ORIGINAL ARTICLE

Exploring the Efficacy of Telemedicine for Managing Covid-19 Patients in Nigerian Communities

NANKPAH AUDU BWAKAN

Registry Department (PR Unit), Plateau State University, Bokko snankpah20134real@gmail.com

Abstract

The dreaded Coronavirus regime has exposed the poor state and inability of Nigeria's health institutions to effectively meet the health needs of Nigerians, especially the rural dwellers during the Covid-19 outbreak. This paper seeks to explore the efficacy of telemedicine in managing the Covid-19 patients especially those in the rural communities where only Primary Healthcare Centers (PHCs) exist though they lack the proficiency to test and provide care for Covid-19 patients. This paper relied on secondary data to examine the efficacy of telemedicine as an alternative to the urban based healthcare facilities to penetrate the rural settlements and provide quality healthcare services to the rural dwellers in the Coronavirus era. Findings from the study showed that decentralization of health facilities and the practice of telemedicine will go a long way in managing Covid-19 and other patients in rural communities. It also suggests that government at all levels should work-out modalities for kick starting the practice of telemedicine in Nigeria, particularly in rural communities as an alternative platform to respond to the health challenges of communities in the Covid-19 era and beyond.

Keywords: Telemedicine, Efficacy, Community, Covid-19

Introduction

Prior to the outbreak of the novel Coronavirus also known as Covid-19 in December 2019, in Wuhan, China which later grew into a global pandemic as declared by the World Health Organization (WHO), there were general outcries regarding the poor state of Nigeria's health institutions (primary, secondary and tertiary healthcare centers) to effectively address the health needs of Nigerians. The outbreak of the novel Coronavirus has further put the nation's health institution under serious pressure and even exposed the health professionals and their families to the risk of contracting the novel virus.

A visit to any public health care facility in the country would reveal the poor condition of the hospital ranging from lack of equipment, drugs, enough space and health professionals to provide adequate and sufficient care to the patients and the rural communities suffer more than the urban centers in Nigeria. This is due to successive governments's negligence of the health sector. The dreaded Coronavirus has further exposed the incapacity and inefficacy of the public health facilities to adequately respond to the health emergency that is ravaging the world and Nigeria.

At the infant stage of the novel Coronavirus spread mostly in urban centers, the Presidential Task Force (PTF) set-up by President Muhammadu Buhari as part of the Federal Government's strategy to contain the spread of the global health challenge expressed its determination to ensuring that the virus does not spread to the community level because at that level the causalities would be massive due to the large population and poor awareness as well as cultural factors among other things. Another very important factor is that the few PHCs in some communities are ill-equipped and lack health professionals such as Laboratory Technicians/Scientists, Nurses, Pharmacists and Physicians to adequately attend to the health needs of the communities.

To further confirm the assertion on the shortage of healthcare facilities and health professionals in Nigeria, Ndeche (2020, p.21) recounts the difficult and terrible situation that Semawon went through when she took ill in her village that is a border town between Nigeria and the Republic of Benin but the nearest hospital to her is in Badagry which is about 30 kilometres away from her village and travelling

down to Badagry town will further aggravate her condition and put stress on her limited funds. Moreover, getting transportation to Badagry would be a bit difficult.

However, this is not the case in urban centers because the ill and poorly equipped health institutions are being complemented by the privately owned health facilities which are usually set-up by public office holders from the proceeds of embezzled public funds for the purpose of profit making. Regrettably, if government had genuinely invested in the health sector, the nation's health facilities would have been rated among the best in the world and health professionals would not have left the Nigeria in search of greener pasture overseas where they are usually rated as the best among their colleagues there.

On a general assessment of the impact of the Coronavirus, it could be seen that it has exposed the country's healthcare centers' inefficacy to provide care for Covid-19 patients to recover, but the good and sad news is that the virus is not a respecter of social strata as many influential people in government and even the private sector have gone down with the Virus in the country. Also, it has affected all the spheres of the country forcing schools and government offices to close thereby making the government to lose huge revenue.

Now that the Coronavirus pandemic is at the stage of community transmission with non-availability of fully equipped hospitals and health professionals in rural communities, there is a need for Nigerian government to borrow a leaf from the advanced countries who are practising the telemedicine concept which is a latest development in the global health sector. Telemedicine is a new development in health sector which uses technology and operates 24 hours a day. If adopted and practised in Nigeria, telemedicine has the capacity of closing the gap created by the shortage of health institutions and health professionals by meeting the healthcare needs of both the urban and rural communities.

In view of the shortage of health institutions with modern equipment and professionals to run massive test in rural communities, a lot of rural dwellers got infected by the novel Coronavirus and even died without their relations or community members knowing the cause of their deaths because there are no facilities to run the test and probably place them on medication. The introduction of telemedicine will no doubt go a long way in providing care for Covid-19 patients and other patients and in reducing the causality figure not only in the rural communities but also in the urban centers.

Conceptual Clarifications

Telemedicine

The term telemedicine simply implies "healing at a distance", which requires the application of Information and Communication Technology (ICT) to address patient's condition via increasing access to care and medical information. The report on the second global survey on eHealth conducted by the World Health Organization (2010, p.9) says it has found that there are 104 peer-reviewed definitions of telemedicine and adopted a broader definition of the term 'telemedicine' as thus:

> *The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities.*

A synopsis of these 104 peer-reviewed definitions of the term 'telemedicine' is that it is a platform that uses various ICT enables for patients to consult physicians, pharmacists and other health professionals through online clinical consultation to get solution to their health problems. The major driver of the telemedicine is the Internet which connects the medical and health personnel with their patients in both urban and rural areas which in turn reduces the pressure on the health institutions facilities in countries that are practising the concept

of telemedicine. Telemedicine is about providing healthcare services by health professionals regardless of the location of the patients provided that the patient or his/her relations can put a phone to the health professionals and give a proper and true narration of the patient's state of health.

WHO (2010) highlights some of the four elements of telemedicine as follows:

i. It provides clinical support.
ii. It is intended to overcome geographical barriers, connecting users who are not in thesame physical location.
iii. It involves the use of various types of ICT.
iv. Its goal is to improve health outcomes.

Song, Liu and Wang (2020, p. 124) say telemedicine provides an online platform for consulting clinic, where experts are available 24 hours a day. Medical experts conduct preliminary screenings through remote consultation, which avoids the risk of cross infection in the hospitals and relieves pressure away from designated hospitals. Telemedicine is a professional and reliable information platform that delineates factual information, allowing medical staff to obtain reliable information in real time with appropriate authentication. Additionally, medical staff can communicate with colleagues, listen to lectures, apply for consultations, etc.

History of Telemedicine

Historically, there is no definite period that can be trace to the commencement of telemedicine practice but some experts traced its origin to between mid and late 19th century. However, the World Health Organization (2010, p.9) traces the history of telemedicine practice in the world to the 1970s when the word 'telemedicine' was first coined while the first ever published literature on telemedicine was in the early 20th century when electrocardiograph data were transmitted over via telephone wires. However, the modern practice of telemedicine began in the 1960s in large part driven by the military and space technology sectors, as well as a few individuals using readily available commercial equipment. WHO says examples of early technological milestones in telemedicine include the use of television to facilitate consultations between specialists at a psychiatric institute and general practitioners at a state mental hospital, and the provision of expert medical advice from a major teaching hospital to an airport medical centre.

However, in recent times the telemedicine concept received a boost in Africa countries. Ibekwe and Fasunla (2020, p.111) reveal that following the outbreak of the novel Coronavirus in the world, the concept of telemedicine was accorded relevance following the directives of some Africa countries such as *Mali, Botswana, Uganda, Senegal, South Africa, and Ghana after recording deaths as a result of Covid-19 pandemic that patients should seek medical attention through online rather than physical consultation with health professionals.*

Adopting Telemedicine in Covid-19 Era

Covid-19 pandemic is an emerging global health challenge that poses a serious challenge to Nigeria's health system, particularly the seeming unavailability of medical solution and right information on the best ways to manage the health challenge. The lack of right information makes the health professionals vulnerable to the virus due to the series of contacts between them and patients. In situations like this telemedicine is the best alternative to the traditional face-to-face consultation between the health professionals and patients. So*ng, Liu and Wang (2020, p. 125) hint that the telemedicine* platform is considered safe, trustworthy, convenient, cost-saving, and eases the stress to go to hospitals. Telemedicine activities avoid close contact and decrease the risk of contracting Covid-19; therefore, in this peculiar period, telemedicine plays a huge role.

On their part, Ibekwe and Fasunla (2020, p.111) explain that social distancing is one of the proven precautionary practices to contain the spread of the novel coronavirus infection. Therefore, the usual face-to-face clinic consultation is to be modified during the pandemic in order to control, prevent, and curtail transmission or spread of the virus. An

alternative medical consultation method which will prevent physical contact but still provide remote satisfactory clinical service or remote doctor patient consultation and effective medical outcomes is desirable.

The telemedicine platform provides an avenue for patients to consult physicians from the comfort of their homes via the online clinical consultation while the health professionals utilize the audio-visual tools to assess their patients and prescribe appropriate medication for the patients if their ailments do not require surgical intervention. Other advantages of the telemedicine concept are that it will reduce large movement of patients and caregivers to health institutions and minimize the risk of health professionals and caregivers contracting the Covid-19. Telemedicine provides reliable care for Coronavirus patients as experimented in China. So*ng , Liu and Wang (2020, p. 125) say* the Shandong Anti-Epidemic Expert Group utilized the "telemedicine" platform to carry out epidemic control activities in Shandong and Hubei provinces and explain further that:

> Also, Shandong province supported medical teams, not only in China but also around the globe. On January 23, 2020, telemedicine shared personal protection videos and conducted remote training for healthcare providers in Shandong province. Concurrently, 50 training and panel discussions were held nationwide by telemedicine. Expert panels from intensive care, respiratory, infectious disease, and traditional Chinese medicine backgrounds were invited to connect with Hubei province colleagues. Topics included diagnosis, respiratory support, circulation, immunization, extracorporeal membrane oxygenation (ECMO) treatment, case discussion, personnel protection, psychological counseling, and management of critically ill patients with COVID-19. More than 500,000 individuals participated in these video conferences.

If the application of telemedicine in caring for Covid-19 patients is adopted in Nigeria, it would go a long way in addressing the problem of exposing the health and medical personnel and their families to the risk of contracting the virus. The platform will enable the health and medical personnel and the Covid-19 patients to share health condition and solution via the technological platform without making physical contacts as some countries have resorted to caring for the patients of Coronavirus through the telemedicine platform.

Telemedicine and Managing Covid-19 Patients in Communities

In most of the communities in Nigeria there are nohealth facilities and where there are PHCs such health centers are ill-equipped. The PHCs by their nature are set-up to attend to pregnant women and treat ailments such as malaria, fever, headache and general body pains because physicians who are trained to handle major health challenges are normally posted to secondary and tertiary health facilities mostly located in urban centers.

In a study on the unavailability of healthcare facilities in communities to **provide healthcare services,** Adamu and Yakuba (2018, p. 83) say inNigeria none of the health facilities is equipped with the minimum equipment package, essential drugs or staff complement required to enable them to offer quality maternal health services which shows that there is shortage of material resources for focused antenatal care services in Bauchi State and this lack of facilities have really affected the quality of healthcare provision in Bauchi and many other states that are experiencing the same problem of lack of equipped healthcare facilities.

However, the outbreak of the novel Coronavirus is a serious health challenge not only in Nigeria but the world at large and the rural communities are more at risk because of the lack of health facilities to manage the global pandemic. Morah and Omojola (2017, p. 391) reveal that 60% of Nigeria's population reside in the rural communities and are cut-off from the urban radio stations to create awareness and methods of managing any outbreak of diseases/pandemics such as Coronavirus,

HIV/AIDS, Tuberculosis among others.

This is time for Nigeria government and companies to adopt the telemedicine practice in the country for the benefit of the rural population, where there are no health institutions. One advantage of the telemedicine practice in this era of Covid-19 is that whenever a member of the community is showing symptoms of Covid-19 or any other condition, the physicians who are providing 24 hours online clinical consultation service can be contacted on phone and such a patient will be given the right medical advice in line with global best practice that would lead to his or her recovery. The telemedicine provides a platform for patients to consult a health professional from the comfort of their homes. All that the rural dwellers need to do is to get a small phone with SIM card(s) for them to be able to make and receive calls. With the phones Covid-19 patients in rural communities can contact a physician and appropriate drugs would be prescribed to the patients.

David et al. (2020) note that telemedicine bridges the gap between patients and quality healthcare services, thus enabling anyone with an internet connection or mobile phone to receive adequate care regardless of their location. Video Consultation and chats are some of the mediums that telemedicine leverages to ensure a good healthcare service delivery. It is worrisome to know that the burden on the health system caused by shortage of healthcare professionals in Africa has been worsened by the emergence of Covid-19 pandemic. Through telemedicine, patients can get access to healthcare professionals around and outside the country, thereby minimizing the effect caused by this obvious shortage of healthcare professionals and social distancing. Some African countries such as Mali, Botswana, Uganda, Senegal, South Africa, and Ghana advised patients to seek medical attention online rather than physical consultations.

It is evident that telemedicine has the efficacy to close the gap between the Nigeria population and healthcare service created by the shortage of health professionals which is now worsened with the emergence of the Covid-19 pandemic. Telemedicine practice comes with its own challenges. Poor internet coverage particularly in the rural communities, relatively low awareness about telemedicine, erratic electricity supply and level of illiteracy are some of the possible factors that may hinder the practice of telemedicine in Nigeria and other parts of the African continent.

China is one of the countries that applied telemedicine in caring for the patients of Covid-19 and it worked for the country due to the level of education and the availability of network connectivity. So*ng, Liu and Wang(2020, p. 125)* say residents of rural communities who are showing symptoms of Covid-19 could consult healthcare providers via online clinic consultation services where the health experts conduct preliminary screenings of patients online and give suggestions to them to either continue to stay home or to go to the hospital. After arrival at the hospital or clinic, clinicians determine whether patients are suspected for Covid-19 after which experts conduct a remote consultation for further determination of the risk of Covid-19. Non-severe cases are assessed. The cases are reported to the expert group via telemedicine every day, thereby implementing early preventive interventions for this group of patients. For cases with severe illness, remote consultation could be arranged at any time via telemedicine. Patients discharged from the hospital are followed up via telemedicine. Telemedicine seamlessly monitors patients from initial triage through to post-discharge, while also collecting patient data to be incorporated into a future database.

While situating the telemedicine practice in Nigeria, Ndeche (2020, p.21) stresses that telemedicine will provide immediate intervention to all citizens showing symptoms to consult freely with medical personnel and clarify if the symptoms they are experiencing are related to Covid-19 or not. It has the capacity to conduct virtual diagnosis, protects health workers from infection, reduces the financial resources deployed in the management of cases, allays the fear of the public, and manages the spread of the COVID-19 disease.

Telemedicine and the Physical-Social Distancing

According to Bwakan (2020, p. 203), with the outbreak of the novel Coronavirus, there is a need for adequate sensitization of communities, on the need to apply social and behaviour communication change by advocating physical and social distancing, hand washing, avoiding hand-shake, applying hand sanitizer, wearing of face mask, ban on religious gatherings, obeying the stay-at-home order and other new behaviours. Agro FM, a community radio station operating in Shendam Local Government Area, is playing a significant role in sensitizing the communities on the safety protocols and measures prescribed against the spread of Coronavirus pandemic by PFT.

In this regard, the media spearheaded the campaign for physical and social distancing, particularly at the rural communities on the need for people to always maintain social distancing and the stay-at-home order among other safety measures aimed at curbing the spread of Covid-19 as released by the Presidential Task Force set-up by the Federal Government of Nigeria. The telemedicine can help both the urban and rural population because they do not need to cluster themselves in hospitals queuing up to consult physicians or any other health professionals as the patients can consult the healthcare providers from the comfort of their homes through the telemedicine platform.

With the enforcement and much awareness on the need for people to observe physical and social distancing as one of the measures aimed at containing the spread of Covid-19, Ibekwe and Fasunla (2020, p.111) maintain since physical and social distancing is a measure prescribed by the PTF to curb the spread of the virus in the country, the telemedicine could help in preventing the usual face-to-face clinic consultation during the pandemic. It has a wide application with promising values in otorhinolaryngological practice, ranging from remote clinical consultation to disease management and only requires smartphones, laptops, and improved internet coverage for patients to make remote audio-visual consultations with otorhinolaryngologists. In some situations, health conditions may require that clinical photographs, radiological images, audiometric data, and laboratory results can be sent via the Internet and fax to otorhinolaryngologists to help them make informed diagnosis.

The telemedicine platform operates to allow physicians to evaluate a range of commonly occurring pathologies with a high degree of reliability. Medical care can be provided and drug prescription given to patients where surgical interventions are not required. In countries where telemedicine are practised such *as Mali, Botswana, Uganda, Senegal, South Africa, and Ghana where the government advised the Covid-19 patients and other patients to seek medical attention via the online clinical consultation, the pa*tients have reported satisfaction with remote medical treatment, especially with access and quality of medical care they received.

Conclusion

The conclusion of this study is that the outbreak of Coronavirus also known as Covid-19 has exposed the poor state of Nigeria's healthcare facilities and the rural dwellers are at risk because of the unavailability of health facilities and lack of awareness on the novel Coronavirus. Nonetheless, the emergence of the virus has challenged developing nations, Nigeria inclusive, to adopt and practise telemedicine to complement the ill-equipped and already overstrained healthcare facilities. Telemedicine has proven to have the efficacy of meeting the health needs of both urban and rural population satisfactorily provided that network service providers will extend their services to rural communities in Nigeria. Government at all levels can deploy the telemedicine to adequately manage patients of various ailments during the Covid-19 era and beyond.

Recommendations

i. Government and companies should encourage the telemedicine practice in order to provide 24 hours online clinical consultation for Covid-19 patients and other patients.
ii. For Covid-19 patients and other patients to observe the physical and social distancing safety measures, governments at all levels should work

out modalities for adaptation and commencement of telemedicine practice for patients to consult physicians from the comfort of their homes without necessarily maintaining physical contact with health professionals.

iii. Network service providers: MTN, Airetel, Glo and others, should expand their network coverage to cover all rural communities to enable the rural dwellers to benefit from the online clinical consultation.

iv. Governments at all levels should acquire mobile telephones for rural dwellers to enable them to consult physicians on phone and get medical attention.

References

Adamu, A., & Yakubu, L., (2018). Availability of material resources for focused antenatal care in health facilities in Bauchi State, Nigeria. *IOSR Journal of Nursing and Health Science, 7 (3), 80-85.*

Bwakan, A.N. (2020).Integrating community radio with SBCC for community sensitization against the spread of Coronavirus in Plateau State. *NTA-TVC Journal of Communication, 4* (1), 202-211.

David, K.B., et al. (2020).Telemedicine: an imperative concept during COVID-19 pandemic in Africa. Pan African Medical Journal, 35(2), 1-4.

Ibekwe,T.S., & Fasunla, A.J. (2020). Telemedicine in Otorhinolaryngological practice during COVID-19 Pandemic. *Niger Med J., 61*(3), 111-113.http://www.nigeriamedj.com/text.asp?2020/61/3/111/288927.

Morah, N.D. & Omojola, O. (2013).Digital large screens as a community medium: Interactivity and community relevance in focus. In Ojebode, A. (Ed.),*Community media for development and participation: experiences, thoughts and forethoughts*. Ibadan: John Archers Publishers.

Ndeche, C. (2020). Healing from a distance: Can telemedicine improve healthcare in Nigeria during COVID-19 pandemic? https://google.com/amp/s/guardian.ng.

Song, X., Liu, X., & Wang, C. (2020).The role of telemedicine during the COVID-19 epidemic in China-experience from Shandong province.__http://creativecommons.org/licenses/by/4.0/.

WHO Global Observatory for eHealth. (2010). Telemedicine: opportunities and developments in Member States: report on the second global survey on eHealth 2009.https://apps.who.int/iris/handle/10665/44497