Using ICT4CHW to Influence Decision Makers

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Abstract

One of the goals of mobile health (mHealth) is to create behavior change among beneficiaries. This includes promoting recommended maternal health behaviors, such as ensuring that pregnant mothers attend a recommended number of antenatal care checkups, consume iron tablets, adhere to proper nutritional standards, and receive the recommended number and types of immunizations, along with their children. In places like India, it is common for pregnant women's family members to have more influence in making maternal and newborn health-related decisions than the pregnant women themselves. For this reason, it isn't enough for healthcare providers like Accredited Social Health Activists (ASHAs) in India to simply provide the appropriate counseling information to pregnant women during home visits. A truly successful home visit would empower a pregnant woman to access the care that is offered, and would likely engage other family members. We hypothesize that CommCare increases the number of family members— specifically mothers-in-law and husbands— present during ASHAs' home visits. To assess this statement's validity, data from ASHAs that use CommCare and ASHAs that don't use CommCare was collected about the number of people present during home visits. Qualitative interviews were also performed to supplement quantitative data and to assess different ways CommCare can be used to involve certain family members in promoting maternal and newborn health messages.

The results of this study indicate that 1) more family members attend home visits where CommCare is used than home visits where CommCare isn't used; 2) mothers-in-law are more likely to be present during home visits where CommCare is used; and 3) ASHAs would be willing to use a CommCare module geared specifically towards counseling mothers-in-law about prenatal and newborn health.

In summary, the main contributions of this paper are to highlight the importance of involving family members in mHealth interventions and to recommend modules that are designed for specific types of family members.

Introduction/Background

Enabling Behavior Change with Information and Communication Technologies for Community Health Workers (ICT4CHW) Studies have shown that community health workers (CHWs) can have a significant impact in improving maternal and newborn health outcomes.[1] In order to best support CHWs, there has been a recent push to explore ways ICT4CHW can help improve CHWs' job performance. Research has shown that, when used correctly, ICT provides decision support to CHWs and improves CHWs' timeliness when making home visits.[2] This paper will focus on the use of ICT4CHW to encourage healthy behaviors among CHWs' beneficiaries, specifically by improving beneficiaries' access to care and helping CHWs more persuasively convey health messages.[3] During home visits in India, it is common for CHWs to counsel pregnant woman that do not have the power to make health-related decisions. While this reveals certain limitations in current practices, it also presents an opportunity to use ICT4CHW to gain access to decision makers during home visits. This study seeks to understand if ICT4CHW can be used to effectively engage decision makers with important maternal health information and thus, help beneficiaries gain access to care.

Decision Makers: Because this study took place in India, we chose to focus on two common decision makers in Indian households: the husband and the mother-in-law. In India, personhood is typically based on the collective, or more specifically, the joint family unit. The joint family is considered to be the ideal type of household, and consists of the husband and his parents, along with his wife and children. The joint family "is, if not a *fact* of traditional Indian society, at least a deeply held traditional *value* that continues to provide the underlying principles of household-building strategies in South Asia."[4] Because a woman's identity is linked to her joint family, her claims are often subordinate to the family's greater interests. This is important to keep in mind when thinking about behavior change, as the husband and the mother-in-law typically have a significant influence on a household's health-related decisions.

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[1] Baqui *et. al.* Effect of community-based newborn-care intervention package implemented through
[2] DeRenzi, Brian, and Leah Findlater. *Improving Community Health Worker Performance Through Automated SMS*. ICTD '12, n.d. Web. 21 Nov. 2013.
[3] Baqui *et. al.* Effect of community-based newborn-care intervention package implemented through two service-delivery strategies in Sylhet district, Bangladesh: a cluster-randomised controlled trial. *The Lancet, v. 371*, 2008.
[4] Uberoi, Patricia. "Imagining the Family: En Ethnography of Viewing Hum Aapke Hain Koun…!" in Pleasure and the Nation, ed. Rachel Dwyer and Christopher Pinney. Delhi: Oxford University Press, 2001:309-352.

The Remind Project: Since 2012, Catholic Relief Services (CRS), Dimagi Inc., and Vatsalya have been working on a three-year Reducing Maternal and Newborn Deaths (ReMiND) Pilot Project to sustain improvements in maternal, newborn and child health (MNCH) outcomes in Uttar Pradesh, India. The project will contribute to these improved outcomes by increasing the adoption of MNCH and nutrition practices among beneficiaries that have access to ASHAs that use Dimagi's mHealth platform, CommCare. The mobile application is a combination of data collection and counseling. The five major counseling topics include: antenatal check-ups, immunizations, importance of proper nutrition and rest, danger signs of pregnancy and safe delivery. It is anticipated that this project will improve the quality of essential MNCH services in targeted blocks.

At the time of data collection, the CommCare application for this project was being used by 111 ASHAs in the Manjhanpur block of Uttar Pradesh's Kaushambi district. The 111 ASHAs had been using the CommCare application for approximately 4 months.

Methods

Quantitative and qualitative research methods were used in this study, including phone calls, in person unstructured interviews, and informal observations. The study collected data from ASHAs in two blocks--Manjhanpur and Muratganj--in Uttar Pradesh's Kaushambi district. Manjhanpur served as the intervention block, where ASHAs had been using CommCare for four months as part of the ReMIND project. Muratganj served as the control block, as the ASHAs there were not using CommCare at the time of the study. From each of the two blocks, 25 ASHAs were selected to be a part of the study.

All 50 ASHAs (25 from each block) were called once a week for three weeks in a row. They were asked questions about their three most recent home visits that week. This resulted in a maximum of nine data points for each of the 50 ASHAs. ASHAs from Manjhanpur (hereinafter referred to as 'CC') were contacted via their mobile phones they used to run CommCare. ASHAs from Muratganj (hereinafter referred to as 'NCC') were contacted on their personal mobile phones. After all phone calls were completed, in-person interviews and home visit observations were conducted with ten randomly selected ASHAs from both groups.

Observations and Findings

A. Survey

A1. Total Number of Participants and Calls

Survey analysis includes all ASHAs who answered at least one of the three phone calls (CC = 23 ASHAs; NCC = 17 ASHAs). Because the sampling was random, it includes ASHAs who were inactive and those for whom we did not have the correct contact information. Note that there are more CCs than NCCs in this dataset.

Table A1.

Group	CHW count	# calls where no visits reported*	For calls where CHWs answered the phone, number of visits discussed (max 3)			Total Calls (Answered or Not)**
			Mean	*SD*	*Count of Calls*	
CC	23	7	2.55	0.67	62	69
NCC	17	11	2.76	0.49	38	49

* Most often because the ASHA didn't answer.
** We are missing data on the second call from one CC ASHA and on the first call from one NCC ASHA, as seen when scanning down the 'Grand Total' column.

A2. Total Number of Attendees and Duration

In order to measure the Number of Attendees and Duration, we built a mixed-effects regression model. This supports different amounts of data from each ASHA. The result is that CC ASHAs reported having more attendees and longer visits. It is unclear whether either of these is the effect of the other.

We also included the bonus measure of Number of Visits in the Past Three Days. We were interested in seeing whether this number holds up with a larger dataset, since we were surprised that the NCC ASHAs reported a higher number of visits.

Table A2.

Group	Total Attendees		Duration		# Visits Past 3 Days	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*
CC	5.17	0.79	56.1	34.8	2.48	1.4
NCC	3.46	2.00	32.2	21.2	3.79	3.2

A3. Likelihood of Specific Individuals Attending

Across the board, there is a greater likelihood of a specific individual attending a home visit with a CC ASHA than a NCC ASHA. Our results indicate that men are more likely to show up for visits with CC ASHAs than visits with NCC

ASHAs. The ratios of CC to NCC probability for the two groups with men are 9.3 and 2.6 respectively, compared to 1.2 and 1.9 for groups with women. It is important to note that we had limited data in measuring this, therefore, it is best not to draw any strong conclusions. This is area was further explored in the interviews.

Table A3.

Measure	Father in law	Husband	Mother in law	Sister in law	Female neighbors	Other female family
CC raw count	13	49	87	40	93	74
NCC raw count	1	13	39	15	50	44
CC observed probability*	0.084	0.316	0.561	0.258	0.600	0.477
NCC observed probability*	0.009	0.120	0.361	0.139	0.463	0.407
Ratio of CC to NCC probability	**9.3**	**2.6**	**1.6**	**1.9**	**1.3**	**1.2**

* Computed out of total observations: CC = 155 visits; NCC = 108 visits

Based on separate logistical regression analyses for each attendee category, CC vs. NCC is a significant predictor of whether a specific individual will attend a home visit for Husband, Mother-in-Law and Sister-in-Law. The other three categories of attendees aren't significant. This is most likely due to a lack of data.

B. In-Person Interviews

Here we report our findings from the qualitative interviews that were completed after initial quantitative data collection and analysis. This section is organized by common themes that emerged during ten in-person interviews.

Overall, the most significant finding from the interviews was the confirmation that CommCare attracts more family members to home visits than home visits where CommCare is not used. The data also confirmed mothers-in-law and husbands' respective roles in making health-related decisions. ASHAs expressed greater comfort interacting with mother-in-laws than husbands. Most ASHAs expressed interest in using a module that was geared specifically toward mothers-in-law and the positive role that they can play in the pregnancies of their daughters-in-law.

CommCare attracts more people to home visits

Multiple CC ASHAs noted that they believed more people attended home visits where CommCare was used due to the novelty of mobile phones. They also said that multimedia featured in CommCare applications, including audio and images, were contributing factors in drawing people to home visits.

Role of the mother-in-law as a key decision maker in the household

Interview findings also showed that it's important to involve family members in health-related counseling. Some counseling topics, such as immunizations, are considered by many to be sensitive. ASHAs pointed out that if a mother-in-law doesn't understand the purpose of immunizations or sees them as harmful for the baby, than it is not useful to counsel the pregnant woman about immunizations since she won't be able to visit the Village Health and Nutrition Day (VHND) anyway. Almost all ASHAs confirmed that mothers-in-law are important factors in making health-related decisions for pregnant women. Mothers-in-law were described as major decision makers in the household. One ASHA commented,

> In the villages, it happens that whatever the mother-in-law says, that only the daughter-in-law will do. If the mother-in-law says that "no, you must take this pill/medicine", then she will definitely take it. If the mother-in-law says, no you will not get sterilized, then she will not. That is how it happens.

ASHAs enjoy when people attend home visits and listen to them

When asked about their opinion on having additional people attend home visit, most ASHAs agreed that that it could be a nuisance at times. They said that it is common to have many children running around, which can distract from the counseling. There might also be large crowds of people who are drawn to the mobile and the audio coming from it. This becomes distracting when those crowds include older male children or those for whom the information is not relevant.

However, all ASHAs agreed that, despite possible nuisances, they would rather have more people present during home visits than fewer people. One ASHA said,

> They should sit. Because it is good. If everyone listens, then this is a very good thing. Because if one person is uninfluenced from what I am saying, then three out of four people in the family will certainly be influenced from what I am saying. Meaning that they will listen to what I am saying, they will understand that yes, the ASHA is saying something good…

Adopting a CommCare module for mothers-in-law

CommCare counseling sessions can be used an as opportunity to engage decision makers of the household. Thus, we asked CC ASHAs how we could change modules to help enable greater access to care for pregnant women. Most CC ASHAs are receptive to the idea of utilizing a CommCare module that

is directed at mothers-in-law, with health information regarding her pregnant daughter-in-law. Most agreed that they would not be comfortable approaching the husbands on their own, which this kind of health information. One ASHA commented that the "beneficiary and mother-in-law listening together would be the best, this will help them understand, this will be the easiest."

When this same ASHA was asked which counseling topic she thought was most important for the MIL to hear, she said,

> It is also necessary for the mother-in-law to listen to these, like the iron and rest module—the daughter-in-law taking rest once in awhile, that is the responsibility of the in-laws and the people of the house. Importance of nutrition/eating/drinking the right things, taking care of what the daughter-in-law is eating. And the immunizations—that is also the responsibility of the in-laws. Because the beneficiary cannot go for the immunizations without permission from her in-laws.

Here, it is important to consider that there are particular topics of health counseling that can be prioritized specially for the mother-in-law. These are topics like immunizations, proper nutrition, and taking rest during the day, which fall directly under the responsibility of the extended family.

Discussion/Conclusion

This research demonstrates the value of ICT4CHW systems in helping to engage decision makers in the family. Specifically, the data show that key decision makers in the family such as mothers-in-law and husbands are more likely to participate in counseling sessions when CommCare is used. Although these initial data might seem like an irrelevant externality, it would be most useful to see this as an opportunity. ICT systems attract attention, and make it so that more people are attending counseling sessions. This gives a pathway to engage key decision makers and ultimately, allow beneficiaries to access care.

This study also demonstrates that the mother-in-law is a more effective target for behavior change than the husband. Our data show that ASHAs have greater access to mothers-in-law during home visits and they are often more comfortable speaking to mothers-in-law about health-related topics. Given the kinship structures at play, this provides an opportunity for future work in leveraging ICT4CHW to target and influence important decision makers. This could be done by creating a module that explicitly targets the mother-in-law and her responsibilities in a safe pregnancy and delivery.

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