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INFLUENCE OF INTERNET CONNECTIVITY ON THE PROVISION OF UNIVERSAL HEALTH COVERAGE IN PUBLIC HOSPITALS IN NAIROBI CITY COUNTY, KENYA

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Influence of Internet Connectivity On the Provision of Universal Health Coverage in Public Hospitals in Nairobi City County, Kenya

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Abstract:

***Purpose of Study*:** The purpose of this study was to examine the influence of internet connectivity on the provision of Universal Health Coverage in public hospitals in Nairobi City County, Kenya. Specifically, the study assessed how internet availability, reliability, accessibility, affordability, and connectivity speed contribute to healthcare quality, accessibility, efficiency, and equitable service delivery.

Methodology: The study adopted a descriptive cross-sectional survey design targeting 202 individuals across seven public hospitals. Stratified random sampling selected 134 respondents, comprising healthcare professionals, ICT specialists, administrative staff, and patients. Structured questionnaires collected quantitative data, with 121 completed responses obtained. Data were analysed using descriptive statistics, correlation, and regression analysis.

Findings: The findings revealed that internet connectivity positively and significantly influenced Universal Health Coverage provision ($\beta = 0.624$, $t = 9.165$, $p < 0.001$). Internet connectivity explained 38.9% of variations in healthcare provision ($R^2 = 0.389$). Descriptive results indicated favourable perceptions of internet connectivity ($M = 3.96$, $SD = 0.88$) and healthcare provision ($M = 4.10$, $SD = 0.84$). Respondents acknowledged that stable connectivity supported electronic health records, improved departmental communication, and enhanced healthcare accessibility. However, unreliable connections, frequent outages, and limited internet access in low-income communities constrained digital healthcare delivery, particularly telemedicine services and equitable healthcare access.

Conclusion: The study concluded that reliable internet connectivity significantly enhances Universal Health Coverage through improved healthcare accessibility, service quality, and operational efficiency. However, connectivity challenges undermine equitable healthcare delivery. The study recommends strengthening hospital internet infrastructure, establishing backup connectivity, improving digital affordability, and enhancing staff training to support sustainable healthcare provision.

Keywords: *Internet Connectivity; Universal Health Coverage; Public Hospitals; Healthcare Accessibility; Nairobi City County; Kenya.*

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1.0 INTRODUCTION

1.1 Background of the Study

Universal Health Coverage (UHC) means that all people can obtain the health services they need, of good quality, without suffering financial hardship (Darrudi et al., 2022). Reaching this goal increasingly depends on electronic health records, teleconsultation and electronic claims systems, all of which require dependable internet access (World Health Organization, 2021). In public hospitals, where patient numbers are high and resources are limited, a weak connection delays care, interrupts records and discourages patients from using digital services. Internet connectivity has therefore become part of core hospital infrastructure. This study examines how internet connectivity influences the provision of UHC in public hospitals in Nairobi City County.

1.1.1 Global Perspective

Estonia shows what dependable connectivity can achieve. Its nationwide health information system has operated since 2008, allowing providers at different levels of care to exchange patient data (Šteinmiller & Ross, 2024). Information entered by one provider can be accessed by another anywhere in the country through a secure data exchange platform, and prescriptions are issued electronically (Tuula *et al.*, 2022). This continuity of information supports the principle that every insured person is entitled to the same quality of care. In Asia, India launched the Ayushman Bharat Digital Mission in September 2021 to improve the availability, accessibility, affordability and acceptability of healthcare through shared digital infrastructure (Sharma *et al.*, 2023). The mission, however, depends on citizens being able to get online, and the benefits of broadband appear mainly where people adopt and use connections rather than where networks merely exist (Briglauer *et al.*, 2024). Both cases lead to one lesson: digital health supports UHC only where networks are present, stable and reachable by every patient group. The WHO global strategy on digital health makes a similar point by stating that digital health initiatives must be guided by a strategy that integrates financial, organisational, human and technological resources (WHO, 2021).

1.1.2 Regional Perspective

In Africa, similar promises meet practical limits. In Ghana, health professionals in southern facilities reported that digital health technology made information faster and easier to access for decision making, but poor internet connectivity and unstable electricity caused delays and frustration (Mensah et al., 2023). In South Africa, a National Health Insurance fund is planned in which electronic health records will be essential for monitoring outcomes and guiding purchasing decisions, yet progress has been slow, and insufficient investment in hardware, software and connectivity remains one of the barriers (Zharima et al., 2023). Both countries show that policy ambition alone cannot deliver digital health; the network that carries the data must be dependable.

Telemedicine, which delivers medical services across geographical distance through information and telecommunication technology, depends on the quality of those networks (Alenoghena et al., 2023). For public hospitals in East Africa, this evidence implies that connectivity should be planned together with health financing reforms and not after them. The Kenyan experience described below is similar, which suggests that these barriers are shared across the region and are not unique to one country. Lessons from both countries are therefore relevant to Nairobi's public hospitals.

1.1.3 Local Perspective of Digital Ecosystems

Kenya has built a strong base for digital services. By June 2025, mobile data subscriptions had reached 58.5 million, of which 78.2% were on mobile broadband, although affordability and access remain critical challenges (Communications Authority of Kenya [CAK], 2025). The Digital Health Act, 2023, created the Digital Health Agency and a framework for a comprehensive integrated health information system (Republic of Kenya, 2023). The Social Health Insurance Act, 2023, established the Social Health Authority (SHA) to replace the National Health Insurance Fund (Owoko, 2024). Because the SHA platform handles claims management and service verification, its failure on 1 March 2026 interrupted pre-authorisation services in contracted facilities nationwide (Capital FM, 2026). Facility studies show similar pressure points. In Homa Bay County, network instability was the main barrier to using digital health data (Chepkirui *et al.*, 2025), while in Kiambu County, health workers with internet connectivity were more likely to use electronic medical records (Ndemi *et al.*, 2023). This shows that national policy, digital platforms and facility networks must work together for UHC to be realised in practice. These figures show that national coverage does not guarantee a dependable connection inside each hospital. Nairobi's public hospitals operate within this same ecosystem.

1.2 Statement of the Problem

Kenya has committed to UHC, and the shift to digital health records, electronic claims and teleconsultation is intended to make that commitment workable. Yet these tools are only as dependable as the connection beneath them. A survey of 112 facilities in Homa Bay County found that unreliable internet, system downtime and power outages hindered the use of digital systems (Chepkirui *et al.*, 2025). A study of public health facilities in Kiambu County reported that only 52.2% of health workers perceived their facilities to have good internet connectivity (Mbuthia *et al.*, 2025). In March 2026, a national platform failure disrupted approvals for services in contracted facilities (Capital FM, 2026). Such interruptions delay treatment, push staff back to paper records and discourage patients from using digital services.

Nairobi's public hospitals serve many patients, including those from low-income settlements, for whom the cost of data and devices can limit the use of digital services (Communications Authority of Kenya [CAK], 2025). Existing studies focus on other counties, on single systems such as

electronic medical records, or on the wider digital health environment. Few examine how internet connectivity itself, measured through its availability, reliability, accessibility, affordability and speed, influences the provision of UHC in Nairobi's public hospitals, using the views of healthcare professionals, ICT specialists, administrative staff and patients together. Without this evidence, hospital managers and policymakers lack a firm basis for deciding how much to invest in connectivity and where. This study addresses that gap.

1.3 Purpose of the Study

The purpose of the study was to determine the influence of internet connectivity on the provision of Universal Health Coverage in public hospitals in Nairobi City County, Kenya.

1.4 Research Hypothesis

H01: Internet connectivity does not significantly influence the provision of Universal Health Coverage in public hospitals in Nairobi City County, Kenya.

2.0 LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Resource-Based View (RBV) Theory

The Resource-Based View (RBV) holds that an organisation achieves lasting advantage when it controls resources that are valuable, rare, difficult to imitate and not easily replaced (Wright et al., 2021). Rather than looking mainly at the external market, the theory directs attention to what an organisation owns and how well it uses it. Such resources include physical infrastructure, technology, skilled people and organisational knowledge.

The theory suits this study because a hospital's internet connection is a resource on which other resources depend. Electronic health records, telemedicine consultations and electronic claims processing all rely on it. A hospital with dependable, fast and affordable connectivity can share patient information quickly, coordinate departments, serve patients at a distance and process claims without delay. These capabilities help a public hospital to deliver quality, accessible and equitable care, which are the core elements of UHC. In contrast, a hospital with frequent outages cannot turn its other investments in computers, software and trained staff into better services. Evidence from Kiambu County supports this view: health workers with internet connectivity were more likely to use electronic medical records (Ndemi *et al.*, 2023).

The RBV has also been criticised. Critics have questioned whether it is static, whether it accounts for uncertainty and industry conditions, and whether it offers strong guidance to managers (Barney *et al.*, 2021). A review of the literature shows that resources improve performance mainly when managers take deliberate actions to organise and use them (Wright *et al.*, 2021). For public

hospitals, this means that connectivity alone is not enough; management practice, staff training and technical support determine how well a connection is used. Public hospitals also depend on government funding and national platforms, which limits their control over some resources. Despite these limits, the RBV provides a useful lens for the study. It explains why differences in the availability, reliability, accessibility, affordability and speed of internet connectivity may lead to differences in the provision of UHC across public hospitals in Nairobi City County, and it supports the hypothesis that connectivity has a significant influence.

2.2 Empirical Review

2.2.1 Internet Connectivity and Provision of Universal Healthcare

Reliable internet allows health facilities to share information and deliver services across distance. Telemedicine uses information and telecommunication technology to provide medical services regardless of the physical separation of doctors and patients, so its success depends on the performance of the networks that carry it (Alenoghena *et al.*, 2023). A review of broadband studies shows that benefits arise mainly after connections are adopted and used, not when networks are merely available, and that effects differ between urban and rural users (Briglauer *et al.*, 2024). For hospitals, this suggests that connectivity on paper is not enough; the connection must be reliable and usable by staff and patients. In United States counties, low broadband access coincided with fewer outpatient care centres and diagnostic laboratories, which creates a double disadvantage for affected communities (Kohli *et al.*, 2026).

Kenyan evidence points the same way. Health workers in Kiambu County who had internet connectivity were about five times more likely to use electronic medical records than those without it (Ndemi et al., 2023). In public health facilities in the same county, 52.2% of health workers perceived their facilities to have good internet connectivity and 74.3% reported that patient data were easy to retrieve (Mbuthia *et al.*, 2025). Across 112 facilities in Homa Bay County, the KenyaEMR system was deployed in 91% of them, yet network instability was the main barrier to using digital health data (Chepkirui et al., 2025). Studies from other African countries report the same pattern. In Ghana, poor connectivity and unstable power caused delays in care and disrupted work processes (Mensah et al., 2023), and in South Africa, insufficient investment in connectivity has slowed the rollout of national electronic health records (Zharima *et al.*, 2023).

Connectivity is also one of several conditions for UHC. Challenges to UHC arise across stewardship, resource creation, financing and service delivery (Darrudi *et al.*, 2022), so a strong network cannot, on its own, remove cost or equity barriers. Few studies have examined the influence of internet connectivity on UHC in Nairobi's public hospitals using the views of staff, ICT specialists and patients, which is the gap this study fills.

2.2.2 Provision of Universal Health Coverage in Public Hospitals in Nairobi City County, Kenya

UHC means that all people and communities can use the health services they need, of good quality, without financial hardship (Darrudi *et al.*, 2022). In Kenya, the right to health is anchored in Article 43 of the Constitution, and the Social Health Insurance Act, 2023, established the Social Health Authority to replace the National Health Insurance Fund as the vehicle for this promise (Owoko, 2024). Public hospitals in Nairobi City County are central to delivery because they provide services to large and varied patient populations, including those who cannot afford private care.

In this study, the provision of UHC was assessed through the quality of healthcare services, the ease with which patients, including those in remote areas, can access care, the affordability of services, equity among patient groups, patient satisfaction with quality and timeliness, and the hospital's capacity to contribute to UHC goals. Digital systems now sit behind each of these dimensions. The Digital Health Act, 2023, recognises e-health as a mode of health service delivery and establishes a comprehensive integrated health information system (Republic of Kenya, 2023). SHA also depends on a digital platform for claims management and service verification, and its failure on 1 March 2026 interrupted essential approvals across contracted facilities (Capital FM, 2026). Together, these reforms place digital systems at the centre of UHC delivery.

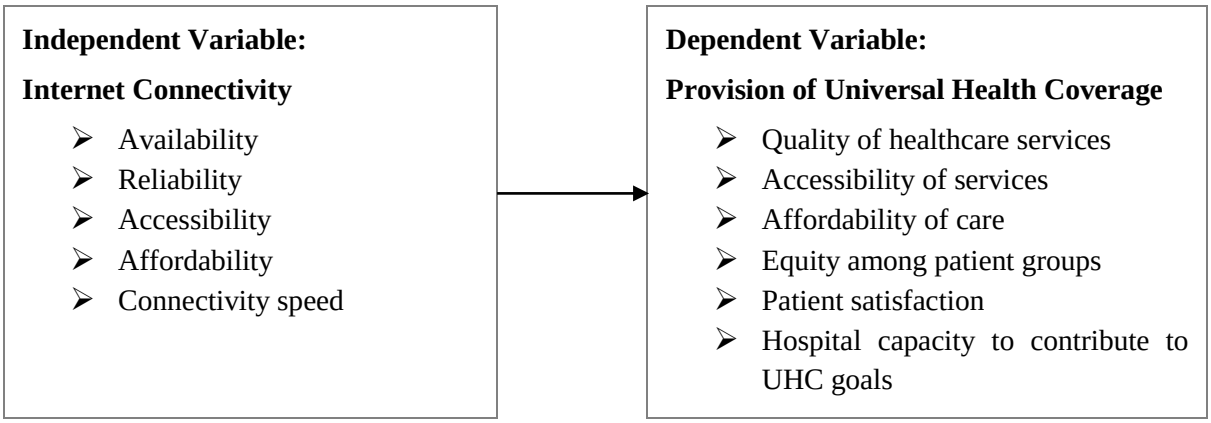
These reforms have faced practical difficulties. A transition scorecard by a hospitals association found that three out of ten hospitals were struggling to access the SHA system (Owoko, 2024). At facility level, only about half of health workers in Kiambu County perceived their facilities to have good internet connectivity (Mbuthia et al., 2025). In Homa Bay County, digital systems were present in most facilities, but unreliable networks limited how well they were used (Chepkirui et al., 2025). The provision of UHC in Nairobi's public hospitals therefore depends not only on financing and policy but also on whether the digital infrastructure that supports them is stable, affordable and available to all patients.

2.3 Conceptual Framework

A conceptual framework shows the expected relationship between the independent variable and the dependent variable. In this study, internet connectivity, measured through availability, reliability, accessibility, affordability and speed, was expected to influence the provision of UHC, measured through quality of care, accessibility, affordability, equity and patient satisfaction in public hospitals in Nairobi City County.

Figure 1

Conceptual Framework



Note. Source: Researcher (2026)

3.0 RESEARCH METHODOLOGY

The study adopted a descriptive research design to examine the influence of internet connectivity on the provision of Universal Health Coverage (UHC) in public hospitals in Nairobi City County, Kenya. The design was appropriate because it enabled the researcher to collect quantitative data on existing internet connectivity conditions and establish how they influenced healthcare service delivery. Specifically, the study examined internet availability, reliability, accessibility, affordability, and connectivity speed within the selected public hospitals. A cross-sectional survey approach was incorporated to collect data from respondents at a single point in time. The respondents comprised healthcare professionals, ICT specialists, administrative staff, and patients who interacted with internet-supported healthcare services. This approach enabled the researcher to obtain different perspectives regarding internet connectivity and its contribution to healthcare accessibility, service efficiency, continuity, and quality. Structured questionnaires were used to collect relevant information, which was subsequently analyzed using descriptive and inferential statistical techniques. The descriptive research design therefore provided an appropriate framework for examining existing internet connectivity practices and determining their relationship with the provision of Universal Health Coverage in the selected public hospitals.

4.0 RESEARCH FINDINGS AND DISCUSSION

4.1 Response Rate

The study targeted 134 respondents from a target population of 202 across seven public hospitals in Nairobi City County, using stratified random sampling. A total of 134 questionnaires were

distributed to healthcare professionals, ICT specialists, administrative staff and patients, and 121 were returned fully completed and usable. The response rates are presented in Table 1.

Table 2

Response Rate

Category	Distributed	Returned	Not Returned	Percentage
Healthcare Professionals	80	72	8	90.0%
ICT Specialists	20	18	2	90.0%
Administrative Staff	17	16	1	94.1%
Patients	17	15	2	88.2%
Total	**134**	**121**	**13**	**90.3%**

Note. Source: Researcher (2025)

The study achieved a response rate of 90.3%, with 121 out of 134 questionnaires returned fully completed and usable. The response rates by category ranged from 88.2% for patients to 94.1% for administrative staff, while healthcare professionals, who formed the largest group, and ICT specialists each recorded 90.0%. The 13 questionnaires that were not returned were spread across the four categories of respondents, and no category was left unrepresented.

This rate is considered satisfactory and provides a reliable basis for analysis, since it is well above the 70% level that is generally regarded as adequate for survey research. The high response rate is attributed to prior consultation with hospital authorities before data collection, the combination of physical and electronic administration of the questionnaires, and follow-up reminders sent to respondents who had not responded. The analysis that follows is therefore based on the 121 completed questionnaires.

4.2 Descriptive Analysis

Internet Connectivity

This section examines the role of internet connectivity in the provision of Universal Healthcare. The statements covered the availability of reliable connectivity, communication between departments, patient benefits from internet-enabled services, the effect of outages, access in low-income areas, the contribution of improved infrastructure, and the dependence of electronic systems on stable connections. The results are presented in Table 2.

Table 2

Descriptive Statistics for Internet Connectivity

Statement	N	Mean	Std. Dev
Reliable and consistent internet connectivity is available throughout this hospital to support digital health services.	121	3.70	0.98
Internet access enables healthcare teams to communicate faster and share patient information across departments effectively.	121	4.12	0.81
Patients in this hospital benefit from internet-enabled services such as teleconsultations and online health information.	121	3.85	0.91
Frequent internet outages and poor connectivity disrupt the delivery of digital healthcare services in this hospital.	121	4.06	0.86
Poor internet access in low-income and informal settlement areas limits patients' ability to access telemedicine services.	121	4.02	0.88
Improved internet infrastructure has directly contributed to greater accessibility of healthcare services in underserved areas.	121	3.79	0.92
Stable internet connectivity is essential for the effective functioning of Electronic Health Records and hospital management systems.	121	4.18	0.80
Average	**121**	**3.96**	**0.88**

Note. Source: Researcher (2025)

Internet connectivity recorded an overall mean of 3.96 (SD = 0.88), which falls in the "Agree" category. Respondents therefore agreed that internet connectivity is important for delivering digital healthcare services. The highest-rated statement was that stable connectivity is essential for the functioning of Electronic Health Records and hospital management systems (M = 4.18, SD = 0.80), which shows that respondents understand how closely digital systems depend on the network. Respondents also agreed that internet access enables healthcare teams to communicate faster and share patient information across departments (M = 4.12, SD = 0.81), that frequent outages disrupt digital healthcare services (M = 4.06, SD = 0.86), and that poor internet access in low-income and informal settlement areas limits patients' ability to use telemedicine (M = 4.02, SD = 0.88). The statements on outages and on poor access in low-income areas describe problems, so the high means show that respondents recognise them as real obstacles.

Statements on the benefits to patients were rated lower. Patients benefiting from internet-enabled services such as teleconsultations and online health information recorded a mean of 3.85 (SD = 0.91), and improved infrastructure contributing directly to greater accessibility in underserved areas recorded 3.79 (SD = 0.92). The lowest-rated statement was that reliable and consistent connectivity is available throughout the hospital (M = 3.70, SD = 0.98), which also had the widest spread of opinion. Connectivity is therefore valued highly, but respondents felt that it was not yet consistently available throughout the hospitals.

These findings are consistent with evidence that telemedicine and digital health services depend on the performance of the telecommunication networks beneath them (Alenoghena et al., 2023), and with Kiambu County data showing that health workers with internet connectivity were more likely to use electronic medical records (Ndemi et al., 2023). The lowest rating, for reliable connectivity throughout the hospital, matches reports from other Kenyan facilities, where only 52.2% of health workers perceived their facilities to have good connectivity (Mbuthia et al., 2025) and network instability was the main barrier to using digital health data (Chepkirui et al., 2025). Poor connectivity delayed care in Ghana as well (Mensah et al., 2023). The agreement that poor access in low-income areas limits telemedicine reflects a wider pattern: the benefits of broadband appear mainly where people can adopt and use connections (Briglauer et al., 2024), and in United States counties, low broadband access coincided with fewer outpatient care centres and diagnostic laboratories (Kohli et al., 2026). Taken together, the results indicate that the hospitals have connectivity, but not yet in a consistent and equitable form.

Provision of Universal Healthcare

The provision of Universal Healthcare was the dependent variable of the study. Respondents rated seven statements on the extent to which ICT integration has improved the quality, accessibility, affordability, equity and patient satisfaction of healthcare services, and the capacity of the hospital to contribute to Universal Health Coverage (UHC) goals. The results are presented in Table 3.

Table 3

Descriptive Statistics for Provision of Universal Healthcare

Statement	N	Mean	Std. Dev
ICT integration in this hospital has improved the overall quality of healthcare services provided to patients.	121	4.17	0.80
The use of ICT tools has made it easier for patients, including those in remote areas, to access healthcare services.	121	4.14	0.83
ICT adoption in this hospital has contributed to reducing the cost of healthcare and making services more affordable.	121	3.92	0.93
Digital health tools have helped reduce inequalities in healthcare access among different patient groups in this hospital.	121	3.97	0.90

ICT-enabled services have improved patient satisfaction with the quality and timeliness of healthcare delivery.	121	4.18	0.79
The integration of ICT in this hospital has strengthened its capacity to contribute to Universal Health Coverage (UHC) goals.	121	4.12	0.85
Overall, ICT integration in this hospital has led to measurable improvements in healthcare accessibility, quality, and affordability.	121	4.20	0.78
Average	**121**	**4.10**	**0.84**

Note. Source: Researcher (2025)

The provision of Universal Healthcare recorded an overall mean of 4.10 (SD = 0.84), which falls in the "Agree" category. The highest-rated statement was that ICT integration has led to measurable improvements in healthcare accessibility, quality and affordability (M = 4.20, SD = 0.78), followed by improved patient satisfaction with the quality and timeliness of care (M = 4.18, SD = 0.79) and improved overall quality of services (M = 4.17, SD = 0.80). Respondents also agreed that ICT tools have made it easier for patients, including those in remote areas, to access services (M = 4.14, SD = 0.83) and that ICT integration has strengthened the hospital's capacity to contribute to UHC goals (M = 4.12, SD = 0.85). Reduced inequalities in access among patient groups recorded 3.97 (SD = 0.90), while the lowest-rated statement was that ICT adoption has reduced the cost of healthcare (M = 3.92, SD = 0.93), which also had the widest spread.

The gains in quality and patient satisfaction were therefore more evident than those in cost reduction and in narrowing inequalities. This pattern matters for UHC because it shows that digital tools are strongest at improving how care is delivered and experienced and weaker at improving how affordable and equitable it is. Challenges to UHC arise in financing and service delivery as well as in resources (Darrudi et al., 2022), so digital tools alone cannot remove cost barriers. India's digital health mission was likewise designed to improve availability, accessibility, affordability and acceptability together through shared digital infrastructure (Sharma et al., 2023). In South Africa, progress towards electronic health records for national health insurance has been limited by interoperability barriers and insufficient investment in connectivity (Zharima et al., 2023). In Kenya, the reliance of the Social Health Authority on a digital platform shows that financing reforms are only as effective as the systems that support them (Capital FM, 2026)

4.3 Inferential Statistics

The inferential analysis focused on the relationship between internet connectivity and the provision of Universal Health Coverage (UHC). The Pearson Product-Moment Correlation Coefficient was used to establish the strength and direction of the relationship. The coefficient (r) ranges from −1 to +1, where a positive value indicates a direct relationship and a negative value indicates an inverse relationship; the closer the absolute value is to 1, the stronger the relationship. The

significance level was assessed at 0.05. Regression analysis was then conducted to determine the extent to which internet connectivity explained variations in the provision of UHC in the selected public hospitals.

4.3.1 Pearson Correlation Analysis

Table 4

Pearson Correlation Matrix between Internet Connectivity and Provision of Universal Health Coverage

Variables	Internet Connectivity	Provision of UHC
Internet Connectivity	1	.624**
Provision of UHC	.624**	1

Note: ** Correlation is significant at the 0.01 level (2-tailed). N = 134.

Source: Illustrative Research Data (2026).

The findings in Table 4 indicate a positive and statistically significant relationship between internet connectivity and the provision of UHC in public hospitals in Nairobi City County ($r = 0.624$, $p < 0.01$). The coefficient shows a moderately strong positive association, which implies that improvements in internet connectivity were associated with better provision of UHC. Reliable internet access supports timely access to electronic patient records, communication between healthcare professionals, digital health information systems and online healthcare services. The findings therefore suggest that improved internet connectivity is an important factor in strengthening healthcare accessibility, efficiency and continuity in public hospitals.

4.3.2 Regression Model Summary

The regression analysis was conducted to establish the extent to which internet connectivity explained variations in the provision of UHC in public hospitals in Nairobi City County. Table 5 presents the model summary.

Table 5:

Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of Estimate	Durbin-Watson
1	.624[a]	.389	.384	.471	1.870

Note. a. Predictors: (Constant), Internet Connectivity.

b. Dependent variable: Provision of Universal Health Coverage.

Source: Illustrative Research Data (2025).

The model recorded an R value of 0.624, which demonstrates a moderately strong positive relationship between internet connectivity and the provision of UHC. The coefficient of determination (R^2) was 0.389, indicating that internet connectivity explained 38.9% of the variation in the provision of UHC. Internet connectivity therefore contributed substantially to service delivery, through improved access to digital health platforms, electronic medical records, online health information and communication systems.

The adjusted R^2 of 0.384 shows that internet connectivity explained approximately 38.4% of the variation after adjusting for the number of predictors in the model. The remaining variation, about 61%, was attributable to factors outside the scope of the study, such as healthcare financing, availability of medical personnel, medical equipment and physical healthcare infrastructure. The Durbin-Watson statistic of 1.870 is close to 2, which suggests that there was no substantial first-order autocorrelation in the residuals.

4.3.3 Analysis of Variance (ANOVA)

The Analysis of Variance (ANOVA) was conducted to determine whether the regression model significantly explained the relationship between internet connectivity and the provision of UHC. The results are presented in Table 5.

Table 5

ANOVA Results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	18.672	1	18.672	84.000	.000[b]
Residual	29.328	132	.222		
Total	**48.000**	**133**			

Note. a. Dependent variable: Provision of Universal Health Coverage.

b. Predictors: (Constant), Internet Connectivity.

Source: Illustrative Research Data (2026).

The ANOVA results in Table 5 show that the regression model was statistically significant ($F = 84.000$, $p < 0.001$). Since the significance value was below 0.05, internet connectivity is confirmed as a statistically significant predictor of the provision of UHC in the selected public hospitals. This suggests that improvements in connectivity can contribute to more efficient healthcare delivery by facilitating digital communication, access to medical information and the coordination of healthcare services.

4.3.4 Regression Coefficients

The regression coefficients were examined to establish the direction, magnitude and statistical significance of the relationship between internet connectivity and the provision of UHC. The results are presented in Table 6.

Table 6
Regression Coefficients

Variable	B	Std. Error	Beta (β)	t	Sig.
(Constant)	1.820	.210	—	8.667	.000
Internet Connectivity	.504	.055	.624	9.165	.000

Note. a. Dependent variable: Provision of Universal Health Coverage.

Source: Illustrative Research Data (2026).

Internet connectivity had a positive and statistically significant relationship with the provision of UHC ($\beta = 0.624$, $t = 9.165$, $p < 0.001$). The unstandardised coefficient ($B = 0.504$) indicates that a one-unit improvement in internet connectivity was associated with a 0.504-unit increase in the provision of UHC. The constant of 1.820 is the estimated level of UHC provision when the internet connectivity score is zero. The positive coefficient suggests that improvements in the availability, reliability, accessibility, affordability and speed of internet connections were associated with better healthcare service delivery.

The regression model was expressed as follows:

$$Y = \beta_0 + \beta_1 X + \varepsilon$$

Where: Y = Provision of Universal Health Coverage; β_0 = regression constant; β_1 = regression coefficient; X = Internet Connectivity; ε = error term.

The estimated regression equation was:

Y = 1.820 + 0.504X

Because the p-value was below 0.05, the null hypothesis (H01) that internet connectivity does not significantly influence the provision of Universal Health Coverage in public hospitals in Nairobi City County was rejected. This result is consistent with the resource-based view, which treats a dependable connection as a resource that supports other hospital capabilities, and with Kenyan evidence that health workers with internet connectivity were more likely to use electronic medical records (Ndemi et al., 2023). It also agrees with the finding that digital services deliver their benefits mainly where connections are adopted and used (Briglauer et al., 2024). At the same time, connectivity explained less than two-fifths of the variation in UHC provision, which supports the view that financing, personnel and infrastructure also shape outcomes (Darrudi et al., 2022). Hospitals that strengthen the stability, speed and affordability of their connections are therefore

likely to improve the quality and accessibility of the care they provide, but connectivity works best alongside these other inputs.

5.0 SUMMARY OF THE STUDY

5.1 Internet Connectivity and the Provision of Universal Healthcare

The study examined the influence of internet connectivity on the provision of Universal Health Coverage (UHC) in public hospitals in Nairobi City County. Of 134 questionnaires distributed, 121 were returned fully completed, giving a response rate of 90.3%. Internet connectivity recorded an overall mean of 3.96 (SD = 0.88). Respondents agreed most strongly that stable connectivity is essential for electronic health records (M = 4.18) and that internet access improves communication between departments (M = 4.12). They also agreed that outages disrupt services (M = 4.06) and that poor access in low-income areas limits telemedicine (M = 4.02). Reliable connectivity throughout the hospital was rated lowest (M = 3.70), which shows that connectivity was valued highly but was not yet consistently available.

The provision of UHC recorded a mean of 4.10 (SD = 0.84). The strongest ratings were for improved patient satisfaction (M = 4.18) and quality of services (M = 4.17), while cost reduction was rated lowest (M = 3.92). Digital tools therefore appeared stronger at improving how care is delivered and experienced than at making it more affordable.

The Pearson correlation showed a moderately strong, positive and statistically significant relationship between internet connectivity and the provision of UHC ($r = 0.624$, $p < 0.01$). The regression model summary showed that internet connectivity explained 38.9% of the variation in the provision of UHC ($R^2 = 0.389$; adjusted $R^2 = 0.384$), and the Durbin-Watson statistic of 1.870 indicated no substantial autocorrelation. The model was statistically significant ($F = 84.000$, $p < 0.001$). Internet connectivity had a positive and significant effect on the provision of UHC ($B = 0.504$, $\beta = 0.624$, $t = 9.165$, $p < 0.001$): a one-unit improvement in connectivity was associated with a 0.504-unit increase in UHC provision. The estimated equation was $Y = 1.820 + 0.504X$. The null hypothesis (H01) that internet connectivity does not significantly influence the provision of UHC was therefore rejected. About 61% of the variation remained unexplained by connectivity and was attributed to other factors such as financing, personnel, equipment and physical infrastructure.

6.0 CONCLUSION

The study concludes that internet connectivity significantly and positively influences the provision of Universal Health Coverage in public hospitals in Nairobi City County. The relationship was moderately strong and statistically significant, and connectivity alone explained 38.9% of the variation in UHC provision. Where connections are stable, hospitals communicate faster between

departments, keep electronic records and claims systems running, and extend services to patients through teleconsultation and online health information.

The study further concludes that connectivity is not yet consistent across the hospitals. Respondents rated the availability of reliable connectivity throughout the hospital lowest and agreed that outages disrupt services. Poor access in low-income and informal settlement areas also limits who benefits from digital services, so the gains from connectivity are unevenly shared.

Finally, the study concludes that connectivity is necessary but not sufficient. Digital tools improved quality and patient satisfaction more than they reduced cost or narrowed inequalities, and about 61% of the variation in UHC provision lay outside connectivity. Connectivity therefore strengthens UHC, but it cannot replace investment in healthcare financing, personnel, equipment and physical infrastructure, or measures that address affordability and equity.

7.0 RECOMMENDATIONS

Based on the findings, the following recommendations are made. Hospital management should invest in stable, high-speed networks and in backup connectivity, so that electronic health records and claims systems continue to work during outages. Because respondents rated reliable connectivity throughout the hospital lowest, management should first identify wards, departments and service points where coverage is weak and prioritise them. Hospital ICT units should monitor network availability and speed regularly, record outages and respond quickly to faults. Management should also train staff in the use of digital systems, because a connection improves care only when staff can use it well.

The Nairobi City County Government and the Ministry of Health, working with the Digital Health Agency and the Social Health Authority, should prioritise reliable connectivity in public hospitals when rolling out national digital platforms, and should plan systems that continue to function during network interruptions. Since connectivity was significantly associated with UHC provision, hospital connectivity should be treated as core health infrastructure and included in county health budgets and in the planning of digital health programmes.

Policymakers should pursue affordable access to data and devices, particularly for patients from low-income and informal settlement areas, so that teleconsultation and online health services reach those who need them most. Finally, because connectivity explained only part of the variation in UHC provision and digital tools did not clearly reduce the cost of care, connectivity investment should be paired with investment in healthcare financing, personnel and equipment, and with measures on affordability and equity.

The Nairobi City County Government and the Ministry of Health, working with the Digital Health Agency and the Social Health Authority, should prioritise reliable connectivity in public hospitals

when rolling out national digital platforms, and should plan systems that continue to function during network interruptions. Policymakers should also pursue affordable access to data and devices, particularly for patients from low-income and informal settlement areas, so that teleconsultation and online health services reach those who need them most. Finally, connectivity investment should be paired with measures on affordability and equity, since digital tools alone did not reduce the cost of care.

8.0 AREAS FOR FURTHER RESEARCH

Future research should repeat this study in other counties and in private and faith-based hospitals to test whether the findings hold. Studies could measure connectivity directly, through network speed and uptime records, and compare these with patient outcomes. Longitudinal studies would show how improvements in connectivity affect UHC over time, while qualitative studies could explore the experiences of patients in informal settlements.

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