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The Nigerian Health System and mHealth Philosophy: Weighing the Balance

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Abstract

The appalling state of the Nigerian healthcare system has drawn a lot of attention from scholars, medical experts, and free thinkers. To these people, it is baffling why despite Nigeria's political and economic relevance in Africa; the country suffers a great deal of health insecurity. It is against this backdrop that this paper sought to examine and ascertain the balance between the Nigerian healthcare system and the mobile health philosophy (the process whereby mobile health devices and applications are used to carry out healthcare services delivery). Relying on the descriptive survey research design and method of analysis, the study examined healthcare procedures that provide prompt mobile health services to Nigerians. It finds that although the concept of mHealth is new to Nigerians, nonetheless, both medical experts and end users have taken advantage of it to maintain good health by seeking and providing solutions to health concerns and challenges. Other outstanding challenges that hamper the mHealth philosophy in Nigeria are epileptic power supply, poor internet coverage, lack of finance to acquire mobile health devices, security of peoples' private information and many others. The paper condemned the lack of sustainable government (Federal, State and Local) support for primary, secondary

and tertiary healthcare systems in the country. It is the conclusion of the paper that despite these challenges, the benefits of mHealth remain overwhelming especially as it makes healthcare service delivery proactive and easily accessible by everyone anywhere and anytime. Therefore, it should be integrated into the policy and health care delivery system in Nigeria.

Introduction

The Nigerian healthcare system, just like that of other countries in the world is saddled with the task of ensuring that the physical, mental and social well-being of the citizens is secured. It is also responsible for guaranteeing that adequate healthcare services are properly delivered to Nigerians all over the country with the primary objective of mitigating the incessant increase and spread of illnesses as well as saving lives. In Nigeria, the medical profession is of utmost importance to both the government and the masses because it determines the rate and manner in which vital services that engender quality healthcare are handled. Also, while it cannot be argued that the Nigerian healthcare system has since the country's independence in 1960, been systematically and positively responsive to the various health challenges of Nigerians, it should, however, be noted that it has been wrecked by a myriad of challenges such as poor management and maintenance, lack of sustainable government support through funding, poorly equipped health institutions, loose and ineffective legislations on drug counterfeiting and the presence of quack health professionals in the system.

In the same vein, many Nigerians, who, as a result of economic hardship, cannot afford easy access to quality healthcare delivery together with other limitations, have died prematurely, resulting in a low life expectancy rate. Sasu (2021) noted that life expectancy at birth in Nigeria in 2021 was about 60.87 years (59 years for males and 63 years for females). Going by the aforementioned statistics, one can emphatically state that the country's healthcare system is poorly managed and not safe to guarantee the health security of Nigerians.

Further, it has become obvious that in a world of rapidly changing circumstances especially as regards technological transformation in different fields of endeavour including medicine, there is very little or no evidence of improvement in the country's healthcare delivery system. With the introduction of information and communication technology into Nigeria's healthcare system, there has been a paradigm shift from the traditional healthcare system (which involved the non-use of digital health equipment) to the modern healthcare system which in many complex ways, influences the peoples' pattern of quality health accessibility and delivery in the country. The integration of information technology into the healthcare systems across the globe has transformed the traditional perception of healthcare in many ways such that Salami (2022)describes the process as a shift from the industrial age of medicine to the information age of healthcare; an age when professional health providers as well as health service consumers are trained on how to utilise digital information tools in dispensing and receiving services.

It is important to note that the shift from a traditional healthcare delivery system to Mobile Health (mHealth) system would facilitate easy and quick access to healthcare with the use of mobile devices such as smart phones, computers, Personal Digital Assistants (PDAs) and also provide easy connection to various wireless networks(Sadiku, Shadare& Musa, 2017), there are also concerns about the privacy of peoples' information, the durability and overall maintenance of these devices, literacy level of Nigerians who would be making use of these devices as well as power failure. Based on the foregoing, the thrust of this paper is to examine the Nigerian health system and also evaluate the balance between mobile health philosophy (mHealth) and the Nigerian healthcare system. It will also weigh the challenges and prospects of

the introduction of mobile health (mHealth) into the Nigerian health system.

The Nigerian Healthcare System: An Overview

Ordinarily, one may without proper investigation, quickly conclude that based on the strategic position of Nigeria as a driving force in African politics and economy, the country's healthcare system would be equally commensurate with those of the developed countries across the globe. Ironically, this is truly not what it appears to be. According to a communiqué of the Nigerian National Health Conference held in 2009, 'the healthcare system in Nigeria is weak as is evident in the lack of coordination, fragmentation of services, dearth of resources in addition to drug and supplies, improper and inadequate infrastructure, lack of equal resource distribution and easy access to quality healthcare services, and above all, lack of clarity of roles and obligations among the various levels of government' (Nigeria National Health Conference Communiqué, 2009).

Consequent upon the foregoing, it can be deduced that the Nigerian healthcare system which comprises health facilities, medical equipment, health personnel and resources that are responsible for meeting the health needs of the Nigerian citizens has overtime been bedevilled by several socio-political and economic challenges which till today have continued to deprive the people of their health security. What is even more worrisome in this situation is the fact that while various reforms have been initiated by the federal government to tackle the aforementioned challenges in the healthcare system, these reforms have been considered incomprehensive as they failed to incorporate the state and the local government area levels into the system.

Elaborating on the responsibilities of the Nigerian government in the health sector, Menizibeya (2011) posited that by the constitutional delineation of government roles, it is the function of the federal, state and local governments to provide quality healthcare services in Nigeria. The author expressed the view that while primary healthcare is split into sub-levels at the village, district and local government areas, it is also managed by the local government areas in Nigeria, but with the support of their respective ministries of health in their states as well as private medical institutions. On the other hand, there is the secondary healthcare system which is under the control and management of the ministry of health across the thirty-six states in the country. The secondary healthcare system often receives medical referrals from the primary healthcare because of its focus on specialty services which are often insufficient and lacking in the latter. Teaching and Specialist hospitals, in collaboration with the federal government, non-governmental organisations and private health professionals, are known for the provision of tertiary primary healthcare service delivery to Nigerians (Adeyemo, 2005).

A critical look at the issues raised above shows that the quality healthcare delivery system in Nigeria is solely dependent on the collective efforts of governmental, non-governmental and private health organisations. Though independently, each of these groups has a fundamental role to play in the healthcare system at the federal, state and local government levels, with adequate collaboration, coupled with sustainable government funding and management, they can guarantee a quality primary, secondary and tertiary healthcare delivery system across different communities and states in the country.

It would be a great disservice to the efforts of the federal government of Nigeria if one fails to capture that before and after independence, it launched various healthcare programmes in a bid to foster the revitalisation of the county's healthcare system. That being said, the question remains, 'how effective and sustainable were these programmes?'An answer to this question will be provided in the course of our discussion. At first, before the country's independence

specifically within the period 1946 and 1956, a 10-year health development plan was initiated and coordinated by the then Ministry of Health to engender quality healthcare delivery across the regions. This plan brought about the development of clinics and health centres all over the country. In the 1980s, about 10,000 general hospitals among other health centres were built all over the country (Menizibeya, 2011). Furthermore, by 1987, the federal government launched a primary healthcare plan in line with the objectives to improve the gathering and compilation of health data, improve personnel development in the healthcare system, ensure the availability of essential drugs, improve immunisation programmes, promote the treatment of epidemic diseases, improve maternal and child care as well as family planning, and others (Menizibeya, 2011).

According to Menizibeya (2011), even though the primary healthcare plan was limited consequent upon infrastructural and personnel shortfall as well as poor public health management, it made a very minute contribution towards the improvement of the country's healthcare system.

In another event, the federal government, in a bid to resuscitate the deplorable state of the country's healthcare system, founded the Nigerian Health Insurance Scheme (NHIS) in 2005 by Decree 35 of 1999 which provided for the establishment of a governing council charged with the responsibility of overseeing the activities of the scheme (National Health Insurance Scheme Decree, 1999). Be that as it may, it was observed that even with the presence of the scheme, the death rate in the country stood at 16.3 per 1000 population in 2010; infant mortality rate at 93.0 per 1000 live births in 2010; HIV prevalence at 2.6 million of the country's population in 2007; HIV death at 170,000 and overall life expectancy stood at 47 years in 2010(The Library of Congress Country Studies, 2010). In addition, between 2006 and 2010, there were 29,115, 258 and 17,462 reported cases of Cholera, Polio outbreak (polio type – 3) and Meningococcal disease respectively which affected mostly the Northern states in the country(Adagbada, Adesida, Nwaokorie, Neimogha& Coker, 2012). Unfortunately, irrespective of the several efforts made by the Nigerian government to foster a good quality healthcare system through the NHIS, poor management has always stood out as its primary limitation thus compounding health security challenges for the citizens.

Development of Mobile Health (mHealth) in Nigeria and Responses from End Users

It would be paramount to establish a concise explanation of what mHealth entails before we make further advances towards unveiling its evolutionary process into Nigerian society. Mobile health or simply mHealth as it is popularly known refers to the use of mobile phones in carrying out healthcare services just as it is traditionally done in situations where people visit the hospital to get rid of their health challenges. The difference is that with mobile health, healthcare services are provided usually in the form of direct phone calls, short message service (SMS), voice calls or software applications. Lending credence to the abovementioned, Choudhurry and Jahan (2014) espoused further that mobile health (mHealth) is the use of mobile and wireless technologies, such as mobile phones, patient monitoring devices, personal digital assistants and mobile software applications to support the achievement of health objectives. Mobile health can also be seen as the process of utilising a mobile phone for the expression of health-related concerns between health professionals and patients. It encompasses health tasks such as the recording of medical history, sending laboratory results, medical check-ups and follow-ups and others (O. Edi, personal communication, April 19, 2022).

According to Haddad (2022), in 2008, the Rockefeller Foundation assembled a group of people at their seminar conference tagged 'eHealth connect'. It was at that conference that the term 'mHealth' was coined to describe the use of a mobile phone to carry out healthcare. Haddad

(2022) added that the term 'mHealth' paved the way for a new digital industry which as of 2008 would allow people across the globe to open their mobile phones, send a message and gain quick access to quality healthcare wherever they are. In another event, the World Health Organisation (WHO, 2023) mentioned that mHealth is the first component of electronic health (eHealth) which is the use of information and communication technologies (ICT) in health and health-related fields which reaches inaccessible areas in society.

It is in a bid to strengthen health systems across the globe that the World Health Organisation (WHO, 2023) in 2005, urged its member states to critically look into the need to develop and execute electronic health to promote equitable and affordable health access for their citizens. Matching words with action, the WHO Assembly, in 2013, adopted a concession on electronic health standardisation, and member countries were encouraged to establish a national eHealth strategy(WHO, 2023). This was followed by the WHO's release of its first regulations on eHealth intervention in 2019. Howbeit, it has been observed that despite the recorded outstanding advancements in digital health, which permits the use of mobile devices for health promotion, training, consultation, supervision and disease prevention, Nigeria, seems to be lagging in the adoption and implementation of sustainable policies that would grant easy and quick access to mobile healthcare service delivery across the different tiers of government.

It is unarguable that the concept of mobile health is still at its nascent stage in Nigeria, but overtime, different kinds of healthcare services have been gradually introduced with the use of mobile health applications. At this point, one may not be out of order to question what mobile health applications are, their types as well as what they are used for? Responding to these questions, Rouse (2018) describes mobile health applications as computer software that offers health-related services but this would only be possible when installed on mobile devices such as smart phones. Adding to Rouse's (2018) definition, P. Umelor (personal communication, May 2, 2022)explained that mobile health applications are smart phone software programmes that allow easy communication between medical professionals like doctors, nurses, pharmacists and psychologists and their clients either via audio, visual or audio-visual mediums. Moreover, Rouse (2018)remarked that given the fact that mobile health applications are accessible to patients everywhere and anywhere, health apps are an indivisible part of the movement towards mHealth programmes in healthcare.

Highlighting the different categories of mobile heath applications, the author mentioned that mobile health applications are of various types. One is for healthcare providers which are used to access clinical reference tools as well as to supervise and follow up on patients. This is made possible with the use of Global System Positioning (GPS) technology to track a patient's whereabouts as well as generate questions about the patient's well-being, including regular reminders to report to the hospital or check symptoms. The other one is used by patients to monitor their health condition by accessing health-related information among other services. Through these applications, mobile consulting is made possible as patients can conveniently seek consultations from medical experts digitally. There are also the 'patient portals', and according to Rouse (2018), this category of mobile health applications makes it easier for patients to carry out activities such as checking laboratory test results, reviewing their medical records and even making arrangements for consultations with their mobile devices. Moreover, while the Secure Text Messaging (STM) health applications aid the exchange of texts and picture messages between mobile devices, patient monitoring devices such as wearable sensors (Glucometer – used for checking sugar level and Aneroid monitor or Clinical mercury manometer – used for checking blood pressure) help in the supervision of the health conditions of patients most of who

live in remote areas. It also helps health providers to monitor patients whose illnesses are chronic and are at risk of severe health risks.

Interestingly, it has also been observed that most of these mobile health devices are already in use by a lot of individuals and households in Nigeria but what seems to be lacking is official and legal government backing, strategic monitoring and the incorporation of these devices into the country's healthcare system. Most Nigerian health practitioners and software developers like Charles Immanuel Akhimien, AhjokuAmadi-Obi and Charles Davies Omiete have made significant health indigenous inventions of mobile applications which help bring solutions and succour to the overall health challenges of Nigerians within and outside Nigeria. For instance, Charles Immanuel Akhimien is credited with the co-founding of Omoni apps – a mobile application which enables pregnant women to gain quick access to reliable information on child-bearing and child welfare. Through this medium, they can communicate with medical doctors who assist them with maternal and child health information. Also, while the apps serve as a reminder to parents of their children's immunisation visit to the hospital, it has a Global Positioning System of the nearest hospitals within one's reach (Adum&Ejiofor, 2022).

On the other hand, AhjokuAmadi-Obi is credited with the founding of another mobile health application known as *Hudibia*, an Igbo word which translates in English as 'Meet a Doctor'. The application allows users to search for a doctor anywhere in the world. It enables people to book appointments, arrange for mobile consultations as well as make online payments for these services at their convenience and with the use of their smartphones (Adamu, 2016). Another mobile health application founded by Charles David Omiete called 25 Doctors also provides people with basic information about their body and the need to maintain a healthy lifestyle by eating right and maintaining good body weight, among others. There are other mobile health applications like 'Kangpe' and 'Find-A-Med' which are renowned for their intelligent contributions to the maintenance of quality health in Nigeria through mobile technology.

In another event, it should be noted that the technological innovations that have become increasingly inseparable from healthcare are a welcome development in the country as long as Nigerians (individuals, organisations and government) imbibe a good maintenance culture. On this note, Nkechi Enechukwu, a medical doctor at the Nnamdi Azikiwe University Teaching Hospital (NAUTH), remarked that the use of mobile devices and applications in attending to the medical needs of sick patients across the thirty-six states of the country has aided a more effective and efficient delivery of healthcare services. It is a development that all Nigerians must acknowledge and take advantage of to ensure that there are no limitations or barriers that would deny them a healthy life. N. Enechukwu (personal communication, April 12, 2022) noted that although most Nigerians, especially the aged and those who are not technologically savvy, may find it difficult to make use of mobile health devices, it is at this point that they should be properly guided on how to make use of them either by their children or health practitioners in the hospitals.

In the same vein, Wilson Akubuo, a medical doctor asserted that the beauty of technological innovations is seen in its ability to ease human tension, pressure and suffering. As such, the use of mobile health devices in Nigeria has saved more lives than one can ever imagine(W. Akubuo, personal communication, May 13, 2022). In addition, W. Akubuo (personal communication, May 13, 2022)said that mHealth devices have revolutionised the pattern of the healthcare delivery system in Nigeria such that people have begun to conduct personal research and investigations on their health status with the use of mobile devices instead of waiting for the

day they would visit the hospital and pay consultation fees to see a doctor. Indeed, mHealth is a great transformation in the Nigerian health system and its relevance is seen from the use of an Aneroid monitor to check blood pressure level, the use of a Glucometer to check sugar level, the use of Short Message Service (SMS) to text and react to laboratory test results, to the use of GPS to access nearby hospitals or clinics in cases of a health emergency.

In another event, Edi (2022), opined that even though technological devices come with their pros and cons, the benefits of mobile health supersedes its demerits. But this also would be dependent on whether Nigerians would learn to take proper advantage of it and not abuse it. Accordingly, Edi (2022)uses all her social media platforms to inform and educate Nigerians on the need for healthy living including preventive measures on how to avoid certain sicknesses. Again, she noted that as an ophthalmologist, she utilisesmHealth devices in communicating with clients who either need their medicated glasses repaired, or new ones issued.

Methods and Materials

The study adopted the descriptive survey research design and was qualitative. Data were drawn from both primary and secondary sources. Primary data were obtained via interviews – face-to-face and phone calls while secondary data were collated from the literature review. Altogether,162 respondents constituted the study subjects. The majority of the respondents, 149 (92 %) were contacted on phone interviews and the remaining 13 respondents were randomly selected. The data are shown in the table thus:

Table 1: Data showing the End Users of mHealth Services by Background Characteristics

Age (in years)	No. of Respondents	%
20-30	13	8.0
31-40	11	6.8
41-50	37	22.8
51-60	42	26.0
61-70	59	36.4
Education Level		
Primary	8	5.0
Secondary	41	25.3
Higher	87	53.7
University	26	16.0
Employment Status		
Paid Employment-Public/Civil Service	79	48.8
Paid Employment-Private	33	20.4
Self-employment	47	29.0
Unemployed	3	1.9
Opinion about mHealth Services		
Good	126	77.8
Not Good	7	4.3
Some How	29	17.9
Reasons for Use of mHealth Services		
Diabetes	78	48.1
Arthritis	41	25.3
Pains	89	54.9
HIV/AIDS	35	21.6

Diarrhoea	36	22.2
Malaria	21	13.0
Tuberculosis	6	3.7
Acute Respiratory Infection	17	10.5
Pregnancy-related Problems	60	37.0
Cancer	24	14.8
Total	162	100

The data used in the study were collected via Google form from 162 persons comprising 93 men and 69 women, all in the age group of 20-70 years. Out of the 162 respondents, 59 (36.4%) reported their ages in the cohort of 61-70 years; 13 (8.0%) reported theirs in the cohort of 20-30 years while 42 (26.0%) others said they were in the age cohort of 51-60 years. The data also show that 37 (22.8%) respondents were in the age cohort of 41-50 years while 11(6.8%) others reported their ages in the cohort of 31-40 years. Data related to the educational background of the respondents indicate a population with a high literacy rate. As shown in Table 2, 87 (53.7%) of the 162 respondents had finished a higher education which could be a national diploma or national certificate of education (NCE). Twenty-six (16.0%) respondents said they graduated from a University with a first degree while 41 (25.3%) others reported that they completed their secondary school and another eight (5.0%) respondents had completed their primary education.

A further assessment of the background of the respondents revealed that 79 (48.8%) of the respondents were in paid employment, specifically the public/civil service. Forty-seven (29.0%) respondents out of the total were self-employed whereas 33 (20.4%) other respondents said they were in paid employment but in the private sector. Only three (1.9%) respondents reported that they were unemployed. The respondents were also interrogated on their opinion about the mHeath services. Data shown in the table reveal that the majority of the respondents, 126 (77.8%) confirmed that the mHealth services were good and thus preferred the services to conventional hospital/clinic settings. Only 29 (17.9%) respondents said the mHealth services in their opinion were somehow compared to the seven (4.3%) others who condemned the services.

The data equally show that the most sought mobile health service was for pain. This was reported by 89 (54.9%) respondents. Another seventy-eight (48.1%) respondents reported that they used mhealth services to treat their diabetic problem compared to the 60 (37.0%) respondents who said their pregnancy-related problems were preferably handled using the mHealth. The table shows that 41 (25.3%) respondents used mHealth technology to treat arthritis; 36 (22.2%) respondents relied on mHealth to treat diarrhoea and 35 (21.6%) others used it to obtain treatment for HIV/AIDS infection. Also, as shown in the table, 24 (14.8%) respondents relied on the mHealth services to treat Cancer; 21 (13.0%) respondents used the service to seek expert advice on malaria infection and treatment; 17 (10.5%) respondents used it for the same purpose with regards to acute respiratory infection while six (3.7%) other respondents always depended on the services to handle tuberculosis disease.

Mobile Health and the Enhancement of Healthcare Service Delivery in Nigeria: Challenges and Prospects

Despite the effervescence that accompanies technological innovations in the healthcare system, especially about the use of mobile health devices in Nigeria, it has been observed that there is a disparity in the views of Nigerians on the issue of incorporating mobile health (mHealth) philosophy into the Nigerian health system. On this note, while some people acknowledge the fact that mobile health technology does not only enable adequate disease management,

prevention and cure but also tends to increase people's access to healthcare services, especially in a situation where resources are insufficient or unavailable and systems are under stress, others like Umelor (2022), Edi (2022) and P. Anwi (personal communication, April 18, 2022)express their distrust in its usage.

According to Umelor (2022), medical conditions manifest as signs or symptoms and most times, these signs are confusing and complicated which implies that for instance, a symptom of appendicitis and that of an ulcer might manifest in the same manner. So, unless proper diagnosis through laboratory examinations is carried out, wrong assertions may be made at the expense of people's lives. Thus, it is in a situation like this that using mobile health devices to determine or tackle illnesses becomes challenging. Umelor (2022) commented that mobile health devices cannot give biochemical details of medical issues, which is an important ground for diagnosis, rather, one can only guess symptoms, which is not accurate for proper diagnosis. Umelor (2022) also decried the unethical and unhealthy behaviour of most Nigerians regarding self-medication. The source observed that since self-medication is predominant in Nigeria, the use of mHealth would further increase its prevalence.

Given this situation, Anwi (2022)disputed the notion that the introduction of mHealth technology in Nigeria's healthcare system would salvage the prevalence of health insecurity in the country. According to Anwi (2022), the country's poor and fragile internet services would serve as a hindrance to both professional health practitioners and the people who need their services. As a result of poor network, people who live in the interior parts of the country would not be able to make use of some mobile health devices like mHealth applications which originally was designed to take care of their health challenges(N. Maceline, personal communication, May 21, 2022). The fact that most Nigerians, especially those who live in interior villages, are poor and may not be able to afford the procurement of mobile health devices is another challenge that calls for great concern. On this note, Anwi (2022) argued that if the relevance of mHealt must be felt in Nigerian society, then, the Nigerian government at all levels: Federal, State and Local must ensure that those who are economically disadvantaged are provided with these devices to ensure quality healthcare. Anwi (2022)also mentioned electricity failure or incessant power outages and lack of technological literacy by most Nigerians as other challenges of mHealth which need to be worked on to facilitate a health system where quality health services are delivered.

Most Nigerians have over time stood in strong opposition to mHealth because they believe that physical interactions between physicians and patients remain the most reliable means of evaluating one's health. This argument is based on the premise that it is not all information about one's health that would be made readily available on mHealth applications hence, the need to visit/seek proper medical care from medical experts in the hospital. Concurrently, in most Nigerian hospitals, medical doctors and nurses often spend most of their time attending to their patients physically and in the end, may not give the same amount of time to other patients online. Again, with the shortage of medical doctors in the country, splitting the time of the medical workforce with mHealth engagements would put so much pressure on existing human resources(Fayehun, Omigbodun&Owoaje,2020).

Another serious limitation to the adoption of the mHealth philosophy in the Nigerian healthcare system is the concern about the protection of the privacy of patients' information shared on mobile devices. Owing to the incessant level of cybercrime, internet scams and fraud in the country, the fear of the system being manipulated and used to defraud, kidnap or by any means invade the private lives of people is imminent hence the unsupportive attitude of some Nigerians to mHealth. These devices like smartphones, tablets and other wearable devices that contain healthcare data are often targets for thieves thus restricting people from gaining quick

access to healthcare. It has also been uncovered that mobile devices have limited storage and battery powers, therefore is not feasible for hospitals all over Nigeria to equip thousands of healthcare staff with mobile devices to promptly attend to patients' health challenges.

Be that as it may, it is important to note that the essence of pinpointing or mentioning certain challenges that accompany technological innovations is to provide reliable and sustainable solutions that would make them better and safer for human use. On that note and based on the situation in Nigeria, it is the responsibility of the Nigerian government to take the country's healthcare system seriously by actively working in collaboration with health agencies, Non-governmental Organisations (NGOs) and the legislature both at the national and state levels to monitor and ensure the effective use of mHealth devices in the country. Laws that would ensure the protection of peoples' information stored in mHealth devices should be enacted and implemented such that those who break them would be severely punished following the provisions of the law. Also, there is a need for the government to ensure that mHealth devices get across to the economically disadvantaged Nigerians and the challenge of power failure should be adequately addressed.

Despite the challenges of mHealth, the fact that it is beneficial and can resuscitate Nigeria's healthcare system cannot be overemphasised. Mobile health (mHealth) can facilitate quick access to healthcare experts from anywhere and at any time. Its use can facilitate the speed of decision-making, especially for emergencies as it provides healthcare experts access to patients' medical history and data. People who suffer from chronic diseases and as such, require protracted healthcare services such as regular checkups and tracking/monitoring can be regarded as the primary beneficiaries of mHealth as its proper usage enhances their recovery process. For instance, mobile regular diabetes inspection could present itself as an efficient tool to address the clinical needs of people residing in rural communities as well as healthcare centres. This may involve insulin and medication recording, data export and communication, diet recording, and weight management (Sadiku, Shadare& Musa, 2017).

Mobile health has encouraged the development of teleconsultation using computer and communication technology between medical institutions – an application imbued with the capacity to prevent diseases and keep people away from them (Li *et al.,* 2014). It also can improve the management of diseases and ensure quality healthcare delivery for every Nigerian who is connected and increases vaccination coverage to remote villages and communities across Nigeria. Based on this background, it is obvious that there is a dire need for an efficient government policy and regulatory framework to minimise the political, economic and socially motivated hindrances to the delivery of quality healthcare services by the Nigerian healthcare system.

Conclusion

The paper examined the Nigerian Health System and Mobile Health philosophy with the sole aim of striking a convincingly acknowledgeable balance between both the system and the concept. In the course of the examination, the research revealed that the Nigerian healthcare system is in a serious state of comatose and the primary reason behind such a situation is the government's (Federal, State and Local) laissez-faire attitude towards the growth and development of primary, secondary and tertiary healthcare service delivery across all health institutions in the country. Lack of standard medical facilities, and equipment, as well as poor remuneration of medical experts, among many other factors, have dragged the relevance of the Nigerian health system into the mud with little or no sustainably proactive efforts by the government to ameliorate the challenges. The paper also x-rayed the evolutionary process

involved in the development of mHealth in Nigeria. Here, it revealed that the term 'mHealth' was birth in 2008 consequent upon the gathering of a group of people by the Rockefeller Foundation for a conference on the theme 'eHealth'. A discussion of electronic health further unravelled the need for mobile health which became one of the sub-parts of eHealth. The debate on the essence of mobile health was further strengthened by the World Health Organisation as it encouraged its member states to gradually acknowledge and embrace the philosophy which was set to revolutionise the healthcare system.

The paper also established that although the philosophy of mHealth is still at its nascent stage in Nigeria, it has for a long time now been utilised by a lot of Nigerians. It further highlighted the different categories of mHealth which were for both health service providers as well as end users. In addition, there are others like telemedicine, people's portal and others. Emphasis was on the different types of indigenous mHealth applications which had been originated by Nigerian medical experts and technological gurus to help adequately inform and educate the Nigerian citizens on how well to live healthily by preventing diseases and curing those that could not be prevented. Some of these applications have been shown to include: Omoni apps, *Hudibia*, 25 Doctors, Tel-A-Med and *Kangpe.*

Some limitations such as poor electricity supply, poor network coverage, lack of funds to purchase mHealth devices and issues of safety regarding patients' confidentiality were established. In addition, issues relating to some mHealth devices being the target of thieves, their limited capability to carry out biological and clinical medical tests and the lack of adequate government policies to protect, support and promote the use of mobile health devices by Nigerians were also spotted as other limitations of the philosophy. The paper noted that despite the abovementioned limitations of mHealth, its benefits are still overwhelming and can be made more sustainable with the support of the Nigerian government across all levels – Federal, State and Local.

Recommendations

In view of the current waves of technology that have altered some ideals of human life, institutions and society, and considering the importance of mHealth philosophy in contemporary times, this study is poised to make the following recommendations:

1. The government of Nigeria should introduce and also integrate the mHealth philosophy into the nation's health policy system and enforce its assimilation by the citizens.
2. Public health institutions should be re-organised and adequately funded to enable the acquisition of state–of–the–art equipment that will in turn boost the capacity of the health institutions to operate the mHealth system.
3. Adequate public enlightenment should be carried out on the advantages of the mHealth philosophy and system over the conventional and manual protocols involving scheduled visits, covering distance, acquisition of ' patient's card and folder', and waiting time, among others.
4. For an effective migration into the mHealth system, healthcare services for children under five, pregnant women and the elderly should be made free and compulsory under the system.

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