Telehealth Model For The Managementof Elderly Patients In Ogbia Lga, Bayelsa State

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Abstract:

This study developed a telehealth model to improve elderly care in selected communities of Ogbia Local Government Area, Bayelsa State, Nigeria. The growing burden of chronic diseases, mobility challenges, and inadequate healthcare infrastructure necessitated an accessible and sustainable solution. Using a mixed-methods design with questionnaires and interviews, the study examined telehealth perceptions, usage, and barriers among elderly patients, nurses, and caregivers. Findings showed 73% of respondents had used telehealth, and 79% found tele-consultations effective. Over 70% reported improved medication adherence through remote monitoring and reminder systems. Major barriers included technological illiteracy, poor internet connectivity, socio-cultural resistance, and weak policy support. Guided by the Technology Acceptance Model, adoption was influenced by perceived usefulness and ease of use. The proposed hybrid model integrates mobile health tools, community education, and family involvement. It offers a culturally relevant framework to strengthen elderly healthcare in resource-limited rural settings.

Keywords— **Telehealth; Elderly care; Technology Acceptance Model (TAM); Chronic disease management; Rural healthcare; Bayelsa State; Mixed-methods; Healthcare accessibility.**

Introduction

Telehealth has emerged as an innovative solution for improving healthcare delivery to elderly populations, addressing challenges such as mobility limitations, chronic disease management, and healthcare accessibility. Research evidence highlights its effectiveness in enhancing patient outcomes and reducing hospitalizations. Rantz et al. (2024) developed a remote monitoring system that improved chronic care management among older adults, resulting in reduced readmissions and better health outcomes. Similarly, Wolever et al. (2016) found that telehealth interventions significantly improved mental health outcomes among elderly patients with depression. Kvedar et al. (2020) emphasized that telehealth models enhance healthcare outcomes for older adults by improving medication adherence, reducing hospitalizations, and enhancing quality of life. In a study by Inglis et al. (2019), a telehealth program for elderly patients with chronic heart failure led to a 45% reduction in hospitalizations and a 25% improvement in quality of life. However, successful implementation requires addressing challenges specific to aging, including cognitive decline, sensory impairments, and social isolation (Lazar et al., 2017).

Effective telehealth models also depend on strong collaboration among healthcare providers, caregivers, families, and community organizations. Fisher and Clifford (2016) emphasized the need for stakeholder engagement to ensure comprehensive care, while Wade et al. (2020) identified caregivers as pivotal in facilitating telehealth use and improving outcomes. Moreover, Cristiano et al. (2020) highlighted that patient engagement and empowerment are key determinants of telehealth program success. Collectively, these findings underscore that a well-designed, collaborative, and patient-centered telehealth model can substantially enhance the management of elderly patients. By

addressing technological, psychological, and social barriers, telehealth can optimize health outcomes and improve the overall quality of life among older adults.

Objectives

- **i.** To investigate the various forms of telehealth services for the management of elderly patients in selected communities of Ogbia LGA, Bayelsa State.
- **ii.** To identify the various barriers hindering access and utilization of telehealth services for the management of elderly patients in selected communities of Ogbia LGA, Bayelsa State

Research questions:

i. What are the various forms of telehealth services available for the management of elderly patients in selected communities of Ogbia LGA, Bayelsa State?
ii. What are the various barriers hindering access and utilization of telehealth services for the management of elderly patients in selected communities of Ogbia LGA, Bayelsa State?

Literature Review

Recent studies demonstrate that video conferencing has become a transformative tool in healthcare delivery, particularly for enhancing patient engagement, satisfaction, and health outcomes among elderly and general populations. Zhang et al. (2021) found a strong positive correlation between the frequency of video conferencing and patient engagement in the U.S., noting improved treatment adherence, communication, and satisfaction. Similarly, Adeola et al. (2021) in Nigeria reported that frequent users of video consultations experienced higher satisfaction levels and appreciated the accessibility and time-saving benefits of virtual care.

Johnson et al. (2023) extended these findings to elderly populations through a mixed-methods design, revealing that video conferencing significantly enhanced the quality of care. Elderly patients reported better communication with healthcare providers, increased satisfaction, and improved treatment adherence, although technological comfort varied. Likewise, Otieno et al. (2023) in Kenya observed substantial improvements in chronic disease management and medication adherence among elderly patients following video-based consultations, with participants reporting enhanced quality of life. Across these studies, technological literacy and internet connectivity emerged as consistent barriers, particularly among elderly participants. Nevertheless, all authors emphasized the importance of digital infrastructure investment, patient and provider training, and policy support to ensure equitable access to telehealth. Collectively, the findings underscore that video conferencing, when supported by adequate training and infrastructure, can significantly enhance healthcare access, patient engagement, and overall care quality, particularly for elderly and chronically ill populations.

Patel et al. (2022) investigated barriers to telehealth use among elderly patients in rural United Kingdom communities using a sequential mixed-methods approach. A purposive sample of 100 elderly participants provided quantitative data through questionnaires assessing internet access, device availability, and service reliability, while focus groups explored personal experiences. Quantitative analysis involved frequency and logistic regression, and thematic analysis was applied to qualitative data. The study found that limited internet connectivity, lack of access to devices, and inadequate technical support were major barriers. It recommended improving rural infrastructure, providing subsidized devices, and simplifying telehealth platforms.

Johnson et al. (2023) conducted a concurrent mixed-methods study in the United States among 150 elderly patients with chronic diseases, using stratified random sampling. Surveys and interviews revealed barriers such as poor technology access, low digital literacy, inadequate nurse support, and privacy concerns. Quantitative data were analyzed using descriptive and chi-square methods, while thematic analysis identified recurring issues. The study recommended digital literacy programs, better nurse support, and enhanced data security to increase telehealth acceptance.

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Zhang et al. (2023) explored telehealth barriers among 130 elderly patients in China with limited technology access using a concurrent mixed-methods design. Convenience sampling was applied, and data were collected through surveys and semi-structured interviews. Findings indicated that lack of suitable devices, low digital literacy, and high service costs were predominant barriers. The authors emphasized simplifying technology, reducing costs, and offering digital literacy training to improve utilization.

Methodology

The study utilized a descriptive research design to systematically collect numerical data to describe the characteristics of the target population and identify relevant patterns or trends (Polit & Beck, 2021). The study was conducted in Ogbia Local Government Area (LGA). It is one of the eight LGAs of Bayelsa State. Sample size consists of Elderly: 74, Caregivers: 84, Nurses: 24, Grand Total: 181. : Quantitative Data (Questionnaires) was analyzed through the statistical package (SPSS) version 26 using the following. The researcher obtained ethical approval from community development committee and Bayelsa state health management board's ethics committees before commencing with the research and also adhered to ethical guidelines and regulations governing research involving human participants, including those specific to telehealth and geriatric care.

Results

RESEARCH QUESTIONS 1: INVESTIGATING THE VARIOUS FORMS OF TELEHEALTH SERVICES FOR THE MANAGEMENT OF ELDERLY PATIENTS (ELDERLY PATIENTS RESPONSES)

Item	Strongly Disagree (%)	Disagree (%)	Agree (%)	Strongly Agree (%)	Total (%)
Video calls are types of telehealth care services.	5 (6.76%)	10 (13.51%)	35 (47.30%)	24 (32.43%)	**74**
Remote monitoring serves as a telehealth care facility/tool.	7 (9.46%)	15 (20.27%)	30 (40.54%)	22 (29.73%)	**74**
Medication reminders through digital smartphone apps is a form of telehealth care tool.	6 (8.11%)	13 (17.57%)	35 (47.30%)	20 (27.03%)	**74**
Virtual counseling Telehealth platforms for mental health support is a telehealth care tool.	4 (5.41%)	12 (16.22%)	34 (45.95%)	24 (32.43%)	**74**

INVESTIGATING THE VARIOUS FORMS OF TELEHEALTH SERVICES FOR MANAGEMENT OF ELDERLY PATIENTS (CAREGIVERS RESPONSES)

Item	Strongly Disagree (%)	Disagree (%)	Agree (%)	Strongly Agree (%)	Total (%)
Remote monitoring serves as a telehealth care facility/tool.	8 (9.64%)	15 (18.07%)	40 (48.19%)	20 (24.10%)	**83**
Medication reminders through digital smartphone apps is a form of telehealth care tool.	5 (6.02%)	10 (12.05%)	40 (48.19%)	28 (33.73%)	**83**
Virtual counseling Telehealth platforms for mental health support is a telehealth care tool.	6 (7.23%)	12 (14.46%)	35 (42.17%)	30 (36.14%)	**83**

INVESTIGATING THE VARIOUS FORMS OF TELEHEALTH SERVICES FOR THE MANAGEMENT OF ELDERLY PATIENTS (NURSES RESPONSES)

Item	Strongly Disagree (%)	Disagree (%)	Agree (%)	Strongly Agree (%)	Total (%)
Video calls are types of telehealth care services.	5 (20.83%)	7 (29.17%)	10 (41.67%)	2 (8.33%)	**24**
Remote monitoring serves as a telehealth care facility/tool.	3 (12.50%)	5 (20.83%)	13 (54.17%)	3 (12.50%)	**24**
Medication reminders through digital smartphone apps is a form of telehealth care tool.	4 (16.67%)	6 (25.00%)	12 (50.00%)	2 (8.33%)	**24**

The study findings reveal that telehealth services including teleconsultation, remote monitoring, medication reminders, and virtual mental health support are generally well-accepted by elderly individuals, caregivers, and nurses, though barriers remain. Most elderly respondents (79.73%) viewed teleconsultation as

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an effective way to access healthcare, aligning with Rantz et al. (2024) and Kvedar et al. (2020), who found that telehealth improves patient outcomes and access to care. Similarly, 70.27% reported that remote monitoring enhanced their health management, supporting evidence from Wade et al. (2020), who highlighted its role in facilitating continuous care through caregiver involvement. However, the disagreement rates suggest that technological difficulties and preferences for face-to-face care persist, echoing Patel et al. (2022), who noted limited internet connectivity and device access as key barriers. Medication reminders were perceived as highly useful by both elderly respondents (74.33%) and caregivers (81.92%), reinforcing findings from Johnson et al. (2023) that emphasize the role of digital literacy and support systems in improving telehealth adoption. Telehealth for mental health support was also positively rated (78.38% agreement among elderly respondents), consistent with Wolever et al. (2016), who demonstrated the benefits of virtual counseling for emotional well-being.

Among nurses, support for telehealth was moderate, with mixed opinions about teleconsultation effectiveness. This aligns with Zhang et al. (2023), who found that professional concerns about technological reliability and patient usability can limit adoption. Overall, while telehealth is widely accepted, improving digital literacy, user-friendliness, and technical infrastructure remains essential for optimal elderly care.

RESEARCH QUESTIONS III: THE VARIOUS BARRIERS TO THE UTILIZATION OF TELEHEALTH SERVICES TO MANAGEMENT OF ELDERLY PATIENTS (ELDERLY RESPONSES)

Item	Strongly Disagree (%)	Disagree (%)	Agree (%)	Strongly Agree (%)	Total (%)
I have difficulty using the technology required for telehealth services (e.g., smartphones, computers).	12 (16.22%)	20 (27.03%)	26 (35.14%)	16 (21.62%)	**74**
I do not trust the privacy of telehealth services.	7 (9.46%)	15 (20.27%)	34 (45.95%)	18 (24.32%)	**74**
Telehealth services do not provide the same level of care and attention as in-person visits.	6 (8.11%)	10 (13.51%)	33 (44.59%)	25 (33.78%)	**74**

THE VARIOUS BARRIERS TO THE UTILIZATION OF TELEHEALTH SERVICES TO MANAGEMENT OF ELDERLY PATIENTS (CAREGIVERS RESPONSES)

Item	Strongly Disagree (%)	Disagree (%)	Agree (%)	Strongly Agree (%)	Total (%)
Lack of reliable internet connection makes telehealth services challenging.	12 (14.46%)	18 (21.69%)	35 (42.17%)	18 (21.69%)	**83**
The elderly patient's difficulty with technology reduces the effectiveness of telehealth.	6 (7.23%)	16 (19.28%)	35 (42.17%)	26 (31.33%)	**83**

NURSES

Item	Strongly Disagree (%)	Disagree (%)	Agree (%)	Strongly Agree (%)	Total (%)
Lack of internet access for patients hinders the use of telehealth services.	4 (16.67%)	5 (20.83%)	12 (50.00%)	3 (12.50%)	**24**
Elderly patients struggle with the technology required for telehealth services (e.g., smartphones, computers).	5 (20.83%)	6 (25.00%)	10 (41.67%)	3 (12.50%)	**24**

The findings reveal that technological challenges, privacy concerns, and perceptions of reduced care quality remain significant barriers to telehealth adoption among elderly patients. Over half (56.76%) of elderly respondents reported difficulty using technology, consistent with Patel et al. (2022) and Zhang et al. (2023), who identified digital illiteracy and limited access to appropriate devices as major constraints in rural and low-resource settings. Similarly, trust in privacy was a major concern, with 70.27% expressing doubts about data security—echoing Johnson et al. (2023), who found that privacy fears significantly reduced willingness to engage in telehealth programs. Furthermore, 78.37% of elderly respondents believed telehealth was less effective than in-person care, reflecting concerns also raised by Kvedar et al. (2020) about the perceived quality and interpersonal connection in virtual consultations.

Caregivers reinforced these findings, with 63.86% citing unreliable internet connectivity and 73.50% noting elderly patients' technological struggles as major barriers. These insights align with Patel et al. (2022), who emphasized infrastructure deficiencies

as a core limitation to rural telehealth implementation. Nurses similarly highlighted the lack of internet access (50%) and elderly patients' difficulty with technology (54.17%) as primary obstacles. Collectively, these results demonstrate that while telehealth offers potential for improving elderly care, its success depends on addressing digital literacy, infrastructure, and privacy issues. Interventions such as user training, simplified platforms, improved connectivity, and stronger data protection policies could enhance telehealth accessibility and trust among elderly populations, supporting prior research recommendations for inclusive telehealth frameworks.

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