

Going mobile: scaling up mHealth initiatives in LMICs



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Background: The expansion of mobile coverage around the world has reached a point where there are now more mobile connections than people on the globe.¹ The global spread of technology has increased the potential for mobile health (mHealth), a branch of eHealth that has recently emerged and is defined by the World Health Organization as “medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices”.² The opportunities for mHealth can be seen in India, where over 70% of the country’s 1.2 billion people are mobile subscribers, yet only one in three has access to proper water and sanitation.³ However, little funding is allocated to maintaining or scaling-up existing mHealth interventions, and few programs have succeeded in scaling up to a national level and integrating into a national health system, in spite of the numerous mHealth pilot projects that have been launched. There is currently a gap in the literature documenting attempts to bring mHealth to a national scale in low resource settings. The department of Alta Verapaz, located in the north central part of Guatemala, holds great potential for mHealth initiatives. Of its population of 1.2 million people, 48% live in extreme poverty and the maternal mortality ratio is very high at 273 deaths per 100,000 live births.^{4,5} It is in this context that mHealth is being scaled up first to a departmental, then a national level by TulaSalud.

Objective: The primary objective of this scoping review is to document the scale-up of mHealth programs in low-and middle-income countries (LMICs), with the goal of capturing the successes in addition to the challenges that can occur during the

scale-up of mHealth initiatives. The current scale-up of TulaSalud to a district, then a national level in Guatemala will be used as a case study to investigate some of these challenges. Furthermore, four cases studies from the literature will be used as comparators for TulaSalud’s experience in bringing telemedicine to scale.

Methodology: This study consisted of a scoping review and key informant interviews. The literature was searched for mHealth programs that have attempted to achieve national scale within LMICs. Interviews were conducted with community facilitators (CFs), the local health ministry, and TulaSalud staff.

Research Context: Established in 2007, TulaSalud aims to reduce maternal and infant mortality rates by improving access to health services in Alta Verapaz through the use of mobile devices. Mobile phones are used to perform epidemiological monitoring, engage in tele-consultations, and perform culturally competent community health promotion in local languages (Q’eqchi’ and/or Poqomchi’).⁵ Between 2008 and 2012, CFs performed 116,275 tele-consultations and coordinated 2,014 emergency transfers, 298 of which were for pregnant women, and 235 for children under five years old.⁵ In 2012, this translated to 80 ‘lives saved’ as a result of timely access to emergency services.⁵ TulaSalud is in the process of scaling up from a departmental to a national level, with plans to distribute mobile phones to CFs across the country in September 2015, and to have all CFs trained in using the mobile application “Kawok” by January, 2016. Through this scale-up, TulaSalud and the Ministry

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of Health plan to cover 100% of communities across the country by January 2016.

Findings – Case Studies: Launched by the Ministry of Health in Uganda, mTrac monitors the utilization of health services to identify bottlenecks and allows community health workers to send messages to patients.¹ The project has successfully integrated into Uganda's health system, becoming the Ministry of Health's national communications tool.⁶ Developing based on lessons learned from the failed launch of the Pesinet program in Senegal, Djantoli established strategic partnerships with both government and the private sector, and improved the business model to promote scalability and sustainability.¹ The project was re-launched in Mali in 2009, targeting maternal and newborn child health (MNCH) with an emphasis on disease prevention and early detection, as well as diarrheal disease and malaria.¹ In close collaboration with local health authorities, Djantoli, as it is now called, has successfully scaled up to three of the eight health districts in Mali.⁷ Developed and implemented in Zambia, Programme (or Project) Mwana seeks to address long wait-times for the transmission of lab results and diagnosis of HIV/AIDS.⁸ Programme Mwana was implemented as a pilot project in Zambia in 2010. The project's focus is on using mobile technology to improve MNCH in rural Zambia, with the long-term goal of developing a communication system that could be scaled-up across several countries, with the help of partnerships from UNICEF and local governments. Throughout the entire scale-up process, evaluation and monitoring were performed in order to identify problems and learn from the project's successes.⁹ As of 2014, Programme Mwana had been rolled out in 778 health facilities across all 10 provinces in Zambia, and had delivered 54,313 HIV test results via SMS.⁹ The Mobile Technology for Community Health (MOTECHE) project was launched in Ghana in July 2010 in the Upper East Region of Ghana, with funding from the Bill & Melinda Gates Foundation.¹⁰ In order to address high maternal and neonatal mortality rates, MOTECHE utilizes mobile phones to disseminate personalized, evidence-based maternal health messages and information.⁶

MOTECHE was designed with scale in mind, with messages that are universally relevant while also easily adaptable to local contexts. Following its successful 18-month pilot project, Ghana Health Service rolled-out the MOTECHE project in three new districts, further approaching their goal of national scale.¹¹ This expanded service resulted in 36,000 patients and community members being registered, with data being collected in 136 health facilities.¹¹ The technology built in MOTECHE is now used in 17 organizations across seven countries.¹¹

Findings – Lessons Learned: Using mTrac, Djantoli, Programme Mwana in Ghana, MOTECHE, and TulaSalud as case studies, three primary lessons can be learned. First, public-private partnerships are essential in bringing mHealth to scale. Partnerships with government should be established early in project development and should align with national strategies and policies. The primary cause of tension in these public-private partnerships was the project timeline. In Ghana, the Grameen Foundation experienced tension between the desire to rapidly innovate and experiment with new applications for the technology, and the need to create a static program long enough for Columbia University to conduct sufficient monitoring and evaluation of the pilot project.¹⁰ This tension was further compounded because all partners were considered equal and there were not clear guidelines for communication or allocation of responsibilities.¹⁰ Second, mHealth project implementers should incorporate a gender equality strategy into scale-up plans in order to reduce barriers for women to participate in mHealth projects. Female CFs in TulaSalud highlighted a lack of respect from community members as a barrier to their work. Therefore, it is important to consider the ways in which gender norms could intersect with participation in mHealth.

Third, mHealth projects should be designed with end-users in mind, collaborating with those who will use the technology whenever possible. This is important in order to ensure the design of a user-

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friendly tool that is culturally and linguistically appropriate.

Conclusions and Recommendations: Overall, the scale-up process of telemedicine in Alta Verapaz has been largely successful, and can be used as a model for similar projects seeking to achieve scale in low resource settings. As telemedicine continues to expand across Guatemala, continued monitoring and evaluation will be important in order to determine outcomes at a national level. TulaSalud should continue documenting the scale-up in order to further supplement the gaps in the literature and inform future attempts to bring mHealth to scale.

Global Health Relevancy

- Expanding to all 22 departments across Guatemala through the end of 2015 and into 2016, there is a need to investigate the lessons learned from the scale-up of telemedicine by TulaSalud in Alta Verapaz
- Documenting the scale-up of mHealth in Guatemala and around the world serves to inform future mHealth projects, allowing global health professionals to build on best practices and learn from challenges faced; this could improve future mHealth interventions thereby improving health in LMICs