J Health Rep Technol. 2023 January; 9(1):e130916. https://doi.org/10.5812/jhrt-130916.

Published online 2023 February 18. **Rapid Communication**

Application of Telemedicine in the Provision of Healthcare in Nigeria: An Insight from COVID-19

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Received 2022 August 19; **Revised** 2022 December 31; **Accepted** 2023 February 01.

Abstract

Background: In recent times, telemedicine has received wide acceptance in global healthcare as a result of its tremendous potential in solving major healthcare concerns. However, despite the proven benefits of telemedicine and the growing applications in developed countries, Nigeria has failed to fully use this tool in the provision of healthcare in the country.

Objectives: To examine the potentials of telemedicine as an alternative option for delivering quality healthcare services in Nigeria, the challenges hindering the utilization, and ways to overcome these challenges.

Methods: Review of evidences was carried out on papers sourced from Google Scholar and PubMed databases. The key terms used for the search include "telemedicine", "information technology", "treatment", "Nigeria", "COVID-19", "virtual", and "health care". Papers were critically assessed for intellectual content, and those that did not meet the inclusion criteria or were extraneous to the study's focus were eliminated. A review of related evidence was conducted after data was extracted from selected papers.

Results: Telemedicine has the potential to improve healthcare delivery, access, and efficiency. However, the underutilization of telemedicine in Nigeria has been identified to be as a result of some considerable factors which include the absence of a policy on virtual care, insufficient funding, high cost of maintaining virtual health care services, and technological and infrastructural constraints.

Conclusions: As a result of the aforementioned, the imbalanced implementation of telemedicine systems in the provision of healthcare in Nigeria necessitates immediate stakeholder attention to establish supporting legislation and assure the availability of suitable infrastructure and services. Other research-based proposals include including virtual care training in school curricula and funding telemedicine research and development in the country.

Keywords: COVID-19, Telemedicine, Healthcare, Virtual Care, Nigeria

1. Background

Telemedicine is a subset of telehealth, which distributes health services using information and communication technologies (ICT) (1). Telemedicine supports and promotes long-distance healthcare, and such innovations can reduce routine physical interaction and direct hospitalization while significantly enhancing the delivery of high-quality healthcare services (1). The COVID-19 pandemic has exponentially grown telemedicine, with healthcare automation becoming more common (2). In some developed and developing nations, telemedicine is a practical growing component of health information systems (3). However, most sub-Saharan African countries, including Nigeria, lack evidence on proper telemedicine use in healthcare delivery (4).

Studies have found willingness to adopt telemedicine in countries like Nigeria with resource-poor settings and hard-to-reach populations (5). However, using telemedicine in Nigeria is still nascent, possibly due to some critical factors. Therefore, this study explores the telemedical approach as an alternative option for delivering quality healthcare services in Nigeria, with an insight derived from the COVID-19 pandemic, the challenges hindering the utilization, and ways to overcome those challenges.

2. Challenges and Utilization of Virtual Services

The inequitable distribution of health workers has been a significant hindrance to developing the Nigerian health sector over the years (6). Nigeria has approximately 35,000 doctors but needs 237,000 (7), which indicate a ra-

tio of about 1 physician to 5,500 patients in a population of over 200 million people (8). Unfortunately, the COVID-19 pandemic has over-stretched the health system and, as a result, exacerbated the dearth of health workers, signaling the need for innovative means such as telemedicine as an essential tool for reducing the negative effects of shortages in medical practitioners (9, 10). The COVID-19 pandemic has accelerated the use of telemedicine and uncovered its opportunities in providing prompt clinical care, education, and healthcare, at a low cost and extensive coverage. The reason is that physical clinical consultations are now more restricted, and there is a higher risk of occupational exposure for medical practitioners when providing patient care (11-13). Telemedicine uses technology tools, including messaging platforms, emails, phones, tablets, wireless monitors, teleconferencing, video conferencing, and other telecommunication technologies (14). The effectiveness of telemedicine services depends on their patient-centered nature, encouragement of self-quarantine, and ability to shield patients, doctors, and the general public from COVID-19 (13, 14).

Furthermore, the simplest forms of telemedicine have reportedly been used in health facilities in Nigeria. For instance, some people communicate medical pictures using their mobile devices for remote diagnostics, and electronic medical records are used to reduce paperwork stress (3). There is also evidence of the use of telemedicine services in Nigeria to provide healthcare against diseases like Ebola, hypertension, and cancer (5). However, some factors, which include technological, human, organizational, social, and individual characteristics, might contribute to the underutilization of telemedicine in the healthcare sector. For instance, most healthcare professionals will likely face challenges such as resistance to change in role redefinition, responsibilities, new skill development, and a lack of a business model that incorporates telemedicine (15). The cost of a license and technology (1, 15) and also insufficient knowledge of operating telemedicine devices are problems that healthcare workers encounter when attempting to use telemedicine services.

Poor funding for healthcare is a recurrent problem for countries in sub-Saharan Africa, including Nigeria, with many public healthcare facilities depending on government funding (9). From the perspective of the patients, those living in rural or low-income areas may not have access to telemedicine devices due to financial constraints.

Accompanied by financial constraints, technological and infrastructural control threatens the utilization of telemedicine services. Barriers to the adoption of telemedicine in many African countries - including Nigeria - include poor internet connectivity, inadequate and unstable electricity supply, insufficient or inadequate ICT and virtual health infrastructure, and high cost of telecommunication equipment (1).

3. Strengthening the Health System Through the Incorporation of Telemedicine

The use of telemedicine and virtual systems in healthcare provision in Nigeria is still in its infancy (1). Telemedicine can improve healthcare delivery, access, and efficiency while preventing medical-staff infection. Nigeria is underutilizing this critical tool, which improves access to high-quality healthcare for patients. Therefore, there is a need to strengthen the health system through the integration of telemedicine.

A supportive telemedicine strategy is needed to guide the adoption of telemedicine services in Nigeria due to the uneven implementation of telemedicine systems in healthcare delivery. Most sub-Saharan African nations, including Nigeria, have no legal framework for telemedicine and telehealth (3). Therefore, the Nigerian government should demonstrate the political will to integrate telemedicine into the country's public healthcare system (9). As a result, telemedical facilities, private-public partnerships (9), and supportive policies will be developed to promote the growth and deployment of telemedicine.

Challenges limiting the application of telemedical services related to security, confidentiality, and privacy should be mitigated by providing a robust platform that identifies and authenticates clinicians at both ends (3). In addition, data availability, sharing, and privacy concerns should be treated fairly and respected for the owners' security and wishes (5). A government agency can address sensitive issues like abuses and rights arising from telemedicine's public use by developing policies and sensitizing its citizens (5).

In addition, training and workshop sessions with healthcare practitioners and other key stakeholders are required. Knowledge of technological innovation and data security assurances in the form of training is one of the several ways to raise telemedicine applications and create positive interactions with the systems (3). Incorporating telemedicine into traditional procedures would be much easier with these workshops and training. Demonstrations and case studies could also be organized to explain and persuade stakeholders and health workers who are skeptical of telemedicine (1).

Another critical hindrance to using telemedicine in Nigeria is its high cost, and the government can subsidize telemedicine and telehealth import duties to encourage virtual services in healthcare (1). In this way, high equipment importation costs could be reduced with adequate government financing; telemedicine promises

to enhance the treatment of both communicable and non-communicable diseases and support health infrastructure (5). Healthcare providers and regulators can also work with international and local organizations and philanthropic groups (9) to raise funds to implement telemedicine technology. However, long-term funding is required to implement telemedicine, necessitating a detailed plan and budget before beginning the project. Other research-based recommendations include incorporating virtual care training in school curricula and funding telemedicine research and development in the health industry. Understanding the complexities further and providing structured solutions will be made possible.

4. Limitations of the Study

This study used a generalized approach to telemedicine in healthcare delivery in Nigeria without answering the use of telemedicine in specific sectors and fields in healthcare. The use of telemedicine in the different areas of the Nigerian healthcare sector requires further research that is more detailed and specialized, which would solve problems associated with telemedicine in these specific fields.

5. Conclusions

Globally, telemedicine and virtual care technology have demonstrated numerous benefits for patients and healthcare professionals. The low doctor-to-patient ratio in Nigeria makes telemedicine an essential tool in health care delivery. Telemedicine improves healthcare access in rural and underserved areas while also ensuring the efficient use of the skills of healthcare professionals. Telemedicine systems also limit unnecessary human exposures and foster high-quality care. Telemedicine can be used to manage the challenges facing healthcare systems in the event of future outbreaks. While developed countries increasingly utilize telemedicine and virtual healthcare services, Nigeria has failed to fully use them due to significant challenges and obstacles. These limiting constraints, on the other hand, can be overcome with intentional effort and willpower. Health systems in Nigeria should learn from the COVID-19 pandemic, build capacity, and prepare resources for future pandemics. Nigeria can improve its use of telemedicine in healthcare delivery by following the recommendations made in this commentary.

Footnotes

Authors' Contribution: Study concept and design, OME; Drafting of the manuscript, OME, HJO, SOA and KHI; Critical review of the manuscript for important intellectual content, OME and HJO. All authors have submitted comments, read, and approved the final version of this manuscript.

Conflict of Interests: The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding/Support: The authors received no financial support for the research, authorship, and/or publication of this article.

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