



AMERICAN JOURNAL OF SOCIAL DEVELOPMENT AND ENTREPRENEURSHIP (AJSDE)

ISSN: 2836-0702 (ONLINE)

VOLUME 4 ISSUE 2 (2025)



PUBLISHED BY
E-PALLI PUBLISHERS, DELAWARE, USA

Telediagnosis and Patient Satisfaction in Maternal and Child Health Services at Bungoma County Referral Hospital, Kenya

Paul Anyango Ndeda^{1*}, Fred K. Wamalwa¹, Esther Chepsiror²

Article Information

Received: August 10, 2025

Accepted: September 15, 2025

Published: December 17, 2025

Keywords

Healthcare Access, Kenya, Maternal and Child Health, Patient Satisfaction, Telediagnosis, Telemedicine

ABSTRACT

Despite widespread adoption of telemedicine, healthcare systems face challenges in implementing effective telediagnosis services, particularly in resource-constrained settings. This study investigated a critical research gap: the influence of telediagnosis utilization on patient satisfaction among maternal and child health service seekers at Bungoma County Referral Hospital, Kenya. A mixed-methods design was applied, combining a cross-sectional survey of 204 patients with key informant interviews from healthcare providers. Quantitative data were analyzed using descriptive statistics, Pearson correlation, and linear regression, while qualitative insights contextualized patient experiences. Results showed high satisfaction across telediagnosis dimensions (mean scores 4.12–4.31), with patients reporting confidence in diagnostic accuracy, timeliness, and service accessibility. However, inferential analysis revealed that telediagnosis was not a significant predictor of satisfaction ($r = -0.138$, $p = 0.055$; $B = -0.126$, $p = 0.055$), suggesting that structural and relational factors may play a larger role. Providers highlighted the need for robust infrastructure, stable connectivity, and training to maximize impact. This study contributes by offering rare quantitative evidence from a Kenyan public hospital and by showing that while telediagnosis enhances convenience and perceived quality, it alone does not determine satisfaction. The findings underscore the innovation of integrating digital diagnostics into maternal and child health services but emphasize the practical requirement of complementary investments in infrastructure, staff capacity, and patient education. These insights are critical for policymakers and health managers designing sustainable digital health interventions in similar low-resource settings.

INTRODUCTION

Healthcare systems globally are under increasing pressure to deliver timely, affordable, and patient-centered services. Telemedicine, defined as the use of digital information and communication technologies to support healthcare delivery remotely, has been widely recognized as a viable solution for enhancing access to medical services (World Health Organization, 2020). It encompasses diagnostic, therapeutic, preventive, and rehabilitative practices facilitated through tools such as mobile applications, video conferencing, and remote monitoring (American Telemedicine Association, 2020). The COVID-19 pandemic further accelerated its adoption worldwide, reinforcing its role as an indispensable component of healthcare delivery (Powell *et al.*, 2017).

Despite its growth in developed countries, the uptake of telemedicine in low- and middle-income countries remains low, constrained by infrastructural deficits, regulatory gaps, and sociocultural barriers (Dodoo *et al.*, 2022). In Africa, the potential of telemedicine is significant given rising healthcare demands and persistent service gaps, yet adoption rates are still limited (Manyati & Mutsau, 2021). In Kenya, while telemedicine has been introduced in select facilities, reports indicate uptake remains as low as 7.3% compared to the global average of 17.6% (WHO, 2019). The majority of implementations are concentrated in urban centers, leaving rural areas such as Bungoma

underserved.

Patient satisfaction is a critical indicator of healthcare quality, influencing adherence to treatment, service utilization, and overall health outcomes (Aiken *et al.*, 2021). Within maternal and child health (MCH) services, patient satisfaction is particularly important as it shapes decisions on antenatal visits, delivery care, and postnatal follow-ups (Johnson & Mwaniki, 2021). Yet in Bungoma County Referral Hospital, patient satisfaction remains suboptimal due to frequent delays, overcrowding, and poor provider-patient communication (Kim *et al.*, 2022). Telemedicine offers a potential solution by improving timeliness, strengthening communication, and increasing access to follow-up care. However, limited empirical evidence exists on its role in influencing MCH patient satisfaction in Kenyan referral hospitals.

Patient satisfaction is widely recognized as a cornerstone of healthcare quality and a predictor of favorable health outcomes. Ideally, maternal and child health services should be accessible, reliable, and patient-centered, ensuring mothers and children feel respected, informed, and supported throughout their care journey. Satisfied patients are more likely to adhere to medical advice, attend follow-up visits, and utilize health services consistently, which contributes to reducing maternal and neonatal morbidity and mortality (Aiken *et al.*, 2021; WHO, 2020). Innovations such as telemedicine have

¹ Department of Development Studies, Catholic University of Eastern Africa, Kenya

² School of Business and Economics, Catholic University of Eastern Africa, Kenya

* Corresponding author's e-mail: ndedapaul2@gmail.com

been integrated into well-functioning health systems to enhance timeliness, strengthen communication, and improve continuity of care, all of which foster patient trust and satisfaction.

However, in Bungoma County Referral Hospital, patient satisfaction remains below expectations. Reports highlight frequent service delays, overcrowding, inadequate staffing, and poor communication between healthcare providers and patients (Kim *et al.*, 2022). In maternal and child health services, dissatisfaction manifests in low uptake of antenatal care, high dropout rates in postnatal follow-up, and increased reliance on home deliveries due to perceived neglect or long waiting times (Johnson & Mwaniki, 2021). Although telemedicine has been introduced in some settings to address these gaps, its application in Bungoma remains limited, thereby restricting access to timely consultations, follow-ups, and advice. This mismatch between patient expectations and actual experiences underscores persistent weaknesses in ensuring satisfaction.

While studies in other contexts suggest telemedicine can improve satisfaction and care continuity (Njoroge *et al.*, 2020; Kim *et al.*, 2022), there is little empirical evidence on its role in maternal and child health services in rural Kenyan referral hospitals. Existing research often focuses on healthcare access or outcomes rather than patient satisfaction, or it examines satisfaction in broader outpatient contexts rather than in maternal and child health. This has created contextual gaps (insufficient focus on Bungoma County Referral Hospital), conceptual gaps (emphasis on access rather than satisfaction), and methodological gaps (heavy reliance on cross-sectional designs with limited depth). This study therefore addresses these gaps by investigating the influence of telemedicine on patient satisfaction in maternal and child health services at Bungoma County Referral Hospital. The objective of this study is to examine the effect of telediagnosis on the satisfaction of maternal and child health service seekers at Bungoma County Referral Hospital in Kenya.

LITERATURE REVIEW

The theoretical foundation of this study is the Expectation-Confirmation Theory (ECT), initially established by Oliver (1980) and later adapted for healthcare by Bhattacharjee (2001). This theory posits that patient satisfaction is a direct result of their post-service perceptions of performance meeting or exceeding their pre-service expectations. According to ECT, expectations are formed from past experiences, word-of-mouth, and service assurances. When a service meets or surpasses these expectations, it leads to positive confirmation and satisfaction; a failure to do so results in negative disconfirmation and dissatisfaction. This continuous evaluation process, where patients compare service delivery with their expectations, is central to the theory. Parasuraman *et al.* (1988) further refined this concept through their SERVQUAL model, which identifies five

dimensions critical to patient satisfaction: reliability, assurance, tangibles, empathy, and responsiveness. The robustness of ECT is demonstrated by its effectiveness in predicting patient behavior and satisfaction levels through an understanding of the cognitive processes involved in evaluating healthcare services (Bhattacharjee, 2001). Its versatility allows it to be applied across diverse healthcare settings, providing a quantifiable framework for measuring service quality and identifying gaps between expectations and performance to guide service improvement initiatives.

Despite its strengths, ECT has limitations, particularly in the complex healthcare context. A key critique is the assumption that patients always have well-developed expectations. In a setting with new medical technologies, such as telediagnosis, patient expectations may be unrealistic or absent, making the expectation-performance comparison less relevant. The theory may also downplay the significant influence of emotional and psychological factors, cultural background, health literacy, and personality on patient satisfaction. Opponents of the theory argue that the dynamic nature of health needs can cause expectations to shift during the service process, rendering an initial comparison less valid. Additionally, the theory may not adequately explain situations where patients with low expectations report high satisfaction despite objectively poor service quality.

In the context of this study, ECT provides a relevant framework for examining patient satisfaction with telediagnosis services at Bungoma County Referral Hospital. The theory suggests that patient satisfaction with telediagnosis will be determined by whether the services, including telediagnosis, meet or surpass their initial expectations for accuracy, efficiency, and communication. For example, a patient's satisfaction with telediagnosis will be based on their comparison of the remote diagnostic process to their prior in-person experiences, specifically regarding diagnostic accuracy, provider competence, and communication clarity.

Telediagnosis and Patient Satisfaction

Existing literature provides mixed evidence on the factors influencing patient satisfaction with telediagnosis. Lanier *et al.* (2021) found that video-based teleconsultations led to higher patient satisfaction than audio or text-based modalities in the United States, highlighting the importance of the communication medium. However, this finding's relevance to a rural, resource-constrained setting like Bungoma County, where technology access is limited, is unclear. Orrange *et al.* (2021) studied affordability and trust in US tele-diagnostic services and found that while patients perceived them as cheaper, ambiguous payment systems created dissatisfaction. The influence of these factors in a low-income context like Kenya, where out-of-pocket costs are a major barrier, remains underexplored.

International studies have also pointed to the role of privacy and convenience. Haxhihamza *et al.* (2021) found

that while patients valued telemedicine for its convenience, concerns over privacy breaches and limited interpersonal connection were key sources of dissatisfaction. These findings suggest the need to understand how cultural perceptions of privacy and patient engagement impact satisfaction in a Kenyan context. Pikkemaat *et al.* (2021) observed the positive effect of smart-glasses-enabled teliagnosis in the Democratic Republic of Congo on efficiency and referral reduction, but their study did not measure patient satisfaction, leaving a critical gap. Similarly, Piay-Fernandez *et al.* (2023) focused on the feasibility of teliagnosis for sensitive services in Colombia, raising questions about provider competence and safety without addressing general outpatient services relevant to the study's population.

Research in the African context highlights both opportunities and challenges. Smith, Hunte, and Graber (2020) noted that teliagnosis could empower patients in low- and middle-income countries but acknowledged disparities in digital literacy and internet access as major limitations. Kim *et al.* (2022) and Onsongo *et al.* (2023) provided a provider-centric view of teliagnosis in Kenya, identifying barriers such as inadequate ICT infrastructure, high costs, and poor patient literacy. These studies, however, did not directly evaluate the effect of these challenges on patient satisfaction from the patient's perspective. Kuria (2020) demonstrated that mobile health platforms can improve diagnostic accuracy and patient confidence in Kenya, but did not investigate whether these improvements translated into higher patient satisfaction in a referral hospital setting. This body of literature reveals a clear gap in understanding how patient-level factors, technological limitations, and perceived benefits interact to influence satisfaction with teliagnosis in a rural Kenyan referral hospital.

MATERIALS AND METHODS

This study adopted a mixed methods design to investigate the effect of teliagnosis on the satisfaction of maternal and child health service seekers at Bungoma County Referral Hospital in Kenya. A concurrent triangulation strategy was employed, whereby quantitative and qualitative data were collected simultaneously, analyzed separately, and then integrated during interpretation. Such a design is advantageous because it provides measurable statistical relationships alongside contextual explanations, enhancing both validity and reliability of the findings through triangulation (Anyiro, 2021; Creswell, 2023).

Research Design

The study followed a descriptive cross-sectional survey design within the mixed methods framework. Quantitative data provided measurable evidence on the influence of teliagnosis, while qualitative insights were obtained from healthcare providers to capture lived experiences and contextual perspectives. This integration minimized the weaknesses of either method when used in isolation, ensuring robustness in answering the research question

(Dubey & Kothari, 2022).

Study and Target Population

The study population comprised maternal and child health clients attending Bungoma County Referral Hospital between January and December 2023. According to hospital records, 3,178 antenatal care (ANC) and 2,552 postnatal care (PNC) clients were served, giving a total population of 5,730. From this, the target population for the study was 419 service seekers, consisting of 221 ANC and 198 PNC clients (KDHS, 2025). Additional respondents included facility administrators, the medical superintendent, the nursing officer in charge, clinical officers, and medical officers, who were purposively selected for key informant interviews.

Sample Size and Sampling Procedures

The sample size was determined using the Taro Yamane (1967) formula at a 95% confidence level and a 5% margin of error, expressed as:

$$n = \frac{N}{[1 + N(e)^2]}$$

Where,

n = sample size

N = study population

e = level of significance (Significance level = 5 percent)

N = target population = 419

The sample size was calculated as 204 respondents. Stratified random sampling was applied to ensure proportional representation of both ANC and PNC clients, while purposive sampling was used to identify healthcare providers for qualitative interviews (Bhardwaj, 2019).

Research Instruments

Primary data were collected through structured questionnaires and key informant interview guides. The questionnaire contained closed-ended questions and Likert-scale items, specifically addressing constructs of teliagnosis such as accessibility, timeliness, diagnostic accuracy, and their link to satisfaction outcomes. Section A captured demographic characteristics of respondents, while Section C focused on teliagnosis and patient satisfaction. Key informant interviews targeted healthcare providers with knowledge and experience in telemedicine implementation, providing qualitative insights on diagnostic practices, challenges, and patient feedback. Questionnaires were preferred due to their ability to collect standardized responses at scale (Einola & Alvesson, 2021), while interviews allowed for in-depth understanding of context-specific experiences.

Validity, Pilot Testing, and Reliability

Validity of the instruments was ensured through expert review by supervisors and public health specialists, along with a pilot test conducted on 20 respondents not

included in the main study sample. The pilot assessed clarity, flow, and comprehension of items, after which adjustments were made to improve precision (Sekeran & Bougie, 2019). Construct validity was examined using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, which yielded a score of 0.885 for telediagnosis, surpassing the minimum acceptable threshold of 0.70 (Almanasreh, Moles & Chen, 2019). Reliability was tested using Cronbach's alpha, where telediagnosis constructs attained a coefficient of 0.886, confirming strong internal consistency (Hair & Alamer, 2022).

Data Analysis

Quantitative data were coded, entered, and analyzed using SPSS version 26. Descriptive statistics, including means and standard deviations, summarized responses on telediagnosis and satisfaction. Pearson's product-moment correlation was employed to test the strength and direction of the relationship between telediagnosis and patient satisfaction (Belle *et al.*, 2022). Multiple regression analysis was used to establish the predictive effect of telediagnosis on satisfaction, expressed as:

$$Y = \alpha + \beta_1 X_1 + \dots (1)$$

where Y denotes patient satisfaction, X1 represents telediagnosis, α is the intercept, β_1 is the regression coefficient, and ϵ is the error term. Qualitative data from interviews were transcribed verbatim, coded, and analyzed thematically to identify emerging patterns and themes. Integration of quantitative and qualitative results occurred during the interpretation phase to provide a holistic understanding of how telediagnosis influenced satisfaction.

Ethical Considerations

Ethical clearance was obtained from the Catholic University of Eastern Africa Ethics Review Committee, while authorization to conduct fieldwork was granted by NACOSTI and Bungoma County Health Department. Informed consent was sought from all participants after explaining the study's purpose, voluntary nature, and confidentiality safeguards (Kombo & Tromp, 2016). Respondents retained the right to withdraw at any point without penalty. No personal identifiers were recorded, ensuring anonymity. Interviews were conducted respectfully, and participation was limited to academic purposes only.

RESULTS AND DISCUSSION

Frequency of Use of Telemedicine Services

The research evaluated how frequently respondents utilized telemedicine services for MCH care delivery at Bungoma County Referral Hospital.

Table 1: Frequency of use of Telemedicine services in seeking MCH services

Frequency of use	Frequency	Percentage
Occasionally (once every 2–3 months)	91	46.7

Frequently (once a month)	46	23.6
Very Frequently (more than once a month)	44	22.6
Rarely (less than once every 6 months)	11	5.6
Never	3	1.5
Total	195	100.0

Table 1 reveals that occasional use (46.7%) represents the dominant utilization pattern, indicating measured but consistent engagement with telemedicine services. Significantly, 92.9% of respondents reported some level of telemedicine usage, with 68.8% engaging monthly or more frequently. This high adoption rate contrasts with findings from similar studies in sub-Saharan Africa where telemedicine uptake remains limited due to infrastructure constraints. Key informant interviews revealed that cost and time efficiency drove the occasional usage pattern. Healthcare providers noted that patients particularly valued the elimination of transportation costs and reduced travel time to healthcare facilities. One provider emphasized: "Patients experience greater satisfaction when they can receive diagnostic services from home without incurring additional expenses. The minimal non-usage rate (1.5%) suggests successful implementation and acceptance of telemedicine services within the study population, indicating effective change management and user adoption strategies compared to earlier telemedicine initiatives in Kenya that faced higher resistance rates.

Devices Used to Access Telemedicine Services

Device preference analysis revealed technology adoption patterns and accessibility considerations for telemedicine service delivery.

Table 2: Devices Used to Access Telemedicine Service

Device	Frequency	Percentage
Smart phone	148	75.9
Feature phone	47	24.1
Total	195	100.0
Device	Frequency	Percentage

The predominance of smartphone usage (75.9%) reflects Kenya's rapid mobile technology advancement, with smartphone penetration reaching significant levels in rural areas. This finding surpasses recent national statistics showing 58% smartphone adoption, suggesting that healthcare contexts may accelerate technology adoption among users.

Healthcare workers interviewed highlighted that smartphone users engaged more effectively with visual diagnostic information, multimedia health education content, and comprehensive telemedicine applications. However, they emphasized that feature phone users (24.1%) demonstrated equal satisfaction levels when

services were appropriately adapted, stating: “We ensure that SMS-based and voice call functionalities serve feature phone users effectively, maintaining service quality across device types.”

This inclusive approach aligns with WHO recommendations for universal health coverage through technology, emphasizing that digital health interventions should accommodate diverse technological capabilities (WHO, 2019). The substantial feature phone usage indicates the importance of multi-platform service design in resource-limited settings.

Reasons for Device Choice

Understanding motivational factors behind device selection provides insights into user behavior and technology acceptance barriers.

Table 3: Reasons for the Choice of Device

Reason	Frequency	Percentage
Easy to use	97	49.7
Convenient	66	33.8
Affordable	25	12.8
Visibility	6	3.1
Portable	1	0.5
Total	195	100.0

Ease of use emerged as the primary selection criterion (49.7%), emphasizing the critical importance of intuitive user interface design in healthcare technology adoption. This finding supports the Technology Acceptance Model (Davis, 1989), where perceived ease of use significantly influences user acceptance and continued usage of technology systems.

Convenience ranked second (33.8%), with key informants noting that patients valued the ability to access healthcare services without disrupting daily activities or work schedules. Healthcare providers observed: “Patients who prioritized ease of use showed higher engagement rates and expressed greater satisfaction with their healthcare experiences.” Interestingly, affordability ranked only third (12.8%), suggesting that functionality considerations outweigh cost concerns when users perceive significant value in telemedicine services. This contrasts with earlier assumptions about price sensitivity in low-income settings and aligns with recent findings by Nyamai *et al.* (2021) showing that Kenyan patients prioritize service quality over cost in healthcare technology adoption. The minimal importance of visibility (3.1%) and portability (0.5%) indicates that users focus primarily on functional rather than aesthetic or physical device characteristics when selecting telemedicine access tools.

Timing of Device Application

Analysis of when patients most commonly utilized telemedicine devices revealed usage patterns aligned with healthcare needs and system capabilities.

Table 4: Time of Application of the device

When the device is applied	Frequency	Percentage
When I need to consult the doctor	99	50.8
For appointments	53	27.2
When I need clinical advice	33	16.9
When caregivers are monitoring my progress	10	5.1
Total	195	100.0

Direct medical consultations dominated device usage (50.8%), indicating successful adaptation of traditional doctor-patient interactions to digital platforms. This finding demonstrates that telemedicine effectively addresses immediate clinical decision-making needs, supporting continuity of care principles emphasized in recent maternal health guidelines (WHO, 2022).

Appointment scheduling represented substantial usage (27.2%), highlighting telemedicine’s administrative value in healthcare service coordination. Key informants noted improved appointment adherence rates when patients could schedule and receive reminders through telemedicine platforms, stating: “Digital appointment systems significantly reduced no-show rates compared to traditional scheduling methods.”

The moderate use for clinical advice (16.9%) suggests that patients distinguish between formal consultations and advisory interactions, preferring direct medical consultations for primary health concerns. The limited usage for caregiver monitoring (5.1%) may reflect system design limitations or insufficient integration of family-centered care approaches in current telemedicine implementations.

Telemedicine Services Utilized

Examination of specific telemedicine applications revealed service utilization priorities within maternal and child health care delivery.

Table 5: Telemedicine services utilized at Bungoma County Referral Hospital

Services	Frequency	Percentage
Antenatal care	99	50.8
Immunization services	42	21.5
Postnatal care	29	14.9
Family planning services	25	12.8
Total	195	100.0

Antenatal care dominated telemedicine utilization (50.8%), reflecting the critical importance of continuous pregnancy monitoring in maternal health outcomes. This finding aligns with global trends showing telemedicine’s effectiveness in antenatal care delivery, particularly for routine monitoring, health education, and early

complication detection (Pehl *et al.*, 2020). Healthcare providers emphasized that telemedicine-enabled antenatal care improved monitoring frequency and early intervention capabilities: “Remote monitoring allows us to track pregnancy progression more closely and identify potential complications earlier than traditional visit schedules permit.” This approach supports evidence-based antenatal care models recommending increased contact points between patients and providers. Immunization services ranked second (21.5%), indicating successful integration of preventive care into telemedicine platforms. Key informants noted that digital immunization tracking and reminder systems improved vaccination coverage rates and reduced missed immunizations. This finding supports recent research by Oluoch *et al.* (2022) demonstrating telemedicine’s effectiveness in preventive healthcare delivery in Kenya. Postnatal care utilization (14.9%) suggests opportunities for expanded postpartum monitoring through telemedicine platforms. The relatively lower usage may reflect traditional postpartum care practices or limited awareness of available remote monitoring options. Family planning services showed the lowest utilization (12.8%), potentially indicating cultural sensitivities or preferences for in-person counseling for reproductive health topics.

Duration of Telemedicine Service Utilization

Analysis of patient engagement duration provides insights into user retention patterns and long-term service adoption. The majority of users (41.0%) demonstrated sustained engagement for 6 months to 1 year, indicating successful user retention beyond initial adoption phases. Combined with long-term users (25.1%), 66.1% of respondents showed continued commitment to telemedicine services, suggesting

Table 6: Period utilizing telemedicine services for Maternal and Child Health

Period	Frequency	Percentage
6 months to 1 year	80	41.0
Less than 6 months	66	33.9
More than 1 year	49	25.1
Total	195	100.0

positive user experiences and perceived healthcare value. Healthcare providers noted that patients continuing telemedicine usage beyond initial months showed improved health outcomes and higher satisfaction levels. Key informants emphasized: “Sustained users develop confidence in the system and integrate telemedicine into their regular healthcare routines, leading to better health monitoring and outcomes.” The substantial proportion of newer users (33.9% using services for less than 6 months) indicates ongoing expansion and adoption of telemedicine services. However, key informants noted that infrastructure dependency remained a challenge, with service continuity depending on reliable technological connectivity through telephone, SMS, or data packages. This finding emphasizes the need for robust technological infrastructure to support sustained telemedicine implementation in resource-limited settings.

Telediagnosis Utilization and Patient Satisfaction

The primary objective examined the impact of telediagnosis utilization on patient satisfaction at Bungoma County Referral Hospital. This analysis addresses the first research objective by evaluating patient perceptions of telediagnosis effectiveness across multiple dimensions

Table 7: Descriptive Statistics for Telediagnosis Utilization

Statements	N	Mean	Std. Dev
Telediagnosis has helped in accurately diagnosing my health condition	195	4.31	.883
I feel more confident in the diagnostic accuracy of telediagnosis services	195	4.18	.723
Telediagnosis has provided me with timely access to diagnostic services	195	4.12	.722
I am satisfied with the level of expertise provided through telediagnosis	195	4.18	.817
Telediagnosis has improved my overall satisfaction with healthcare services	195	4.27	.7335

Table 7 demonstrates consistently high agreement levels across all telediagnosis dimensions, with means ranging from 4.12 to 4.31 on a 5-point Likert scale. The highest satisfaction related to diagnostic accuracy (M=4.31, SD=0.883), indicating strong patient confidence in remote diagnostic capabilities. This finding surpasses expectations for technology-mediated healthcare in resource-limited settings and aligns with recent studies from developed countries showing high patient satisfaction with telediagnosis accuracy (Reed *et al.*, 2019). Key informant interviews revealed that patients particularly appreciated the accessibility and convenience of telediagnosis services. Healthcare providers noted:

“Telediagnosis enables service delivery to reach the lowest levels of care through electronic devices, primarily mobile phones. Patients demonstrate high satisfaction due to ease of access and immediate guidance on health concerns without visiting physical facilities.” This observation supports the high satisfaction scores for timely access (M=4.12, SD=0.722). The confidence dimension (M=4.18, SD=0.723) reflects successful trust-building between patients and remote diagnostic systems. This finding challenge earlier concerns about patient acceptance of technology-mediated diagnosis in traditional healthcare contexts. Key informants emphasized that successful implementation

required adequate provider training and patient education about telediagnosis capabilities and limitations. Overall healthcare satisfaction improvement (M=4.27, SD=0.7335) suggests successful integration of telediagnosis into comprehensive care delivery systems. This finding aligns with international studies demonstrating telediagnosis effectiveness in improving healthcare access and patient experiences (Smith *et al.*, 2020). However, it contrasts with some literature reporting mixed patient satisfaction with telemedicine due to privacy concerns and reduced interpersonal connection (Haxhihamza *et al.*, 2021). The relatively low standard deviations (0.722-0.883) across all measures indicate strong consensus among respondents regarding telediagnosis benefits, supporting the reliability and consistency of service delivery. This uniformity suggests successful standardization of telediagnosis protocols and consistent quality assurance measures. Healthcare providers emphasized infrastructure dependency as a critical implementation consideration: “The usefulness of telediagnosis depends on technological prerequisites including reliable devices and acceptable connectivity through telephone, SMS, or data packages.” This finding highlights the importance of technological infrastructure investment for sustainable

telediagnosis implementation, supporting recent research by Kampmeijer *et al.* (2016) on digital health infrastructure requirements.

The cost and time efficiency benefits identified through qualitative analysis provide context for the high satisfaction scores. Patients experienced significant out-of-pocket expense reduction through eliminated transportation costs and minimized travel time to healthcare facilities. This economic benefit likely contributed to overall positive perceptions of telediagnosis services, particularly important in resource-limited settings where healthcare access costs significantly impact patient decisions. These findings contribute to emerging evidence supporting telediagnosis effectiveness in sub-Saharan African healthcare contexts, while highlighting the critical importance of appropriate technological infrastructure and comprehensive implementation strategies for successful adoption and sustained patient satisfaction.

Inferential Statistics

Correlation analysis

The findings of the correlation between the independent variable, telediagnosis services, and the dependent variable, patient satisfaction, are summarized and presented in Table 8.

Table 8: Correlation between independent variable and dependent variable Correlations

Statements	N	Telediagnosis services	Patient satisfaction
Telediagnosis services	Pearson Correlation	1	-.138
	Sig. (2-tailed)		.055
	N	195	195
Patient satisfaction	Pearson Correlation	-.138	1
	Sig. (2-tailed)	.055	
	N	195	195

According to the findings in the table, there is a weak and negative linear relationship between telediagnosis services and patient satisfaction, with a Pearson correlation coefficient (r) of $-.138$. The p -value (Sig. 2-tailed) for this correlation is $.055$. Since this p -value is slightly greater than the conventional significance level of $.05$, the relationship is not statistically significant. This indicates that while there is a slight tendency for patient satisfaction to decrease as telediagnosis services increase, this relationship is not strong enough to be considered statistically significant in the population from which the

sample was drawn.

Regression analysis

A simple linear regression analysis was conducted to examine the predictive relationship between telediagnosis and patient satisfaction. This analysis aims to determine the extent to which the independent variable (telediagnosis) can predict the dependent variable (patient satisfaction). The analysis was performed with all necessary assumptions complied with.

Table 9: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	.138 ^a	.019	.014	.33080

a. Predictors: (Constant), Telediagnosis

Table 9 shows the amount of variance that the predictor variable accounts for. The R value of $.138$ represents the simple correlation coefficient between telediagnosis services and patient satisfaction. The R^2

value is $.019$, which indicates that the independent variable, telediagnosis services, explains only 1.9% of the variance in patient satisfaction. This suggests that the model is a poor fit and that other variables not

included in the model account for the remaining 98.1% of the variance in patient satisfaction. The Adjusted R Square value of .014 confirms this low explanatory power.

Table 10: Summary of ANOVA results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.410	1	.410	3.730	.055b
	Residual	21.196	193	.110		
	Total	21.605	194			

a. *Dependent Variable: Patient satisfaction*

b. *Predictors: (Constant), Telediagnosis services*

The ANOVA table provides the results of the F-test, which assesses the overall statistical significance of the regression model. As seen in the table, the F-statistic is 3.730 with a significance value of .055. Since the p-value of .055 is greater than the typical significance level of .05, the model as a whole is not statistically significant. This indicates that telediagnosis services do not significantly predict patient satisfaction.

Table 11: Summary of regression coefficients result

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.783	.275		17.377	.000
	Telediagnosis services	-.126	.065	-.138	-1.931	.055

a. *Dependent Variable: Patient satisfaction*

The coefficients table shows the specific results of the regression analysis and is used to construct the regression equation. The unstandardized coefficient (B) for telediagnosis services is $-.126$, with a standard error of $.065$. This indicates that for every one-unit increase in telediagnosis services, there is a predicted decrease of $.126$ in patient satisfaction. The corresponding t-statistic is -1.931 , and the p-value is $.055$. As this p-value is greater than $.05$, the coefficient for telediagnosis services is not statistically significant. This means we cannot conclude that telediagnosis services have a meaningful predictive effect on patient satisfaction. The intercept (Constant) is 4.783 , which is the predicted patient satisfaction when telediagnosis services are at a value of zero.

The standardized beta coefficient for telediagnosis services is $-.138$, which means that for every one-standard-deviation increase in telediagnosis services, there is a predicted decrease of $.138$ standard deviations in patient satisfaction.

From the coefficients table, the regression equation is:

$$Y = 4.783 - 0.126X_1 + \epsilon$$

Where,

$$Y = \text{Patient Satisfaction } X_1 = \text{Telediagnosis services}$$

The results of the regression analysis confirm the findings from the correlation analysis, indicating that there is no significant relationship or predictive effect of telediagnosis services on patient satisfaction. The null hypothesis, which states that there is no significant effect of telediagnosis services on patient satisfaction, cannot be rejected based on these statistical findings.

CONCLUSION

The study examined the impact of telediagnosis utilization on patient satisfaction at Bungoma County Referral Hospital by evaluating multiple dimensions of patient experience. The findings revealed that patients generally reported high satisfaction with telediagnosis services, particularly regarding diagnostic accuracy, confidence in the results, timely access to healthcare, level of expertise, and overall satisfaction with healthcare services. Patients highlighted the accessibility, convenience, and cost and time efficiency of telediagnosis, appreciating the ability to receive guidance and diagnostic services without physically visiting healthcare facilities. Healthcare providers emphasized that effective implementation depended on reliable technological infrastructure, adequate connectivity, and comprehensive training for both staff and patients. Inferential analysis indicated a weak and non-significant relationship between telediagnosis utilization and patient satisfaction, and regression results showed that telediagnosis services did not significantly predict patient satisfaction, suggesting that other factors beyond the use of telediagnosis contribute more substantially to patient experiences. The study highlights the importance of integrating telediagnosis into broader healthcare delivery systems, ensuring supportive infrastructure, training, and patient education to maximize benefits. While telediagnosis demonstrates potential for improving access and convenience, sustainable adoption requires attention to infrastructure and complementary strategies to enhance overall patient satisfaction.

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