Designing and developing a distributed training and learning platform for Community Health Workers (CHWs).

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Abstract
Accredited Social Health Activists (ASHAs) in India play an essential role in improving the access to healthcare services of rural populations. Even though they play a key role in achieving the United Nations Sustainable Development Goal (SDG) 3 with their main focus on improving maternal and child health in India. They receive inadequate training and supervision. As the traditional face to face training mechanisms face consistent challenges in providing adequate training and capacity building opportunities to these workers which leads to their inadequate knowledge and skill sets. Existing research studies in HCI have highlighted the potential of ICTs for capacity building, however so far they mainly focus on leveraging the modality of feature phones [14,15]. We are keen to investigate the potential of distributed learning platforms for ASHAs which are more interactive, flexible and relevant to their local context.

Introduction

Within the Human-Computer Interaction (HCI) community, there has been a growing interest that is centered around improving maternal and child health in developing contexts. Particularly in India, mothers and children in the lowest economic bracket have about two and a half times higher mortality rate [1]. As of 2018, in India, the infant mortality rate is 32 per 1000 live births; the maternal mortality rate is 122 per 100,000 live births [2]. To reach the United Nations goal of reducing infant mortality to at least as low as 12 per 1,000, maternal mortality ratio to less than 70 per 100,000 live births by 2030 [3] there is a huge scope of improvement in terms of quality of care delivered to achieve the desired numbers. Also, most of these deaths are preventable by improving the quality of care during delivery and care at birth [1]. One of the contributing factors to this cause is the lack of skilled health experts.

However, to meet WHOs prescribed proportion of one specialist to 1000 people in India, there is a requirement for an additional 1.4 million doctors by 2030 [4]. To alleviate the crisis of health experts, many developing countries, including India, appoint Community Health Workers (CHWs) [4,5]. India in particular enrolls female volunteers from their villages as a key carder of CHWs to serve as Accredited Social Health Activists (ASHAs). The primary role of the ASHAs is to provide health education to community members, promote awareness about health services, escort pregnant women for deliveries, make regular visits for antenatal and postnatal care. The recruitment criteria include the age range of 25 to 45, minimum education of eight grade. Currently, there are more than 9 lakh ASHA workers in India [6]. ASHAs play a crucial role in achieving the United Nations Sustainable Development Goal 3, with their primary focus on improving maternal and child health in India.

However, ASHAs are an essential component in India's health ecosystem; the ASHA program faces constant challenges in providing essential skills to these workers. Various factors including lack of skilled trainers, poor infrastructure, delayed training schedules, low-literacy, insufficient funds, restrict the successful implementation of the training program [7,8]. As a result of which, the quality of care that the ASHAs may provide remains limited and unsatisfactory.

Existing work has identified the need for having alternate solutions for capacity building and imparting training to ASHA workers to improve their skills. A rich body of research has explored the ICTs based interventions focused on improving the knowledge of the CHWs. For example dissemination of videos has been investigated as a tool for training and knowledge dissemination [11,12,13], SMS [9, 10], Interactive Voice Response (IVR) platforms to provide training sessions to CHWs [14,15], all the aforementioned platforms leverage the modality of feature phone for providing training and disseminating information.

Our work

We proposed to design, develop and evaluate a smartphone based training and learning platform for the community health workers. With the increased penetration of smartphones research has reported that a significant number of CHWs on today's date are smartphone owners [16]. Currently, we are in the initial phase of developing the system and the main functionality that the platform is aimed to provide is a learning platform for the ASHAs with the primary goal of equipping them with right information. They can attend and participate in live sessions hosted by healthcare experts and other verified structured audio content relevant to their needs. The application is aimed to provide them with an option where ASHAs can subscribe to upcoming shows and will be notified when a live show is about to start. The recordings of live shows will be stored in the app and categorised in different topics like Breastfeeding, Danger Signs in Pregnancy etc. Apart from audio, the app would also provide them with a locally relevant and appropriate experience of rich video and text content. And also, ASHAs can connect with other fellows using a link to a WhatsApp group provided in the app. The users experience with the developed system would be collected for the evaluation of the system so as to understand the feasibility and usability of the system.

Novelty of the approach

From the existing literature study on imparting training and capacity building of CHWs , we have identified the potential aspects of supporting and empowering them with the latest innovative technological interventions. As we identified the primary pointers for improving their knowledge and confidence through the mobile based interventions that leverage the feature phone modality, our novel approach is proposing the design, development and evaluation of the smartphone based system where technology could be useful through opening up ways to be more interactive, flexible and relevant to their local context to serve them better to deliver quality service of care.

Benefit of attending HCIxB 2020

Attending the symposium would be an opportunity for me that would help me grow as a researcher. I wish to get feedback from the expert HCI researchers about my work which would help me refine and shape my research; would help me broaden my horizon and explore more. By

attending the symposium I aim to develop a better understanding of the "HCI across borders" and apply the same while conducting my research. I look forward to taking part in healthy discussions, getting exposed to different perspectives, unique insights and incorporating them in my research.

Asra Sakeen Wani is a second-year PhD student in Human Centered-Design (HCD) Department at IIIT- Delhi. Her research lies at the intersection of human-centred computing and education in healthcare for development. She is particularly interested in designing and developing learning and training platforms for Community Health workers in India

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