical illnesses who attend follow-up clinics at ALERT Comprehensive Specialized Hospital were classified into strata based on their clinic days of particular illnesses (e.g., endocrine, cardiac, neurological). Participants were sampled inside each stratum through a simple random selection process, ensuring that across conditions, the participants were fairly represented.

The qualitative part was completed through purposive sampling; the selected subgroup from the survey participants underwent a follow-up telephone interview. Based on socio-demographic diversity, the use of telehealth, and critical responses to the survey, participants were selected in order to capture diverse experiences and relevant insights to meet the purposes of the study.

4.9. Data collection instrument

Data were collected using a mixed-methods approach. The study subjects were first interviewed using structured questionnaires developed and adapted from related studies. The questionnaires were prepared in English and then translated into Amharic for the interviews. Responses were, however, translated back to English to ensure consistency.

In addition to these structured questionnaires, subsets of the respondents were selected for follow-up interviews conducted over the telephone. The follow-up interviews allowed for the collection of qualitative data, giving an in-depth understanding of participants' experiences and perspectives about telehealth services.

4.10. Data analysis and processing

Data entry, cleaning, and analysis were done with Google Sheets and SPSS version 26 for the quantitative component, while for the qualitative part, NVivo version 14 was used. For the data cleaning process, error checking on the inconsistency of the data was observed and corrected. Descriptive statistics were first conducted as percentages, frequencies, mean, and standard deviation on the socio-demographic characteristics and key variables relating to telehealth services.

Following the descriptive analysis, bivariate analyses were conducted for each independent variable with the outcome variable to identify significant associations. Variables that were

significant in the bivariate analysis were taken for multivariate analysis, along with the control of confounding, to determine independent predictors of both the usage of and barriers to telehealth services. The results are presented in the results and discussion sections below using tables, graphs, and texts, depending on the type of data, to ensure clarity and ease of interpretation.

4.11. Data quality management

To ensure the quality of data, measures were taken. A properly constructed questionnaire checklist is used. The questionnaire was pretested in 5% of the sample size, some corrections made, and wording of the checklist clarity evaluated. There was a day-to-day checking of completeness, correctness, and clarity of data collected by the lead investigator with continuous feedback to the data collectors.

4.12. Operational definitions

Telehealth: “is the use of digital information and communication technologies to access health care services remotely and manage your health care. Technologies can include computers and mobile devices, such as tablets and smartphones. This may be the technology you use from home, or a nurse or other health care professional may provide telehealth from a medical office or mobile van, such as in rural areas. Telehealth can also be technology that your health care provider uses to improve or support health care services.” (Mayo Clinic, 2023)

Chronic Medical Conditions: Long-term health conditions that require ongoing management and follow-up care, such as diabetes, cardiovascular diseases, chronic respiratory conditions, and hypertension.

Patient Perspectives: The beliefs, attitudes, experiences, and satisfaction levels of patients regarding the use and effectiveness of telehealth services in managing their chronic medical conditions.

Barriers to Access: Factors that impede patients' ability to utilize telehealth services, including technological challenges, lack of awareness, financial constraints, and infrastructural limitations.

Follow-Up Clinics: Healthcare facilities or scheduled appointments where patients with chronic conditions receive ongoing monitoring, treatment adjustments, and health education.

Remote Monitoring Devices: They refer to electronic appliances that enable monitoring patients outside a healthcare setup to report certain health data and findings to caregivers. Examples are blood pressure monitors, blood sugar level monitors, and smart wearable devices, among many others.

4.13. Ethical consideration

The study received ethical clearance from ALERT comprehensive specialized hospital and Addis Ababa University, Department of Family Medicine. Although informed consent was obtained during the data collection process, each respondent was allowed to decide on their own to participate in or withdraw from the research. Anonymity was maintained by deidentifying responses, and no identities were requested in the questionnaire.

4.14. Dissemination plan

The findings of this study are reported to the Department of Family Medicine. It is also to be provided to ALERT Hospital so that it may assist in improving the services provided at the study location. Publication in peer-reviewed journals is also considered.

5. Results

5.1. Socio-demographic profile of the respondents

The majority of the respondents in this study are 60 years old and older, at 32.1%. Then, 50-59 years followed at 23.9%, showing that the majority of the people are those in their aged years in the survey. Those under 18 years are 0.7%, while those between 18 and 29 years old comprise just 8.9%. More females responded than males at 53.2%, while male respondents comprised 46.8%. The majority of respondents reside in urban settings, accounting for 97.9%, while the rest stay in the rural sector at 2.1%. In terms of education, a great deal of the respondents had higher education attainment, such as 35.4% of respondents with a bachelor's degree and 17.5% of respondents with a college diploma. Only 3.2% of respondents had a master's degree or higher, and 8.6% had no education at all.

With respect to occupation and income, the majority are from private employment at 31.1%, while public employment accounts for 23.2%. The rates of self-employment and unemployment stand at 18.9% each, and retirees make up 7.9%. As seen in the economic profile, 39.3% report that the monthly household income is in the category of 5,001–10,000 ETB. While 21.4% receive an income of 3,001-5,000 ETB, 18.2% reported income above 10,000 ETB. Smaller proportions of respondents earn below 1,000 ETB (12.5%) and between 1,001-3,000 ETB (8.6%). The data also suggest that the great majority of the respondents were urban-based, educated, and economically active, though there is a reasonable representation of the older age groups and the low-to-middle-income earners. Table 1 below shows further details in that respect.

Neurologic diseases are the most prevalent chronic condition among the respondents, 23.2%, followed by diabetes, 21.8%, and heart disease, 16.8%. Hypertension accounts for 13.9%, while asthma/COPD affects 11.1%. Other less prevalent conditions include kidney disease, 3.2%, and hematologic diseases, 1.4%. A further 8.6% of respondents reported other chronic conditions like gout, conditions of the thyroid gland, and dyslipidemia.

5.2. Awareness of participants regarding telehealth services

There is a high awareness of telehealth services, as 87.5% of the respondents indicated they had heard of it, and 12.5% had not. Of those who were aware, healthcare providers played a major role in spreading information, as 54.3% first learned about telehealth through them.

Table 1: Socio-demographic profile of respondents (n = 280)

Categories		Frequency	Percent
Age	Under 18	2	0.7
	18-29 years	25	8.9
	30-39 years	41	14.6
	40-49 years	55	19.6
	50-59 years	67	23.9
	60 years and above	90	32.1
Sex	Female	149	53.2
	Male	131	46.8
Location	Rural	6	2.1
	Urban	274	97.9
Educational level	No formal education	24	8.6
	Primary school	36	12.9
	Secondary school	63	22.5
	College diploma	49	17.5
	Bachelor's degree	99	35.4
	Master's degree or higher	9	3.2
Occupation	Employed in the private sector	87	31.1
	Employed in the public sector	65	23.2
	Retired	22	7.9
	Self-employed	53	18.9
	Unemployed	53	18.9
Monthly household income	1,001-3,000 ETB	24	8.6
	3,001-5,000 ETB	60	21.4
	5,001-10,000 ETB	110	39.3
	Above 10,000 ETB	51	18.2
	Below 1,000 ETB	35	12.5

Media sources, including TV, radio, and the internet, account for 22.1% of first-time awareness, while friends or family come in at 11.1%. The data shows that healthcare providers are the major source of information about telehealth, reflecting their critical role in promoting digital health solutions. However, the remaining knowledge gap suggests the need for broader community outreach and education regarding telehealth services.

Table 2: Chronic conditions and awareness of telehealth services among respondents (n = 280)

	Categories	Frequency	Percent
Chronic Condition	Asthma/COPD	31	11.1
	Diabetes	61	21.8
	Heart Disease	47	16.8
	Hematologic Disease	4	1.4
	Hypertension	39	13.9
	Kidney Disease	9	3.2
	Neurologic Disease	65	23.2
	Other	24	8.6
Ever heard of telehealth services?	No	35	12.5
	Yes	245	87.5
Where did you first hear from?	Never heard	35	12.5
	Friends/Family	31	11.1
	Healthcare provider	152	54.3
	Media (TV, radio, internet)	62	22.1

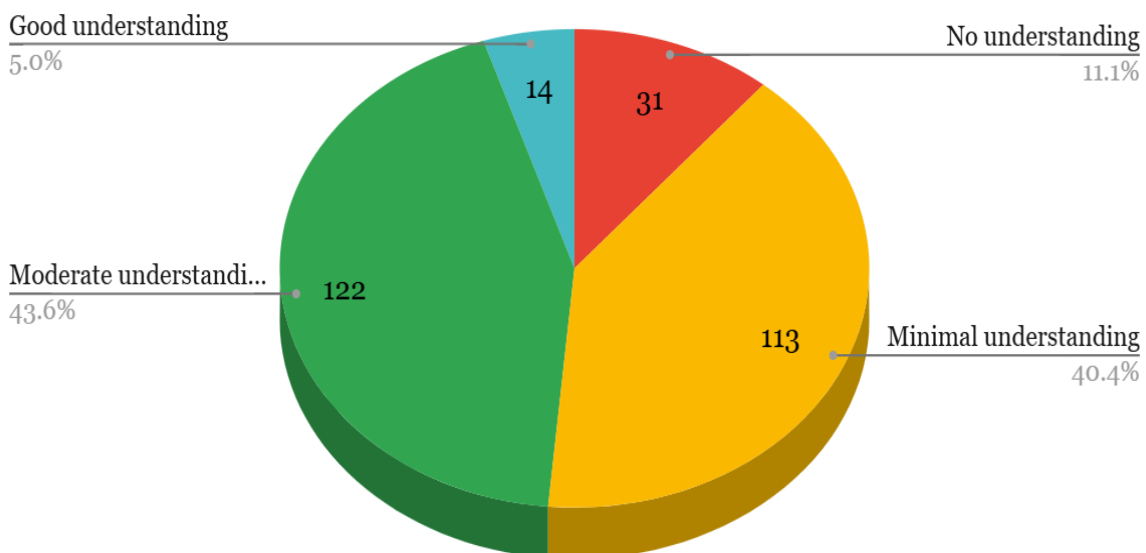
Thematic analysis of qualitative data also revealed some interesting facts. Most of the participants showed very limited knowledge about telehealth services. For instance, Participant 3 said, "I don't know much about them," and Participant 5 added, "I have no understanding of such services." Others, such as Participant 9, mentioned the lack of exposure to telehealth: "I have never had a chance to call or get in touch with a health

professional before." A few participants had some awareness of telehealth but noted deficiencies in promotion. Participant 4 commented, "I have seen an advertisement once. Not much promotion is there on this topic." Participant 8 added, "I do not think such a service even exists in our hospitals.

5.3. Participants' rating of their understanding of telehealth services

The following pie chart represents respondents' self-assessed knowledge about telehealth services. A majority of the responses, 43.6%, claimed to have a moderate understanding of telehealth. But a big group showed a minimal understanding at 40.4%. Conversely, just 5.0% responded with a good knowledge of telehealth. Only 11.1% of the participants admitted that they had no knowledge of the topic. The information generally tends to reflect that most participants do not possess a critical view of knowledge concerning the operation of telehealth services.

Figure 2: Respondents' subjective rating of their understanding regarding telehealth services



5.4. Participants' satisfaction with the telehealth services

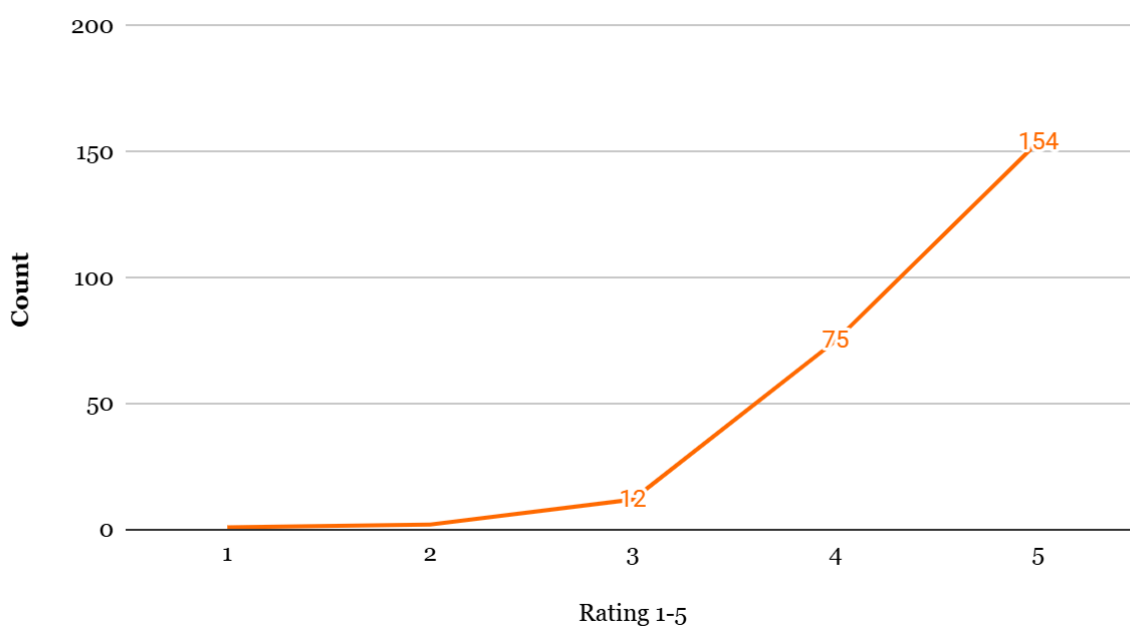
There is a strong positive trend in participant satisfaction with telehealth services. The following chart (Fig. 3) illustrates the distribution of participant satisfaction with telehealth

services they accessed, rated on a scale of 1 to 5. A significant majority of participants expressed high satisfaction, with 154 individuals giving a rating of 5. A smaller number, 75, rated their satisfaction at 4. Very few participants reported lower satisfaction levels, with only 2 individuals giving a rating of 3.

During the phone interview, some participants expressed satisfaction with their current follow-ups in healthcare. For example, Participant 2 stated, "The service I get at the clinic is great," and Participant 4 reflected this by saying, "The follow-up at the hospital is great."

Others pointed to the ills of the status quo in healthcare. Participant 1 complained, "You can't even get your results on time," and Participant 10 emphasized the time wasted, stating, "When you go to the hospital, you wait in a long line or queue; you spend the entire day there." In general, they expressed that indeed telehealth services would help alleviate such inconveniences.

Figure 3: Participants' satisfaction with the telehealth services they accessed



5.5. Trends in the use of telehealth services

The results of the survey were that 81.8% of the respondents had utilized telehealth services, whereas only 5.7% had never done so. With respect to the number of times used in the last year, it was found that 44.6% used telehealth 2-3 times, which is the most frequent range. It is followed by 19.3%, who used it once, and 16.4%, who used it 6-10 times. Although a smaller

percentage, 7.1%, used the services more than 10 times, and 12.5% did not use telehealth in the last year.

Table 3: Pattern of telehealth services used by respondents in the last year

	Categories	Frequency	Percent
Ever used telehealth services?	Don't know	35	12.5
	No	16	5.7
	Yes	229	81.8
	Total	280	100
How often in the last year?	None	35	12.5
	2-5 times	125	44.6
	6-10 times	46	16.4
	More than 10 times	20	7.1
	Once	54	19.3
	Total	280	100
What kind of services?	None	35	12.5
	Mobile apps	56	20
	Phone consultation	154	55
	Video consultation	10	3.6
	Web-based programs	25	8.9
	Total	280	100
Would you recommend others to use?	Yes	150	53.6
	Maybe	76	27.1
	No	20	7.1
	Haven't tried	34	12.1
	Total	280	100

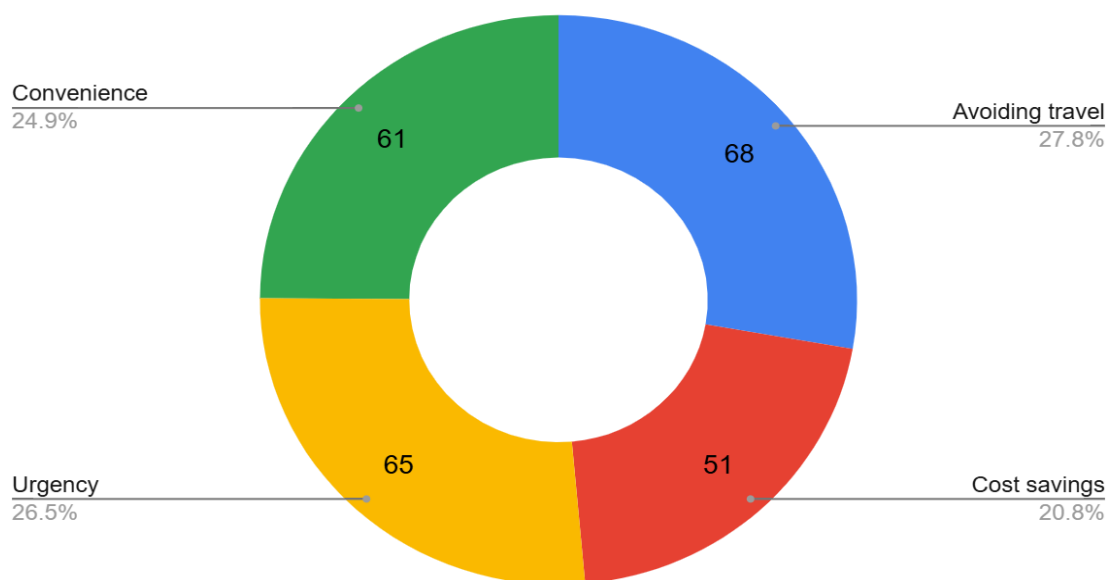
For the kinds of telehealth services, it appears that telephone consultation is the most utilized type at 55%, while the use of mobile apps accounted for 20%. On the other hand, the utilization of web-based programs is low at 8.9%, while video consultation was the lowest at 3.6%. These data imply that telehealth services are extensively adopted, with phone consultations being the primary means of connection; however, there is an opportunity to

promote additional modalities, including video and web-based platforms. It is also clear that the majority of these users (53.6%) would recommend these services to others.

Below is a donut chart showing the proportion of participants and the main reasons that led them to use telehealth services. The avoidance of travel was the strong factor for 27.8% of participants. In close proximity, 26.5% of the participants had to seek telehealth services due to the urgency of their medical condition. Convenience was mentioned by 24.9% of consumers, while 20.8% were motivated primarily by cost savings. In essence, the data suggests that the participants' primary motivations for using telehealth services were convenience, the need for immediate care, and the desire to avoid travel.

Phone call interview participants frequently noted that telehealth could reduce time spent on healthcare. Participant 1 said, "It will save me time. It will give me rest from unnecessary delays and travels," while Participant 8 remarked, "No sunburning, no rain, no transportation hassle." They acknowledged telehealth's potential to enhance access. For example, Participant 7 stated, "I wish we were asked over the phone like this," while Participant 10 regarded telehealth as "a lifesaver."

Figure 4: Compelling reasons for the participants to use telehealth services

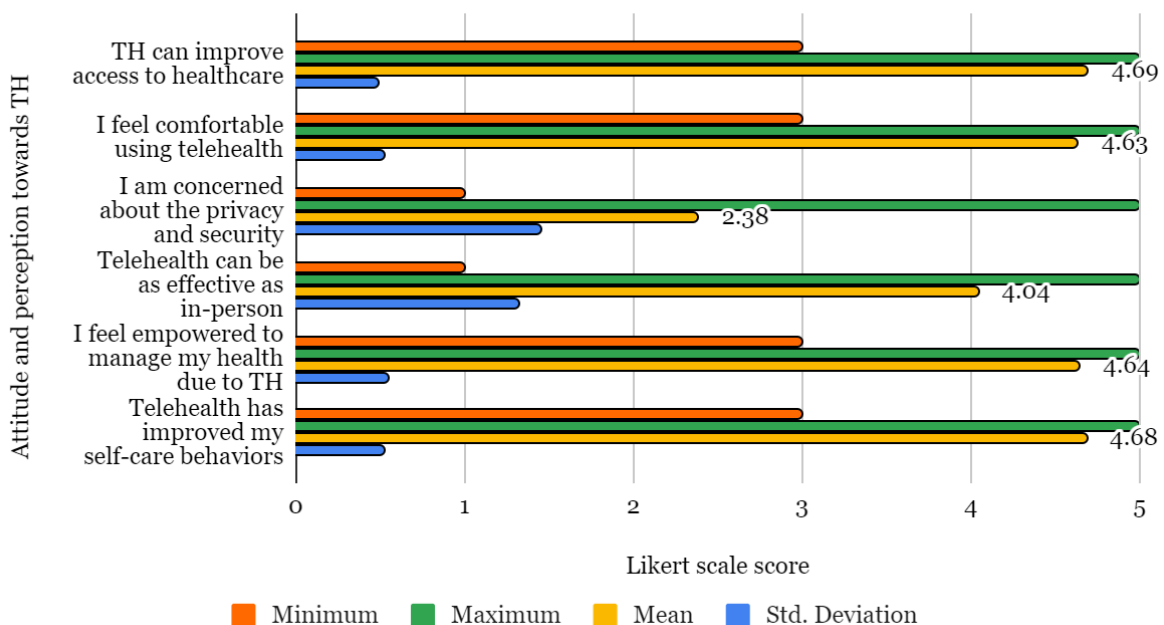


Rural participants demonstrated how telehealth could reduce some of the logistical and budgetary challenges. Participant 11 commented, "It will save me a lot of money; transportation costs are a major issue."

5.6. Attitude and perception towards telehealth services

According to Pimentel (2010), the interpretation of the Likert scale items can be done through standardized intervals for descriptive analysis. This gives clarity on the summarization of responses from participants.[19] Through this approach, participants in this study have been found to have a major positive attitude towards telehealth services. The mean score for the belief that telehealth can improve access to health care was 4.69 (SD = 0.483), indicating that participants almost always agreed with this statement. The mean for comfort in using telehealth was 4.63 (SD = 0.519), showing that the participants felt very comfortable using such services. The feeling of empowerment to take care of their health because of telehealth scored a mean of 4.64 (SD = 0.54), reflecting consistency in realizing its benefits. Additionally, the statement that telehealth has improved self-care behaviors had a mean score of 4.68 (SD = 0.521), further emphasizing how well participants have fared in the process.

Figure 5: Attitude and perception towards telehealth services



The mean score related to the statement of telehealth being as good as in-person care was at 4.04 (SD = 1.316), meaning in the range of "often." This might mean that more respondents considered it to be equally good as its face-to-face counterpart, even though there's variation in answering patterns, with the existence of other opinions apart from the generally favorable ones. Instead, concerns over privacy and security issues of telehealth services received an average of 2.38 (SD = 1.451) and were described as "rare," which indicated that apprehension

regarding privacy was not the issue for most respondents, although a high standard deviation is indicative of substantial disagreement in the group.

5.7. Barriers and concerns against the use of telehealth services

Two major concerns in the use of telehealth services are cost and language difficulty, as highlighted by the data and corresponding charts below (Figure 6). Language is a barrier but does not seem to be much of an issue for most, with 48% of respondents, or 135 people, finding it "not difficult at all" and 33%, or 93 people, finding it "somewhat difficult." In contrast, cost is perceived as much more of an issue. A majority of the respondents, 52% (147 individuals), rated cost as "somewhat significant," while only 22% (62 individuals) rated it as "not significant," and 23% (65 individuals) rated it as "a little significant." These results indicate that language barriers, although present, are less impactful for the majority of users, whereas the cost of telehealth services is a significant obstacle for more than half of the population, which may limit access to these services for a significant portion of those in need. Figure 7 illustrates the different barriers to telehealth service use reported by respondents. The most important one is a lack of awareness about telehealth services, reported by 156 individuals. Second comes a lack of access to needed technology reported by 142 individuals. Lack of digital literacy is also an important barrier, with 80 individuals reporting it. Other barriers include the option to visit in person (63 respondents), poor internet access (53 respondents), and concern about privacy (26 respondents). This data suggests that access-related issues, both in terms of physical access and digital literacy, along with a preference for in-person visits, are the primary obstacles to telehealth adoption.

There are concerns when it comes to the use of certain technologies to deliver healthcare services, as 81.4% of the respondents admitted to having so. Figure 8 below illustrates respondents' concerns regarding the use of telehealth services. The most outstanding issue, as expressed by 188 participants, representing about 67.14%, is the "lack of physical examination." This suggests that there is a strong preference for in-person assessment, with many feeling that telehealth cannot adequately replace the hands-on component of a traditional medical visit.

Figure 6: Cost and Language as barriers to telehealth service use among respondents (n=280)

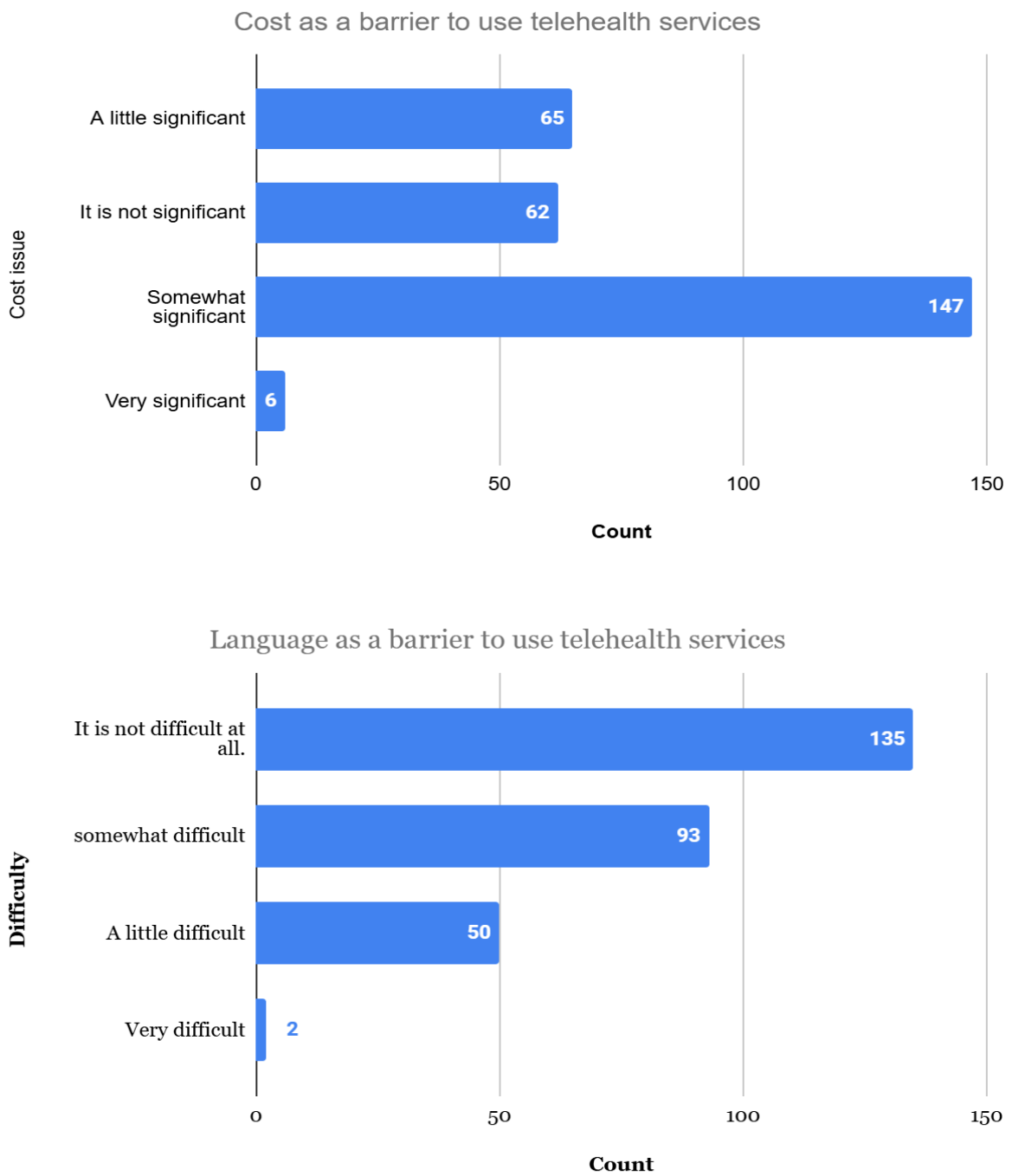
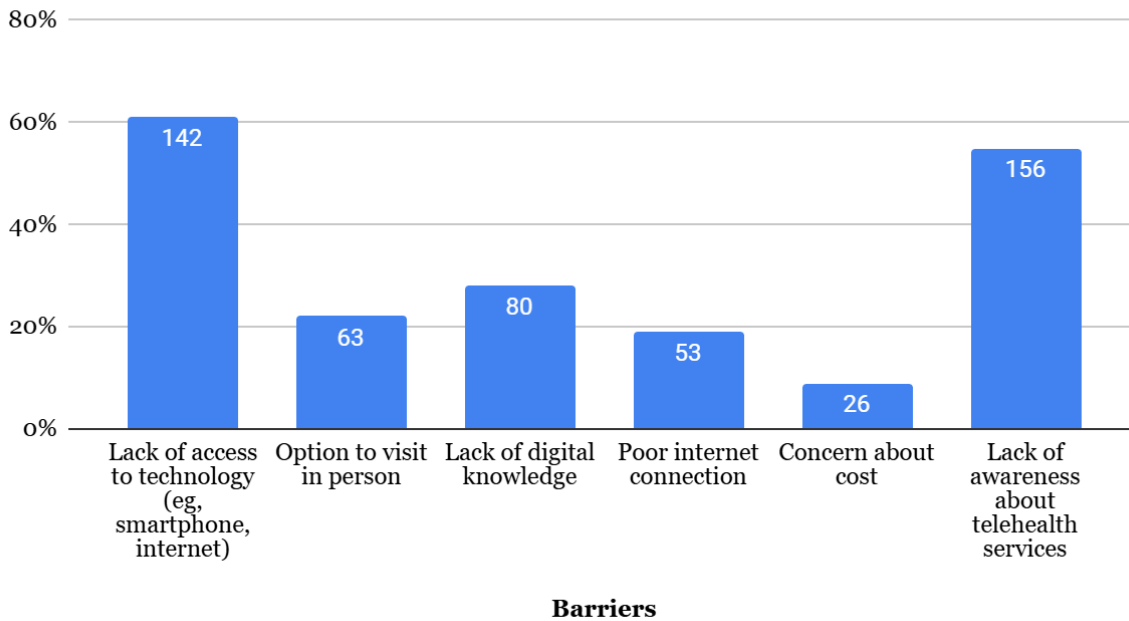
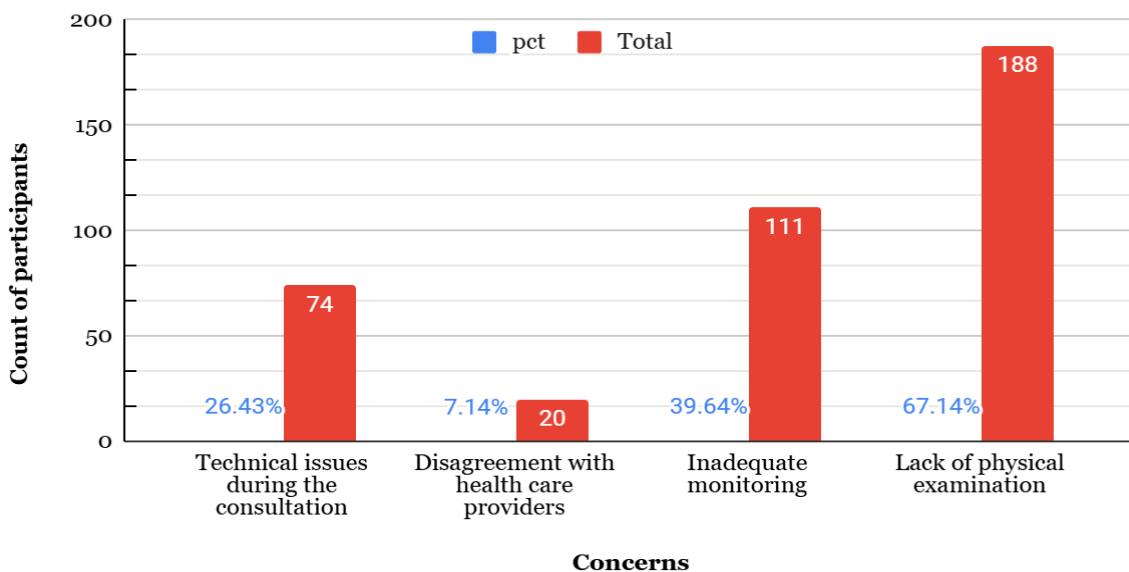


Figure 7: Barriers to use of telehealth services reflected by respondents



Another major issue is "lack of monitoring," which was experienced by 111 participants (39.64%). This reflects fears about the capability to monitor the health status of patients and treat conditions from a distance. "Technical issues during the consultation" were the concern of 74 participants (26.43%), which suggests frustration and disconnection caused by technical problems. The least expressed concern, indicated by only 20 participants at a rate of 7.14%, was "disagreement with healthcare providers," suggesting that most participants are generally aligned with their providers on the use of telehealth despite other reservations.

Figure 8: Respondents' concerns regarding the use of telehealth services



Analysis of the qualitative data resulted in some similar themes as well. Participants emphasized the need for greater awareness. Participant 4 stated, "I think it needs to be promoted well." Language proved to be a significant barrier. Participant 1 suggested, "Explain things to us in Amharic and solve the language issue for us." Some participants admitted to trouble with the latest technologies. Participant 5 confessed, "I am not technically proficient in using such applications," and Participant 10 similarly came forward, saying, "I am not good at using the latest technologies either." Connectivity was a major concern for rural participants as well. Participant 11 remarked, "Connection could hinder me as I am outside the city." Financial constraints became the other great obstacle. One of the participants said, "Providers of such services usually work at private centers, and I can't afford that."

5.8. Factors affecting understanding, use, and satisfaction with telehealth

After a bivariate analysis, age, location, occupation, and income were found to be candidates for multivariate analysis as possible factors that affect the use of telehealth services. However, only occupation and household income were found to have a statistically significant effect with p-values less than 0.05 during multivariate binary logistic regression. Compared to unemployed individuals (reference group), all other occupations demonstrated higher odds of using telehealth services: Self-employed individuals had an adjusted odds ratio (AOR) of 46.919 (95% CI: 8.724–252.349), indicating a very strong likelihood of using telehealth. Private-sector employees had an AOR of 16.744 (95% CI: 3.462–80.986). Public-sector employees had an AOR of 31.576 (95% CI: 5.386–185.123).

Retired individuals initially showed high crude odds (COR of 11.968), but after adjustment, their AOR was 1.499 (95% CI: 0.381–5.899), suggesting no significant association. When compared to those earning less than 1000 ETB, individuals earning 1,001–3,000 ETB had an AOR of 0.031 (95% CI: 0.004–0.213). The respondents earning 3,001–5,000 ETB showed an AOR of 0.046 (95% CI: 0.007–0.299). For those earning 5,001–10,000 ETB, the AOR was 0.024 (95% CI: 0.003–0.180). The highest-earning respondents, with income above 10,000 ETB, had an AOR of 0.017 (95% CI: 0.002–0.152).

Higher household income had a statistically significant association with better understanding when participants earning above 10,000 ETB served as the reference group. Lower-income groups (e.g., less than 1000 ETB", $OR=0.124$, $p<0.001$) had significantly lower odds of better understanding. When it comes to age groups, younger participants (e.g., 18-29 years:

$OR=6.86$, $p<0.001$) were more likely to show better understanding compared to older age groups. In a similar manner, rural residents had significantly lower odds of higher understanding compared to urban residents (Rural, $OR=0.106$, $p=0.01$).

Table 4: Factors affecting telehealth use among respondents

Variables	Categories	Telehealth used		COR(95% CI)	AOR(95% CI)
		Yes	No		
Age	Under 18	2	0		
	18-29 years	23	2	656286663.653 (.000–)	.000 .000
	30-39 years	39	3	4.672 (1.027-21.256)	.000 .000
	40-49 years	47	7	5.281 (1.499-18.612)	.000 .000
	50-59 years	54	13	2.728 (1.092-6.814)	.000 .000
	60 years and above	64	26	1.688 (.791-3.601)	.000 .000
Location	Urban	226	48	4.708 (.042-1.084)	2.333 (.283-19.223)
	Rural	3	3		
Occupation	Unemployed	14	39		
	Self-employed	3	50	4.024 (1.413-11.459)	46.919 (8.724-252.349)
	private	14	73	24.074 (5.692-101.823)	16.744 (3.462-80.986)
	public	7	58	7.532 (2.704-20.979)	31.576 (5.386-185.123)
	Retired	13	9	11.968 (3.765-38.042)	1.499 (.381-5.899)
Income	Below 1,000 ETB	33	2		
	1,001-3,000 ETB	16	8	3.536 (.715-17.487)	.031 (.004-.213)
	3,001-5,000 ETB	46	15	.429 (0.141-1.304)	.046 (.007-.299)
	5,001-10,000 ETB	92	17	.657 (.260-1.659)	.024 (.003-.1804)
	Above	42	9	1.160(.478-2.814)	.017 (.002-.152)

	10,000 ETB				
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Table 5: Factors affecting understanding and satisfaction with telehealth services

Variables	Categories	Estimate	Exp(B)	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Threshold	Miniman understanding	-3.002	0.04968759374	0.00	-3.821	-2.184
	Moderate understanding	-0.362	0.6962823678	0.322	-1.079	0.355
	Good understanding	2.927	18.6715318	0.00	2.073	3.78
Household Income	Less than 1000 ETB	-2.084	0.1244314895	0.00	-3.072	-1.095
	1000-3000 ETB	-2.069	0.1263120306	0.00	-3.073	-1.065
	3000-5000 ETB	-1.213	0.2973040281	0.002	-1.979	-0.447
	5000-10000 ETB	-0.402	0.6689807457	0.236	-1.067	0.263
	Above 10000 ETB	0		.	.	.
Age	Less than 18 years	0.401	1.493317268	0.779	-2.404	3.206
	18-29 years	1.926	6.862007243	0.00	0.987	2.865
	30-39 years	1.237	3.445262159	0.002	0.444	2.03
	40-49 years	0.71	2.033991259	0.055	-0.015	1.435
	50-59 years	-0.105	0.9003245226	0.753	-0.758	0.548
	60 years and above	0		.	.	.
Location	Rural	-2.245	0.1059275404	0.01	-3.951	-0.538
	Urban	0		.	.	.
Variables	Categories	Estimate	Exp(B)	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Threshold	Low	-21.566	0.000000000430 5317687	0.00	-23.456	-19.675
	Medium	-20.829	0.000000000899 6637802	0.00	-22.459	-19.199
	High	-19.238	0.0000000004416 13923	0.00	-20.672	-17.803

	Very High	-16.486	0.0000000069218	0.00	-17.973	-14.998
Household income	Less than 1000 ETB	6.202	493.7355253	0.00	3.887	8.516
	1000-3000 ETB	1.92	6.820958469	0.011	0.441	3.4
	3000-5000 ETB	1.916	6.79372913	0.00	0.854	2.977
	5000-10000 ETB	1.407	4.083685951	0.00	0.622	2.192
	Above 10000 ETB	0		.	.	.
Education	No formal education	-19.265	0.000000004298 498763	0.00	-21.456	-17.075
	Primary school	-20.89	0.000000000846 4245924	0.00	-21.992	-19.788
	Secondary school	-19.905	0.000000002266 565833	0.00	-20.917	-18.893
	College diploma	-19.731	0.000000002697 339284	0.00	-20.558	-18.905
	Bachelor's degree	-18.963	0.000000005813 98276	.	-18.963	-18.963
	Master's degree or higher	0		.	.	.
Employment	Unemployed	-0.049	0.9521811297	0.963	-2.109	2.012
	Self-employed	3.391	29.69563306	0.00	1.964	4.819
	Employed in the private sector	2.109	8.239997166	0.002	0.761	3.456
	Employed in the public sector	1.526	4.599741011	0.034	0.115	2.936
	Retired	0		.	.	.

Household income was a statistically significant predictor of satisfaction with telehealth services, with higher income categories associated with greater odds of higher satisfaction with the services they managed to use. For instance, participants earning less than 1000 ETB were 493.74 times more likely to report lower satisfaction compared to those earning more than 10,000 ETB ($p<0.001$). Similarly, educational attainment had a statistically significant relation with satisfaction; lower education levels had significantly lower odds of achieving higher satisfaction compared to those with a master's degree or higher. Employment played a role, with self-employed individuals ($OR=29.70$, $p<0.001$) and those in the private sector

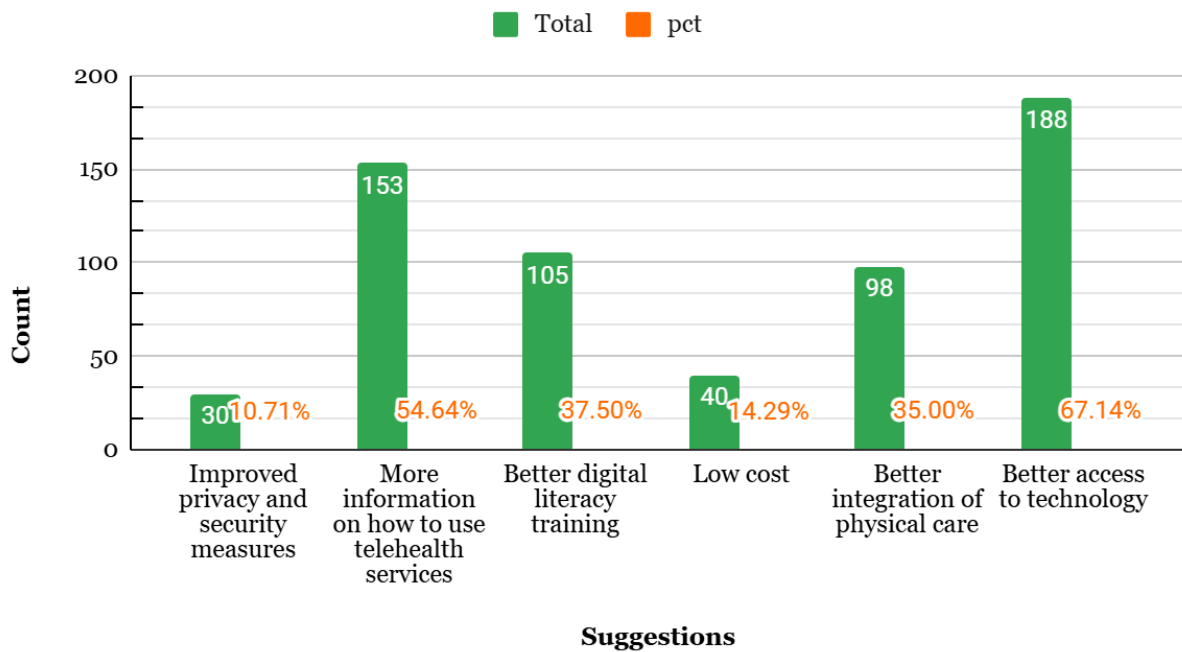
($OR=8.24$, $p=0.002$) showing higher odds of reporting greater satisfaction when compared to retired participants.

5.9. Suggested Improvements

Finally, the participants of this study made some suggestions regarding what they believe should happen in order for telehealth services to improve and manage their demands well. Figure 9 below presents the respondents' suggestions for improving telehealth services. The most frequently suggested improvement, with 188 responses (67.14%), was "better access to technology," indicating a strong need for increased availability and ease of use of telehealth platforms. "More information on how to use telehealth services" was also a popular suggestion with 153 responses (54.64%).

Other ideas included "better digital literacy training" (105 respondents, 37.5%), emphasizing the need for enhanced general education as well as instruction on how to successfully use relevant technology. "Better integration of physical care" (98 replies, 35%) was another key suggestion, underscoring the need to align emerging technologies with existing processes to make things easier and more convenient. The next "low cost" was suggested by 40 respondents, or 14.29%, indicating that affordability is a factor for some users. The least frequent suggestion was "improved privacy and security measures," with 30 responses, or 10.71%, which, although not a concern for many, needs to be assured. Overall, this data put forward the need for better access, increased availability, feature improvement, better digital literacy, and/or lower costs to enhance the adoption and effectiveness of the use of telehealth services.

Figure 9: Suggested improvements by respondents



The interviewees agreed that education in telehealth is vital. Participant 1 said, "It would be nice if we were taught how to use these technologies," while Participant 8 mentioned the need for proper understanding between patients and doctors, saying, "We need to make sure we understand our doctors too so that we don't hurt ourselves on our own."

Systemic changes suggested included active follow-ups. Participant 1 said, "The hospital could call and check up on us," and Participant 8 added, "Doctors themselves should call and check on their patients." They also urged for affordability. Participant 10 highlighted, "Cost will continue to be an issue... I recently went to a private clinic... I can't afford that."

6. Discussion

The knowledge of the availability of telehealth services among chronic condition patients was low in ALERT Comprehensive Specialized Hospital. It showed that 43.6% had a moderate understanding, 40.4% had a minimal understanding, and 11.1% said they had no understanding at all. Only 5.0% understood telehealth very well. The limited awareness of the services might be attributed to, as noted by respondents, inadequate exposure to or promotion of telehealth services in this population. The majority of participants demonstrated limited awareness of telehealth services, with many citing a complete lack of knowledge. Only a few had partial awareness, often through advertisements, but highlighted inadequate promotion as a barrier to widespread understanding.

Patient satisfaction in the use of telehealth services for chronic condition management was estimated in the research and followed a strong positive trend. Many responded with a rating of 5 (154 participants), while 75 rated their experience 4 and just 2 participants rated their satisfaction at 3. This agrees with a related study by Polinski et al. (2016), where 94-99% of the patients described themselves as "very satisfied" with the attributes of telehealth, hence signifying a high acceptability rate of such services. [16] Whereas some participants were satisfied with their current follow-up care, many reported inefficiencies in the system, such as long waiting times and delayed results. These presented insight into how telehealth could address present gaps.

The study indicated the perceived benefits and challenges of telehealth services among patients with chronic conditions, showing both the drivers for use and the barriers to the adoption of the technology. Thus, "avoiding travel" was the most compelling factor at 27.8%, while "urgent medical needs" came second at 26.5%, "convenience" at 24.9%, and "cost savings" at 20.8%. However, problems were apparent, with 81.4% of respondents expressing concern. The most common complaints among 156 respondents were a lack of knowledge, followed by a lack of technology and digital literacy challenges, which accounted for 142 and 80, respectively. Other major issues included privacy and insufficient internet availability. Furthermore, 67.14% of respondents expressed concern about the lack of a physical examination, implying that they would prefer in-person care.

Participants identified time-saving, improved access to healthcare professionals, and convenience for rural residents as key advantages of telehealth. These benefits were particularly valued by those facing logistical and financial challenges in accessing in-person care. Significant barriers to telehealth adoption included lack of promotion, language issues,

technological illiteracy, connectivity challenges, and socioeconomic constraints among interviewees. These barriers were more pronounced among rural and financially disadvantaged participants.

These results indicate an overall positive perception of the services provided with telehealth, especially regarding improved access, personal comfort in using them, and the promotion of self-empowerment and self-care practices. These high scores are reflective of the recent rising acknowledgment of telehealth as one of the most powerful transformational tools in healthcare delivery. The relatively strong agreement on the effectiveness of telehealth compared to in-person care underscores its potential as a viable alternative, especially in contexts where access to physical healthcare facilities is limited.

However, while rated infrequently as an overall issue, privacy and security concerns showed a great deal of variability among participants. In other words, even if telehealth is well-accepted and beneficial, there are some specific apprehensions concerning data protection and the question of trust. These support the findings of Gajarawala and Pelkowski (2020) that, while telehealth has a number of advantages in increasing access, convenience, and efficiency, it faces many barriers, such as those to technology access, privacy, and regulatory issues. Although telehealth is reaching a wider range and gaining acceptance as an effective tool in the management of acute and chronic conditions, addressing these barriers will be important in its broader adoption and assurance of equal access to healthcare for all patients. [17]

The multivariate binary logistic regression analysis showed that occupations and household incomes are key predictor variables for utilizing telehealth services. Comparatively, people who were engaged in the public and private sectors and were of self-employed status showed a more significant percentage over the unemployed concerning the usage of telehealth. On the other hand, household income showed a parallel relationship with the utilization of telehealth; high-income earners showed significantly higher odds compared with the reference category in using the services. Occupation seems to augment accessibility and motivate telehealth utilization. Higher household income may signify accessibility to alternatives and other care arrangements or a difference in preference regarding care delivery.

The results of the multivariate ordinal logistic regression would hint at the critical influence of socioeconomic factors, income, location, and demographic variables such as age. A higher income and urban residence are associated positively with better understanding, which might again be explained by the availability of resources and opportunities. Similarly, younger individuals have a better understanding, which again could point to either the differences in

exposure or education. Strategies to address disparities in understanding should focus on rural and lower-income populations to ensure fair outcomes.

The results also emphasize that satisfaction is highly influenced by socioeconomic factors, including household income, education, and employment. More income and particular kinds of employment (for example, self-employment) correlated with higher levels of satisfaction. This might reflect better access to resources and greater autonomy. Low education levels have been found to be associated with decreased satisfaction, emphasizing the importance of targeted interventions that can improve satisfaction outcomes for less educated and lower-income groups. These results emphasize the importance of addressing educational and economic disparities to foster equity in satisfaction outcomes.

Some of the major recommendations that the patients had for the telehealth service were increased accessibility, usability, and affordability. The primary recommendation that the patients had to provide included an increase in access to technology, in which 67.14% felt the urge to increase availability and make access to telehealth services easier to use. In the same fashion, 54.64% of the respondents recommended increasing information about the use of telehealth services. Improved digital literacy ranked at 37.50%, emphasizing the urgent requirement for education and training for its users to harness telehealth technology effectively. Additionally, 14.29% of participants stressed low-cost service delivery to enhance cost-effectiveness.

Qualitative data analysis revealed that the participants' suggestions for change were relatively similar. In order to enhance telehealth adoption, participants proposed patient education in the use of telehealth, systemic improvements in proactive follow-up by healthcare providers, and affordability of services. These areas, if addressed, would greatly enhance uptake and satisfaction in telehealth.

Such results are in accordance with the identified strengths and weaknesses of telehealth-assisted case management by Joo and Liu (2021). The identified strength of having better access and affordability is indeed a recognized characteristic of telehealth, which aims to increase accessibility to healthcare while supporting cost savings. However, the emphasis on digital literacy and usability also reiterates one of the problems identified in the review, namely, the trouble in learning how to use a telehealth device. Addressing these recommendations could help translate the strengths of telehealth into practical improvements, making it a more effective and inclusive care strategy for managing chronic illnesses.

7. Strengths and Limitations

The study is conducted by examining several key areas of awareness, satisfaction, perceived benefits, barriers, and recommendations so that the whole picture of the multifaceted nature of telehealth can be captured. One of the further strengths of this study is its focus on a diverse population of patients for the generalizability of the findings to comparable healthcare settings. The mixed-methods approach also helps, with quantitative data, such as satisfaction ratings and awareness levels, complemented by qualitative insights, including recommendations from patients, to more meaningfully capture the issues at hand and inform actionable solutions.

This otherwise strong study does have a number of limitations: for example, this study involves the results in a single institution that perhaps has limited generalization to healthcare facilities with other characteristics and levels of resources; again, dependence upon self-reported measures introduces a probability of response bias participants either overestimate or underestimate their satisfaction or understanding, and/or their concern. The present study only partially examines provider perspectives and technical infrastructure challenges, both of which are critical components of telehealth implementation and effectiveness.

8. Conclusion

The study indicated that there was a significant gap in awareness and understanding of telehealth services among patients with chronic conditions, thus the need for better promotion and education in order to bridge this knowledge gap. Low awareness notwithstanding, the satisfaction of patients with telehealth services was remarkably high, showing its acceptability and potential to act as an alternative in managing chronic diseases. Results show that some significant benefits of telehealth include time-saving, money-saving, and increased accessibility, especially to the more remote and disadvantaged socioeconomically.

Nevertheless, the major hurdles that arise are lack of awareness, poor access to technology, lack of digital literacy, privacy issues, and low connectivity. To address these, system-wide efforts are needed, such as patient education, improving digital literacy, ensuring affordability, and bettering the technological infrastructure.

This study concludes that telehealth can fill a niche in conventional systems by addressing inefficiencies, but due attention needs to be paid to ensure equity of access and optimal benefits for the universe of patients, especially underserved communities.

9. Recommendations

The following recommendations based on the study's findings aim at improving the care of chronic conditions through telehealth services for patients.

→ Raise awareness and promote

- ◆ Provide targeted awareness to the patients about telehealth services and possible benefits.
- ◆ Use telehealth education within routine clinic visits to engage the patient directly.

→ Enhance digital literacy

- ◆ Train patients and carers on the usage of telehealth and ensure maximum implementation among the aged or elderly population with rural dwellers.
- ◆ Design user-centered telehealth interfaces for patients at various levels of technical literacy.

→ Closing Infrastructure Gaps

- ◆ Increase internet connectivity in rural and underserved areas to ensure integration of uninterrupted telehealth services.
- ◆ Telehealth platforms should respect privacy standards to alleviate fears of data security.

→ Integrating Telehealth into Routine Care

- ◆ Telehealth services need to be coupled with in-office visitation for all patients to infuse confidence in their physical examinations.
- ◆ Healthcare providers should increase follow-up and regular interaction as a form of patient engagement.

→ Policy and Systemic Support

- ◆ Advocate for policy reforms to support the expansion of telehealth, including regulations that facilitate telehealth adoption and ensure equitable service provision.
- ◆ Invest in research to continuously assess patient needs and telehealth efficacy, ensuring ongoing improvement of services.

References

1. Erin Shigekawa et al. "The Current State Of Telehealth Evidence: A Rapid Review." *Health Affairs*, 37 (12) (2018): 1975-1982 .
<https://doi.org/10.1377/hlthaff.2018.05132>.
2. Allison A. Lewinski et al. "Telehealth for the Longitudinal Management of Chronic Conditions: A Systematic Review." *Journal of Medical Internet Research*, 24 (2022).
<https://doi.org/10.2196/37100>.
3. F. Tesfay et al. "Prevalence of chronic non-communicable diseases in Ethiopia: A systematic review and meta-analysis of evidence." *Frontiers in Public Health*, 10 (2022). <https://doi.org/10.3389/fpubh.2022.936482>.
4. Saleh, Aarash, et al. "Telehealth for Chronic Disease Management." *Thorax*, vol. 69, 2013, p. 334. <https://doi.org/10.1136/thoraxjnl-2013-204082>.
5. Lewinski, Allison A., et al. "Telehealth for the Longitudinal Management of Chronic Conditions: Systematic Review." *Journal of Medical Internet Research*, vol. 24, 2022. <https://doi.org/10.2196/37100>.
6. Hanlon, P., et al. "Telehealth Interventions to Support Self-Management of Long-Term Conditions: A Systematic Metareview of Diabetes, Heart Failure, Asthma, Chronic Obstructive Pulmonary Disease, and Cancer." *Journal of Medical Internet Research*, vol. 19, 2017. <https://doi.org/10.2196/jmir.6688>.
7. Parker, S., et al. "Electronic, Mobile and Telehealth Tools for Vulnerable Patients with Chronic Disease: A Systematic Review and Realist Synthesis." *BMJ Open*, vol. 8, 2018. <https://doi.org/10.1136/bmjopen-2017-019192>.
8. Kelly, Jaimon T., et al. "Telehealth Methods to Deliver Dietary Interventions in Adults with Chronic Disease: A Systematic Review and Meta-Analysis." *The American Journal of Clinical Nutrition*, vol. 104, no. 6, 2016, pp. 1693-1702. <https://doi.org/10.3945/AJCN.116.136333>.
9. Zaman, S., Khan, R., Evans, R., Thrift, A., Maddison, R., & Islam, S. (2020). Exploring Barriers to and Enablers of the Adoption of Information and Communication Technology for the Care of Older Adults With Chronic Diseases: Scoping Review. *JMIR Aging*, 5. <https://doi.org/10.2196/25251>.
10. Brunton, L., Bower, P., & Sanders, C. (2015). The Contradictions of Telehealth User Experience in Chronic Obstructive Pulmonary Disease (COPD): A Qualitative Meta-Synthesis. *PLoS ONE*, 10. <https://doi.org/10.1371/journal.pone.0139561>.

11. Taylor, J., Coates, E., Brewster, L., Mountain, G., Wessels, B., & Hawley, M. (2015). Examining the use of telehealth in community nursing: identifying the factors affecting frontline staff acceptance and telehealth adoption.. *Journal of advanced nursing*, 71 2, 326-37 . <https://doi.org/10.1111/jan.12480>.
12. Shilane, D., Miller, S., Fleming, J., Bar, J., Corbin, Y., Garcia, M., Gasner, M., Campbell, K., Brown, S., & Weber, E. (2023). Barriers to Telehealth Utilization Among Patients of Limited Income with Chronic Conditions and a Gap in Care.. *Telemedicine journal and e-health : the official journal of the American Telemedicine Association*. <https://doi.org/10.1089/tmj.2022.0393>.
13. Demeke, W. (2023). Factors Affecting the Adoption of Telemedicine in Ethiopia. 2023 IST-Africa Conference (IST-Africa), 1-11. <https://doi.org/10.23919/IST-Africa60249.2023.10187862>.
14. Sagaro, G., Battineni, G., & Amenta, F. (2020). Barriers to Sustainable Telemedicine Implementation in Ethiopia: A Systematic Review. *Telemedicine Reports*, 1, 8 - 15. <https://doi.org/10.1089/tmr.2020.0002>.
15. Manyazewal, T., Woldeamanuel, Y., Blumberg, H., Fekadu, A., & Marconi, V. (2021). The potential use of digital health technologies in the African context: a systematic review of evidence from Ethiopia. *NPJ Digital Medicine*, 4. <https://doi.org/10.1038/s41746-021-00487-4>.
16. Polinski, J., Barker, T., Gagliano, N., Sussman, A., Brennan, T., & Shrank, W. (2016). Patients' Satisfaction with and Preference for Telehealth Visits. *Journal of General Internal Medicine*, 31, 269-275. <https://doi.org/10.1007/s11606-015-3489-x>.
17. Gajarawala, S., & Pelkowski, J. (2020). Telehealth Benefits and Barriers. *The Journal for Nurse Practitioners*, 17, 218 - 221. <https://doi.org/10.1016/j.nurpra.2020.09.013>.
18. Joo, J., & Liu, M. (2021). A Scoping Review of Telehealth-Assisted Case Management for Chronic Illnesses. *Western Journal of Nursing Research*, 44, 598 - 611. <https://doi.org/10.1177/01939459211008917>.
19. Pimentel, J. L. (2010). A note on the usage of Likert Scaling for research data analysis. *International Journal of Research Methodology*, 18(2), 109–112.
20. Mayo Clinic. (2023). Telehealth: Technology meets health care. Retrieved October 21, 2025, from <https://www.mayoclinic.org/healthy-lifestyle/consumer-health/in-depth/telehealth/art-20044878>

Annex-1: Consent and Information Sheet

Greetings,

My name is _____.

I am a member of the research team in Addis Ababa University that investigates perspectives about telehealth services and access barriers among patients with chronic medical conditions attending follow-up clinics at ALERT Comprehensive Specialized Hospital, Addis Ababa, Ethiopia.

The research intends to study mainly your attitudes regarding telehealth services and challenges to their availability. Consequentially, your participation in the study is crucial, together with your response to this study. This study will involve no risk at all.

Interviews for this study take about twenty to thirty minutes. Although the information you are providing will help in the implementation of the programs that enhance suitable telehealth service, it may include some private and personal matters. Your identity is anonymous, and your information of any kind is strictly confidential and used solely for the purposes of this research. The participation in the interview is entirely voluntary, and you are free to refuse to answer any questions or to end it at any moment without facing any repercussions.

Would you be open to taking part?

➤YES ➤NO

I'll ask you if you want to take part.

If you have any questions about this study, you can contact the investigator later or the interviewer right away.

Name: Dr. Wendu Mitiku

✉ wendumitiku8@gmail.com

☎ +251911386748

Annex-2: Questionnaire

Section 1: Demographic Information		
1	Age	☐ Under 18 ☐ 18-29 years ☐ 30-39 years ☐ 40-49 years ☐ 50-59 years ☐ 60 years and above
2	Gender	☐ Male ☐ Female
3	Living Location	☐ Urban ☐ Rural
4	Educational Level	☐ No formal education ☐ Primary school ☐ Secondary school ☐ College diploma ☐ Bachelor's degree ☐ Master's degree or higher
5	Occupation	☐ Unemployed ☐ Self-employed ☐ Employed in the private sector ☐ Employed in the public sector ☐ Retired
6.	Monthly household income	☐ Below 1,000 ETB ☐ 1,001-3,000 ETB ☐ 3,001-5,000 ETB

		☐ 5,001-10,000 ETB ☐ Above 10,000 ETB
7.	Type of Chronic Condition	☐ Diabetes ☐ Hypertension ☐ Asthma/COPD ☐ Heart Disease ☐ Kidney Disease ☐ Hematologic Disease ☐ Neurologic Disease ☐ Other (please specify_____)
Section 2: Knowledge and Awareness of Telehealth		
8.	Have you heard of telehealth services before?	☐ Yes ☐ No
9.	If yes, where did you first hear about telehealth?	☐ Healthcare provider ☐ Friends/Family ☐ Media (TV, radio, internet) ☐ Other (please specify_____)
10.	How would you rate your understanding of telehealth services?	☐ No understanding ☐ Minimal understanding ☐ Moderate understanding ☐ Good understanding ☐ Excellent understanding
Section 3: Attitudes and Perceptions Towards Telehealth		
To what extent do you agree with the following statements? (Strongly agree, agree, neutral, disagree, strongly disagree)		
11.	I believe telehealth can improve access to healthcare services.	☐ Strongly disagree ☐ Disagree

		☐ Neutral ☐ Agree ☐ Strongly agree
12.	I feel comfortable using telehealth services for my chronic condition as it allows me to manage my condition at my own pace, space, and place.	☐ Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly agree
13.	I am concerned about the privacy and security of telehealth services.	☐ Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly agree
14.	I think telehealth services can be as effective as in-person consultations.	☐ Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly agree
15.	I feel more empowered to manage my health due to telehealth services.	☐ Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly agree
16.	Telehealth has improved my self-care behaviors.	☐ Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly agree

Section 4: Experience with Telehealth Services		
17.	Have you ever used telehealth services?	☐ Yes ☐ No
18.	If yes, how many times have you used telehealth services in the past year?	☐ Once ☐ 2-5 times ☐ 6-10 times ☐ More than 10 times
19.	Which type of telehealth service have you used?	☐ Phone consultation ☐ Video consultation ☐ Mobile app for monitoring/communication ☐ Web-based programs ☐ Other (please specify_____)
20.	How satisfied were you with the telehealth service you received?	☐ Very dissatisfied ☐ Dissatisfied ☐ Neutral ☐ Satisfied ☐ Very satisfied
21.	What was the main reason for using telehealth services?	☐ Convenience ☐ Cost savings ☐ Avoiding travel ☐ Urgency ☐ Other (please specify_____)
22.	Would you recommend telehealth services to others with chronic conditions?	☐ Yes ☐ No ☐ Maybe
Section 5: Barriers to Access		

23.	What barriers have you faced in accessing telehealth services? (Check all that apply.)	☐ Lack of access to technology (e.g., smartphone, internet) ☐ Lack of digital literacy ☐ Poor internet connectivity ☐ Concerns about cost ☐ Lack of awareness about telehealth services ☐ Preference for in-person visits ☐ Other (please specify)
24.	How difficult is it for you to access telehealth services due to language or communication barriers?	☐ Not difficult at all. ☐ Slightly difficult ☐ Moderately difficult ☐ Very difficult ☐ Extremely difficult
25.	How significant is the cost of telehealth services as a barrier to access?	☐ Not significant ☐ Slightly significant ☐ Moderately significant ☐ Very significant ☐ Extremely significant
26.	Do you have concerns about the quality of care provided through telehealth?	☐ Yes ☐ No
27.	If yes, what are your specific concerns?	☐ Lack of physical examination ☐ Miscommunication with healthcare providers ☐ Inadequate follow-up ☐ Technical issues during the consultation ☐ Other (please specify_____)

Section 6: Suggestions

28.	What improvements would make you more likely to use telehealth services? (Check all that apply.)	☐ Better access to technology ☐ Lower cost ☐ Improved digital literacy training ☐ Enhanced privacy and security measures ☐ More information on how to use telehealth services ☐ Better integration with in-person care ☐ Other (please specify_____)
29.	Do you have any additional comments or suggestions on telehealth services?	_____ _____ _____

Annex-3: Interview Guide

1. Introduction

Objective: Start with a brief introduction to the interview, explaining its purpose, ensuring confidentiality, and obtaining verbal consent.

Example:

- "Thank you for agreeing to participate in this interview. My name is _____, and I'm here to understand your experiences and views on telehealth services. This interview is confidential, and your responses will be used only for research purposes. You can choose not to answer any question or stop the interview at any time. Do I have your consent to proceed?"

2. Opening Question

Can you tell me about your general experience with healthcare services for managing your [specific chronic condition]?

3. Experience with Telehealth

Can you describe your first experience using telehealth services?

How would you compare telehealth services to in-person visits?

What aspects of telehealth did you find most helpful or convenient?

4. Perceived Benefits of Telehealth

What benefits have you experienced from using telehealth services?

Do you think telehealth has improved your access to healthcare? If so, how?

In what ways has telehealth impacted your health management?

5. Barriers to Telehealth Access and Use

What challenges have you encountered when using telehealth services?

Have you faced any technical difficulties? If yes, could you describe them?

Are there any specific reasons why you prefer or avoid using telehealth services?

6. Patient satisfaction and preferences

How satisfied are you with the telehealth services you have received?

Would you choose telehealth services again in the future? Why or why not?

What improvements would you suggest to make telehealth services better for patients like you?

7. Future of Telehealth

Do you see telehealth as a long-term solution for your healthcare needs?

How do you think telehealth could be better integrated into your ongoing care?

What role do you think telehealth should play in managing chronic conditions in the future?

8. Closing Question

Is there anything else you would like to share about your experience with telehealth or your thoughts on how it could be improved?

Interview Guide Notes

Probing: For each question, be prepared to ask follow-up or probing questions if the respondent's answers are brief or unclear.

Examples include:

Can you tell me more about that?

How did that make you feel?

Why do you think that is?

Flexibility: Allow the interview to flow naturally. If the respondent brings up an interesting point not covered by the questions, explore it further.

Recording: With consent, record the interview to ensure accuracy in capturing the responses. Take notes on key points or interesting observations during the interview.

Annex-4: የግንዛቤ እና ፈቃደኝነት መጠየቂያ ቅጽ

ሰላም!

ስሜ _____ ነው።

ሥር የሰደደ የጤና እክል ያለባቸው ታማሚዎች የቴሌ ጤና አገልግሎትና ተደራሽነትን በተመለከተ በክትትል ክሊኒኮች በ ALERT Comprehensive ከፕሮግራም ሆስፒታል የሚከታተሉትን ታካሚዎች አስተያየት በማጥናት በአዲስ አበባ ዩኒቨርሲቲ የምርምር ቡድን አባል ነኝ።

የዳሰሳ ጥናቱ ዋና ግብ በቴሌ ጤና አገልግሎት ላይ ያለዎትን አመለካከት እና እነሱን ለማግኘት እንቅፋቶችን መመርመር ነው። በውጤቱም፣ የእርስዎ ተሳትፎ እና የእርስዎ መልስ የጥናቱ ግብ ላይ ለመድረስ ወሳኝ ናቸው። በዚህ ጥናት አትኅዳም።

ለጥናቱ የሚደረጉ ቃለመጠይቆች ከሃያ እስከ ሠላሳ ደቂቃዎች ሊቆዩ ይችላሉ። ምንም እንኳን እርስዎ የሚያቀርቡት መረጃ ተስማሚ የቴሌ ጤና አገልግሎትን ለማሻሻል በፕሮግራም አተገባበር ላይ የሚያግዝ ቢሆንም፣ የግል እና የግል ጉዳዮችን ሊያካትት ይችላል። ማንነትዎ ማንነቱ ሳይታወቅ ይቀራል፤ እና ማንኛውም የሚያቀርቡት መረጃ በከፍተኛ ሚስጥራዊነት ይታከማል እና ለዚህ ምርምር ዓላማዎች ብቻ ጥቅም ላይ ይውላል። በቃለ መጠይቁ ውስጥ ያለዎት ተሳትፎ ሙሉ በሙሉ በፈቃደኝነት ነው፤ እና ምንም አይነት ችግር ሳይገጥምዎት ማንኛውንም ጥያቄ ለመመለስ ወይም በማንኛውም ጊዜ ለመጨረስ ነፃ ነዎት።

ለመሳተፍ ፈቃደኛ ትሆናለህ?

➤ አዎ ➤ አይ

መሳተፍ ከፈለጋችሁ እጠይቃችኋለሁ።

ስለዚህ ጥናት ማንኛውም አይነት ጥያቄ ካለዎት፣ መርማሪውን በኋላ ወይም ቃለ-መጠይቅ ጠያቂውን ወዲያውኑ ማግኘት ይችላሉ።

ስም፡ ዶ/ር ወንዱ ምትኩ

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Annex-5: የአማርኛ መጠይቅ

ክፍል 1: የስነ ሕዝብ አወቃቀር መረጃ		
1.	እድሜ	☐ 18 ዓመት በታች ☐ 18-29 ዓመት ☐ 30-39 ዓመት ☐ 40-49 ዓመት ☐ 50-59 ዓመት ☐ 60 ዓመት እና ከዚያ በላይ
2.	ጾታ	☐ ወንድ ☐ ሴት
3.	የመኖሪያ ቦታ	☐ ከተማ ☐ ገጠር
4.	የትምህርት ደረጃ	☐ መደበኛ ትምህርት አልተማርኩም ☐ የመጀመሪያ ደረጃ ትምህርት ☐ ሁለተኛ ደረጃ ትምህርት ☐ የኮሌጅ ዲፕሎማ ☐ የመጀመሪያ ዲግሪ ☐ የማስተርስ ዲግሪ ወይም ከዚያ በላይ
5.	ሥራ	☐ ሥራ አጥ ☐ በራስ ተቀጣሪ ☐ በግሉ ሴክተር ውስጥ ተቀጥሮ ☐ በመንግስት ዘርፍ ተቀጥረው የሚሰሩ ☐ ጡረታ ወጥቷል።
6.	ወርሃዊ የቤተሰብ ገቢ	☐ ከ1000 ብር በታች ☐ 1,001-3,000 ብር ☐ 3,001-5,000 ብር

		☐ 5,001-10,000 ብር ☐ ከ10,000 ብር በላይ
7.	ሥር የሰደደ በሽታ ዓይነት	☐ የስኳር በሽታ ☐ የደም ግፊት ☐ አስም/ሲኦፒዲ ☐ የልብ በሽታ ☐ የኩላሊት በሽታ ☐ ከደም ጋር የተያያዘ በሽታ ☐ የነርቭ ሕመም ☐ ሌላ (እባክዎ ይግለጹ _____)
ክፍል 2: ስለ ቴሌ ጤና እውቀት እና ግንዛቤ		
8.	ከዚህ በፊት የዶክተር ቢሮ ወይም ሆስፒታል በአካል መጎብኘት ሳያስፈልጋቸው የጤና አጠባበቅ አገልግሎቶችን እና መረጃዎችን በርቀት ለማቅረብ እንደ ስልክ ወይም ኮምፒውተር ያሉ ቴክኖሎጂዎችን ሰምተዋል?	☐ አዎ ☐ አይ
9.	አዎ ከሆነ መጀመሪያ የሰሙት የት ነበር?	☐ የጤና ባለሙያ ☐ ጓደኞች/ቤተሰብ ☐ ሚዲያ (ቴሌቪዥን ፣ ሬዲዮ ፣ ኢንተርኔት) ☐ ሌላ (እባክዎ ይግለጹ _____)
10.	ስለእነዚህ አገልግሎቶች ያለዎትን ግንዛቤ እንዴት ይመዝኑታል?	☐ ግንዛቤ የለኝም ☐ ዝቅተኛ ግንዛቤ ☐ መጠነኛ ግንዛቤ ☐ ጥሩ ግንዛቤ ☐ በጣም ጥሩ ግንዛቤ
ክፍል 3: ለቴሌ ጤና ያላቸው አመለካከት		

በሚከተሉት መግለጫዎች ምን ያህል ይስማማሉ? (በጣም እስማማለሁ፣ እስማማለሁ፣ ገለልተኛ፣ አልስማማም፣ በጽኑ አልስማማም)		
11.	ቴሌቪዥን የጤና አጠባበቅ አገልግሎቶችን ተደራሽነት እንደሚያሻሽል አምናለሁ።	☐ በጽኑ አልስማማም ☐ አልስማማም ☐ ገለልተኛ ☐ እስማማለሁ ☐ በጣም እስማማለሁ
12.	ጤንነቴን በራሴ ፍጥነት፣ አካባቢ እና ቦታ እንድቆጣጠር ስለሚያስችለኝ የቴሌ ጤና አገልግሎትን ለመጠቀም ምጽት ይሰማኛል።	☐ በጽኑ አልስማማም ☐ አልስማማም ☐ ገለልተኛ ☐ እስማማለሁ ☐ በጣም እስማማለሁ
13.	የቴሌ ጤና አገልግሎት ግላዊነት እና ደህንነት ያሳስበኛል።	☐ በጽኑ አልስማማም ☐ አልስማማም ☐ ገለልተኛ ☐ እስማማለሁ ☐ በጣም እስማማለሁ
14.	እኔ እንደማስበው የቴሌ ጤና አገልግሎቶች በአካል የመመካከር ያህል ውጤታማ ሊሆኑ ይችላሉ።	☐ በጽኑ አልስማማም ☐ አልስማማም ☐ ገለልተኛ ☐ እስማማለሁ ☐ በጣም እስማማለሁ
15.	በቴሌ ጤና አገልግሎት ምክንያት ጤንነቴን እንድቆጣጠር የበለጠ እበረታታለሁ።	☐ በጽኑ አልስማማም ☐ አልስማማም ☐ ገለልተኛ ☐ እስማማለሁ ☐ በጣም እስማማለሁ

16.	ቴሌሄልዝ እራሴን የመንከባከብ ባህሪዬን አሻሽሏል።	☐ በጽኑ አልስማማም ☐ አልስማማም ☐ ገለልተኛ ☐ እስማማለሁ ☐ በጣም እስማማለሁ
ክፍል 4፡ በቴሌ ጤና አገልግሎት ልምድ		
17.	የቴሌ ጤና አገልግሎትን ተጠቅመው ያውቃሉ?	☐ አዎ ☐ አይ
18.	አዎ ከሆነ፣ ባለፈው ዓመት ስንት ጊዜ የቴሌ ጤና አገልግሎትን ተጠቅመዋል?	☐ አንድ ጊዜ ☐ 2-5 ጊዜ ☐ 6-10 ጊዜ ☐ ከ 10 ጊዜ በላይ
19.	የትኛውን የቴሌ ጤና አገልግሎት ተጠቅመዋል?	☐ የስልክ ምክክር ☐ የቪዲዮ ምክክር ☐ የሞባይል መተግበሪያ ☐ የድረ-ገጽ ፕሮግራሞች ☐ ሌላ (እባክዎ ይግለጹ _____)
20.	ባገኙት የቴሌ ጤና አገልግሎት ምን ያህል ረክተዋል?	☐ በጽኑ አልረከሁም ☐ አልረከሁም ☐ ገለልተኛ ☐ ረክቻለሁ ☐ በጣም ረክቻለሁ
21.	የቴሌ ጤና አገልግሎትን ለመጠቀም ዋናው ምክንያት ምን ነበር?	☐ ምጽት ☐ ወጪ መቆጠብ ☐ ጉዞን ማስወገድ ☐ ድንገተኛ ☐ ሌላ (እባክዎ ይግለጹ _____)

22.	ሥር የሰደደ ሕመም ላለባቸው ሰዎች የቴሌ ጤና አገልግሎትን ይመክራሉ?	☐ አዎ ☐ አይ ☐ ምናልባት
ክፍል 5: ለአገልግሎቶች እንቅፋት		
23.	የቴሌ ጤና አገልግሎትን ለማግኘት ምን መሰናክሎች እጋጥመውታል? (ልክ ናቸው ብለው የሚያስቡትን ሁሉ ይምረጡ።)	☐ የቴክኖሎጂ ተደራሽነት እጥረት (ለምሳሌ፣ ስማርትፎን፣ ኢንተርኔት) ☐ የዲጂታል እውቀት እጥረት ☐ ደካማ የበይነመረብ ግንኙነት ☐ ስለ ወጪ ስጋት ☐ ስለ ቴሌ ጤና አገልግሎት ግንዛቤ ማነስ ☐ በአካል ለመጎብኘት ምርጫ ☐ ሌላ (እባክዎ ይግለጹ _____)
24.	በቋንቋ ወይም በተግባባት ችግር ምክንያት የቴሌ ጤና አገልግሎትን ማግኘት ለእርስዎ ምን ያህል ከባድ ነው?	☐ በጭራሽ እስቸጋሪ አይደለም. ☐ ትንሽ እስቸጋሪ ☐ በመጠኑ እስቸጋሪ ☐ በጣም እስቸጋሪ ☐ በጣም እስቸጋሪ
25.	የቴሌ ጤና አገልግሎት ዋጋ ለአገልግሎት እንደ ትልቅ እንቅፋት ነው?	☐ ጉልህ አይደለም ☐ ትንሽ ጉልህ ☐ በመጠኑ ጉልህ ☐ በጣም ጉልህ ☐ በጣም ችግር ያለበት
26.	በቴሌሄልዝ በኩል ስለሚሰጠው የእንክብካቤ ጥራት ስጋት አለው?	☐ አዎ ☐ አይ
27.	አዎ ከሆነ፣ የእርስዎ ልዩ ቅሬታዎች ምንድን ናቸው?	☐ የአካል ምርመራ እጥረት ☐ ከጤና እንክብካቤ አቅራቢዎች ጋር ያለመግባባት

		☐ በቂ ያልሆነ ክትትል ☐ በምክክሩ ወቅት ቴክኒካዊ ጉዳዮች ☐ ሌላ (እባክዎ ይግለጹ _____)
ክፍል 6: የማሻሻያ ምክሮች		
28.	የቴሌ ጤና አገልግሎትን የበለጠ ለመጠቀም ምን ማሻሻያዎችን ይመክራሉ? (አስፈላጊናቸው ብለው የሚያስቡትን ሁሉ ይምረጡ።)	☐ የተሻለ የቴክኖሎጂ ተደራሽነት ☐ ዝቅተኛ ወጪ ☐ የተሻለ የዲጂታል እውቀት ስልጠና ☐ የተሻሻለ የግላዊነት እና የደህንነት እርምጃዎች ☐ የቴሌ ጤና አገልግሎቶችን እንዴት መጠቀም እንደሚቻል ላይ ተጨማሪ መረጃ ☐ በአካል የሚደረግ እንክብካቤ የተሻለ ውህደት ☐ ሌላ (እባክዎ ይግለጹ _____)
29.	በቴሌ ጤና አገልግሎት ላይ ተጨማሪ አስተያየቶችን ወይም ጥቆማዎችን ለመስጠት ፍቃደኛ ከሆኑ እባክዎን ስልክ ቁጥርዎን ይስጡ።	_____

Annex-6: የቃለ መጠይቅ መመሪያ

1. መግቢያ

ዓላማ፡ ለቃለ መጠይቁ እጭር መግቢያ፣ ዓላማውን በማብራራት፣ ሚስጥራዊነትን በማረጋገጥ እና የቃል ስምምነትን በማግኘት ጀምር።

ለምሳሌ፦

በዚህ ቃለ መጠይቅ ላይ ለመሳተፍ ስለተስማማችሁ አመሰግናለሁ። ስሜ _____ ነው፣ እና በቴሌ ጤና አገልግሎት ላይ ያላችሁን ልምድ እና አመለካከት ለመረዳት ነው። ይህ ቃለ መጠይቅ ሚስጥራዊ ነው፣ እና ምላሾችዎ ለምርምር ዓላማዎች ብቻ ጥቅም ላይ ይውላሉ። ማንኛውንም ጥያቄ ላለመመለስ ወይም ቃለ መጠይቁን በማንኛውም ጊዜ ለማቆም ምረጥ ይችላሉ።

2. የመክፈቻ ጥያቄ

የእርስዎን [የተለየ ሥር የሰደደ ሕመም] በማከም ሂደት ስለ ጤና አጠባበቅ አገልግሎት ስላሎት አጠቃላይ ልምድ ሊነግሩኝ ይችላሉ?

3. ከቴሌ ጤና ጋር ልምድ

የቴሌ ጤና አገልግሎቶችን በመጠቀም የመጀመሪያ ተሞክሮዎን መግለጽ ይችላሉ?

የቴሌ ጤና አገልግሎቶችን በአካል ከመጎብኘት ጋር እንዴት ያወዳድራሉ?

የትኞቹን የቴሌ ጤና ገጽታዎች በጣም አጋዥ ወይም ምቹ ሆኖ አግኝተዋል?

4. የተገነዘቡት የቴሌ ጤና ጥቅሞች

የቴሌ ጤና አገልግሎትን በመጠቀማችሁ ምን ጥቅሞች አገኛችሁ?

ቴሌ ጤና የእንተኝ የጤና አገልግሎት አሻሽሏል ብለህ ታስባለህ? ከሆነ እንዴት?

ቴሌ ጤና በጤና አስተዳደርዎ ላይ ተጽዕኖ ያሳደረው በምን መንገዶች ነው?

5. የቴሌ ጤና ተደራሽነት እና አጠቃቀም እንቅፋቶች

የቴሌ ጤና አገልግሎትን ሲጠቀሙ ምን ተግዳሮቶች አጋጥመውዎታል?

ማንኛውም ቴክኒካዊ ችግሮች አጋጥመውዎታል? አዎ ከሆነ፣ እነሱን መግለፅ ይችላሉ?

የቴሌ ጤና አገልግሎትን የሚመርጡበት ወይም የሚቆጠቡበት ልዩ ምክንያቶች አሉ?

6. የታካሚ እርካታ እና ምርጫዎች

ባገኙት የቴሌ ጤና አገልግሎት ምን ያህል ረከተዋል?

የቴሌ ጤና አገልግሎትን ወደፊት ትመርጣለህ? ለምን ወይም ለምን አይሆንም?

እንደ እርስዎ ላሉ ታካሚዎች የቴሌ ጤና አገልግሎት የተሻለ ለማድረግ ምን ማሻሻያዎችን ይመክራሉ?

7. የቴሌ ጤና የወደፊት

ቴሌ ጤናን ለጤና እንክብካቤ ፍላጎቶችዎ የረጅም ጊዜ መፍትሄ አድርገው ይመለከቱታል?

ቴሌ ጤና ከቀጣይ እንክብካቤዎ ጋር እንዴት ሊዋሃድ ይችላል ብለው ያስባሉ?

ለወደፊት ሥር የሰደዱ ሁኔታዎችን ለመቆጣጠር ቴሌ ጤና ምን ሚና መጫወት አለበት ብለው ያስባሉ?

8. የመዝጊያ ጥያቄ

ከቴሌ ጤና ጋር ያለዎትን ልምድ ወይም እንዴት ማሻሻል እንደሚቻል ስላለዎት ሀሳብ ማካፈል የሚፈለጉት ሌላ ነገር አለ?

የቃለ መጠይቅ መመሪያ ማስታወሻዎች

መፈተሽ፡ ለእያንዳንዱ ጥያቄ፣ ምላሽ ሰጪው መልሶች አጭር ወይም ግልጽ ካልሆኑ ተከታትለው ለመጠየቅ ወይም ለመፈተሽ ይዘጋጁ።

ምሳሌዎች የሚከተሉትን ያካትታሉ፡

ስለዚህ ጉዳይ የበለጠ ሊነግሩኝ ይችላሉ?

ይህ ምን እንዲሰማዎት አደረገ?

ለምን ይመስላችኋል?

ተለዋዋጭነት፡ ቃለ-መጠይቁ በተፈጥሮ እንዲፈሰ ፍቀድ። ምላሽ ሰጪው በጥያቄዎቹ ያልተሸፈነ አንድ አስደሳች ነጥብ ካነሳ፣ የበለጠ ያስሱት።

መቅዳት፡ በስምምነት፣ ምላሾቹን ለመያዝ ትክክለኛነትን ለማረጋገጥ ቃለ-መጠይቁን ይመዝግቡ። በቃለ መጠይቁ ወቅት ቁልፍ ነጥቦችን ወይም አስደሳች ምልክታዎችን ማስታወሻ ይያዙ.

Annex-7: Ethical Clearance



ጤና ሳይንስ ኮሌጅ

College of of Health
Sciences

ኢትዮጵያ ሕዝባዊ ዲሞክራሲያዊ ሪፐብሊክ

Department of
Family Medicine

Date: - November 11, 2024

Ref. No.: MF/PG/2011 /2024

To: ALERT Comprehensive
Specialized Hospital

From: Dr. Assiged Geleta
Head, Department of Family Medicine
College of Health Sciences



Subject: Ethics approval of Dr. Wendu Mitiku's Research

As per our faculty meeting we have revalued he proposal & approved Dr.Wendu Mitiku's research entitled “ Exploring Patient Perspectives On Telehealth Services And Barriers To Access Among Patients With Chronic Medical Conditions Attending Follow-Up Clinics At ALERT Comprehensive Specialized Hospital, Addis Ababa Ethiopia.” Advisor name Dr. Eden Habtemariam. To this end I am sending you this letter to confirm approval and to provide the necessary support for the completion of the Research.

Best Regards



P.O.Box:9086

aau.edu.et

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ALERT COMPREHENSIVE SPECIALIZED
HOSPITAL INTERNAL MEMORANDUM



Ref. No.AR/47/2017

Date: 09/03/2017 E.C

To: All Alert Comprehensive Specialized Hospital Departments

Subject: Request for support

This is to inform you that Dr Wendu Mitiku, a student at Addis Ababa University College of Health Science, is conducting research titled "Exploring Patient Perspective on Telehealth Services and Barriers to Access Among Patients with Chronic Medical Condition Attending Follow-up Clinics at ALERT Hospital, Addis Ababa, Ethiopia 2024."

As mentioned above, we kindly request your esteemed department to support him in collecting data and other related activities beneficial to his study.

With our best regards
Dr. Mitiku Wendu
Academic & Research General
Directorate Director
ALERT

Academic & Research General Director

CC:

- Research coordinator
ALERT