UNDERSTANDING AND DESIGNING TOOLS FOR ENGAGING LOW HEALTH LITERACY IN NIGERIA:

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Abstract

Maternal health literacy involves the use cognitive and social skills to determine the ability of women to gain access and understand their health in order to ensure positive health outcomes both for them and their children. It is important to find ways to improve the pregnancy outcomes of women and new mothers to reduce maternal mortality in Nigeria. Factors influencing maternal health literacy in Nigeria include the culture and belief system, poor and ineffective communication platform, lack of education and low educational level. This paper focussed in the first two factors that influence maternal health literacy by providing initial steps that offers semi-illiterate pregnant women access to healthcare. This is achieved by proposing the design of a mobile app that involves all the women in order to reflect on their needs, values and perceptions in co-creation of health knowledge for a healthy outcome for the women and their children. This paper highlights on co-designing techniques that involve end users in the conception, design and testing of the apps so that the values and cultures of the end users are captured into the app. Data will be collected through observation and interviews with pregnant women, community health workers (CHWs), clinicians. The data will then be analysed to ascertain the maternal health literacy level from a focused group to find a way of improving their health outcomes. We posit that interacting with the end users throughout the design and creation of app cycle can yield impressive results thereby improving maternal health literacy and healthcare engagement.

Introduction

Low health literacy is consistently associated with more hospitalizations, greater use of emergency care, inability to demonstrate taking medications appropriately, interpret labels and health messages; and higher mortality rates [1]. This paper focuses on maternal health literacy. Maternal health literacy is “the cognitive and social skills (that) determine the motivation and ability of women to gain access to, understand, and use information to ensure positive health outcomes for them and their children” [2]. It is indicated that every 10 minutes, a woman dies as a result of childbirth and pregnancy in Nigeria [3]. World Health Organisation (WHO) [4] found that Nigeria has the second highest maternal rate in the world with more than half a

million women dying every year as a result of complications during pregnancy and childbirth. It is important to find ways to improve the pregnancy outcomes of pregnant women and new mothers in order to reduce maternal mortality [5]. The causes of high maternal mortality are many and varied. One of the main causes can be attributed to health illiteracy, that is, not being able to read or understand written health materials that are given to them by health providers. This has the potential to negatively impact their ability to make informed pregnancy health decisions, especially if they need to be made quickly [3].

Many pregnant women have challenges knowing when and how to access health care services [6]. Many pregnant women with reading problems are ashamed about their inability to read [7]. They feel reluctant to ask questions about their health and they also avoid revealing to health professionals about their literacy difficulties [8]. Thus, they hide their low literacy by relying on a trusted person who accompanied them to consultations; saying they would read something later; or making an excuse to leave [8]. Many pregnant women do not know information that the health care professionals need, lack the health vocabulary to report symptoms accurately or may relate information in an illogical or out-of-sequence fashion [9]. Other cause of high maternal mortality includes: the culture and belief system, poor and ineffective communication, lack of education and low educational level, and low socioeconomic status [10].

Context and Settings of HCI4D in improving Maternal Mortality

Since the formation of HCI4D, several research papers have reviewed the fast-growth nature of this research community [11], how the cultural characteristics of local communities impact technology design [12], the participation of community members during the design of a technology [13], the adoption of user-centered design as a primary design approach [14] , and key issues affecting the growth of the discipline [15]. An important best practice in HCI4D is to tailor the design of a technological artefact to the needs of end users and account for social, cultural and political factors that could impact adoption. An example is found in a study of how stakeholders of clinicians are engaged with the health facilities [16]. It revealed that clinicians were unable to effectively address the needs of patients because doctors made assumptions about patients' lifestyles and did not pay attention to the perspectives of community health workers (CHWs). Although, this study is at its initial stage of understudying the needs, beliefs and motivations of pregnant women in accessing healthcare, in order to inculcate them into the mobile health design. We intend using a technique that involves co-designing with the pregnant women, CHWs and other stakeholders to develop a mobile app. The difference between one

fix all and specifically considering underserved populations, is that many times underserved populations face challenges that developers fail to consider. Designs of apps have flopped several times without involving the targeted users and knowing their experiences [17]. Based on this, we intend to develop an app that educates pregnant women on the importance of earlier antenatal, how to take care of themselves and unborn babies during pregnancy and sending service feedbacks to the clinics. Patient education has shifted from just a transfer of knowledge to the co-creation of knowledge [18], because patient centered care is a priority [19]. Factors associated with a high-quality patient-professional interaction include the patient experience of being taken seriously, the involvement of the professional with the patient, a clear explanation of the pain, and an open interaction between patient and professional [20]. The app will be designed to support the needs, values of pregnant women to overcome barriers to care. There is emerging evidence that health information technology adoption is correlated with users' health literacy [21]. Therefore, providing health education may be an effective way to increase engagement with technologies such as maternal health apps.

Another potentially useful approach is to involve end users in the conception, design and testing of apps. Instead of bringing in service users to provide feedback on an app in the development, a different approach of working closely with the people concern, to learn what their needs are and formulate how an app may even be of use [22]. This type of interaction throughout the app creation cycle can yield impressive results.

Methodology

The research follows a co-design process according to Ingrid Burkett & et al [23]. The co-design framework is focused on cooperating human values into interactive design in order to understand the problem, explore possible solution space and implement them. It will involve prioritizing contextual human values into interaction design process. Contextual human values refer to the focussed pregnant women consider important in their life which are determined from their beliefs system. To understand contextual human values, initially qualitative questions and interviews are formulated to understand the community's beliefs systems on their health knowledge. Generally, we do not expect people to explicitly express their human values. Thus, it is critically important to frame right questions to extract relevant human values from the low maternal health literate community. The questions will consider the social, cultural and political aspects in which the technology is expected to operate. It factors out what is useful and appropriate for the low maternal health literate community and make sense of the design of the mobile health app that reflects their values, thereby contributing to both personal and

social wellbeing. Consequently, health literacy has been considered as a means for not only acquiring knowledge but also a resource for engaging in health at a personal and community level. The interviews, observations, and mapping exercise will be analysed to generate a set of themes and narratives describing pregnant women's barriers to receiving and demanding good quality of care. It will consist of a phase is a creative, iterative, and unstructured set of ideation workshops conducted with key stakeholders to consider a range of ideas and solutions. The ideas generated will be developed into testable prototypes and role-playing scenarios.

Novelty of the approach

Our novel approach is proposing the design where technology could be useful in engaging low maternal literacy by involving pregnant women in designing mobile health app that allow them to reflect on their needs, values and perceptions in co-creation of health knowledge. This will improve health literacy and discourage factors that could disengage them from acquiring health knowledge.

Expected Contribution of our work

We expect that when low maternal health literate community are involved in co-creating mobile health literate app, it will foster an environment that promotes their empowerment, which could ultimately engage them in healthcare.

Benefit of attending HCIxB 2019

Designing mobile health technology for the low health literacy community is highly significant in the context of today's world. The design of engaging experiences for this underserved community rests on the assessment of user engagement in healthcare. This need to understand their experiences has motivated a focus on user engagement across HCI discipline. Therefore, attending this event shall provide me with the environment to get feedback, interact and share knowledge from HCI experts all over the world that will be attending the conference.

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