



## Commentary

## Leveraging mobile health technology towards Achieving Universal Health Coverage in Nigeria



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## ARTICLE INFO

## Keywords:

mHealth  
Nigeria  
Mobile health  
UHC  
Health system

## ABSTRACT

Universal Health Coverage (UHC) is ensuring everyone has access to quality health services needed without suffering any financial hardship. Most African countries including Nigeria are striving to meet this target since the declaration but so far, as of 2020, Nigeria has only made little progress in achieving this goal which was declared to be achieved by 2030. Meanwhile, incorporating Mobile health technology (mHealth) has prospective benefits for achieving UHC by improving access to health care services particularly for those in hard-to-reach communities, enhancing knowledge and access to health information for health workers and communities leading to; increase in productivity of the health workforce, and access to quality healthcare services. Although mHealth has good prospect of promoting the achievement of UHC in Nigeria but there are limitations of poor power supply, poor data collection from evidence-based researches, and restricted access to mobile phones and internet especially in core rural communities in Nigeria. We aim to discuss how mHealth can be leveraged on in promoting achievement of UHC and the challenges associated with incorporating appropriate technology in the Nigerian healthcare system.

## 1. Commentary

Universal Health Coverage (UHC) aims to ensure everyone has access to quality health services (including promotion, prevention, diagnosis, treatment and rehabilitation) needed without suffering any financial hardship [1]. Achieving Universal Health Coverage is a pivotal target set by all nations for the Sustainable Development Goal 3 (SDG3) and key in achieving some other SDGs by 2030. Achieving this milestone requires health system strengthening through provision of equitable access to basic health-care services, availability of essential medicines, sustainable health financing, adequate qualified health workers and basic infrastructure [2]. In addition, incorporating appropriate technologies in form

of mobile health into healthcare services has the potential of increasing healthcare services coverage and impacts. This article aims to discuss the key benefits and challenges associated with the use of mHealth for health system strengthening and contribution toward the attainment of universal health coverage in Nigeria.

Mobile Health (mHealth) is health and medical prevention and treatment supported by exponential technologies, including but not limited to wireless gateways and connectivity, biosensors and wearable personal technology, precision medicine with patient's engagement and empowerment [3]. This new method of health technology promotes remarkable progress in the care of patient and access to cost effective care. Mobile health technology has increased access to healthcare with

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<https://doi.org/10.1016/j.puhip.2021.100120>

Received 17 September 2020; Received in revised form 4 March 2021; Accepted 31 March 2021

Available online 23 April 2021

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increased accessibility rate to medical services beyond the conventional way [4]. LMICs may benefit more from the opportunities of mHealth by targeting major determinants of UHC. Several mHealth interventions have been implemented in India, Zambia, South Africa, Kenya, and other LMICs and have increased access to full and affordable healthcare services and information without discrimination [5].

Health care equity and financial protection for all are the two major pillars of Universal Health Coverage (UHC) [6]. UHC can only be achieved in Nigeria when every citizen has access to quality health care when needed without the problem of inadequate health facilities or shortage of medical professionals and financial status stops being a reason for denial. Globally, over 85% of the population has access to the internet, in addition, there are about 184 million active mobile subscribers in Nigeria [7]. Mobile health has prospective benefits for achieving UHC for example, improving access to health care services especially for those in hard-to-reach areas, improvements in safety and quality of healthcare services and products, improved knowledge and access to health information for health workers and communities leading to better productivity of the health workforce, and increased commitment of health services [8]. Mobile health technology projects can be categorized as patient follow-up and medication adherence; staff training, support and motivation; staff evaluation, monitoring and guidelines compliance; drug supply-chain and stock management; pertinent education and awareness; disease surveillance and intervention monitoring; data collection/transfer [9]. Adoption of mHealth for health surveys and surveillance to send appointment reminders in Nigeria and generally across all low-income groups is cost effective and reduces country's cost on out-patient management [10]. For instance, *Safermom* and *Mobicure* are low cost mobile health technologies in Nigeria that deliver vital health information to nursing mothers and pregnant women via SMS and voice calls in local languages [11]. Access to health information in local languages will increase coverage and ensure effective communication of public health issues with rural dwellers who only understand native languages. This initiative together with other similar mHealth initiatives increases awareness on pertinent health issues in the country thereby reducing maternal mortality, Under-5 mortality, infectious diseases like HIV/AIDs, tuberculosis, hepatitis, malaria amongst others.

The patient to doctor ratio in Nigeria is very small and continues to decline as medical practitioners continue to seek greener pasture abroad. Nigeria has a doctor to patient ratio of about 1:2500 which is not comparable to WHO recommended ratio of 1:600 [12]. However, the new mobile telemedicine initiatives in the country create opportunity to reduce the impact of shortage of medical doctors by creating digital platform where doctors around the globe can consult, provide health advices and assist in management of patients remotely. Recently in Nigeria owing to movement restrictions as a result of COVID-19 pandemic, digital platforms like *Hudibia*, a mobile app that promotes access to quality health service from any part of the country recorded 400% increase in number of downloads after one month since index case of Corona virus was recorded in Nigeria [13]. Aside mobile applications locally developed, most mobile apps are freely downloadable on Google Playstore, iTunes for iPhone and other sources and can be used globally. This provides opportunity to access quality health information and services for everyone from anywhere, that is, UHC.

Mobile Authentication Service (MAS) is another mHealth initiative introduced by the National Agency of Food Drug Administration and Control (NAFDAC) to reduce the sale of falsified and substandard medicines in the country [14]. A scratch panel with a personal identification number (PIN) is attached to all authorized pharmaceutical products which can be used to confirm the authentication of the product via short message service (SMS) [15]. This initiative, although has only made few coverage, will improve access to quality medication the country including the low-income areas. Hence, reduces risk of drug resistance, drug poisoning and health expenditure in the country.

Furthermore, mobile health interventions can easily be tailored to a

particular ethnic group, language, and culture or demographic compared to other digital health technologies. Tailoring strategies employed by some mHealth interventions have been effective in improving health education and promotion among underserved communities [16]. Simple mHealth interventions like text messages in local languages have resulted in improvement in health and well-being of people including minorities [16]. Hence, support health equity and help reduce health disparities relating to ethnicity, language, social status amongst others.

Although economic development of a country is a determinant of the country's health and well-being, but mHealth and digital health technologies poses to be instrumental in improving health indicators of some low and middle income countries thereby promoting UHC. With over 500 pilot study on mobile health technology start-ups in Nigeria, it is noticeable that the country has not fully organized the best strategies for efficacy, engagements, and effectiveness of these initiatives [17]. One major challenge currently facing mobile health technology initiatives in the country is the lack of foundation for evidence-based researches to show scale up of such start-ups. There are only few researches done in order to show scientific evidence that the use of telemedicine approaches will indeed improve health system outcomes. Also, lack of uninterrupted power supply is also a major challenge in the adoption of mHealth and other eHealth practices in Nigeria. In a study conducted by [18], the challenges encountered by primary health care workers were technical in nature with concerns about network access, software reliability and electricity. One of the primary health care workers was quoted in the study to have said, "we charge phones with house electricity and when there is no electricity we charge it with a generator, but the problem is that sometimes we don't have access to that generator, or the generator has a fault, what can we do about it?" [18]. Apart from poor internet connectivity and unstable power supply, general misperceptions around new technologies is another challenge of mHealth in Nigeria [19]. Mobile health applications also have poor marketing and publicity after being developed and often charge premium fee for accessing key features and services which may not be affordable by students and poor masses [20].

Another barrier to successful scale up of mobile health technologies is the fact that different countries or eHealth policies have not recognized mHealth as an approach to health related issues. This does not come as a surprise as mobile health is still in a relatively early stage of adoption and development. To address these regional eHealth policies by adopting mobile health technologies as part of health system structures, a number of things would need to be done to prove the many benefits of mobile health [9]. Some of these things include, public awareness campaigns, trials and evaluation, research and development, and guidelines for use. Another major challenge with the full adoption of eHealth and mobile health technologies in Nigeria is its potential to foster health inequality by widening health disparity gap among the historically disadvantaged and average population [15].

These aforementioned challenges are not just peculiar to mHealth innovations in Nigeria but many other low and middle income countries. Globally, there is a slight disparity in the distribution of mobile health applications for health conditions as most commercial apps target diabetes and depression neglecting some other prevalent conditions like anemia, hearing loss, and infectious diseases [21].

## 2. Recommendations

The aforementioned challenges need to be addressed in order to foster promotion of mHealth and achieving UHC in Nigeria. There is need to develop more mobile health innovations that use the Unstructured Supplementary Service Data (USSD) code because they are often simple and cheap [22]. Therefore, usually have wider coverage including students and poor users making access to health information and services affordable in Nigeria. Mobile apps especially for diseases prevalence among underdeveloped communities should be free, simple, visual and functional without internet connection. Increase awareness geared at

understanding mobile health technology will hasten the growth of mHealth in Nigeria and reduce misperceptions and wrong beliefs. Besides, there is also need to make policies and legislations relating to ICT to accommodate effective adoption of mHealth and other digital health technologies in Nigeria. Privacy of users should be prioritized through data security and by anonymizing mobile subscriber data in the country. There is a need for the Nigerian government, network service providers and the international community at large to combine efforts in addressing the issues of mobile network coverage and power supply challenges in order to create an enabling environment for the successful adoption of telemedicine and other eHealth practices [22]. Globally, there is need to enhance mHealth research and informatics that can drive policy-making through support from international organisations like WHO, reputable journals and other stakeholders.

### 3. Conclusion

This commentary highlighted the benefits and challenges of mHealth and role it plays toward achieving Universal Health Coverage in Nigeria. Although, mHealth may not be suitable for every health service and practices and also has so many challenges facing it but the merits of using mHealth can contribute towards achieving UHC in the country and strengthen Nigeria's health sector and that of other LMICs.

### Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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