

Factors Influencing Utilization of Telehealth Technologies among Hypertensive Patients: Focus on Technological Literacy at Nyeri County Referral Hospital, Kenya

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ABSTRACT

Hypertension remains a major public health challenge in Kenya, particularly among populations in rural and underserved regions where access to continuous healthcare services is limited. Telehealth technologies have increasingly been adopted to improve chronic disease management through remote consultations, health monitoring, and patient education. However, the successful utilization of these technologies largely depends on patients' technological literacy. This study assessed the influence of technological literacy on the utilization of telehealth technologies among hypertensive patients attending the Chronic Care Clinic at Nyeri County Referral Hospital. A descriptive cross-sectional research design was adopted using both quantitative and qualitative approaches. Data were collected from 372 hypertensive patients using structured questionnaires. Descriptive and inferential statistics were analysed using SPSS version 26. The findings revealed that technological literacy significantly influenced telehealth utilization among hypertensive patients. Most respondents reported low levels of digital competence, including limited ability to use mobile health applications, difficulty understanding instructions on telehealth platforms, and inadequate confidence in independently operating telehealth systems. Only 38.7% of respondents indicated that they had basic knowledge of using mobile health applications, while 41.4% disagreed. Similarly, only 30.1% reported having received adequate training to use telehealth technologies effectively. The overall mean scores ranging from 2.56 to 2.96 demonstrated low technological literacy levels among the patients. The study concluded that inadequate technological literacy remains a major barrier to effective telehealth adoption and utilization among hypertensive patients in Nyeri County. The study recommends that healthcare institutions and policymakers strengthen digital health literacy programs, provide regular patient training, simplify telehealth interfaces, and establish continuous technical support systems to improve telehealth adoption among chronic disease patients.

Keywords: Technological literacy, telehealth utilization, hypertension, mHealth, chronic disease management, Kenya.

INTRODUCTION

Background of the Study

Hypertension is one of the leading non-communicable diseases globally and continues to contribute significantly to morbidity and mortality rates. According to the World Health Organization, hypertension affects more than one billion people worldwide, with the burden being particularly high in low- and middle-income countries. Effective management of hypertension requires regular monitoring, adherence to medication, lifestyle modification, and consistent interaction with healthcare providers.

Telehealth technologies have emerged as innovative approaches to improving healthcare accessibility and continuity of care among patients with chronic conditions such as hypertension. Telehealth includes the use of mobile health applications, remote patient monitoring systems, virtual consultations, and digital communication

platforms to deliver healthcare services remotely. Globally, telehealth adoption accelerated during and after the COVID-19 pandemic due to the need for alternative healthcare delivery systems.

In Kenya, telehealth technologies have increasingly been introduced within public healthcare facilities to improve healthcare access among patients residing in rural and underserved regions. Despite the potential benefits associated with telehealth technologies, their utilization remains relatively low among hypertensive patients. One of the major determinants influencing telehealth utilization is technological literacy. Technological literacy refers to an individual's ability to understand, operate, and interact effectively with digital devices and applications.

Most hypertensive patients in rural Kenya are older adults who may have limited exposure to smartphones, mobile applications, and internet-based health systems. Challenges such as low digital skills, inability to navigate telehealth applications, poor understanding of digital instructions, and lack of confidence in using technology independently negatively affect telehealth adoption. Therefore, understanding the influence of technological literacy on telehealth utilization is essential for improving chronic disease management and strengthening digital healthcare systems.

Statement of the Problem

Telehealth technologies are expected to improve access to healthcare services, reduce unnecessary hospital visits, and enhance chronic disease management among hypertensive patients. However, despite the availability of some telehealth services at Nyeri County Referral Hospital, the actual utilization of telehealth technologies among hypertensive patients remains low. Many patients attending the Chronic Care Clinic experience difficulties in using mobile health applications and telehealth platforms due to inadequate technological literacy. Most elderly patients struggle with operating smartphones, reading digital instructions, navigating telehealth applications, and independently participating in virtual consultations. The lack of adequate training and technical support further limits effective telehealth adoption. Although several studies have examined telehealth adoption generally, limited research has specifically focused on the influence of technological literacy on telehealth utilization among hypertensive patients in public healthcare facilities within rural Kenya. This study therefore sought to bridge this knowledge gap by examining how technological literacy affects telehealth utilization among hypertensive patients attending Nyeri County Referral Hospital.

Objective of the Study

To assess the influence of technological literacy on the utilization of telehealth technologies among hypertensive patients at Nyeri County Referral Hospital.

Research Hypothesis

H0: Technological literacy does not significantly influence utilization of telehealth technologies among hypertensive patients at Nyeri County Referral Hospital.

H1: Technological literacy significantly influences utilization of telehealth technologies among hypertensive patients at Nyeri County Referral Hospital.

LITERATURE REVIEW

Technological literacy plays a critical role in determining whether patients can effectively adopt and utilize telehealth technologies. Telehealth systems require patients to possess basic digital competencies such as operating smartphones, navigating applications, reading instructions, and communicating through digital platforms. According to Syed et al. (2020), elderly patients often face difficulties using telehealth applications due to limited exposure to digital technologies. The study established that low digital competence significantly reduces patients' willingness and ability to participate in virtual healthcare programs. Similarly, Wang et al. (2021) observed that inadequate eHealth literacy among chronic disease patients limits their ability to understand digital health information and effectively interact with telehealth systems.

Mutua et al. (2023) reported that many patients in Kenyan public hospitals possess low awareness and limited knowledge of telehealth technologies. The study emphasized that lack of digital literacy training remains a major barrier to telehealth utilization in rural healthcare settings. Furthermore, Kibet et al. (2022) found that older hypertensive patients often struggle with smartphone usability and mobile application navigation, which negatively affects self-monitoring and virtual healthcare participation. The Technology Acceptance Model supports the relationship between technological literacy and technology utilization. The model explains that perceived ease of use influences individuals' willingness to adopt technological systems. Patients who find telehealth systems easy to operate are more likely to use them consistently. Therefore, improving technological literacy may positively influence telehealth utilization among hypertensive patients.

METHODOLOGY

Research Design

The study adopted a descriptive cross-sectional research design. The design enabled the researcher to collect data from hypertensive patients at a single point in time and assess the relationship between technological literacy and telehealth utilization.

Study Area

The study was conducted at Nyeri County Referral Hospital, specifically within the Chronic Care Clinic where hypertensive patients receive treatment and follow-up services.

Target Population

The target population consisted of hypertensive patients attending the Chronic Care Clinic at Nyeri County Referral Hospital. According to the hospital registry, the clinic had an annual population of 1,413 hypertensive patients.

Sample Size and Sampling Technique

Using Cochran's formula, a sample size of 385 respondents was obtained. Structured questionnaires were administered to hypertensive patients attending the clinic.

Data Collection Instrument

Primary data were collected using structured questionnaires consisting of Likert-scale questions measuring technological literacy and telehealth utilization.

Data Analysis

Quantitative data were analysed using Statistical Package for Social Sciences (SPSS) version 26. Descriptive statistics including frequencies, percentages, means, and standard deviations were used to summarize the findings.

RESULTS AND DISCUSSION

Response Rate

Out of the 385 questionnaires distributed, 372 were correctly filled and returned, representing a response rate of 96.6%. This response rate was considered adequate for analysis.

Technological Literacy and Telehealth Utilization

The study sought to determine the influence of technological literacy on telehealth utilization among hypertensive patients attending Nyeri County Referral Hospital.

Basic Knowledge of Mobile Health Applications

The findings revealed that only 38.7% of respondents agreed that they possessed basic knowledge of using mobile health applications, while 41.4% disagreed and 19.9% remained neutral. The mean score for this statement was 2.95 with a standard deviation of 1.23. These findings indicate that many hypertensive patients possess limited knowledge regarding telehealth technologies. The findings are consistent with Mutua et al. (2023), who reported that patients in rural public healthcare facilities in Kenya had low awareness and understanding of telehealth systems. Limited knowledge of mobile health applications negatively affects telehealth adoption and participation.

Ability to Read and Understand Instructions

Only 35.5% of respondents agreed that they could easily read and understand instructions on telehealth applications, while 43.0% disagreed and 21.5% remained neutral. The mean score was 2.88 with a standard deviation of 1.21. These findings suggest that many patients experience challenges interpreting digital instructions. Wang et al. (2021) similarly established that low eHealth literacy among older adults limits effective interaction with digital healthcare systems.

Ease of Using Mobile Devices

The study established that only 38.5% of respondents found it easy to use mobile devices for health monitoring, while 42.7% disagreed. The mean score was 2.96 with a standard deviation of 1.25. The results indicate that many hypertensive patients face challenges operating digital devices for healthcare purposes. Kibet et al. (2022) similarly observed that older hypertensive patients in Kenya experienced difficulty using smartphones and mobile applications for self-monitoring.

Confidence in Using Telehealth Technologies Independently

Only 32.5% of respondents reported being comfortable using telehealth technologies without assistance, while 49.4% disagreed. The mean score was 2.76 with a standard deviation of 1.28. This finding demonstrates low confidence levels among patients regarding independent use of telehealth systems. Mahmood et al. (2022) similarly found that elderly chronic disease patients often rely on caregivers for assistance during virtual consultations.

Adequacy of Training and Support

The findings further revealed that only 30.1% of respondents had received adequate training or support to use telehealth technologies effectively, while 48.9% disagreed. The mean score was 2.72 with a standard deviation of 1.27. The findings imply that healthcare institutions provide inadequate digital literacy support and patient training. Similar findings by Mutua et al. (2023) indicated that lack of structured patient training programs remains a significant barrier to telehealth adoption in Kenya.

Ability to Troubleshoot Common Issues

Only 25.8% of respondents agreed that they could troubleshoot common telehealth application issues, while 54.8% disagreed. The mean score was 2.56 with a standard deviation of 1.24. These findings demonstrate weak technological problem-solving skills among patients. Bautista et al. (2020) similarly argued that inability to resolve minor technical problems discourages continuous telehealth usage among chronic disease patients.

Overall Discussion

Overall, the findings demonstrated that technological literacy significantly influences telehealth utilization among hypertensive patients attending Nyeri County Referral Hospital. Most respondents exhibited low digital competence, inadequate confidence in using telehealth technologies, and limited exposure to digital health systems. The low mean scores across all indicators suggest that technological literacy remains a major barrier to

telehealth adoption in rural healthcare settings. Without adequate digital literacy training and technical support, patients may continue experiencing difficulties in utilizing telehealth technologies effectively.

CONCLUSION

The study concluded that technological literacy significantly influences the utilization of telehealth technologies among hypertensive patients at Nyeri County Referral Hospital. Most patients demonstrated low levels of digital competence, limited ability to operate telehealth systems independently, and inadequate confidence in using mobile health technologies.

The study further established that insufficient training, inability to troubleshoot technical issues, and poor understanding of digital instructions negatively affect telehealth utilization. Therefore, improving technological literacy among hypertensive patients is essential for enhancing telehealth adoption and strengthening chronic disease management.

RECOMMENDATIONS

1. Healthcare institutions should introduce continuous digital literacy training programs for hypertensive patients to improve their ability to use telehealth technologies.
2. Telehealth platforms should be simplified and designed using user-friendly interfaces suitable for elderly patients and individuals with limited digital experience.
3. The Ministry of Health should establish community-based digital support initiatives to assist patients in navigating telehealth systems.
4. Healthcare providers should offer regular technical support and demonstrations during clinic visits to improve patient confidence in using telehealth applications.
5. Public health facilities should integrate digital health education into routine chronic disease management programs.

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