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Evaluating the impact of using eHealth tools to extend health services to remote populations in Nigeria using Satellite Communication

Submission date
08/12/2017

Recruitment status
No longer recruiting

Registration date
05/02/2018

Overall study status
Completed

Last Edited
25/11/2021

Condition category
Pregnancy and Childbirth

[_] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Health systems challenges in Nigeria include chronic infrastructure deficits, difficulty in attracting frontline health workers to work in remote areas, weak and irregular training and deficient data management. These challenges severely affect health care delivery to Nigeria's population, especially those living in remote areas. However, there is growing international interest in using information and communication technologies (ICTs) to stimulate improvements in health and well-being of marginalized populations and encourage sustainable development. This project explores an approach to overcoming challenges to delivering basic health care services in remote areas of Nigeria. The project will install satellite communication technology across remote clinics to enable access to online training and data collection tools. The project operates across health facilities in three states of Nigeria (Kano and Ondo states and the Federal Capital Territory), bringing the national standard of health care provision to the most remote communities. Most of the facilities are in areas without terrestrial network coverage, which without satellite communication, will have no alternative means of accessing online health tools. Selecting three States from different regions of Nigeria provides an opportunity to explore the difference challenges and experiences of using satellite communication to support improvements in basic health care. The aim of this study is to understand whether or not eHealth tools can lead to benefits in health services in remote area.

Who can participate?
Frontline health workers and heads of facilities where the study takes place.

What does the study involve?
Participating healthcare centres are non-randomly allocated to one of two groups. Those in the first group do not implement any other programmes. Those in the second group implement the clinical patient administration kit and the video training education. Participants are asked to use online training and data collection tools and are interviewed about their use. Policymakers and planners are also interviewed to understand the benefits and impact of these tools on healthcare delivery in Nigeria.

What are the possible benefits and risks of participating?
That through access to online video training, health workers will reduce the need for travel to training, provide access to up-to-date best practice knowledge, and enable continuous learning. Access to online data collection tools will help to streamline current data reporting and relieve facilities of the need to submit hard copies of paper-based legers of clinic data to local government offices in person each month. Furthermore, online data collection tools will enable efficient provision of real-time data to facility heads and policymakers to inform decision-making. There are no anticipated risks to those participating in the study.

Where is the study run from?
This study is being run by the University of Leeds (UK) and takes place in healthcare facilities three separate states in Nigeria (Kano and Ondo States and the Federal Capital Territory).

When is the study starting and how long is it expected to run for?
March 2017 to March 2019

Who is funding the study?
The project forms part of the UK Space Agency International Partnership Programme (UK). This 2-year project will be implemented by an experienced technology company, in close collaboration with the Federal ministry of health (MOH), and State MOH in the FCT, Ondo and Kano States.

Who is the main contact?
Dr Matthew Allsop (Scientific)
m.j.allsop@leeds.ac.uk

Contact information

Type(s)
Scientific

Contact name
Dr Matthew Allsop

ORCID ID
https://orcid.org/0000-0002-7399-0194

Contact details
Leeds Institute of Health Sciences
University of Leeds
Leeds
United Kingdom
LS2 9JT
+44 113 343 4185
m.j.allsop@leeds.ac.uk

Additional identifiers

Protocol serial number
EXTEND

Study information

Scientific Title
Impact of using e-Health tools to extend health services to rural areas of Nigeria: Protocol for a mixed-methods, non-randomised cluster trial

Acronym
EXTEND

Study objectives
The project aims to understand whether or not eHealth tools lead to benefits and under what circumstances using SatCom to extend health services to remote areas contributes to improved health systems functions and health outcomes. Specific objectives are to:
1. Strengthen service delivery and data management through using an online video training application to increase frontline health worker knowledge and skills, and using an electronic clinical patient administration kit to promote efficiency in data management and use.
2. Understand the acceptability to frontline health workers and feasibility of implementing the intervention components to reach the last mile at scale in rural areas of Nigeria

Ethics approval required
Old ethics approval format

Ethics approval(s)
1. University of Leeds School of Medicine Research Ethics Committee, 03/08/2017, ref: MREC16-178
2. The Ondo State Government Ministry of Health, 23/05/2017, ref: AD.4693 Vol. II/109
3. The Kano State Ministry of Health, 03/04/2017, ref: MOH/Off/797/T1/350
4. Federal Capital Health Research Ethics Committee, 12/05/2017, ref: FHREC/2017/01/42/12-05-17

Study design
Mixed-methods non-randomised cluster trial

Primary study design
Interventional

Study type(s)
Other

Health condition(s) or problem(s) studied
Frontline health workers and facility heads at intervention and non-intervention facilities, pregnant women at participating primary health centres that benefit from the use of eHealth tools as part of service delivery, and policymakers and planners.

Interventions
The use of two interventions are evaluated:
1) Clinical Patient Administration Kit (CliniPAK): A tablet computer-enabled point-of-care data capture and decision support tool that allows health workers to capture patient health information and send appropriate data to remote servers through mobile networks. The CliniPAK software provides an electronic medical record that incorporates data on patient

registration and demographics, vital signs, diagnosis, treatment, case review and administrative task support. The software triggers immediate alerts for at-risk patients, referrals to secondary health systems and on-demand reporting to enable health administrators increase productivity and improve patient clinical experience. CliniPAK was developed and is owned by Vecna Cares Charitable Trust, Cambridge, Massachusetts, USA.
2) Video training application (VTR): The VTR education intervention consists of a series of videos adapted from the 'ORB platform' (www.health-orb.org/), with a set of quizzes administered via a derivative of the open source application - OppiaMobile Application (App) on the tablet computers developed to test the users' understanding of the training content. The intervention will be delivered to FHWs via a structured programme of bite-size training films addressing antenatal care (ANC), basic obstetric care, perinatal care, postnatal care (PNC), and knowledge and skills requirements for FHWs. Relevant video content included in the training package was selected in consultation with State Ministries of Health (SMoH). Installed on the tablet computers held at Primary Health Centres (PHCs), the VTR package will provide high quality learning for FHWs, by delivering clear, engaging clinical scenarios and educational messages for motivating FHWs who lack basic resources to support their work.

In this evaluation study, two clusters are selected across three separate states in Nigeria (Kano and Ondo States and the Federal Capital Territory), with each cluster corresponding to local government areas (LGAs): one LGA with facilities implementing VTR and CliniPAK interventions, and the other LGA with facilities not implementing any e-Health intervention. The "intervention" LGAs are assessed against the non-intervention LGAs. Intervention LGAs are selected based on the availability of areas and PHCs with poor/no access to regular mobile network service and State Ministry of Health plans to scale up eHealth interventions.

Intervention Type
Other

Primary outcome(s)
Binary facility-level indicator measuring whether the monthly NHMIS indicator "total number of ANC visits" is complete (i.e. available through the NHMIS) for every month between months 25 and 30 of the project (6-month post-intervention).

Key secondary outcome(s))
1. Binary facility-level indicators of whether the monthly NHMIS indicators "total PNC visits" and "percentage skilled birth attendance" are complete or not for every month between months 25 and 30 of the project (6-month post-intervention)
2. Monthly NHMIS indicators of "total number of ANC visits", "total number of PNC visits" and "percentage of skilled birth attendance"

Completion date
30/06/2020

Eligibility

Key inclusion criteria
1. Frontline health workers at intervention sites.
2. Adults aged 18 and older

Participant type(s)
Health professional

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Sex
All

Total final enrolment
328

Key exclusion criteria
There is no participant exclusion criteria.

Date of first enrolment
01/03/2017

Date of final enrolment
01/05/2017

Locations

Countries of recruitment
Nigeria

Study participating centre
University of Lagos
College of Medicine
Idi-Araba, Lagos
Nigeria
Private Mail Bag 12003

Study participating centre
Aminu Kano Teaching Hospital
Nigeria
700233

Study participating centre
University of Abuja
Abuja

Nigeria
117, Abuja

Sponsor information

Organisation
UK Space Agency

ROR
https://ror.org/051sgbe98

Funder(s)

Funder type
Government

Funder Name
UK Space Agency

Alternative Name(s)
United Kingdom Space Agency, British National Space Centre, UKSA

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
Anonymised participant level data will be held by the research team. Options for sharing participant data on an open repository will be explored at a later date.

IPD sharing plan summary
Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?

Results article		16/09/2021	21/09/2021	Yes	No
Results article	Qualitative results	14/05/2021	25/11/2021	Yes	No
Protocol article	protocol	18/10/2018	30/10/2019	Yes	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes