Unpacking Readiness for m-Health Applications in Emergency Settings

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Introduction

Long-lasting and protracted conflicts have severe repercussions on the health of entire communities. This is alarming due to the unprecedented number of humanitarian emergencies across the globe. Delivering public health services becomes a top priority in emergency situations in order to make progress on the Sustainable Development Goals (SDGs). However, challenges to making progress on dimensions of Universal Health Coverage (UHC) in these settings are twofold. First, resources are constrained including shortages in human resources for health, as well as limited financial resources as investments in health come at a later priority compared to security and other basic needs. Secondly, conflict itself is a key social determinant of health which further exacerbates the health outcomes especially for vulnerable populations such as women and children. The future trajectory of maternal, new-born, and child health (MNCH) in these settings is worse compared to other lower-and-middle income countries. The international community has responded to that by clearly stating that UHC cannot be achieved without proper inclusion of vulnerable populations and strengthening health care systems in fragile and conflict-affected states.

In parallel, digital interventions have the potential to enhance health care provision in a cost-effective manner for hard to reach populations. Nevertheless, they are only a tool to facilitate service delivery. The utility of the innovation is primarily entrenched in how people perceive a tool and its efficacy in responding to their needs. However, research is still in its nascent stages to document success of digital technologies as several interventions are limited to pilot stages or fail to be sustained due to several factors that affect the ability to change and

adopt a different service delivery approach. The aim of the study briefed here is to operationalize readiness for future implementation of mhealth programs for promoting MNCH in fragile contexts where access to quality healthcare is restricted. The study builds on several readiness assessment tools and existing behavioural theories which fit with the purpose of ensuring that digital technologies can be utilized to maximum advantage for promoting health and well-being of vulnerable populations in complex settings while strengthening health systems.

Tools to Assess Readiness for m-Health

A core principle of humanitarian innovation is to design with and for end users. It is, also, equally important to design for continuous use. Hence, the proposed theory-based readiness assessment tool acknowledges the capacity of both service users and providers to act as "active partners" or "co-producers" in the process of designing and implementing mhealth strategies. The novel tool assesses users' readiness over three phases of implementation: 'development' *(pre-implementation)*, 'implementation' and 'sustainability' *(post-implementation)*.

The development phase incorporates three themes of readiness; innovation/technology readiness, perception readiness, and sociocultural readiness. The innovation readiness gauges the extent to which members of a community are able to adopt mhealth. Socio-demographic and attitudinal factors play a critical role in this stage. Thus, in our tool we assess the knowledge literacy of patient, and assess the perceived ease of use and perceived usefulness of both patients and CHW, and finally assesses trust a critical factor that determine patients adoption especially in a context surrounded by fear and insecurity. The perception readiness comprises the perceived needs of conflict-affected populations; their perceptions about relative advantage and ease of using an innovation and their efficacy in adopting it. Users perceptions about the efficacy of an innovation to respond to their needs is a crucial determinant of acceptance of mhealth services especially in a context where individuals lack trust and feel threatened by insecurities. Furthermore, sociocultural readiness is incorporated in this phase, assesses the influence of the social system and cultural norms on innovation adoption.

In the post-trial implementation phase, the tool focuses on the concept of continuous usage. This is contingent on the perceived usefulness already assessed in the previous phase but also is in congruence with actual net benefits. Thus, the tool goes beyond

evaluating the beneficiary/CHW perceptions, to assess the actual net benefits from innovation adoption. Furthermore, in this stage tool also included an assessment of facilitating conditions that enhance patient's and CHW's adoption of mhealth technologies. The tool is also unique in a sense that it checks the autonomy of women and appropriation of power of women and female community health workers. In the third phase for innovation scalability, the tool was grounded on a theory of implementation which informs the process evaluations of complex healthcare interventions and focuses on social dynamics of implementation for long-term integration and sustainability of interventions over time and between settings.

Finally, engaging community and civil society is key element to accelerate progress towards UHC. Thus, a critical aspect of the success of innovation is to ensure that community voices of conflict affected populations is reflected in stages of innovation development and implementation. The mHealthES readiness tool addresses the key determinants for utilization of mhealth services for health promotion in emergency settings. Testing the proposed tool can help overcome the issues of digital divide which are prominent in resource-constrained settings and create an enabling environment in the complex context of humanitarian emergencies.