

Case Study: Experience of a Telehealth Solution in an integrated COVID-19 Project in Kenya

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Background

COVID-19 has exacerbated existing problems and reveals new problems related to healthcare as the world adapts to the changes this virus brings, especially in rural African locations (Lucero-Prisno, Adebisi & Lin, 2020; Rutayisire, Nkundimana, Mitonga, Boye & Nikwigize, 2020). Indeed, the world is only as strong as the weakest health system according to the United Nations (UN) Secretary-General (UN Coordinated Appeal (UNCA), 2020). Countries which operate under weak health systems, such as those in lower-middle income countries (LMICs), have poor delivery of healthcare (UNCA, 2020). Poor hygienic conditions, such as overcrowded housing and poor water and sanitation service coverage, create environments that make people susceptible and inflate the spread of diseases, such as the coronavirus (Kuguyo et al., 2020; UNCA, 2020). Under-resourced communities have insufficient healthcare personnel or resources to treat the sick as poor road infrastructure creates transportation challenges (UNCA, 2020). New challenges surface, such as inconsistent funding towards PPE supply and testing kits, limited infrastructure and channels for transmitting awareness and education towards COVID-19 precautions, and reallocating the delivery of healthcare services (testing, screening and anticipated vaccinations) (UNCA, 2020). Ignoring the COVID-19 precautionary measures poses another challenge which may weaken social cohesion and lead to violence and further marginalization (UNCA, 2020). In the most vulnerable under-resourced areas, there are challenges with funding humanitarian efforts such as resource mobilization. Resource mobilization ensures gains made in humanitarian contexts are not lost and that appropriate changes are made to humanitarian plans (UNCA, 2020). Often many under-resourced communities do not have the infrastructural capacity to implement digital technology and phone connection (UNCA, 2020).

Remote healthcare is a strategic approach to overcoming healthcare challenges such as the lack of access to healthcare, a lack of resources, and reducing direct transmission of infectious agents like COVID-19 (Charles, 2000; Monaghesh & Hajizadeh, 2020). Telemedicine or telehealth means healing at a distance. According to the World Health Organization (WHO), it is a form of healthcare service delivery where diagnostics, treatment and prevention of illnesses are communicated from practitioner to patient. Research, evaluation and continuing education is also delivered among healthcare professionals (WHO, 1997). Telehealth devices to communicate with healthcare providers include portable electronics such as computers, webcams, video conferencing, television and tablets. Mobile and smartphones are common among patient use (Charles, 2000; Monaghesh & Hajizadeh, 2020; Valle, Godby, Paul, Smith & Coustasse, 2017). Since digitalization has been progressing in African economies since before the pandemic, the use of technology has been increasing. Thus, there has been progress in other LMICs in using telehealth (Monaghesh & Hajizadeh, 2020). The ENRICH project as discussed in this case study utilizes efforts in telehealth to prevent COVID-19 cases in rural Kenyan counties.

There was a late arrival of the numbers in Africa due to inadequate reporting (Kuguyo, Kengne & Dandara, 2020). These numbers have risen from 38,379 confirmed Kenyan cases of COVID-19 at the end of September 2020 when the updated project report was written to 99,630 confirmed cases when this case study was created (JHU, 2021; WHO, 2021). The goal of this project was to improve the well-being and reduction of life-threatening effects of COVID-19 on children and their families within targeted areas of rural Koibarak Community, the Marakwet West Subcounty and Elgeyo Markawet County in Kenya by March 2021. This project contributed to an increase in knowledge on and the access of the preventive measures against COVID-19 amongst community members in the target villages through use of digital technology, distribution of Personal Protective Equipment (PPE) and offering Psychological First Aid (PFA) services. The information provided is from the Telehealth project, funded by the Manitoba Council for International Cooperation, along with the World Vision Canada regular update reports and a virtual

conversation with the project lead in Kenya. This case study will explore the Telehealth Initiative through a “challenge” lens as it explores how the project addresses common challenges found in LMICs, compares with global responses to COVID-19 and provides suggestions for future directions.

Case Presentation: Telehealth Initiative Under ENRICH project

The ENRICH Telehealth Project has addressed many of these common challenges in LMICs in a rural setting through concentrating efforts towards preventative measures in the Koibarak Community, the Marakwet West Subcounty, Elgeyo Marakwet County in Kenya. Channeling the telehealth funding towards the digital technology, PPE supply chain, PFA services and cash transfers to the most vulnerable families showed to be effective and strategic to strengthen the healthcare system. Women, men, children were considered special target groups as preventive mechanisms changed their behaviors for better protection against COVID-19. The **project outputs** were as follows:

Output 1.1- *Community health volunteers and lead farmers spread the information on proper safety and preventative measures against COVID-19, such as handwashing, via bulk mobile messaging to all households in the counties. Mobile phone airtime and bundles were provided to support health workers, community health volunteers (CHVs), and community health workers (CHWs) in conducting continuous awareness creation, assessment, surveillance, referral and feedback on the COVID-19 cases. The 5 most vulnerable families were given cash transfers. The ‘Tele Call Centre’ phone number was circulated among the households through the CHVs as it provided the link between patients and healthcare providers within their locality. By using telehealth digital technology, telephone call appointments were made between the healthcare providers and their clients, and reports of reproductive health concerns were conducted. Telehealth was also used between healthcare providers and county health management teams for expertise advice. Smart TV screens were put in COVID-19 isolation wards to run education sessions.*

Improvements of healthcare delivery and spread of accurate information regarding COVID-19 was ensured through the distribution of mobile phone airtime/ bundle packages and healthcare services in these counties via the CHWs and farmers. Luckily, the infrastructural capacity allows phone services and technology to be used. Bulk SMS texts with accurate and precautionary COVID-19 information were sent to all people with mobile phones. Meanwhile, telehealth appointments for reproductive services offered better means of communication remotely between community members and healthcare providers when transportation and access to healthcare facilities were difficult and minimized to prevent COVID-19 transmission (Monaghesh & Hajizadeh, 2020). Telephones were used between healthcare providers to improve healthcare delivery through spread of expert advice between county health management teams and doctors. Smart TV screens were provided in COVID-19 isolation wards for information dissemination, health worker capacity building and provided clients with information about their treatment while in the hospital. Overall, there was a low COVID-19 positivity rate in the project area due to intensified prevention initiatives.



Figure 1: health care workers undertaking CME (continues medical education) on COVID 19 at health facility fig 2: handwashing simulation for health volunteers

Output 1.2- *Increased local availability and access to PPE. Improve health systems and health workforce capacity for the provision of optimized treatment and care services for all COVID-19 patients, including health facility-based infection prevention and control.*

This ensured a proactive approach to ensure enough resources existed for the duration of the project. Health systems in Kenya are constrained with limited funding and personnel. Inadequate supply of PPE would compromise the safety of health providers and patients thus increasing the risk of contracting the disease and clipping the health care service provision. Health professionals are a risk group for COVID-19 because they are directly exposed to infected patients. Moreover, they are subjected to enormous stress when attending to these patients, many of whom are in severe condition, often in inadequate working conditions (Teixeira et al., 2020). The PPEs masks, aprons, goggles, face shields, and gloves were availed



Figure 1: *Health workers disinfection training & proper use of PPEs*

to health facilities especially in the remote and densely populated Koibarak unit that was targeted by the MCIC funding. Handwashing facilities, sanitizers, disinfectants, disposal bins were also provided to enhance Infection Prevention and Control (IPAC). Capacity building sessions were conducted to health care providers on the revised national guidelines on provision of services in COVID-19 that aligns with WHO recommendations. Health worker trainings were supported by facilitators from the national level. The trainings included: a deeper understanding of COVID-19, IPAC protocols, revised protocols for reproductive maternal, newborn, child health and nutrition services, home-based care and isolation, COVID-19 case definitions, contact tracings and testing (among others). This has enabled the quality service provision and management of patients. Hence the project areas has recorded very slow transmission rate and death cases (79 cases positive out of 520 tests, out of which only one death has been recorded: there slow testing due to inadequate testing reagents /kits).

Output 1.3- *Households supported to cope with the economic impact of the COVID-19 pandemic and Health Care Workers are equipped with skills on Psychological First Aid (PFA), to support the psychosocial wellbeing of the target communities.*

The frontline healthcare workers are at risk of physical and mental consequences directly as the result of providing care to patients with COVID-19 (Shaukat, Ali & Razzak, 2020). The health care workers TOTs were further trained, assessed and provided PFA. The PFA psychologists from national level also supported the Trainers and peer colleagues. The negative impact of COVID-19 is experienced in all sectors of economy. Furthermore, this is likely to be worse as the community transmission rises, especially in the hard-to-reach, highly populated, poverty stricken regions of Elgeyo Marakwet where MCIC and ENRICH project is implemented. In coordination with local administration and community leaders, most vulnerable households were identified and supported with unrestricted cash transfers to enhance access to basic needs (both health & livelihoods) and cushion them from the effects of COVID-19. Community health volunteers, lead farmers and care group members were sensitized on stigma related to COVID-19, referral, monitoring, and risk communication. They were also tasked to



further share the messages to community members through community meetings and forums. A total of 164 men were sensitized on child protection & prevention of teenage pregnancies during the pandemic and their role as frontline responders to curb this menace was agreed upon. The project used lacola radio stations, public address systems to sensitise on prevention of sexual and gender-based violence (especially early marriage and teenage pregnancy prevention). As a result, a significant reduction in cases of child defilement and teenage pregnancies has been realized in Koibarak community health. The project worked closely with ENRICH to upscale production of biofortified crops, to reduce the likely food insecurity impact during the pandemic and to increase crop harvesting.

Discussion

Similarities and Contrasts

Similarities to ENRICH telehealth project compared to the global humanitarian response plan in LMIC globally include that to outputs 1.1, 1.2, and 1.3. Output 1.1 fell in alignment with the UN report for other LMIC such as using community health workers (faith leaders and to distribute hygiene kits and help prevent the COVID-19 spread in Bangladesh and lower stigma of COVID-19 (UNCA, 2020). South Africa and Ethiopia are also using telehealth for contact tracing, which has been effective (Monaghesh & Hajizadeh, 2020; UN, 2020). Telephones between county health management teams and doctors to improve healthcare delivery via dissemination of expert advice has also shown to be effective in a Canadian rural setting (Liddy, Maranger, Afkham & Keely, 2013). The ENRICH project output 1.2 aligns with the global response for securing the supply of essential commodities to prevent the COVID-19 spread such as PPE (soap, hand sanitizer, safe water, masks, gowns, etc), food, time-critical productive and agricultural inputs and non-food items (UNCA, 2020). Both the MCIC project and the UN Coordinated Appeal (2020) report support the local availability of these items to protect their citizens.

Health services provided to the community are in alignment with MCIC project output 1.3. The global response in other LMIC includes PFA offered to local communities in addition to other essential services including health (immunization, HIV and tuberculosis care, reproductive health, gender-based violence (GBV) services), water and sanitation, food supply, nutrition, protection, and education (UNCA, 2020; UN, 2020). Similarly, other essential services are provided through World Vision's ENRICH project, healthcare workers and church services to complement the Telehealth Project PFA. These other essential services include education on sexual reproductive health, GBV, HIV/AIDS, malnutrition, maternal and child health services and immunization services. The health sector is responsible for supplying the maternal, child health and neonatal care supplies such as incubators and weighing scales and taking care of pre-existing health illnesses in the counties.

Challenges throughout the project

Limited resources for mass testing led to inaccurate reporting of the COVID-19 transmission numbers. Some people in Kenya are resistant to testing due to fears of quarantining and self-incurred cost as citizens would have to stay home from work (Rutayisire, Nkundimana, Mitonga, Boye & Nikwigize, 2020). Both Elgeyo Market County and the Koibarak Community Unit are high-risk as they have densely populated rural counties, which have poor access to healthcare services due to poor road infrastructure and are resource-constrained. Finally, though many barriers were addressed through the use of technology, not all processes were ideal. For example, the phone consultations with the experts in Nairobi did not go according to plan due to issues with availability and scheduling of specialized doctors.

Challenge after the project end (September 2020)

The major challenge in the coming few months is a rise in COVID-19 cases in rural Kenyan counties. Thus, the healthcare system will be overwhelmed due to low personnel and resources. When the healthcare system is overwhelmed there is probable likelihood that the disease prevalence of other pre-existing communicable diseases (such as pneumonia, tuberculosis, diarrhea, cholera, HIV, malaria) and non-communicable diseases (such as anemia, malnutrition, hypertension, obesity, diabetes and asthma) will increase due to the lack of appropriate time and follow up services (Ahmed et al., 2020; Feikin et al.,

2011; OECD, 2020). Sparsity of PPE is becoming a challenge since the project and donor funding is a one-time donation and thus will need to be replenished from the government and other NGOs. This is also the case with the uncertainty of the cash transfer replenishments for the PPE and food security of the 5 vulnerable families. Ultimately, the project results are dependent if the beneficiaries reach the behaviour change from the precautionary measures provided by the technology. This behaviour change has yet to be assessed with the rising cases. This was not an issue at the time of the project because there was such a low prevalence. It is with hope that there were enough proactive measures put in place to avoid low compliance. As Smith et al. (2020) concluded, a proactive telehealth response to COVID-19 rather than retroactive will be more likely to decrease cases in the long term. Furthermore, having a system in place for vaccine roll-out once it arrives is another challenge to consider.

Additionally, the fear of movement and lack of transportation during the pandemic are leading to resistance in attending healthcare facilities, which are essential to maintaining the progress made on health issues such as immunizations, maternal, neonatal and child health services. Sexual and reproductive health services have also been impacted from the pandemic due to scarcity of family planning commodities and inability to reach out to teenage girls and ensure needs are met. If teenage girls stop attending healthcare facilities, teenage pregnancies will increase significantly as was the case during the Ebola outbreak in Sierra Leone (Bandiera, Buehren, Goldstein, Rasul & Smurra, 2019). According to Robertson (2020), in LMICs, there is an increase of 9.8–44.7% in under-5 child mortalities, and an 8.3–38.6% increase in maternal mortalities per month due to COVID-19. Of these mortalities among children under 5, 6.7 million children are projected to be wasting in the first 12 months due to COVID-19 with 57.6% of them based in South Asia and 21.8% based in sub-Saharan Africa (Fore, Dongyu, Beasley & Ghebreyesus, 2020). Finally, another major challenge arises when children return to school, where there is poor connection to support devices and tablets, a lack of COVID-19 classroom precautionary training for teachers and inadequate water conditions to ensure hand hygiene.

Future Directions

Some recommendations based on the challenges of the project include focusing on health system strengthening, especially on the sexual and reproductive health services, the possibilities of upscaling the telehealth initiatives to reach more beneficiaries, increasing local production of PPEs, ensuring proper distribution with the vaccine roll-out, improvements to and in-school preventative procedures.

Health system strengthening has been an ongoing effort, especially in sexual and reproductive health. There is a continuous need to empower females and to fund these services (Collaborating Organizations, 2013). Health provisions and health systems need to be aligned so that sexual and reproductive health commodities can continue to be supplied and healthcare workers can continue reaching out to those most at-risk (UN report, Africa impact, 2020). Nutrition services should also be continued through international and domestic partnerships. The upscaling of telehealth initiatives to reach even more beneficiaries inside the counties and in other regions would be an effective response. PPEs need to be locally innovated in these counties and produced through collaboration and training among individuals within Kenya, such as the university students who are producing PPE and ventilators, and with global partners (Kuguyo et al., 2020; UN, 2020). There needs to be an even distribution of the vaccination roll-out to ensure everyone is able to receive it- starting with the most vulnerable and health workers (Sitton, 2020). Having funding in advance through collaboration with international stakeholders (UNDP, UNICEF, IOM) allows focused efforts on delivering supplies in the local community, and partnerships in implementation sites with other organizations (UNCA, 2020). Ensuring continued education and awareness of COVID-19 will lower stigma. Finally, partnering with stakeholders to

allocate funding and reopen schools will ensure support for water coverage, and proper training of COVID-19 precautions for teachers (Al-Samarrai, Gangwar & Gala, 2020).

Conclusion

Through analyzing the Telehealth Initiative through a “challenges” lens, this case study explored how the project addressed common challenges found in LMICs, compared with global responses to COVID-19 and provided suggestions for future directions.

The ENRICH Telehealth Project addressed many of these common challenges in LMICs in a rural setting through concentrating efforts towards preventative measures in the Koibarak Community, the Marakwet West Subcounty, Elgeyo Marakwet County in Kenya. Channeling the telehealth funding towards the leveraging technology to spread preventative measures of COVID-19, distributing both PPE supply and PFA services to all households, and cash transfers to the most vulnerable families showed to be effective in strengthening the proactive COVID-19 response. Outputs 1.1, 1.2, and 1.3 of the ENRICH telehealth project showed similarities to the global COVID-19 response. ENRICH and other NGOs provided services that complement PFA (output 1.3) such as education on sexual reproductive health, GBV, HIV/AIDS, malnutrition, maternal and child health services, immunization services, maternal, child health and neonatal care supplies and pre-existing illnesses.

Challenges throughout the project included limited resources for mass testing which led to inaccurate reporting of the COVID-19. Other challenges included the high risk for the targeted regions of Elgeyo market county and the Koibarak Community Unit, and issues with the scheduling of phone consultations among rural physicians and specialists. The major challenge that occurred after the project includes the rising COVID-19 cases where the healthcare system will be overwhelmed and pre-existing illnesses will increase. PPE sparsity and uncertainty of cash transfer replenishments for the vulnerable families will also occur with the one-time donation to the project. Challenges to consider include the behaviour change if compliance is low, and the vaccine roll-out system. Resistance in attending healthcare facilities due to fear of movement and lack of transportation, which are essential to maintaining the progress made on health issues, is another challenge. Furthermore, another challenge is the lack of sexual and reproductive health services and scarcity of family planning commodities. Finally, the lack of COVID-19 training preparation and lack of connection and water conditions for teachers when reopening schools poses another threat.

Future directions included health system strengthening through funding towards sexual and reproductive health services, the possibilities of upscaling the telehealth initiatives to reach more beneficiaries, increasing local production of PPEs, ensuring proper distribution with the vaccine roll-out, and improvements to in-school preventative procedures.



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