Community readiness for adopting mHealth in rural Bangladesh: A qualitative exploration

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A B S T R A C T

Introduction: There are increasing numbers of mHealth initiatives in middle and low income countries aimed at improving health outcomes. Bangladesh is no exception with more than 20 mobile health (mHealth) initiatives in place. A recent study in Bangladesh examined community readiness for mHealth using a framework based on quantitative data. Given the importance of a framework and the complementary role of qualitative exploration, this paper presents data from a qualitative study which complements findings from the quantitative study.
Methods: The study was conducted in the Chakaria sub-district of Bangladesh. In total, 37 in-depth interviews were conducted between December 2012 and March 2013. Participants included the general public, students, community leaders, school teachers, and formal and informal healthcare providers. Thematic analysis was used to develop a logical and relevant framework to examine community readiness. As in the quantitative exploration, this study approached the investigation with four types of readiness in mind: core readiness, technological readiness, human resource readiness and motivational readiness.
Results: Community members, community leaders and healthcare providers expressed their interest in the use of mHealth in rural Bangladesh. Awareness of mHealth and its advantages was low among uneducated people. Participants who have used mHealth were attracted to the speed of access to qualified healthcare providers, time savings and low cost. Some participants did not see the value of using mobile phones for healthcare compared to a face-to-face consultation. Illiteracy, lack of English language proficiency, lack of trust and technological incapability were identified as barriers to mHealth use. However, a sense of ownership, evidence of utility, a positive attitude to the use of mHealth, and intentions towards future use of mHealth were driving forces in the adoption of mHealth services.
Conclusions: This study re-affirmed the mHealth readiness conceptual framework with different dimensions of readiness and identified potential barriers and possible solutions for mHealth. Moving forward, emphasis should be placed on training users, providing low-cost services and improving trust of users.

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1. Introduction

It is now evident that mobile phones play an important role in improving access to healthcare service delivery in rural and remote settings. Worldwide, numerous mobile health (mHealth) projects are being implemented for healthcare delivery, disease surveillance, health education and health promotion behaviour change communication, and training of the health workforce [1–15]. With high community mobile phone penetration and a shortage of health workforce, mHealth has emerged as a possible viable solution for healthcare delivery in developing countries including Bangladesh [5,16–26]. The national information and communication technology (ICT) policy 'Vision 2021 Digital Bangladesh' places mHealth on

the national agenda and, as such, there are more than 20 ongoing mHealth projects in the country [16,21,22,27–30].

For mHealth to be effective, end-users need to find mHealth services useful and easy to access and be ready to accept them. Community engagement with eHealth services depend on several factors such as characteristics of end users, technological issues, type of eHealth services and social aspects of eHealth use [31]. A lack of pre-implementation evaluation and formative research to identify community needs and readiness are critical factors in the failure of up to 30% of telehealth projects globally [32–34]. "Readiness is an integral and preliminary step in the successful adoption of an innovation" [35]. Thus, it is important to know how a community is reacting to new technology and their beliefs about mHealth to determine the best way for stakeholders to prepare for mHealth services to ensure better uptake.

Based on a review of the published eHealth literature and considerations of the context of developing countries [26,36–42], a conceptual model to assess the readiness for mHealth in a rural community of Bangladesh was proposed [43]. Three high-level dimensions of readiness were identified: technological readiness, human resource readiness and motivational readiness. These three dimensions of readiness are embedded in mHealth core readiness [43]. To understand the readiness of the community for mHealth within the constructs of this conceptual model, a mixed methods study was conducted including a quantitative household survey and qualitative in-depth interviews. Results of the survey have been reported elsewhere [43].The quantitative study was not able to provide an in-depth description of community readiness or community and healthcare provider perceptions of mHealth. Therefore, a qualitative exploration was warranted to explore the community's readiness, based on how the community uses existing mHealth services and what community members understand regarding mHealth. Interviews with community members and healthcare providers were conducted to further understand community perceptions, motivations and knowledge of mHealth services. Opportunities and challenges for mHealth services were also explored. Given the importance of a framework and the complementary role of qualitative exploration, this paper presents data from a qualitative study which complements findings from the quantitative study. An mHealth readiness framework will help to facilitate the design and planning of effective mHealth interventions in Bangladesh and other similar developing country settings.

2. Material and methods

In-depth interviews were chosen because they are considered to be a method for understanding perceptions among participants [44]. The study aimed to understand the different dimensions of readiness and an interview guide was developed accordingly.

2.1. Participants and study site

The International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) has been maintaining a Health and Demographic Surveillance System (HDSS) in Chakaria since 1999 [45]. Bangalees constitute 97.6% of the households, and the remainder is from the Mogh (Rakhain) ethnic minority group. The main languages spoken are the local Chittagonian dialect and Bengali. The sub-district is covered by a mobile network operated by the major mobile phone operators of the country. Annual estimates of household mobile phone ownership in Chakaria from the HDSS shows a sharp increase from 2% in 2004–81% in 2012 [46].

The respondents for the in-depth interviews were purposively selected mobile phone owners from the general adult population, and formal and informal healthcare providers. The icddr,b office

manager invited the potential participants and explained study objectives and procedures. Those who were interested in participating and who provided written consent were included in the study. Participants were purposively selected to include a range of viewpoints including participants of different ages, genders, occupations and levels of community involvement. These included community members such as housewives, farmers, small business owners, students and young adults, community opinion leaders such as teachers, community leaders, member of local government; and healthcare providers (qualified healthcare providers [MBBS] and informal healthcare providers).

2.2. Data collection

An interview guide was developed in English and then translated into Bengali, the local language of the study area. The development of the interview guide was informed by published readiness models [36,39,40]. The icddr,b field manager was consulted for feedback on its content. The interview guide was field tested with two participants (one male and one female) from the study site, who were not included in the final sample. After field testing of the interview guide, necessary changes were made. The final interview guide covered sociodemographic characteristics; experiences with mobile phone usage and operation; experiences with healthcare seeking; knowledge, perceptions and practice of mHealth; and experiences with mHealth. In addition, participants were also asked about their role in future mHealth programs. A separate interview guide was developed for healthcare providers which covered their views, experiences and perceptions regarding mHealth and their role in mHealth in the future.

The interviews were conducted by the investigator (FK) and a icddr,b research officer with a social science background, speak the local language, and experience with qualitative research and data collection. Interviews were conducted between December 2012 and March 2013. The interviews were audio taped with prior consent from the participants. The length of each interview ranged between 17 and 69 minutes. The interview guide was used flexibly in response to how the participants responded in the interview. Reflexivity in the research process and attention to new cases was ensured during the data collection procedure. Coding uncertainty due to uncertain interpretation of the local dialect was clarified over the phone by the investigator (FK).

2.3. Data analysis

Data were analysed according to the data analysis methods of Holstein and Gubriam et al. [47]. All interviews were transcribed verbatim and then translated into English. Colloquial terms and local dialects were interpreted with the guidance of icddr,b managers who are native to the study area. Ten percent of the translations and transcriptions were re-checked by another qualitative researcher for quality assurance. All transcripts were entered into NVivo Version 10.0 for coding. Coded data were analysed thematically. When a new theme arose, the transcripts were re-read and coded by the investigator (FK) several times to categorise the theme into the different dimensions of the mHealth readiness framework. During data analysis, codes and themes were discussed within the investigatory team (STL, PKR, AEH, and FK) and themes finalized. After the final themes were determined, all transcripts were re-read to ensure that all had been coded correctly. In total, 39 in-depth interviews were conducted, but two interviews were of very low quality and did not provide information about mHealth so were excluded from the analysis and reporting.