Usage and Preference of Mobile Telemedicine Applications by Undergraduates in Southeast Nigeria

Chinonso Chinaemerem Adikuru, Adanma Vivian Obiora, Eugenia Chinweokwu Eneome & Augustine Sopuruchukwu Nnaemeka

Abstract

Telemedicine has made the healthcare field to witness rapid transformation driven by technological advancements in recent times. Telemedicine has gained prominence as it has emerged as a viable solution to overcome geographical barriers, improve access to healthcare, and enhance patient outcomes due to the accessibility and convenience it gives to the users. Telemedicine mobile applications have gained popularity among undergraduate students of Southeast Nigeria as they give the students services pertaining to their health without visiting physical healthcare facilities. Hence, this study sets out to examine the usage and preference of mobile telemedicine applications by undergraduates in Southeast Nigeria. Anchored on technological determinism theory (TDT), the study adopted survey as its research method to elicit data from 361 undergraduates in the Southeast that were randomly selected. Google Form questionnaire was used as instrument of data collection. Findings reveal that a notable proportion of undergraduates in the Southeast use these telemedicine mobile apps with Doctoora as the most utilized and preferred app while majority of them do not use them or uncertain about their usage. The study however advocates the need for more awareness and education of these mobile telemedicine apps and therefore recommends that institutions should launch campaigns to educate students about the benefits and functionalities of telemedicine mobile apps to enhance its utilization and preference.

Keywords: mobile telemedicine, undergraduates, Southeast Nigeria, usage, preference

Introduction

Telemedicine involves the use of electronic information and communication technologies to provide healthcare services remotely or at a distance. It has gained popularity globally due to its convenience, accessibility, and cost-effectiveness (Egbujie et al., 2020).The World Health Organization (WHO, 2021) refers to telemedicine as health services and information delivered or

enhanced through the use of telecommunications technologies, this includes, the use of any electronic means to improve and support health. In recent years, the field of healthcare has witnessed a rapid transformation driven by technological advancements. One such innovation that has gained prominence is telemedicine, which has emerged as a viable solution to overcome geographical barriers, improve access to healthcare, and enhance patient outcomes (WHO, 2021). The era of COVID-19 pandemic in 2020 further accelerated the adoption of telemedicine as a means to ensure continuity of care while minimizing the risk of virus transmission. Telemedicine has the potential to bridge the gap in healthcare access, particularly for individuals residing in remote areas or facing mobility challenges. According to Tee-Melegrito (2022), understanding the quality of communication, patient satisfaction, and the development of therapeutic relationships in telemedicine encounters will be crucial in evaluating the effectiveness of remote healthcare interactions. Moreover, "telemedicine uses electronic and telecommunication technology to provide an exchange of medical information, despite a person and their doctor not being in the same room" (Tee-Melegrito, 2022, p.5).

Singh et al. (2020) affirmed that university students are increasingly using telemedicine apps to access healthcare services, particularly for minor ailments and mental health support like intervention strategies against drug abuse (Obiora & Adikuru, 2024). This trend can be attributed to the convenience and flexibility offered by telemedicine apps, which enable students to consult healthcare professionals remotely, avoiding the need for physical visits to healthcare facilities (Kumar et al., 2020). Moreover, telemedicine apps provide students with a sense of anonymity, independence and privacy, which is particularly important for mental health support (Hilty et al., 2017, Adikuru&Okara, 2024). Students can access telemedicine apps from anywhere, at any time, making it an attractive option for those with busy schedules or limited mobility (Egbujie et al., 2020). However, concerns have been raised about the quality of care provided through telemedicine apps, as well as issues related to data privacy and security (Kumar et al., 2020).

The student body, representing a generation deeply immersed in digital technologies in the era of social media (Obiora et al., 2025; Uche & Obiora, 2016), is likely to engage with telemedicine apps as an alternative or complement to traditional healthcare services in post COVID-19 era as Obiora and Kenechukwu (2023) suggested it as viable media for COVID-19 vaccination. Understanding the patterns of usage and preferences among these students is vital for optimizing healthcare delivery within the university community bringing attitude and behaviour change (Adikuru &

Obiora, 2021). While telemedicine has gained recognition for its potential to transcend geographical barriers and enhance healthcare accessibility with basically no effective online communication lawsrestricting the usage (Obiora & Onyeka, 2022; Onyeka & Obiora, 2021), the nuanced preferences and usage behaviours of university students in the context of undergraduate students in Southeast Nigeria, remain relatively unexplored.

Statement of the Problem

The emergence of telemedicine apps presents a promising avenue for expanding access to healthcare services, particularly among undergraduate populations. However, despite their potential benefits, there is need to investigate the patterns of usage and preferences of telemedicine apps among students. This lack of insight into the factors influencing students' preference and utilization of telemedicine apps poses a significant challenge in harnessing the full potential of these technologies to improve healthcare delivery. Additionally, variations in preferences among different demographic groups within the student body further complicate efforts to design effective interventions and promote widespread adoption of telemedicine apps. Thus, addressing these gaps in knowledge is essential for optimizing the integration of telemedicine apps into the healthcare ecosystem of undergraduate students in Southeast Nigeria and ensuring equitable access to quality healthcare services for all students.Therefore, this study seeks to: Assess whether undergraduate students in Southeast Nigeria use telemedicine apps; Examine the various telemedicine apps undergraduate students in Southeast Nigeria use; Identify any preferred telemedicine apps used by undergraduate students in Southeast Nigeria; Ascertain factors responsible for the choice of the preferred telemedicine app; and investigate any challenges faced by students when accessing healthcare services through telemedicine apps.

Theoretical Framework

This study is anchored on technological determinism theory (TDT) which emphasizes the idea that technology has an important effect on how the media contents are disseminated to audience. The theory was propounded in 1964 by a Canadian professor of English, Marshall McLuhan. According to McLuhan (1964), technological determinism is a theory which states that the characteristics inherent in a new technology govern the direction of its development and sets the conditions for social change. McLuhan's notion of a global village is based on characteristics inherent in electronic media, including the elimination of time and space barriers in the communication process. The ability to eliminate space in the communication process will create a new global sense of communication that is reminiscent of older oral

traditions because people will become more dependent on technologies. Thus, the characteristics of eliminating space constraints will cause social change.

Dennis and Defleur admit McLuhan's ideal world, that everyone would be connected to a global network of interactive communication in which everyone can be a communicator, capable of originating, retrieving, storing, and disseminating messages. Technological Determinism implies that media technology shapes how we as individuals in the society think, feel, act, and how the society operates as we move from one technological age to another (McLuhan, 1964). McLuhan also postulates that the medium is the message, which means that personal and social consequences of any medium are as a result of any new technology.

Applying this to telemedicine, it posits that the development and adoption of the telemedicine technology shape how healthcare is delivered and experienced. The theory implies that as telemedicine evolves, it could influence healthcare practices, patient-doctor relationships, and overall healthcare systems, potentially leading to a shift in medical paradigms and patient care models. This theory finds its relevance to this current study in the fact that the research is about the usage and preference of telemedicine apps by undergraduate students in Southeast Nigeria. The theory posits that technology plays a fundamental role in shaping and determining human behaviour. The advancement of technology, including video conferencing and digital health records, has changed the communication landscape (Shadrach &Adikuru, 2023) thereby revolutionizing the delivery and pattern of receiving medical care. Additionally, the theory proposes that our utilization of technology is shaped by its capabilities and limitations, rather than the other way around.

Literature Review

Understanding the Concept of Telemedicine

According to Ligi (2021), telemedicine is a way of providing medical care to people who are not in the same location as their doctors or other health professional. It uses technology such as phone calls, video chats, emails, and text messages to communicate and exchange information. In primary care, telemedicine is usually in the form of phone calls, where the patient seeks the doctor's advice about non-emergency medical problems which do not require the doctor to see the patient (Ligi, 2021). Telemedicine does not replace face-to-face consultation when it is needed but instead complements it. The real role of telemedicine at present lies in the convenience it offers to patients and practitioners by obviating the necessity for a physical visit to

get medical advice or treatment. It is also cost-effective in comparison to the process of waiting to see a doctor.

Telemedicine can be used for many purposes, such as:General healthcare, such as wellness visits and blood pressure control; Nonemergency follow-ups, such as checking how you are healing after surgery; Mental health counselling, such as talking to a therapist or psychiatrist; Drug abuse intervention strategies (Obiora & Adikuru, 2024); Urgent care, such as getting advice for a common cold or sinus infection; Remote monitoring, such as sending your blood sugar or blood pressure readings to your doctor; Store-and-forward, such as sharing your X-rays or lab results with a specialist.

Telemedicine is well on its way to becoming an effective remedy for Nigerians as they can now receive speedy health-related service right from the comfort of their own homes. Ideally, telemedicine platforms ensure that Nigerians have medical support at their fingertips. Providing access to doctors for even a fraction of the 200 million citizens that make up Nigeria's population is extremely difficult, especially considering the saddening lack of adequate medical infrastructure.

Benefits of Telemedicine

Zsai (2017) highlighted the relevance of telemedicine to healthcare thus:

- Telemedicine enhances patient health outcomes by enabling timely access to medical expertise, especially for conditions that require immediate attention or ongoing management.
- By offering convenient virtual consultations, it encourages patients to actively participate in their healthcare. This engagement can lead to higher satisfaction levels and better adherence to treatment plans.
- Telemedicine eliminates the need for patients to travel to physical healthcare facilities. It provides a convenient way to consult with healthcare professionals from the comfort of their homes or workplaces.
- It bridges geographical gaps, ensuring that individuals in remote or underserved areas can receive medical advice, diagnosis, and follow-up care without traveling long distances.
- It optimizes physician availability by allowing them to serve more patients efficiently. It helps address physician shortages, especially in areas with low doctor-to-patient ratios.
- By minimizing travel expenses and streamlining healthcare processes, telemedicine contributes to cost savings for both patients and healthcare systems.

- Telemedicine facilitates post-discharge monitoring, early intervention, and follow-up consultations, which can prevent unnecessary hospital readmissions.
- It enables specialists to consult on cases remotely, reducing delays and improving overall patient care. Patients can access specialized care (e.g., mental health, dermatology) that might not be readily available in their local area.
- Telemedicine ensures round-the-clock availability of healthcare professionals, especially crucial for urgent situations.

Challenges of Telemedicine Usage

Scholars have raised various challenges that hinder effective use of digital technologies which include telemedicine (Obiora & Uche, 2024; Asamoah, 2022).The following challenges have been paramount amongst individuals and systems who use digital technologies including telemedicine:

The lack of adequate infrastructure is a major challenge for telemedicine in Nigeria. Many areas lack reliable electricity and internet access, which makes it difficult to implement telemedicine solutions. In addition, many hospitals and clinics lack the necessary equipment, such as computers and video conferencing equipment. This can make it difficult to provide telemedicine services, even if there is adequate infrastructure.

Telemedicine requires healthcare workers who are comfortable using technology and who understand how to use it to provide care. However, in many African countries, there is a shortage of qualified healthcare workers, and even fewer who are trained in telemedicine. In addition, even when healthcare workers are trained in telemedicine, they may not have the time or resources to use it effectively. This is especially true in rural areas, where healthcare workers are often overworked and have limited resources.

Telemedicine requires the exchange of sensitive information, such as medical records and personal information. In some countries, there are concerns about the privacy and security of this information. Many countries lack strong data protection laws, and there is a risk that patient information could be compromised. This is especially true in areas with limited internet infrastructure, where information can be more easily intercepted

In many areas of Nigeria, some people are unfamiliar with the concept of telemedicine and may not be comfortable using it. In addition, some people may not trust telemedicine or may not believe that it can provide the same quality of care as traditional face-to-face healthcare. This lack of awareness and acceptance can be a barrier to the widespread implementation of telemedicine.

Many people in Nigeria speak languages other than English, and many cultures have different concepts of health and disease, hence it becomes challenging to have these people change their beliefs, norms and way of life (Obiora, 2022). For example, some people may believe that illness is caused by supernatural forces, while others may believe that it is caused by a lack of balance in the body. These cultural differences can make it difficult to communicate effectively about health issues and to provide appropriate treatment.

Telemedicine Applications

Dedicated telemedicine platforms and applications provide secure environment for virtual consultations, ensuring compliance with healthcare regulations and patient confidentiality. There are many telemedicine apps available worldwide, including Doctor on Demand, Teladoc, Amwell, and MDLive. In Africa, there are a number of telemedicine apps available, such as mDoc, MyDawa, and HealthNow. In Nigeria, there are a number of telemedicine apps available, such as Dr. AI, Helium Health, and Lifestores. These apps offer a variety of services, including online consultations, medication delivery, and medical record management.

Available Telemedicine Apps in Nigeria

In Nigeria, the adoption of telemedicine apps has been steadily growing, facilitated by advancements in technology and increasing demand for remote healthcare services.

Several telemedicine apps have emerged to cater to the diverse healthcare needs of Nigerians:

- One notable telemedicine app used in Nigeria is Wellvis, a platform that connects users with certified doctors and specialists for virtual consultations and medical advice (Wellvis, n.d.).
- Another prominent telemedicine app in Nigeria is Kangpe Health, which provides users with access to licensed doctors for medical consultations via chat, phone, or video call (Kangpe Health, 2022).
- Nigeria Health Watch also highlights the impact of telemedicine apps like Doctoora, an innovative platform that connects users with healthcare providers for virtual consultations and medical services (Nigeria Health Watch, 2021).
- Additionally, the Sehaty app, developed by the Saudi Ministry of Health, has gained popularity in Nigeria for its comprehensive telehealth services, including virtual consultations, prescription refills, and medical advice (Sehaty, n.d.).

Review of Empirical Studies

Nathaniel et al (2024) conducted a study on "Knowledge and Perception of Telemedicine among Medical Students of the University of Jos, Plateau State, Nigeria". The study aimed to examine the knowledge and perceptions of telemedicine among medical students at the University of Jos. It was a cross-sectional study among 305 clinical medical students selected through a stratified sampling technique. Respondents with a good knowledge of telemedicine were about five times more likely to have a good perception of the benefits and about eight times more likely to have a good perception of ease of use. Few medical students possess desirable levels of knowledge and perceptions of telemedicine which portrays a gap in the medical education curriculum. Therefore, training and educational opportunities are recommended to improve their knowledge and perception of telemedicine. On the other hand, this study focuses on the usage and preference of telemedicine apps among a broader university student population

Moreover, Abdulhammed et al (2022) in his study "Telemedicine in Healthcare Delivery: Knowledge, Attitude, and Skill Set of Medical Students in Selected Universities in Africa". The study examined the preparedness of African medical students for the use of telemedicine in healthcare delivery by assessing their knowledge, attitude, and skill set. It was a descriptive cross-sectional study. Data were collected online through a 33-item pre-tested, self-administered questionnaire from three selected medical schools in Africa. The respondents have a good attitude but average knowledge and poor skill set of telemedicine usage in healthcare delivery. However, the majority are interested in learning about telemedicine in medical training. This study shows the need to incorporate telemedicine within the curricula of African medical schools. However, this study delves into the specific context of undergraduate students in Southeast Nigeria's usage and preference of telemedicine mobile apps.

In Nigeria, the utilization of telemedicine apps has witnessed a steady rise due to technological advancements and increasing demand for remote healthcare services, particularly in underserved areas. Various telemedicine apps have emerged to address diverse healthcare needs, such as Wellvis, Kangpe Health, Doctoora, and Sehaty, offering virtual consultations, medication delivery, and remote monitoring. Factors influencing users' preference for a telemedicine app include accessibility, quality of healthcare services, convenience, reputation, and cost-effectiveness. Users prioritize apps that offer seamless access to healthcare, reliable consultations, convenient scheduling, positive reviews, data privacy, and affordability, shaping their decisions and enhancing overall healthcare access and outcomes. However previous studies were also delved into so as to provide

insights on the relevance of the present study.

Methodology

This study adopted survey research design to elicit data from undergraduates on their usage and gratifications derived from using mobile telemedicine apps. Sample size of 50 students were randomly drawn from each Federal, State and Private universities in the five states of the region, which totals 750 respondents. Abia State has Michael Okpara University of Agriculture, Abia State University, and Gregory University. Anambra State has Nnamdi Azikiwe University, Chukwuemeka Odumegwu Ojukwu University, and Madonna University. Ebonyi has Alex Ekwueme Federal University, Ebonyi State University and Evangel University. Enugu State has University of Nigeria, Enugu State University of Science and Technology, and Godfrey Okoye University. Imo State has Federal University of Technology, Owerri, Imo State University and Hezekiah University. Questionnaire was shared using Google forms and links shared with various representatives from each school.

In the end, a total number of 361 respondents filled out the online questionnaire. Data were collated and analysed.

Presentation of Findings

Research Objective One

Assess whether undergraduates in the South East use telemedicine apps.

Responses to this research objective indicated that a notable proportion of undergraduates in the South East are either uncertain about or do not use telemedicine apps. While a significant percentage of students do use these apps, the majority either do not or are not certain about their usage of the apps. This suggests that while telemedicine has gained some traction, there remains a substantial portion of the student body that is either hesitant or unaware of its benefits. The data underscores the need for increased awareness and education about telemedicine among students to enhance its adoption and utilization for healthcare services.

Research Objective Two

Examine the various telemedicine apps undergraduate students in South-East Universities use.

Reports indicate varying levels of usage among different telemedicine apps by undergraduate students in South East Universities. Doctoora emerges as the most utilized app, followed by Kangpe Health and Wellvis, showing

significant adoption rates compared to Sehaty and other less frequently used apps. The distribution highlights the preference for specific platforms among students, possibly influenced by factors like usability, accessibility, and the range of medical services offered.

Research Objective Three

Identify any preferred telemedicine apps used by Undergraduates in the South East.

Data collated showed the preferred telemedicine apps among undergraduates in the South East. Doctoora emerges as the most favoured app chosen by majority of the respondents, followed by Kangpe Health and Wellvis. The distribution of preferences provides insight into the popularity and utilization of specific telemedicine platforms among the student population, reflecting varying degrees of acceptance and adoption based on perceived usability, service quality, and perhaps marketing effectiveness within the university community.

Research Objective Four

Ascertain factors responsible for the choice of the preferred telemedicine app.

Responses here showed that the quality of healthcare services is the primary determinant, followed by lack of awareness and acceptance. Accessibility also plays a notable role, indicating that ease of use and availability are important to the students. Privacy and security concerns, while less prominent, still contribute to the decision-making process. Generally, these factors highlight the critical aspects that telemedicine apps must address to be effective and widely accepted in this student population, emphasizing the importance of quality and user-friendly features.

Research Objective Five

Investigate any challenges faced by students when accessing healthcare services through telemedicine apps.

This objective revealed the perception of the students on the challenges faced when accessing healthcare service through telemedicine Apps with cost-effectiveness as the primary concern, suggesting financial barriers significantly influence student access. Convenience also poses a notable challenge, pointing to potential issues with the user experience and accessibility. Inadequate infrastructure and language and cultural barriers further complicate the effective use of telemedicine, while a lack of trained personnel, though less frequently cited, highlights a need for more

specialized support. Altogether, these challenges underscore the multifaceted obstacles that must be addressed to improve telemedicine access for students.

Discussion of Findings

This research work dwelt on the Usage and Preference of Mobile Telemedicine Applications by Undergraduates in Southeast Nigeria. From the results generated in this study, it was discovered that while telemedicine has gained some traction, there remains a substantial portion of the student body that is either hesitant or unaware of its benefits. The data underscores the need for increased awareness and education about telemedicine among students to enhance its adoption and utilization for healthcare services. This is in line with the position of Omoloyo and Ikumapayi (2016), who defined Telemedicine as the process of distributing medical care to patients across a long distance. Medical information could be sent using smoke signals and light reflection, such as signalling plague outbreaks, deaths, and occurrence of event.

According to Ligi (2021), telemedicine is usually in the form of phone calls, where the patient seeks the doctor's advice about non-emergency medical problems which do not require the doctor to see the patient. The author also asserts that telemedicine does not replace face-to-face consultation when it is needed but instead complements it. The real role of telemedicine at present lies in the convenience it offers to patients and practitioners by obviating the necessity for a physical visit to get medical advice or treatment. It is also cost-effective in comparison to the process of waiting to see a doctor or other healthcare provider.

Telemedicine uses technology such as phone calls, video chats, emails, and text messages to communicate and exchange information. According to Smith et al (2018) and Johnson (2020), Telemedicine is defined as the provision of healthcare services remotely through digital technologies; it has gained prominence in addressing healthcare challenges. They also highlight its potential to enhance accessibility, reduce healthcare costs, and improve patient outcomes. The authors also stated that Telemedicine enhances access to medical care, especially in remote areas, and allows patients to consult with healthcare professionals without the need for in-person visits. It can cover a wide range of medical services, including primary care, mental health support, and follow-up appointments. However, conditions may still require in-person examinations. Overall, telemedicine offers convenience, efficiency, and broader healthcare accessibility. Ligi (2021) asserted that Telemedicine utilizes various technologies such as video conferencing, secure messaging platforms, and mobile apps to facilitate communication

between healthcare providers and patients. It can be particularly beneficial for routine check-ups, prescription refills, and managing chronic conditions. Additionally, telemedicine helps reduce healthcare costs, travel time, and wait times for patients. The ongoing evolution of telemedicine is likely to shape the future of healthcare by improving efficiency and patient outcomes.

Despite the various levels of usage among different telemedicine apps by undergraduates in South East, Doctoora emerges as the most utilized app. This is in line with the statement of Nigeria Health Watch (2021) which opined that Doctoora is an innovative platform that connects users with healthcare providers for virtual consultations and medical services. Also, Johnson (2018) supported the claim, stating that Telemedicine enhances access to medical care, especially in remote areas, and allows patients to consult with healthcare professionals without the need for in-person visits. It can cover a wide range of medical service, including primary care, mental health support, and follow-up appointments. However, conditions may still require in-person examinations.

Majority of the respondents stated that quality of health care services is the major factor that influences respondents' choice of telemedicine apps. This is in accordance with the position of Kangpe Health (n.d.), who posited that the quality of healthcare services offered through the app plays a crucial role in influencing users' preferences. Users seek telemedicine apps that connect them with licensed healthcare professionals who offer accurate diagnoses, evidence-based treatment recommendations, and timely medical advice. Kangpe Health (nd) also stated that apps that prioritize the delivery of high-quality healthcare services are perceived as more trustworthy and reliable, leading to increased user satisfaction and loyalty.

Finally, majority of the respondents state that cost effectiveness is the major challenge faced by students when accessing healthcare service through telemedicine apps. This contradicts the position of Esset (2022) who stated that Telemedicine can help reduce the cost of healthcare by eliminating the need for patients to travel to see a doctor. It can also help reduce the cost of treatment by allowing doctors to see more patients in less time. Esset further gave an example of a patient who needs to see a doctor for a routine check-up. If they had to travel to the doctor's office, they would have to pay for things like gas and parking. They would also have to take time off work, which would cost them money. With telemedicine, the patient can consult with the doctor virtually, without having to travel. This eliminates the costs associated with travel. Additionally, with telemedicine, doctors can see more patients in less time. This is because they do not have to spend time with each patient getting them checked in and out of the hospital.

Conclusion

Despite some adoption of the telemedicine app by undergraduates in the Southeast, it still faces significant awareness and education barriers among students, necessitating enhanced efforts to inform and engage this demographic group. While telemedicine's convenience and cost-effectiveness are recognized, there remains a need for more accessible and user-friendly platforms. Doctoora's prominence among students underscores its effectiveness in meeting their needs, reflecting broader trends in telemedicine's potential to improve healthcare accessibility. Quality of healthcare services is the primary factor driving app preference, emphasizing the importance of reliable and professional medical support. However, cost effectiveness remains a significant challenge, contradicting some views on telemedicine's economic benefits, highlighting the need for more affordable solutions to fully realize its potential in enhancing students' healthcare.

Recommendations

On the basis of conclusion reached in this study, the following recommendations are made:

1. Institutions should launch campaigns to educate students about the benefits and functionalities of telemedicine to enhance its utilization and preference.
2. Telemedicine app developers should focus on improving the accessibility and user-friendliness of their platforms to ensure a seamless experience for students.
3. Telemedicine providers should ensure high standards of healthcare services by connecting users with licensed and experienced healthcare professionals for accurate and reliable medical support.
4. Policymakers and healthcare providers should work towards making telemedicine services more affordable for students, possibly through subsidies or cost-sharing models.
5. Investments should be made in upgrading the necessary infrastructure and training personnel to support efficient and effective telemedicine services, ensuring that all students can benefit from this technology.

References

Abdulhammed, O. B., Innocent, K. P., Dimeji, A. O., Brimmo, F. O., Adetoye, E. A., Omotti, A., Okereke, P. U., Arama, U. O., Emmanuel, O. U., Ahmed, A. A., Alawad, R., Dinga, B., Agboola P., Rabiu, A. T., Ogah, O. (2022). Telemedicine in Healthcare Delivery: Knowledge, Attitude, and Skill Set of Medical Students in Selected Universities in Africa. *Research Square Journal.*

Adikuru, C.C. & Okara, C.J. (2024). Drug Abuse and Crime among Youths: The Bane of South Eastern Nigeria. *Journal of Education, Humanities, Management and Social Sciences*. JEHMSS Vol. 2, No 1, January 2024, pg 20-28 (online).

Adikuru, C.C., Obiora, A.V. (2021). Social Media As An Avenue For Youth Mobilization For National Security: A Study of The EndSARS Protest In Nigeria. *GVU Journal of Communication Studies*, Vol. 3, 2021, pg 15-23 (online and hardcopy).

Asamoah, K. (2022). Challenges of Telemedicine in Africa: An Overview. *African Journal of Medicine and Medical Sciences*, 51(3), 214-225.

Egbujie, B. A., Okoro, O. I., & Ejike, C. E. (2020). Telemedicine adoption among university students in Nigeria. *Journal of Healthcare Engineering, 2020, 1-8.*

Johnson, M. (2020). The Impact of Telemedicine on Healthcare Delivery: A Review. *International Journal of Healthcare Technology and Management*, 21(2), 110-122.

Kangpe Health. (2022). About Kangpe Health. Retrieved from https://www.kangpe.com/about

Kumar, S., Nilson, W. J., Pavel, M. (2020). Mobile health and telemedicine: A systematic review. *Journal of Medical Systems*, 44(10), 2105-2123.

Ligi, C. (2021). Telemedicine: A Comprehensive Review. *Journal of Medical Technology and Informatics*, 34(4), 256-268.

McLuhan, M. (1964). *Understanding Media: The Extensions of Man*. New York: McGraw-Hill.

Noel, N. B., Noel, M. B., Yila, E., Nkala, C. A., & Banwat, M. E. (2023). Knowledge and Perception of Telemedicine among Medical Students of the University of Jos, Plateau State, Nigeria. *The Nigerian Medical Journal*, Vol. 64 No. 6.

Nigeria Health Watch. (2021). Doctoora: Bridging the Gap in Healthcare Access. Retrieved from https://nigeriahealthwatch.com/doctoora-bridging-the-gap-in-healthcare-access

Obiora, A. V. (2022). Communication for behaviour and social change. In A. N. Nwammuo, G.U. Nwafor & B. N. Ogbonna (Eds.), *Twenty-one scholars' viewpoints on development communication*, (77-92). Enugu: Rhyce Kerex Publishers.

Obiora, A. V., & Adikuru, C. C. (2024). Intervention communication strategy: Boosting fight against drug abuse among Nigerian youth through artificial intelligence generated memes on social media. *Advance Journal of Arts, Humanities and Social Sciences,7*(4), 57–72.

Obiora, A. V., & Kenechukwu, S. A. (2023). Radio programming and audience mobilization on covid-19 vaccination. *Advance Journal of Linguistics and Mass Communication, 7*(2), 1-13.

Obiora, A. V., & Onyeka, R. C. (2022). Assessment of compliance to online communication laws by undergraduates in South East Nigeria. *NTAtvc Journal of Communication, 6*(1), 52–59.

Obiora, A. V., & Uche, A. O. (2024). Adopting information and communication technologies for effective school leadership in Nigeria. *Social Science Research*, *10*(2), 34–49.

Obiora, A. V., Uche, O. A., &Adikuru, C. C. (2025). Encoding and decoding of emoji on social media for expression sharing among university students in Anambra State. *African Journal of Social Sciences and Humanities Research, 8*(1), 24-35.

Omoyelo, B., & Ikumapayi, A. (2016). Telemedicine: A Primer for Healthcare Providers. *International Journal of Telemedicine and Applications*, 43(2), 53-67.

Onyeka, R. C., & Obiora, A. V. (2021). Awareness and attitude of undergraduates in South- east Nigeria towards laws guiding online communication**.** *Social & Digital Media Discourse, 2*(1), 68 – 80.

Sehaty, (n.d.). About Sehaty. Retrieved from https:www.sehaty.gov.sa/en/ Pages/default.aspx

Shadrach, Idi &Adikuru C. C. (2023). Assessment of Adoption and Practice of Citizen Journalism Among Women in North-East Nigeria. Gender and Society, *Journal of Centre for Gender and Women Studies*, Alex

Ekwueme Federal University Ndufu Alike (AE-FUNAI). Vol. 1 2023, Pg 28-41. (Online)

Smith, J., Brown, K., & White, L. (2018). Telemedicine: A Review of Its Evolution and Current Applications. *Journal of Telemedicine and Telecare,* 24(5), 287-301.

Tee-Melegrito, M. (2022). Enhancing telemedicine encounters: Communication, patient satisfaction, and therapeutic relationships. *Journal of Telemedicine and Telecare,* 28(2), 5-6.

Uche, A. O., & Obiora, A. V. (2016). Social media typology, usage and effects on students of Nigerian tertiary institutions. *International Journal of Innovative Research & Development,5*(8), 15-26.

Wellvis: (n.d.). About Wellvis. Retrieved from https://www.wellvis.com/about

Williams, R. (2020). Understanding Technological Determinism: A Critical Review. *Communication Research Trends,* 39(2), 87-103.

World Health Organisation (2021). *Telemedicine: Opportunities developments in member states: Report on the second global survey on eHealth. WHO Press.*

Zsai, L. (2017). Objectives and Goals of Telemedicine: A Conceptual Framework. *International Journal of Telemedicine and Applications*, 41(3), 156-168.

About the Authors

Dr Chinonso Chinaemerem Adikuru is a lecturer at the Department of Mass Communication, Chukwuemeka Odumegwu Ojukwu University, Igbariam, Anambra State, Nigeria. *Email*: cc.adikuru@coou.edu.ng

Dr Adanma Vivian Obiora is of the Department of Mass Communication, Chukwuemeka Odumegwu Ojukwu University, Igbariam, Anambra State, Nigeria. *Email*: adavobiora@gmail.com

Dr Eugenia Chinweokwu Eneome is a lecturer at the Department of Mass Communication, Chukwuemeka Odumegwu Ojukwu University, Igbariam, Anambra State, Nigeria. *Email*: ce.eneome@coou.edu.ng

Augustine Sopuruchukwu Nnaemeka is of the Department of Mass Communication, Chukwuemeka Odumegwu Ojukwu University, Igbariam, Anambra State, Nigeria.

CITING THIS ARTICLE

APA

Adikuru, C. C., Obiora, A. V., Eneome, E. C., & Nnaemeka, A. S. (2025). Usage and Preference of Mobile Telemedicine Applications by Undergraduates in Southeast Nigeria. *International Journal of General Studies* (IJGS), 5(2), 27-43. https://klamidas.com/ijgs-v5n2-2025-02/.

MLA

Adikuru, Chinonso Chinaemerem, Obiora, Adanma Vivian, Eneome, Eugenia Chinweokwu and Nnaemeka, A. S. "Usage and Preference of Mobile Telemedicine Applications by Undergraduates in Southeast Nigeria". *International Journal of General Studies* (IJGS), vol. 5, no. 2, 2025, pp. 27-43. https://klamidas.com/ijgs-v5n2-2025-02/.