



# Nepal Health Sector Support Programme III (NHSSP – III)

## EVALUATION OF THE “mHEALTH INNOVATION TO IMPROVE FEMALE COMMUNITY HEALTH VOLUNTEERS’ ENGAGEMENT WITH COMMUNITIES” (ENDLINE RESEARCH REPORT)

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*This material has been supported by UKaid from the UK government; however the views expressed do not necessarily reflect the UK government's official policies”*

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## LIST OF ABBREVIATIONS

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AIM	Assuring Integrity in Measurement
ANC	Antenatal Care
BBC	British Broadcasting Corporation
DFID	UK Department for International Development
DG	Director General
DiD	Difference in Difference
DoHS	Department of Health Services
FCHV	Female Community Health Volunteer
FGD	Focus Group Discussion
FP	Family Planning
FWD	Family Welfare Division
GDPR	General Data Protection Regulation
GoN	Government of Nepal
HCD	Human-centred Design
HDI	Human Development Index
HF	Health Facility
HMG	Health Mothers' Group
IDI	In-depth Interview
IEC	Information, Education and Communication
IFA	Iron and Folic Acid
INGO	International Non-governmental Organisation
IVR	Interactive Voice Response
MEOR	Monitoring, Evaluation and Operational Research
MA	Media Action
mHealth	Mobile Health
MoHP	Ministry of Health and Population
NGO	Non-governmental Organisation
NHEICC	Nepal Health Education Information and Communication Centre
NHSSP	Nepal Health Sector Support Programme
NHSSP 3	Third Nepal Health Sector Support Programme
NHTC	Nepal Health Training Centre
NSSD	Nursing and Social Security Division
PNC	Postnatal Care
RMNCH	Reproductive, Maternal, Newborn and Child Health
SPSS	Statistical Package for the Social Sciences
ToC	Theory of Change

## **ACKNOWLEDGEMENTS**

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This is the evaluation report from the mHealth innovation, which has been supported by the UK Department for International Development and the Nepal Health Sector Support Programme (DFID-NHSSP). This approach was pilot tested in three districts – Tertathum, Rautahat and Darchula– in collaboration with the Nursing and Social Security Division (NSSD). This was initiated and managed by DFID-NHSSP in collaboration with the Government of Nepal, and implemented by BBC Media Action (BBC MA). The evaluation design for the pilot approach was developed by BBC MA and reviewed by DFID-NHSSP and NSSD. The evaluation data gathering was done by an agency contracted and overseen by BBC MA for quality, and the endline report has been drafted by BBC MA and reviewed by DFID-NHSSP and MEOR.

## EXECUTIVE SUMMARY

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Female Community Health Volunteers (FCHVs) play an important role linking communities and health facilities in Nepal – particularly among excluded and vulnerable women. The 50,000 strong volunteer force also has growing access to mobile phones. Recognising the growing body of evidence on the role of mHealth interventions to improve maternal, new-born and child health in low and middle income countries, the mHealth for FCHVs project was tasked with designing an innovative digital tool to improve the quality and content of interactions between FCHVs and the mothers they support.

The UK Department for International Development (DFID) Nepal Health Sector Support Programme (NHSSP), in collaboration with the Government of Nepal (GoN), has contracted BBC Media Action (BBC MA) to design, implement and evaluate an innovative mobile-phone-based solution that can best support FCHVs in their work as health promoters in communities across Nepal. The project aimed to deliver an effective FCHV mobile-phone-based tool prototype for future roll-out by the GoN. This report presents the findings from the mixed-method evaluation.

### Implementation

The innovation was implemented after seeking approvals from the GoN and conducting stakeholder consultations. The project initially conducted an in-depth formative research with FCHVs and their beneficiaries in the three districts selected for the Mobile Health (mHealth) pilot roll-out: Tehrathum, Darchula and Rautahat. This research informed the overall project design and shaped the project's Theory of Change (ToC). The development of concepts for the mHealth tool were tested and refined using a Human-centred Design (HCD) process, prior to the full launch of the mHealth tool in September 2019. An evaluation of the mHealth tool in order to understand the changes it may bring to FCHVs' knowledge, communication and efficacy in communicating with their clients was also conducted. The project piloted the mHealth tool, named Mobile Chautari, was implemented with 800 FCHVs across 15 municipalities in the three pilot districts, Tehrathum, Darchula and Rautahat beginning with two-days of training.

**Formative Research:** This was conducted with FCHVs and their clients in the three districts and found that:

- FCHVs faced some key challenges in their ability to interact and communicate effectively with the community members (primarily mothers and pregnant women).
- Communication with community members on health issues was typically one way, where FCHVs shared their broad, but relatively shallow knowledge across reproductive, maternal, new-born, child health (RMNCH) and family planning (FP).
- FCHVs often felt they lacked confidence in communicating with some clients, that some of the existing communication materials were worn or bulky and community members had lost interest in them
- Communities reported that FCHVs were respected in communities but not always trusted for health information.
- FCHVs commonly had access to a mobile phone, but for some groups (such as older FCHVs living in districts such as Rautahat) access and mobile literacy was limited.

**Theory of change:** Formative research had found that FCHVs role as health promoters was affected by their lack of knowledge, skills and confidence to communicate effectively. The ToC posited that if FCHVs have access to a mobile phone and actively engage with it, this will improve their health communication skills, increase their motivation and confidence around their role and improve their understanding of key health topics. This in turn, will lead to more effective interactions with community members, most notably in existing Health Mothers Groups (HMG) but also in one-on-one interactions they may have with clients. This improved quality of interaction with HMGs was in turn expected to lead to community members (especially key clients such as pregnant women and young mothers) to have improved health knowledge, increased trust in the FCHV and motivation to uptake healthy practices around maternal and child health.

**The tool:** The solution, “Mobile Chautari” was designed to focus on creating an accessible mHealth tool which could support FCHVs to facilitate engaging, participatory, and trusted health discussions. It was designed to enhance the existing interactions FCHVs were already having in their communities. Using Interactive Voice Response (IVR), Mobile Chautari enabled FCHVs to play audio health content via their own mobile phone for free. It featured a doctor character, mini-dramas and folk songs on a range of health topics. The audio content (and accompanying prompt cards) covered 13 key health areas that FCHVs had already been trained on, and provided them with an overarching facilitation model to improve interactions. ‘Ke? – Kina? – Kasari?’, (or ‘What? – Why? – How?’ in English), was the central facilitation model that cut across the three pillars of Mobile Chautari, (the two days initial training, audio and prompt cards). It was a simple three-stage process of asking questions to encourage community members to participate in the discussion of health issues. During the training FCHVs were taught what the model was, why it was important to encourage positive behaviour change and how to use it in community interactions, particularly in HMG meetings. They were also taught how to follow the Mobile Chautari prompt cards and how to access the audio content via a toll-free phone number.

## Evaluation

The evaluation used a mixed method design, employing both quantitative and qualitative data collection tools, over the course of the Mobile Chautari pilot. FCHVs were trained in September 2019. A five-month intervention period followed. This allowed FCHVs to conduct up to five monthly HMG meetings, generally of an hour or more. The evaluation included the following components:

- **Analysis of IVR data:** Across the pilot period, backend data from the IVR system was analysed to examine take up and usage of Mobile Chautari. Each call to the IVR system was logged and linked back to FCHVs registered phone numbers to monitor how many times, when and what topics FCHVs were listening to. A three-month period from the Nepali calendar is presented in this report to reflect FCHVs ‘normal’ usage (i.e. it excludes data from the initial training period and the following festival month). The IVR data analysed covers the period of 17th November 2019 to 12th February 2020 (Mangsir, Poush and Magh Nepali months).
- **Baseline and endline surveys:** Quantitative surveys were conducted with FCHVs in one intervention district and a comparable district to enable a difference-in-difference (DiD) analysis: DiD analysis provides quasi-experimental data by comparing change over time in FCHVs. It compares 370 FCHVs using Mobile Chautari and training in Tehrathum with 380 FCHVs not receiving Mobile Chautari in Khotang- a comparison district. Khotang was selected as it was a nearby district geographically and it is similar to Tehrathum in terms of key demographic profile and health indicators. The DiD calculates the after-before difference in outcomes in the intervention group and then subtracts the after-before difference in the comparison district.
- **Qualitative research:** These were conducted with FCHVs, community members and health workers at the end of the intervention period across all three intervention districts (Tehrathum, Rautahat and Darchula). In-depth interviews were conducted to understand FCHV’s uptake and engagement with the Mobile Chautari as well as their perceptions of how the tool affected their interactions with community members and community members’ perceptions and experiences of Mobile Chautari. A range of FCHVs were selected based on whether they were low, medium or high users of Mobile Chautari (based on their IVR data).

## Key findings

### **Mobile Chautari usage**

There was high uptake of Mobile Chautari – just under nine in 10 FCHVs reported using Mobile Chautari during the pilot. In Tehrathum, 87 percent of the FCHVs reported using Mobile Chautari since they were initially trained. Of these, 60 percent reported playing the audio in at least three

meetings. This high level of take up was also reflected in the IVR data. In a smaller window between 17th November and 12th February (selected to represent 'normal usage') almost 2,000 Mobile Chautari calls were completed (i.e. listened to the full message) from phone numbers registered by the FCHVs during their training. This represents 45% of registered FCHVs in Tehrathum and Darchula and 17% of the registered FCHVs in Rautahat. A further 1,600 completed calls came from unregistered numbers. Some of the unregistered calls will also have been from FCHVs who have changed their number, registered it incorrectly or borrowed someone else's phone and some will have come from non-FCHVs including health facility staff and beneficiaries (some FCHVs reported sharing the toll-free numbers with beneficiaries so they could call Mobile Chautari themselves). The IVR data indicates that FCHVs in Tehrathum and Darchula used the tool the most and Rautahat the least. These findings reflect the formative research which suggested that take up would be lower in Rautahat where FCHVs are less active and mobile ownership is lower.

FCHVs also reported challenges in using Mobile Chautari some of which could be easily addressed to maximise uptake. FCHVs reported issues such as quality of telephone network, power cuts, and lack of access to speakers. As a result, FCHVs didn't always use Mobile Chautari as intended in the HMGs. Some misunderstood how to use Mobile Chautari, for example, reporting that they did not know it was free or could be used from a non-registered phone number. Many also did not understand they could use Mobile Chautari in other interactions beyond the HMG. FCHVs in Rautahat where mobile literacy and mobile phone access are lower, particularly reported challenges in using Mobile Chautari.

*"This Mobile Chautari is difficult. It is difficult for those people who do not know how to connect and dial the number from mobile. I know it, so I feel it is easy to use."* - FCHV, high user, Rautahat

### **Engagement with Mobile Chautari**

The audio content drives FCHV's engagement with Mobile Chautari. FCHVs valued "Dr Asha" who they felt acted as a role model to women in their communities and who provided trusted information, which in turn, they felt enhanced their client's trust in them as a reliable source of information. FCHVs also reported that the content was a suitable length and valued the content being in their preferred language (Nepali, Doteli or Bajika).

*"I like the things that Asha sister talks about. She talks about post-partum danger sign, preparation for delivery including money arrangement and savings and the risk of diseases to the new-born."* - FCHV, high user, Rautahat

Both FCHVs and beneficiaries felt Mobile Chautari was particularly useful in covering family planning, pregnancy danger signs and uterine prolapse

FCHVs reported that the most useful issues covered by Mobile Chautari were pregnancy danger signs (37%), uterine prolapse (35%) and planning for pregnancy (26%). The IVR data also mirrors this trend – calls were mostly to the audio contents which focused on maternal nutrition, family planning and uterine prolapse. Uterine prolapse, a common yet taboo issue in Nepal, has received little previous communication material attention and FCHVs could cite specific examples of the Mobile Chautari content on the topic. These changes in approach to communication were noted by the mothers, as one mother from Tehrathum explained:

*"We usually tend not to disclose if our uterine is prolapsed. However, I liked the message of the program that we should share in case of any problem related to reproductive health. Concealing the problems and keeping it to oneself might only lead to complications."* - IDI with mother of child under 5 years, Tehrathum

## **Mobile Chautari's influence on HMGs**

Mobile Chautari provided a structure to HMGs which improved discussion. There was near universal agreement among FCHVs (99%) that Mobile Chautari helped them to be more effective and 60% strongly agreed that Mobile Chautari helps beneficiaries to understand key health points more easily. Mobile Chautari is also increasing discussion in HMGs - 95% of FCHVs reported spending more time discussing health topics when using Mobile Chautari. During the formative research, FCHVs reported that HMGs were often used as a cooperative for collecting instalments and disbursing loans rather than discussing and disseminating health information. However, FCHVs felt HMGs had a greater health focus and were more structured as a result of Mobile Chautari, and beneficiaries were more attentive.

*"The way of closing the meeting has changed, we used to close the meeting by telling them about what topics we discussed today, but now after listening the Mobile Chautari content, we discuss the topics from the content and also discuss what we learned and what members of the mothers group learned and close the meeting."* - FCHV, medium user, Tehrathum

There is some evidence to suggest MC is increasing the reach and diversity of HMGs. While the quantitative survey trend data did not support this claim, FCHVs across three districts reported having more participation from diverse group of people in the meeting after using the Mobile Chautari tool. Generating discussion on previously taboo issues was increasing uptake of HMGs.

*"There was less participation in HMG meeting before but now it is increasing. They travelled a long distance to listen about content on uterine prolapse, family planning. They felt shy before but now they approach us themselves."* - FCHV, high user, Darchula

Mobile Chautari is helping to enhance the trust between FCHVs and their communities. FCHVs felt that they already had the trust of their communities before the introduction of Mobile Chautari. They did feel however, that the use of the mHealth content helped them to gain better recognition of a reliable source of health information, because the information they share is backed up by the audio content and the 'voice of a doctor' i.e. Dr Asha. There was also evidence that mothers were sharing this trusted information with others in their communities.

*"Yes, we used to believe her, but we believe her more now after we were made to listen to Mobile Chautari."* - Mother in law, Tehrathum

## **Mobile Chautari and its impact on FCHV's health knowledge, communication skills and confidence**

Improvements in communication skills, health knowledge and confidence were observed in both the intervention and the comparison district. The evaluation results from the DiD analysis comparing FCHVs in Tehrathum and Khotang on three key outcomes within the Theory of Change (FCHVs communication skills, health knowledge and confidence) indicate that in both districts, these outcomes improved over the course of the intervention period.

- Communication knowledge scores showed the largest increases across both districts. Tehrathum made gains of 4.7 points compared with 6.0 in Khotang, resulting in a -1.3 deficit for Tehrathum vs. Khotang. This equates to a proportional change in score in Tehrathum of 47% but an increase of 56% in Khotang.
- For Health Knowledge Scores, Tehrathum made gains of 1.5 points compared with 3.1 in Khotang, resulting in a -1.5 deficit for Tehrathum vs. Khotang. This equates to a proportional change in score in Tehrathum of 7% but an increase of 13% in Khotang.
- Overall confidence scores showed the lowest increases. Tehrathum made gains of 0.5 points compared with 2.8 in Khotang, resulting in a -1.9 deficit for Tehrathum vs. Khotang. This

equates to a proportional change in score in Tehrathum of 1% but an increase of 5% in Khotang.

The above results were unexpected. Although both districts may have started at different places (e.g. Khotang FCHVs had slightly higher health knowledge scores at baseline compared to Tehrathum), we expected that the presence of Mobile Chautari in HMGs within Tehrathum, would result in greater improvements in outcomes than in Khotang where there was no known intervention. This is not the result. Indeed, the data suggests there was a greater rate of change in Khotang across all three key outcomes. A thorough investigation has revealed that there was no evidence of issues such as respondent fatigue, flaws with the research instrument, or sample bias which might have impacted the results nor was there evidence of other interventions taking place in Khotang during the pilot period. There was, however, evidence to suggest that there may be unintended differences in how the data collection tool was applied across the two districts. There is evidence to suggest that at least one enumerator in Khotang conducted a much more detailed level of probing of interviewees. This means that they are more likely to elicit a higher number of responses from interviewees, which in turn increased the opportunity for correct answers to be elicited. When these interviews are removed, the DiD results narrow substantially between the two districts.

## Conclusions

There is evidence that there is high uptake and engagement with Mobile Chautari tool. With some adaptation in training to optimise use (e.g. ensuring FCHVs understand it is a free service and can be used outside of HMGs) uptake is likely to further increase in any further roll out of the tool. However, in line with project expectations there are two key conditions which influence take up of a mHealth service by FCHVs - mobile access and mobile literacy. This could be addressed through increasing the length of training to ensure FCHVs have more time to practice how to use the tool effectively and also through engaging FCHVs supervisors to be more involved.

It was evident that a key driver of usage of Mobile Chautari was the engaging content using a range of production formats (including songs and drama), the trusted character of Dr Asha, and having content in the local language. These engaging aspects of the content should be retained and continually tested and refined to ensure FCHVs continue to recognise the value of Mobile Chautari.

There was evidence from FCHVs and communities themselves that Mobile Chautari is changing the structure and dynamics of the HMGs. FCHVs feel that Mobile Chautari has enhanced their interaction with their clients. Most notably, they cited that it had provided a clear structure to the HMGs, it has provided them with content that was useful to them and their clients. FCHVs reporting that they feel more confident and have noticed changes in the makeup and attendance of their HMGs.

Whilst there was evidence to indicate that Mobile Chautari was impacting on key areas in the Theory of Change such as supporting them to have more effective interactions with mothers, there was no evidence of impact on key outcomes of health communication skills, health knowledge and confidence, when measured at scale, using the DID methodology. There was some evidence to suggest the results were affected by methodological issues experienced during fieldwork in the comparison results. As a result, it is not possible to draw conclusive answers from the DID. However, the data from Tehrathum shows an overall increase for both health knowledge and communication skills and self-assessed confidence scores. The gains were found to be modest, but in line with expectations when taking into account the relatively small scale and short time period for the pilot intervention. There is evidence to suggest the project could benefit from revisiting the Theory of Change and adjusting our assumptions on how Mobile Chautari is working, for example, focusing more on how Mobile Chautari is playing an important role supporting FCHVs to structure their conversations with clients particularly on more sensitive issues and supporting more inclusive discussions focusing on purely health issues.

# 1. INTRODUCTION

## 1.1 PROJECT BACKGROUND

Introduced in 1988 by Nepal’s Ministry of Health and Population (MoHP), the Female Community Health Volunteers (FCHVs) Programme was designed to enhance Nepal’s primary health care network, improve community participation, and expand the outreach of health services (Panday, A., et al., 2017). This project, initiated by the third Nepal Health Sector Support Programme (NHSSP 3) with the Government of Nepal (GoN) and funded by UKAid contracted BBC Media Action (BBC MA) to design an innovative mobile-phone-based solution that can best support FCHVs in their work as health promoters in communities across Nepal. The project aimed to deliver an effective FCHV mobile phone-based tool prototype that can support FCHVs in their work as a health volunteer to improve the quality and content of their interaction and communication with communities.

The project began with in-depth formative research which sought to understand FCHVs in the proposed pilot districts and how they engaged with their clients. The research was conducted with FCHVs themselves, health facility staff and community members (such as young mothers and father, pregnant women, and grandmothers). The research found that FCHVs communication with community members on health issues is typically one way, where the FCHVs shares her broad, but relatively shallow knowledge on health issues across reproductive, maternal, new-born, child health and family planning. FCHVs often felt they lacked confidence in communicating with some clients. They also felt that some of the existing communication materials they used were worn or bulky and community members have lost interest in them as they have already seen those materials many times. Communities reported that they felt FCHVs were respected in communities but not always trusted for health information. However, FCHVs were motivated and wanted support to improve their health promotion activities. There was appetite for a mHealth tool which could support them in their interactions with communities. The research found that FCHVs commonly had access to a mobile phone, but for some groups (such as older FCHVs living in districts such as Rautahat) access and mobile literacy was more limited.

Following this initial research phase, to design the project and its content BBC Media Action worked collaboratively with key partners to develop a robust theory of change and communication framework. In March 2019, BBC Media Action led a 3-day long Theory of Change (TOC) workshop with active participation from government partners, Options, MEOR, and our IVR technology service provider Viamo. The workshop identified barriers from the formative research which prevented effective communication between FCHV and their clients. These barriers were grouped into categories to understand how they can best be influenced through behaviour change theory and the workshop allowed us to focus our solution design around a core problem statement to support further decision making and to communicate with wider stakeholders using a clear, logical framework.

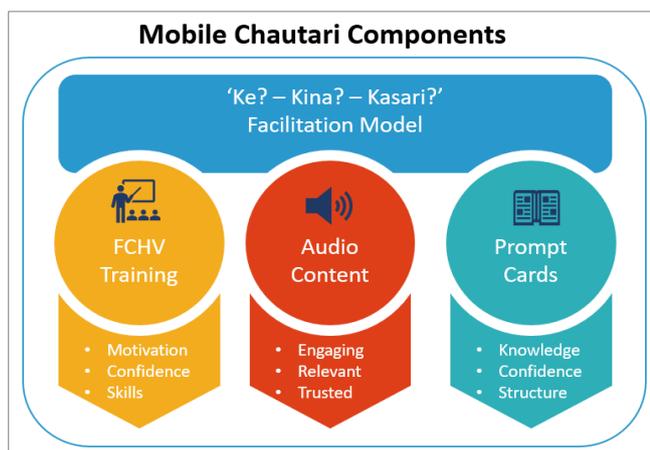


Figure 1; Mobile Chautari components

An early concept of the tool was presented to the Technical Advisory Group (TAG) and the Ministry of Health and Population’s (MoHP) e-Health Technical Working Committee (TWC). These stakeholder interactions allowed BBC Media Action to make sure our proposed solutions were in line with the Ministry’s e-Health strategy and is complementary to wider work happening across the health sector. Extensive discussions took place with the two groups, resulting in support to proceed to the next stage of the project, concept testing and the development of the final mhealth pilot tool.

Following the research and development phase, the final pilot tool was named Mobile Chautari. Mobile Chautari consists of a two-day training

programme; audio content that is played to communities via a mobile phone and speaker; and printed prompt cards to support FCHVs during the interactions. These are bound together by an overarching facilitation model that binds the whole concept (see Figure 1).

Mobile Chautari is delivered via an Interactive Voice Response (IVR) system, which links FCHVs with the audio content that stimulates community discussion. An FCHV can dial a toll-free number to access and navigate 13 different sets of short audio content across a range of maternal and child health areas.

In this pilot phase, Mobile Chautari has been rolled out to just over 800 FCHVs in three pilot districts, Tehrathum, Darchula and Rautahat after the initial two-day training was delivered to them in September 2019.

## 1.2 RESEARCH BACKGROUND

Research has been a key component of the pilot process. Firstly, formative research was conducted in March 2019 in three pilot districts, Tehrathum, Darchula and Rautahat with FCHVs and the communities they serve at the beginning of the project to understand how FCHVs currently interact and engage with communities, what are their key gaps in effective communication with communities, their level of motivation in their role and community member’s perceptions of them as health promoter. Secondly, early prototypes of Mobile Chautari was tested for functionality and usability with FCHVs to refine the final concept. Thirdly, a research evaluation was designed and implemented around the pilot implementation phase to fully explore the project’s Theory of Change.

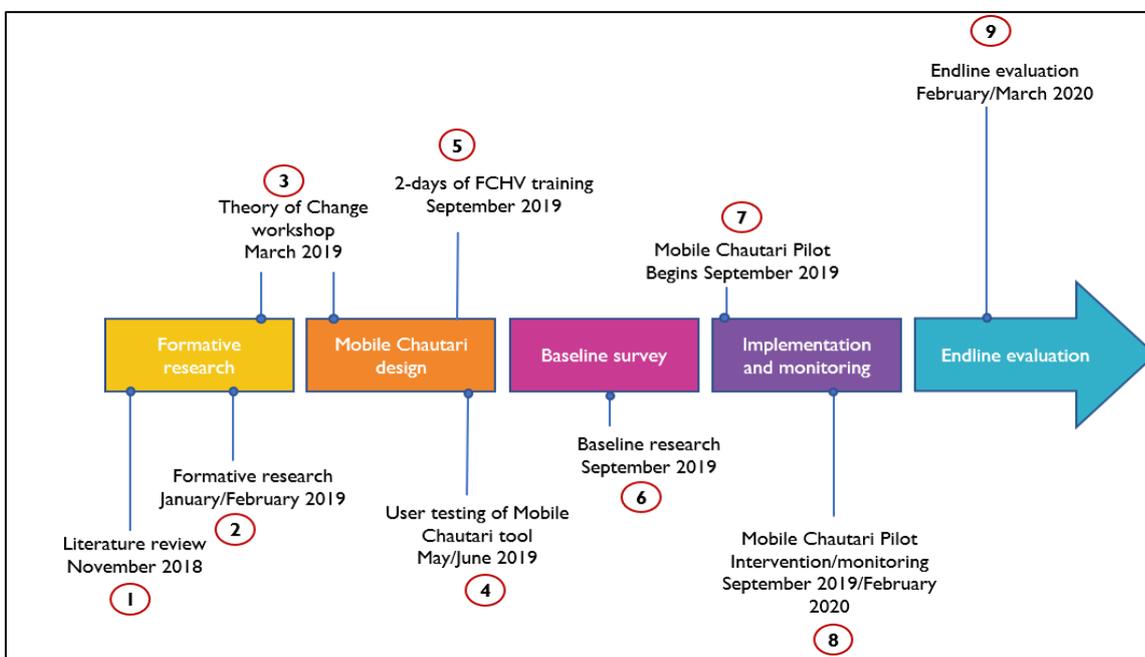


Figure 2 mHealth Research design timeline

## 1.3 RESEARCH OBJECTIVES

The evaluation aimed to fully test the Theory of Change (see below). The Theory of Change posits that if FCHVs have access to a mobile phone and take up and value the role of Mobile Chautari this will improve their health communication skills, increase their motivation and confidence around their role and improve their knowledge of key health topics. This in turn, will lead to more effective interactions with community members (notably in the HMGs but also in individual interactions). This improved quality of interaction with HMGs will in turn, lead to community members (especially key clients such as pregnant women and young mothers) to have improved health knowledge, increased trust in the FCHV and motivation to update health practices around maternal and child health.

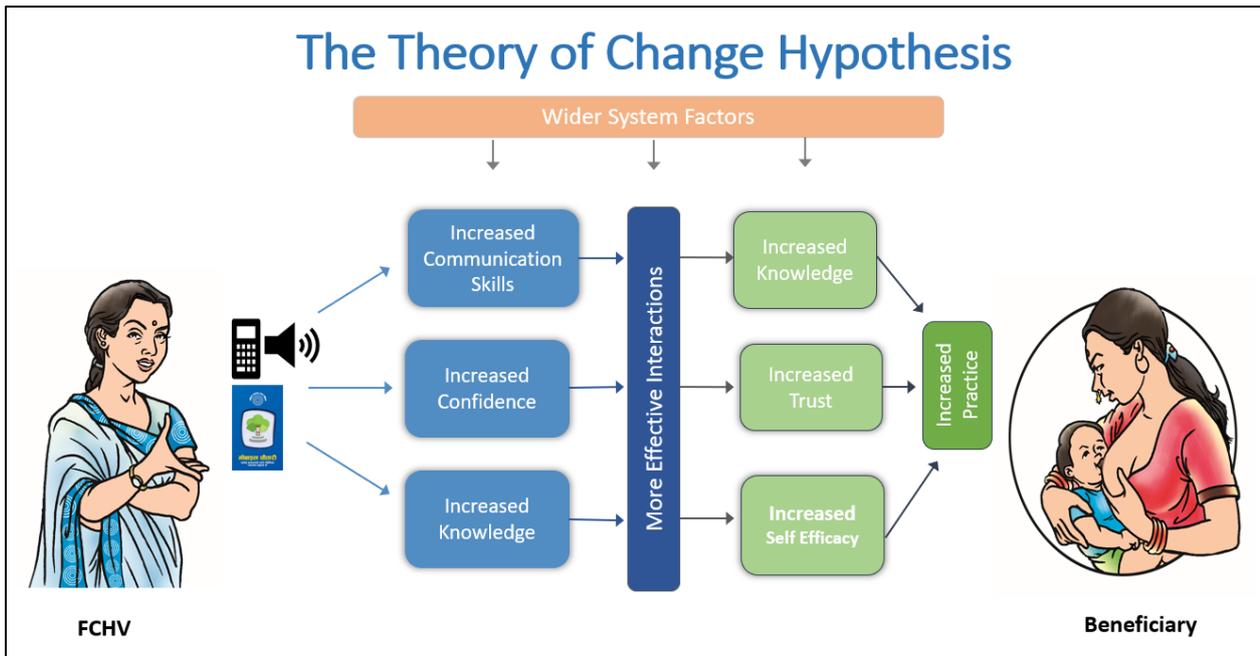


Figure 3 Theory of Change

The evaluation aimed to fully explore and test the different elements of the Theory of Change. It aimed to understand:

1. Did FCHVs take up Mobile Chautari?
2. How did FCHVs engage with Mobile Chautari?
3. Did use of Mobile Chautari result in improvements in:
  - a. FCHVs knowledge on health communication facilitation skills
  - b. FCHVs knowledge on key health related issues
  - c. FCHVs level of confidence to facilitate HMG meetings
  - d. The quality of their interactions with clients and the wider community
4. How community members engaged with Mobile Chautari?
5. How community members perceived the quality of interaction?
6. Whether Mobile Chautari improved the trust community members have in their FCHVs?
7. Whether Mobile Chautari affected the mothers' perceived knowledge on different health issues?

## 2 RESEARCH METHODOLOGY

### 2.1 RESEARCH QUESTIONS

The evaluation used a mixed method design, employed both quantitative and qualitative data collection tools. The evaluation covered the main period of implementation of the Mobile Chautari tool. FCHVs were trained in September 2019, following which a 5-month intervention period followed. This would allow FCHVs to conduct up to 5 monthly HMG meetings. The evaluation used a mixed method design to fully test the Theory of Change. Each research question matches a stage of the Theory of Change. A summary of the different evaluation methods against each research question is provided below.

**Table 1: Research questions and evaluation data source**

Research Questions	Evaluation data sources
1. Did FCHVs take up Mobile Chautari?	IVR Data Quantitative endline survey data
2. How did FCHVs engage with Mobile Chautari?	Quantitative endline survey data Qualitative FGDs with FCHVs and observational data Qualitative IDIs with health facility staff
3. Did use of Mobile Chautari result in improvements in: a. FCHVs knowledge on health communication facilitation skills b. FCHVs knowledge on key health related issues c. FCHVs level of confidence to facilitate HMG meetings d. The quality of their interactions with clients and the wider community	Quantitative baseline-endline survey data Qualitative IDIs with FCHVs and observational data of HMG meetings Qualitative IDIs and FGDs with FCHV clients
4. How community members engaged with Mobile Chautari?	Qualitative IDIs with FCHVs and observational data of HMG meetings Qualitative IDIs and FGDs with FCHV clients
5. How community members perceived the quality of interaction?	Qualitative IDIs with FCHVs and observational data of HMG meetings Qualitative IDIs and FGDs with FCHV clients
6. Whether Mobile Chautari improved the trust community members have in their FCHVs?	Qualitative IDIs with FCHVs and observational data of HMG meetings Qualitative IDIs and FGDs with FCHV clients
7. Whether Mobile Chautari affected the mothers' perceived knowledge on different health issues?	Qualitative IDIs with FCHVs and observational data of HMG meetings Qualitative IDIs and FGDs with FCHV clients

The quantitative and qualitative elements of the evaluation are outlined below.

### 2.2 QUANTITATIVE RESEARCH

#### Quantitative survey timeline

The baseline survey was carried out simultaneously in the intervention and comparison districts in September 2019 and then the endline in February and March 2020. The baseline survey was conducted at the same time the Mobile Chautari training took place.

#### Quantitative design

There is limited causal evidence on how mHealth job aids can improve FCHVs' skills and confidence in delivering information and facilitating discussions on health issues with the clients they serve. As such, in the quantitative element of the evaluation, we employed a quasi-experimental approach using baseline and endline quantitative data from intervention and comparison groups to obtain an appropriate counterfactual to estimate a causal effect. The effectiveness of the programme is determined by comparing the difference in pre/post outcomes of the FCHVs in Tehrathum who

received Mobile Chautari training, with the difference in pre/post outcomes for the FCHVs in the nearby Khotang where Mobile Chautari was not provided.

Originally, the evaluation aimed to employ a Randomised Control Trial, however, a credible experiment requires a sufficiently large sample and for there to be an even balance of key pre-intervention covariates, particularly in the areas that might influence take-up of the intervention and outcomes of interest. In our preliminary discussions regarding the appropriate research design, we identified wide variations in pre-intervention characteristics of the FCHVs across the three roll-out districts and realised that it was not feasible to conduct a randomised experiment. Instead we opted for a design that allowed for the potential to pursue the differences-in-differences technique, a quasi-experimental technique commonly used in econometrics.

The baseline and endline quantitative survey took place in 14 municipalities across two districts – Tehrathum (6) and Khotang (8),<sup>1</sup> We selected FCHVs from eight municipalities in Khotang as the comparison group because the district was the most similar to the intervention district of Tehrathum in terms of key demographic profile, maternal and child health indicators and the mobile phone coverage that may affect take-up of Mobile Chautari, thus improving the power of the study and our chances of detecting an effect in the population, if one existed. The sampling unit for the study was at the health facility level and it captured all FCHVs reporting to the selected health facilities except for some FCHVs who were unavailable on the survey dates.

Without random assignment, a treatment and control group are likely to differ for many reasons. Although this study's design lacks random assignment, from the start we have incorporated the best features of an experiment and collected individual data from the same participants before and after the Mobile Chautari intervention was rolled out.

A careful selection process was undertaken to ensure that FCHVs in the selected municipalities for the control group were as similar as possible to FCHVs in Tehrathum in terms of factors which may influence their ability to take up and use Mobile Chautari.

As such we undertook the following steps to ensure that the intervention and comparison FCHVs were as similar as possible:

- Listed all districts in Province 1 and discounted mountain and terai districts to be left with geographically similar districts to Tehrathum (the intervention district)
- Excluded districts with high levels of accessibility to align with Tehrathum
- Excluded all districts where the large USAID funded Suaahara programme was active
- Measured the remaining districts against key health and demographic characteristics<sup>2</sup> and selected Khotang as the closest matching district
- Excluded health posts where the USAID funded Sabal programme was still active (though in the final stages of closing down by September 2019)
- Conducted a health post survey by telephone to exclude health posts where mobile reception was poor, whilst also verifying similarities to Tehrathum in terms of number of FCHVs per health post, number of household each FCHV serves, the distance for FCHVs to reach the Health post and that FCHVs were active in conducting HMGs

Finally, logistical consideration was given to data collection where research teams could be more efficiently work in similar areas. The final FCHVs for the control group were selected from 37 health posts in eight municipalities, where all FCHVs attached to each of the health posts were enrolled for the survey.

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<sup>1</sup> An overview of each district is outlined in formative research report and baseline report.

<sup>2</sup> Twelve health indicators were assessed and ranked across family planning, early childhood mortality, maternal care, vaccination uptake and nutrition plus a Human Development Score and female literacy rate

## Quantitative analytical approach

The quantitative survey at baseline and endline used the same set of measures to measure FCHVs levels of confidence, health knowledge and health communication skills. The surveys also collected data on their interactions with community members such as the makeup and reach of their HMG meetings, what was discussed and how long they last. This data was collected in order to answer research question 3 (as above). At the endline, in Tehrathum, the survey also included questions on usage and engagement with Mobile Chautari, in order to answer research questions 1 and 2.

The main reason a baseline and endline survey was conducted in both the intervention and comparison districts was to use a Difference in Difference method of analysis to look at how certain key outcomes changed between and within the intervention and comparison districts. DID method recognises the difficulty in obtaining a 'perfect' comparison, and only requires the outcomes within comparison areas change in tandem overtime.<sup>3</sup> For the DID to be credible, that is to satisfy the common trend assumption, we do not actually need the average level of knowledge or efficacy to be the same in Tehrathum as it is in Khotang. What we do need is that the average rate at which knowledge or efficacy to be increasing/decreasing is at similar rates or along a similar trajectory in both groups. There is no statistical test for this assumption, but due to the relatively short time-frame of this pilot evaluation – approximately five months – and the careful selection process of the intervention and comparison districts (as discussed above) to ensure the FCHVs were as similar as possible, the project met the common trends assumption required by the DID model during endline.

The Difference in Difference method was mainly designed to measure the change in levels of knowledge around health, communication skills, and shifts in levels of confidence in managing HMG meetings. FCHVs' knowledge on health issues was assessed through fifteen questions on nine separate topics related to maternal and child health and communication knowledge was measured through items of three communication areas that seek to improve FCHVs ability to conduct mother's health group meetings. The health and communication module contained a mix of multiple choice and open-ended questions. For both the health knowledge and communication knowledge scores<sup>4</sup>, responses categorised as "correct", The health and communication scores were categorised as 'correct' based on the messages or content given in the Mobile Chautari training or tool and equal weighting was given to each correct response. Given that we hypothesised that changes in scores would be dependent on take up and usage of the different topics by the FCHVs themselves (as they select which content to call and engage with) we did not be taking an approach wherein we weight different answer categories or topics within analysis. The same analysis approach was followed at both baseline and endline timepoints.

Factual accuracy of responses coded as correct was first assessed by researchers with a public health background and in consultation with WHO resources and then reviewed by a BBC Media Action Senior Health Advisor. It was also reviewed closely in line with the Senior Project Manager and project team to ensure all answers correct responses analysed were covered in Mobile Chautari content and training.

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<sup>3</sup> Paul J. Gertler, Sebastian Martinez, Patrick Premand, Laura B. Rawlings and Christel M. J. Vermeersch Impact Evaluation in Practice, Second Edition Published: September 2016 Pages: 129 – 142 Available at: [https://elibrary.worldbank.org/doi/full/10.1596/978-1-4648-0779-4\\_ch7](https://elibrary.worldbank.org/doi/full/10.1596/978-1-4648-0779-4_ch7)

<sup>4</sup> Several studies using the difference-in-difference estimator draw upon test scores to determine the impact of a particular intervention. For instance, Leme, Louzано, Ponczek, and Souza, (2012) used the Prova Brasil exam, a nationwide voluntary proficiency test for public school students in Brazil to determine the effect of changes to teacher training. Another study by Bettinger (2005) relied on New York state mathematics and English language tests as a proxy for student proficiency. Previous DFID funded health studies carried out at BBC Media Action have used aggregated level scores i.e. 'number of benefits of ANC' a respondent has been able to name to determine the impact of health-related content. For more detail on previous health surveys see <http://globalhealthstories.com/wp-content/uploads/2017/12/Bangladesh-health-web.pdf>

## 2.3 QUALITATIVE RESEARCH

### Qualitative research timeline

Following the intervention period, to answer key research questions 2-7 (as detailed above), qualitative research was conducted in March 2020. Qualitative research took place in 14 municipalities across the three districts where the intervention had taken place - Tehrathum (6) and Khotang (8), Rautahat (4) and Darchula (5).<sup>5</sup>

### Qualitative research design

The qualitative research aimed to provide a comprehensive understanding of engagement with Mobile Chautari, how Mobile Chautari was being used in practice (if it was being used in the way it was designed), and how, if at all, Mobile Chautari was influencing FCHVs own knowledge, motivation, skills and confidence in facilitating HMGs and other interactions with community members. The qualitative research also aimed to understand community perceptions of the Mobile Chautari tool.

A total of 78 In depth Interviews (IDIs), 6 Focus Group Discussions (FGDs), and 6 observations were conducted with FCHVs, members of HMG meetings (mothers of child under 5 including pregnant women and mother in laws), and health facility staff including health coordinators.

- **IDIs with FCHVs:** IDIs were conducted with 48 FCHVs across three districts representing high, medium and low users<sup>6</sup> based on the IVR data of three month from Nepali calendar-Mangsir, Poush and Magh (17<sup>th</sup> November to 12<sup>th</sup> February 2020). IDIs were used with this group, given they were the key target audience of the Mobile Chautari tool, therefore it was important to conduct one to one interviews which would provide the required space, time and level of personal reflection from the FCHVs to understand how they used the tools, what problems they personally experienced, and in order to understand their reflections on how they had used in in the FCHV meetings.
- **IDIs with mothers and pregnant women:** As key primary clients of FCHVs in-depth interviews were used with mothers in order to fully understand their reflections on the Mobile Chautari tool. 15 IDIs with pregnant women and mothers of young children (aged below five years). These were conducted with mothers who had attended HMGs where Mobile Chautari was used.
- **FGDs with grandmothers:** FGDs were conducted with grandmothers (who had attended HMGs where Mobile Chautari had been used) as key influencers of mothers and pregnant women within their families. 6 FGDs with mother in laws and grandmothers were conducted.
- **IDIs with health facility staff and health coordinator:** IDIs were also conducted with 15 health facility staff (ANM, in charge) and health coordinators to understand wider FCHV's perceptions of Mobile Chautari and further opportunity for scaleup and recommendations.
- **Observations** were also conducted to understand how FCHVs are using Mobile Chautari in the meetings and how HMG participants are reacting on it.

By collecting data from the viewpoints of the FCHVs, her clients, health post staff and through direct observations of the HMG this aimed to strengthen the evaluation by providing a comprehensive picture of how Mobile Chautari was being used, to test all key areas of the Theory of Change and to triangulate data points.

### Qualitative analytical approach

All qualitative data was analysed using the framework analysis method, where all data were coded in the excel sheet based on main research themes and research questions (more detail, see appendix table 2).

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<sup>5</sup> An overview of each district is outlined in formative research report and baseline report.

<sup>6</sup> IVR data was used to identify different levels of users of the Mobile Chautari tool in order to gather a range of opinions on Mobile Chautari. High users were defined as those FCHVs who completed calls more than 5 times AND at least 2 complete calls in each of the three calendar months; medium users means who completed calls for more than 1 times and less than 6 times; and low means at least one call to system or no calls to the system in the three months

## 2.4 SAMPLE SIZE – QUANTITATIVE AND QUALITATIVE

The quantitative survey aimed to sample all 407 FCHVs in Tehrathum and compare these to a similarly sized sample in Khotang. Data was collected from 734 FCHVs at baseline (363 from Tehrathum and 371 from Khotang) and 750 FCHVs at endline (370 from Tehrathum and 380 from Khotang). For pragmatic and ethical reasons all FCHVs attached to a participating health facility were invited to take part in the endline survey, whether they completed the baseline survey or not. To maximise the sample size additional efforts were made to survey as many of the baseline FCHVs as possible, even if they did not initially show up for the endline survey.

All FCHVs who did not complete both the baseline and endline survey were excluded from the final analysis and so the final sample was 658 FCHVs who participated in both baseline and endline survey from Tehrathum (N=334) and Khotang (N=324).<sup>7</sup>

For more information on the sampling strategy please see Appendix table 2.

**Table 2: Sample size distribution**

	Number of FCHVs trained) <sup>8</sup>	Quantitative survey	Qualitative Survey				
		Structured Interview with FCHVs*	Observation of HMG meeting (# of FCHVs)	IDI with FCHVs	FGD with Mother in-law	IDI with Pregnant mothers and mothers with child < 5	IDI with health facility staff/health coordinator
<b>Tehrathum</b>	387	370 (334) *	2	16	2 (7)	5	5
<b>Khotang</b>	-	380 (324) *	-	-	-	-	-
<b>Darchula</b>	217	-	2	16	2 (7)	5	5
<b>Rautahat</b>	206	-	2	16	2 (7)	5	5
<b>Total sample</b>	<b>810</b>	<b>750</b>	<b>6</b>	<b>48</b>	<b>6 (21)</b>	<b>15</b>	<b>15</b>

\* Figures in () denote the number of FCHVs who participated in both the baseline and the endline survey and therefore all baseline-endline analysis is only conducted on this final sample.

## 2.5 LIMITATIONS OF THE STUDY

There were several limitations of the study.

- The project period timeframe was relatively short. The maximum number of HMGs which a FCHV was likely to have run would be 5 (one per month). HMGs also only happen once per month so there would be long period between using Mobile Chautari in the ideal locations (FCHVs were trained primarily to use Mobile Chautari in HMGs but encouraged to use it in other interactions with clients too).
- The project timeline for roll out included a long break following the initial training on Mobile Chautari. Owing to overall project timeline constraints to provide evaluative data and use a baseline/endline survey as part of the methodology, this meant that the only way to complete the roll out of training for FCHVs on Mobile Chautari, to baseline them, and provide as much time as possible for them to use Mobile Chautari and then conduct an endline survey (and all other modes of evaluation data collection), meant that FCHVs were trained on how to use

<sup>7</sup> Owing to drop-outs the final baseline-endline analysis of the quantitative data was carried out on a sample of 658 FCHVs who participated in both baseline and endline survey from Tehrathum (N=334) and Khotang (N=324).

<sup>8</sup> All FCHVs in Tehrathum were trained whereas only FCHVs in selected municipalities were trained in Rautahat and Darchula.

Mobile Chautari in September 2019, but there followed a long holiday festival period in Nepal. HMG meetings were unlikely to happen during this period.

For more detail on the methodology including ethical considerations please see the Appendix table 2.

## 3 RESEARCH FINDINGS

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### 3.1 WHAT IMPACT HAS MOBILE CHAUTARI HAD AGAINST THE THEORY OF CHANGE?

This section focuses on examining how, if at all, Mobile Chautari has performed against the Theory of Change, firstly examining uptake and usage of Mobile Chautari; secondly how FCHVs engaged with the different elements of Mobile Chautari; and thirdly, how, if at all, it affected how they engage with communities.

The results use a combination of qualitative data collected across the three intervention districts. FCHVs were selected for qualitative interviews based on their corresponding IVR data and selected based on whether they were high, medium or low<sup>9</sup> users of Mobile Chautari. In addition, analysis of IVR data across the intervention period was analysed and descriptive analysis was run on key relevant indicators of the quantitative survey conducted in Tehrathum. Qualitative interviews conducted with beneficiaries (mothers in law, pregnant women, mothers with young children) and health facility staff or health co-ordinators was triangulated with interviews with FCHVs and observations of the HMGs themselves, conducted by the Research Team.

#### 3.1.1 How was Mobile Chautari taken up and used by FCHVs?

*Mobile Chautari was more likely to be taken up in districts where mobile phone access was greater*

Over the course of the intervention period, it is evident the service was used by the FCHVs. In a three month period where IVR data was examined 398 of the 810 registered FCHVs (49%) called the service at least once (though more will have used it, but from unregistered numbers). There were 3,618 completed calls (defined as listening at least as far as the song played at the end of each health issue), 1,968 of which came from registered FCHV phone numbers.<sup>10</sup>

The IVR data indicates that the highest proportion of unique users (relative to FCHVs trained in the tool) were from Tehrathum and Darchula and the lowest from Rautahat. These findings match with the formative research conducted at the beginning of the project, which indicated that take up of the service was more likely to take place in Tehrathum and Darchula owing to high mobile access and other key socio-demographic factors such as age and education of FCHV. FCHVs in Tehrathum and Darchula were also more likely to have completed the highest number of calls, compared to Rautahat – 19% of FCHVs in Tehrathum, 18% of FCHVs in Darchula and 6% of FCHVs in Rautahat completed six or more calls (classified as high users because it exceed the expectation of one HMG per month).

Qualitative research suggests that the low uptake in Rautahat is not as extreme as it first appears. FCHVs reported in Tehrathum and Darchula that they mostly used their own mobile phones to call the service while more FCHVs in Rautahat reported using a shared family phone or HMG members phone to call the service, suggesting that the IVR data is underreporting FCHV usage in Rautahat. The IVR data in table 3 also supports this, showing the distribution of completed calls originating from known FCHV phone numbers, phone numbers from health facility staff (labelled 'others) and unknown phone numbers. In line with expectations Tehrathum, with twice as many registered FCHVs as the two other pilot sites, had the most number of completed calls from known FCHVs phone numbers. However, Tehrathum also has the lowest number of completed calls from unknown numbers (280 completed calls) followed by Rautahat (414) and Darchula (925). In Darchula we had reports that some FCHVs were distributing the toll free number to beneficiaries, explaining the high number but in Rautahat we believe at least some of these will have been from FCHVs using unregistered phone numbers as they used an unregistered family members phone or HMG members phone to call Mobile Chautari.

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<sup>9</sup> According to current definition high means completed more than five calls in the three-month observation period; medium means completed 2-5 calls; and low means at least one call to system but less than two completed calls.

<sup>10</sup> These figures discount the Nepali month of Asoj where the training period saw particularly high number of calls and the months of Ashoj and Kartik where two major festivals reduced FCHV activity and use of Mobile Chautari. The three-month period was selected in order to examine what regular usage would look like amongst FCHVs.

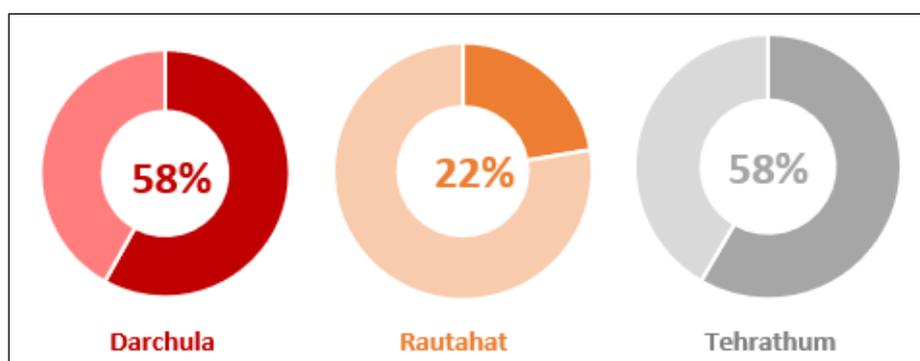


Figure 4: Proportion of unique FCHV registered numbers that called Mobile Chautari, proportional to those trained

Table 3; Distribution of completed calls from FCHV phone numbers, unknown and others phone number across three districts

District	FCHV	Unknown	Others	Total
Darchula	612	925	19	1,556
Rautahat	253	414	7	674
Tehrathum	1,103	280	5	1,388
<b>Grand total</b>	<b>1,968</b>	<b>1,619</b>	<b>31</b>	<b>3,618</b>

Table 4: Number of unique FCHV IVR users compared to total number of FCHVs trained

District	Number of unique FCHV users	Total number of FCHV trained
Tehrathum	226	387
Darchula	126	217
Rautahat	46	206
<b>Grand Total</b>	<b>398</b>	<b>810</b>

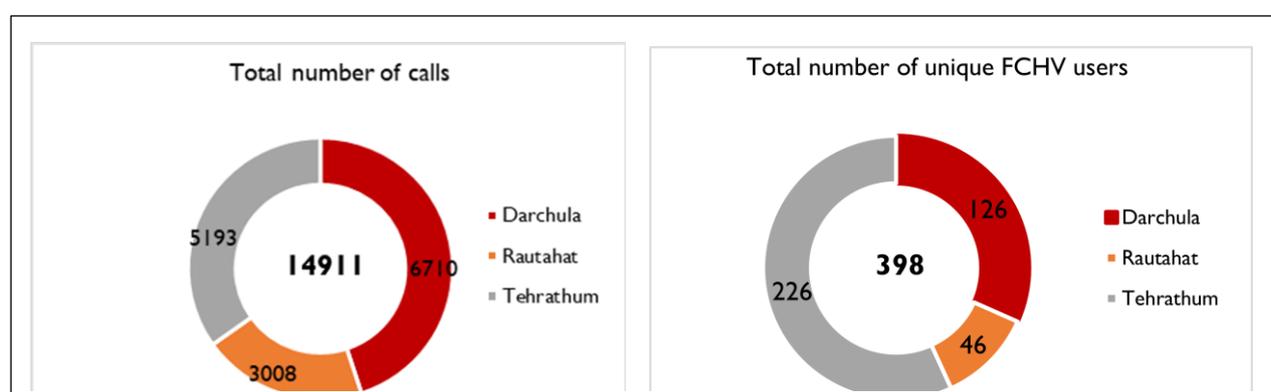


Figure 5: Total number of calls and unique FCHVs users recorded in IVR data across three districts

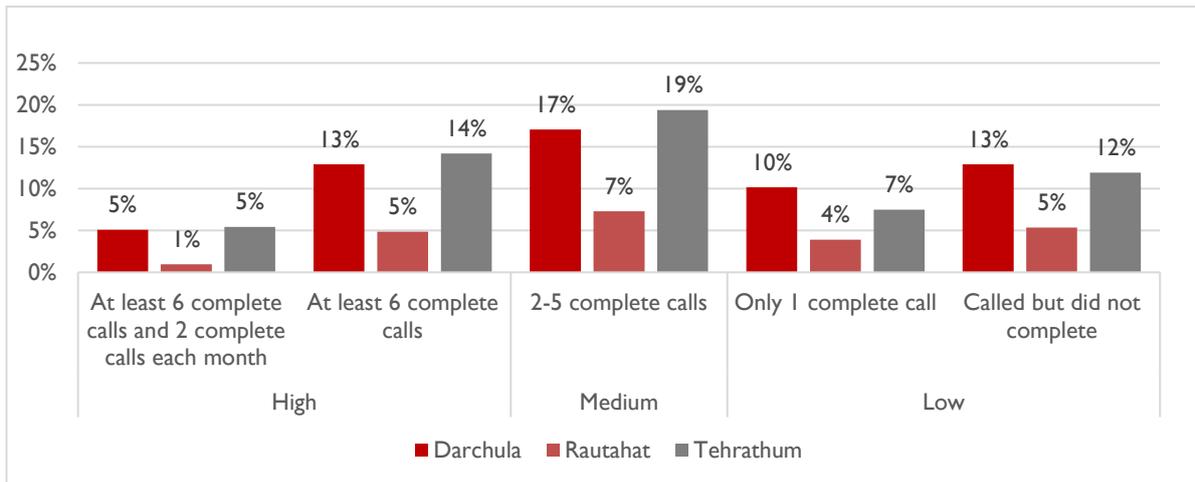


Figure 6: Call frequency of FCHVs over three months as a percentage of total trained in each district

### Use of Mobile Chautari: Ideal conditions

In an ideal HMG meeting the FCHV will have utilised her Mobile Chautari training to plan and prepare for the meeting, having chosen the topic and refreshed her memory of the issue. She will utilise and demonstrate good facilitation skills with structured open and probing questions. The speaker will be charged, and mobile reception will allow the audio content to be played to participants. The FCHV will have and will refer to the prompt cards to promote good discussion and conclude the meeting. If this is not possible, the concept has been designed in such a way to support discussion even if the FCHV is not able to use the audio or the cards. At its basic level the FCHV can use the simple Ke? – Kina? – Kasari? question structure to promote discussion on a health topic even without the audio or prompt cards. If the audio isn't available, perhaps due to mobile reception issues or the speaker is not charged, then she can use the prompt cards to guide the Ke? – Kina? Kasari? questions and the summary "Jani Rakhnu" section to help summarise and conclude the discussions. 'Ke? – Kina? – Kasari?', or 'What? – Why? – How?' in English, is the central facilitation model that cuts across the three pillars of Mobile Chautari, (the training, audio and prompt cards). It is a simple three stage process of asking questions to encourage community members to participate in the discussion of health issues. During the training FCHVs are taught what the model is, why it is important to encourage positive behaviour change and how to use it in community interactions, particularly HMG meetings. The theory behind the model is that the Ke, or what, question establishes rapport with the group, checks existing levels of knowledge and acts as the introduction to bring everyone into the discussion and up to a base level of understanding. The kina, or why, question then moves discussion into why this topic is important, addressing the motivation for making healthier choices. The final Kasari, or how, question then moves discussion on to the process of change.

There was high take up of the Mobile Chautari service by FCHVs, indicating an interest in using this tool

FCHVs were trained in how to use the Mobile Chautari tool through a two-day training session which took place in September 2019. FCHVs that had made use of Mobile Chautari following that training were better able to recall the content of the training and what they learned from it. They reported they learned the specifics of how to use Mobile Chautari (connecting the speaker, dialling numbers), they practiced using Mobile Chautari and learned how to communicate effectively in the HMG meetings.

FCHVs who had used Mobile Chautari less struggled in interviews to recall the content of the training days.<sup>11</sup>

*“Mobile Chautari is a program for the Female Community Health volunteers. It is a program made for the convenience in your daily work. It is developed to assist in the communication with beneficiaries.”* FCHV, low user, Tehrathum

*“A speaker has been provided to play mobile Chautari audio. There is a wire used to connect the speaker to mobile and then we press the numbers from 11 to 23 and then it plays through the speaker.”* FCHV, high user, Rautahat

In Tehrathum, the endline survey showed that take up of Mobile Chautari was high. Eighty-seven per cent (292) of 334 total FCHVs in Tehrathum reported using the Mobile Chautari audio in any way since Kartik (the major festival month which took place after the initial training of the Mobile Chautari tool). Of the 292 FCHVs who had used the Mobile Chautari audio, 290 had used it in at least 1 HMG meeting, 60 per cent (175) reporting that they had used it in at least 3 meetings.<sup>12</sup> Among all 334 FCHVs in Tehrathum, 63 per cent (210) said they had used the Mobile Chautari tool in their last HMG meeting. (It was also clear that Mobile Chautari had replaced use of other types of communication materials (FCHV flip chart or posters) used in HMGs, which FCHVs had complained about in the formative research as sometimes being bulky, difficult to carry and community members being tired of seeing them.

In Tehrathum, when all 334 FCHVs who participated at both baseline and endline were asked about communication materials they had used in their last meeting, use of flipcharts decreased from 78 per cent to 32 per cent across the intervention period, use of posters from 16 per cent to 7 per cent (see Appendix table 3 for data and tests of statistical significance).

The use of Mobile Chautari was also confirmed through interviews with beneficiaries and health post staff, who reported that they had participated in several meetings where Mobile Chautari was used by the FCHVs.

*“When we talk about this in our meeting, they said that each of them has used Mobile Chautari at least twice or thrice. Even when women come here for check-up of their babies, we ask them where and how they learned about bringing their babies for check-up, they answer that they learned from HMG meeting through Mobile Chautari.”*- Health post staff, Tehrathum

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<sup>11</sup> Training feedback forms were also collected by the agency which ran the two-day Mobile Chautari training on the final day of the training session. These forms found that FCHVs were very curious and receptive to the training and feedback on the Mobile Chautari tool was very positive.

<sup>12</sup> Of the 292 FCHVs who reported using Mobile Chautari audio, only 2 said they had not used it in any HMG meetings. A further 198 FCHVs reported using the Mobile Chautari audio in only some of the meetings they conducted during this time.

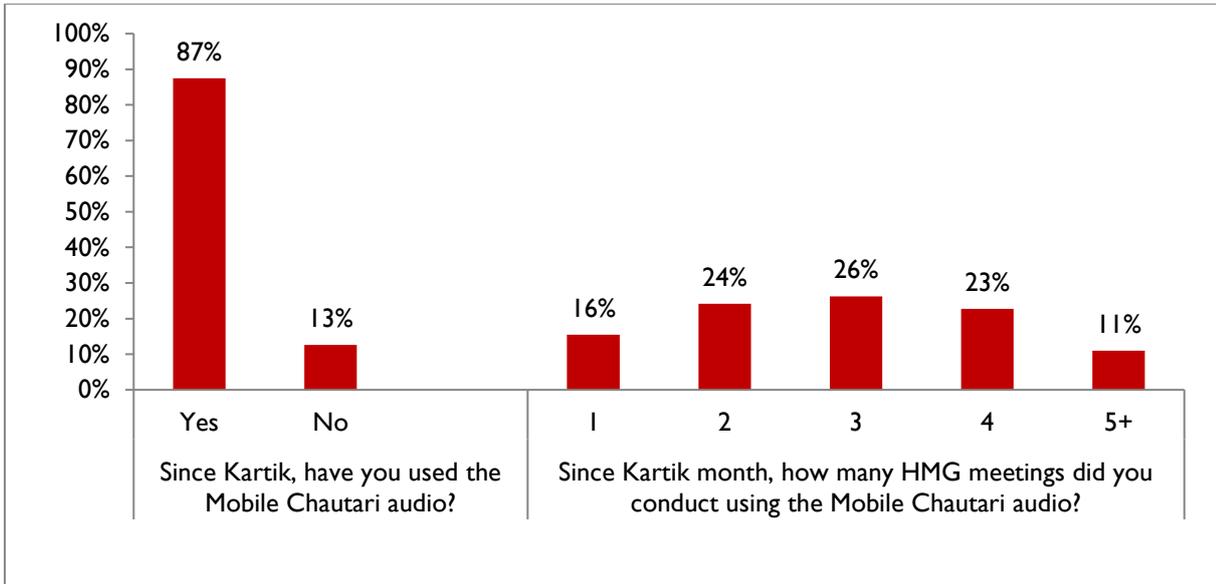


Figure 7: FCHVs self-reported their use of the Mobile Chautari tool in Tehrathum

FCHVs reported using Mobile Chautari audio content outside of HMGs, indicating an inquisitiveness to use Mobile Chautari in different areas of their work

FCHVs in the survey in Tehrathum were asked where they had used Mobile Chautari (as explained to them in the training the primary purpose was for Mobile Chautari to be used in HMGs but they were encouraged to use it in any other interactions with community members where relevant). Over a third (39%) of the 334 FCHVs in Tehrathum reported using Mobile Chautari audio outside the HMG meetings. For many, this is in addition to using the tool during meetings; 128 of these 130 FCHVs said they had used the audio both in and out of HMG meetings. Of those using Mobile Chautari outside of HMGs, 65 per cent reported listening to the content on their own for their own learning, 32 per cent had listened with family and friends and 22 per cent played the content on household visits. (see figure 8)

FCHVs had mixed views as to whether it was useful to play Mobile Chautari outside of the HMG environment. Some felt that the HMG setting was better (as more people could listen to the content and Mobile Chautari purpose was to prompt discussion in a wider group setting). However, some felt that Mobile Chautari was also effective in a one to one setting as it could be shared with community members who missed the HMG and it could allow for more focused discussion, without the distractions, which take place in a group setting.

*“Such an environment is only there in mother’s group meetings because it is a place where we go to talk and discuss about things. The messages that are being provided in Mobile Chautari are the issues we work for in order to deliver them in the meetings. Other places do not have such an atmosphere.” – FCHV, medium user Darchula*

*“Yes, I had played it for a postpartum woman. She was unable to attend the meeting because she had flu or cold and cough. So, I went there and played an audio about seasonal flu.” – FCHV, medium user, Tehrathum*

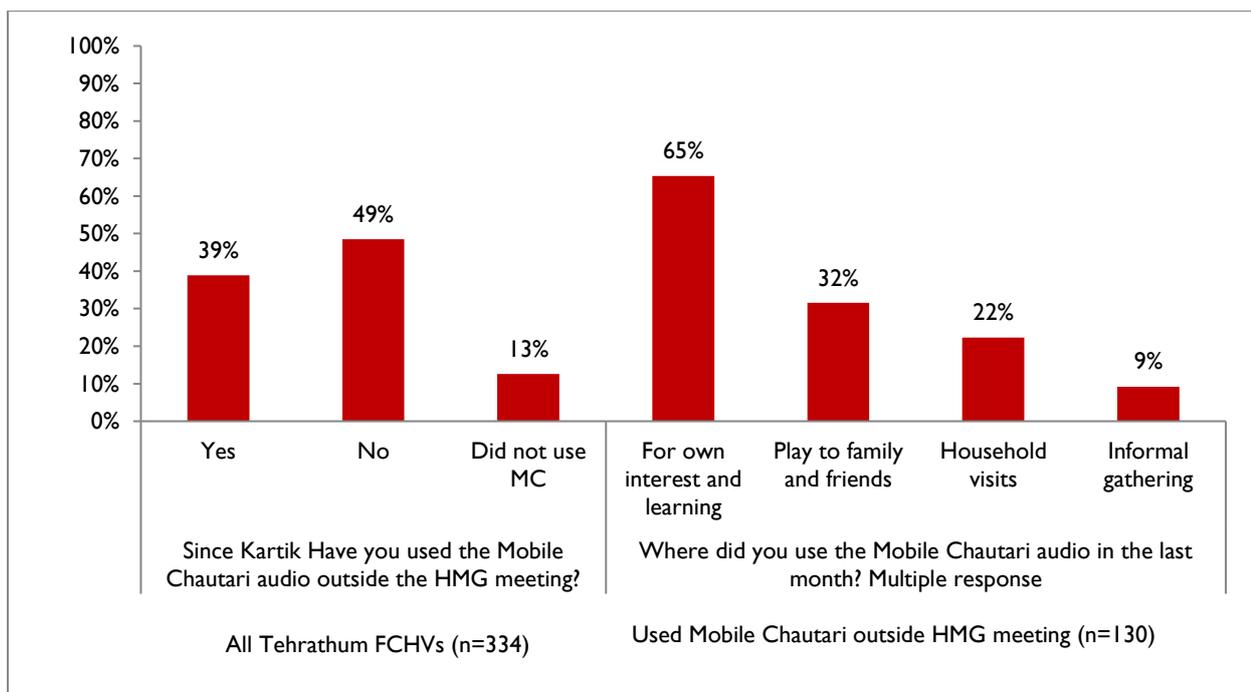


Figure 8: Use of Mobile Chautari outside HMG meetings

**FCHVs also reported high rates of use of the printed prompt cards**

From the survey in Tehrathum, it was clear that FCHVs had used the accompanying printed prompt cards alongside the audio content - 71 per cent reported using the printed prompt cards. A smaller proportion (30%) of FCHVs reported using the printed prompt cards outside of the HMGs, in comparison to the audio content (39%). However, the most cited reason for using the prompt cards outside of the HMGs, was the same reason they had listened to the audio content i.e. to read for their own interest and learning (60%).

*“The printed prompt card that they have given us contains information about pregnant women, postpartum women, flu, measles and rubella, vaccination and about polio. It has also information about new-born baby. We look at the card to choose the topic to play in the discussion”- FCHV, high user, Rautahat*

FCHVs felt that the prompt cards were convenient to carry however there were also some FCHVs that could not read the content of the cards effectively, owing to their age and eyesight issues or owing to literacy issues. FCHVs in Rautahat and Darchula districts also reported that they felt the images on the card were too small to show to beneficiaries during the HMG meetings, indicating they had misunderstood the purpose of the cards as envisioned in the project strategy.

Table 5: Use of printed prompt card in the HMG meetings

Use of printed prompt card in the HMG meeting		
Since Kartik, have you used the printed prompt card? (n=334)	Yes	71%
	No	29%
How frequently did you use them? (n=236)	Always	36%
	Often	42%
	Occasionally	22%
	Never	1%
	Yes	30%

Use of printed prompt card outside the HMG meeting (n=238) <sup>13</sup>	No	70%
Where did you use the printed prompt card outside the HMG? Multiple response (n=72)	For own for interest and learning	60%
	Household visits	25%
	Read to family and friends	25%
	Informal gathering	8%

FCHVs also reported challenges in using Mobile Chautari which affected uptake

FCHVs reported key challenges in using Mobile Chautari. For example, in the more hilly and mountainous districts of Tehrathum and Darchula telephone network issues and frequent power cuts were reported as making it difficult for FCHVs to use it regularly during HMG meetings. A few FCHVs still struggled with the aspects of how to use Mobile Chautari – such as how to connect the speaker and charge the speaker to enable it to run effectively in the HMG.

*“I think the speaker is not properly working because the sound of speaker is not so good therefore, I faced the challenges using it. Sometimes, when the power cuts off, and we cannot charge it, that is also another problem. Other than that, there is no problem for me.”- FCHV, high user, Tehrathum*

There also appeared to be some confusion from some FCHVs about whether Mobile Chautari was free and also a lack of understanding that the content could be played from both NTC and Ncell SIM cards and any other number which may not be registered to the service. Though FCHVs were encouraged to use Mobile Chautari beyond HMGs, there were incidents where they felt it could only be used in HMGs. FCHVs in Rautahat especially of older age reported issues with being able to use Mobile Chautari, where mobile literacy and mobile phone access was lower within FCHVs. This was also reported by health staff in Rautahat who had noticed issues with that FCHVs in their district struggled using Mobile Chautari, that they were more reliant on further support from health post staff and that they would need more time and support to use Mobile Chautari effectively in the future.

The qualitative research also revealed that some FCHVs across all intervention districts had been unable to use it as regularly due to lack of availability of speakers to connect their phones to for use in the HMG.<sup>14</sup>

*“Most of the time health facility staff used to keep Mobile Chautari (speaker) in Health Post. In our ward 1, 2, and 3, one of us had our home very far. We were five of us and one of them could not manage time to go and collect it from Health Post., So, I have played it only for one time. I wanted to keep it to myself, but the sister asked for it and I have returned it to the Health Post.” - FCHV, low user, Tehrathum*

*“Some of the FCHVs have their phones damaged and some of them even don’t have their own phones. Even It is very difficult to note down the numbers. There are some old FCHVs in the group and they easily forget the things we taught them.”- Health post staff, Rautahat*

**3.1.2 How did FCHVs engage with the content of Mobile Chautari?**

It was clear from the survey data collected in Tehrathum and the qualitative data that there were key production aspects of Mobile Chautari which drove engagement. The audio includes two consistent characters across the thirteen health issues and a short two-part drama with a range of different characters.

<sup>13</sup> Of 236 who used the printed prompt card, 1% FCHVs further said that they have never use the printed prompt card.

<sup>14</sup> Three speakers were provided to each health post for sharing across the FCHVs, it was up to health post staff to decide how to distribute speakers effectively. In some health posts FCHVs had to travel to the health post to collect the speaker, in others the health posts gave the speakers to a group of 2-3 FCHVs who could travel to each other to share it.

### What does the Mobile Chautari audio content feature?

Dr Asha<sup>15</sup>, is the central character across the audio, a female doctor was chosen because we learnt from the formative research that doctors are highly trusted for health information and women in communities relate better to a female character for reproductive and child health topics.

Jeevan is a male character used as a narrator to introduce and close each call to Mobile Chautari.

The dramas have been scripted with a variety of characters for communities to relate to and learn from. For each of the health issues the situations and storylines have been carefully scripted to address the key barriers and motivations for positive behaviour change identified through the research and scoping phase of the project.

The audio is concluded with a folk song and finally closed by the male narrator- Jeevan.

*Engaging content and role model:* Amongst FCHVs (n=292) in Tehrathum who had used Mobile Chautari, the character – “Dr Asha” was found to be most strongly and consistently liked, followed by the song and drama. Similar responses were observed by FCHVs when asked to assess perceived responses among beneficiaries.

**Table 6: FCHVs engaged with different content of Mobile Chautari audio**

FCHVs who used Mobile Chautari audio (n=292)	Different content of Mobile Chautari	Unsure	Not at all	A little	A lot
<b>To what extent did you [FCHV] like the following aspects of Mobile Chautari audio?</b>	Dr. Asha	0%	0%	21%	78%
	Drama	1%	2%	28%	68%
	Jeevan	0%	3%	49%	47%
	Song	2%	2%	26%	70%
<b>To what extent do you [FCHV] think beneficiaries liked the following aspects of Mobile Chautari audio?</b>	Dr. Asha	0%	1%	25%	74%
	Drama	1%	3%	29%	66%
	Jeevan	1%	6%	55%	37%
	Song	1%	2%	28%	68%

FCHVs also reported that the different aspects of the Mobile Chautari audio was effective for different purposes. They felt that the drama and the song was the most effective way to communicate key information to clients, as they felt clients enjoyed the folk songs in the local dialect. FCHVs also noted that people felt comfortable sharing their feelings and experiences following the drama. They also reported that they felt Dr Asha was an empowering female character and thought her presence in the content was effective because women in their communities can better connect to a female role model. It was more difficult to find high users of Mobile Chautari in Rautahat, though they also highlighted that Dr Asha was also one of their favoured elements of the content, they struggled to articulate what else they liked about Mobile Chautari.

*“I like the things that Asha sister talks about. She talks about post-partum danger signs, preparation for delivery including arrangement of money management and savings and the risk of new-born diseases.” - FCHV, high user, Rautahat*

<sup>15</sup> The name Asha means hope in English which fits with the aspirations of health improvement whilst it is also commonly understood across Nepal and so is used across the three languages.

**Suitable length of content:** The FCHVs who had used the audio were further probed on length of audio and 82 per cent reported that they felt the length of the audio content was suitable, only 17 per cent felt it was too short.

Similarly, from qualitative interviews, some of FCHVs and beneficiaries stated that the length of the content (drama and song) was short and suggested they would like these to be longer. Some also emphasized keeping character of Dr Asha throughout the audio would also be effective.

*“If possible, the dramas should be a little clearer and longer since we learn more from conversation like this. And as I said before, songs also could be a little longer.”* - FCHV, high user, Tehrathum

*“Well talking from my experience, it [audio] is a bit short. If those things were longer, then we would be able to understand even better. The things Dr Asha says is a bit too short.”* - FCHV, medium user, Darchula

**Useful technology:** FCHVs appreciated having the Mobile Chautari speaker as they felt this device was effective in playing the content in HMGs and grabbing the attention of clients quickly as a result.

**Content in a relevant language:** Mobile Chautari was translated into the three local dialects in the three districts it was rolled out in and this was also recognised as motivating FCHVs to use Mobile Chautari.

**Relevance:** FCHVs reported that they recognised the relevance of the Mobile Chautari content to their own work as it was clearly focused on key topics around maternal and child health which they are responsible for communicating with communities on. A total of 13 different health issues are discussed in the Mobile Chautari audio and in printed prompt card and amongst FCHVs who used Mobile Chautari audio or printed prompt cards, there were key areas of content they felt were most useful. The most useful issues covered were pregnancy danger signs (37%), uterine prolapse (35%) and planning for pregnancy (26%), whereas immunization, post-partum family planning, exclusive breastfeeding, and growth monitoring were less useful.

**Table 7** Health issues from Mobile Chautari FCHVs found most useful

Most Useful Health issues/content from Mobile Chautari	FCHVs who used the audio or cards (n=301)
Pregnancy danger signs	37%
Uterine prolapse	35%
Pregnancy-planning	26%
Essential newborn care	20%
Post- partum danger signs	20%
Iron and folic acid	19%
Birth preparedness	17%
Seasonal influenza during pregnancy	12%
Maternal nutrition	11%
Complete immunization	7%
Post-partum family planning	5%
Immediate and exclusive breastfeeding	3%
Growth monitoring- keeping track of your baby's health	2%

Percentage total may exceed 100 due to multiple responses.

Qualitative data also found that FCHVs across the three districts highlighted the issues of uterine prolapse, family planning and pregnancy danger signs are more effective and helpful as those issues are more prominent in their society and new for some mothers.

*“The problem of uterine prolapse and pregnancy, labour, these have often been talked about in the meeting. Yes, because the people would know about that, and the fact that the pregnant woman should avoid carrying loads and doing extreme work to prevent the prolapse. It would be easier for them if they listen about this issue.” - FCHV, medium user, Darchula*

They also reported that issues around the intake of Iron Folic acid, neonatal care, and maternal nutrition are also useful to their learning and for discussion with beneficiaries.

*“It was easy, no one consumes the Iron Folic acid tablets, no one consumes it even now. I had no knowledge about the iron folic acid tablets while working as FCHV for 3 years. I did not consume it myself neither did I motivate the mother to continue the iron folic acid tablet consumption. After listening it in Mobile Chautari, we knew the right way for its consumption. I told them that I never consumed it and asked others as well and they also said that they had never consumed it as well. Now I understand it clearly.”- FCHV, high user, Tehrathum*

The IVR data also supports these reported trends – calls were mostly to the audio contents which focused on maternal nutrition, family planning and uterine prolapse.

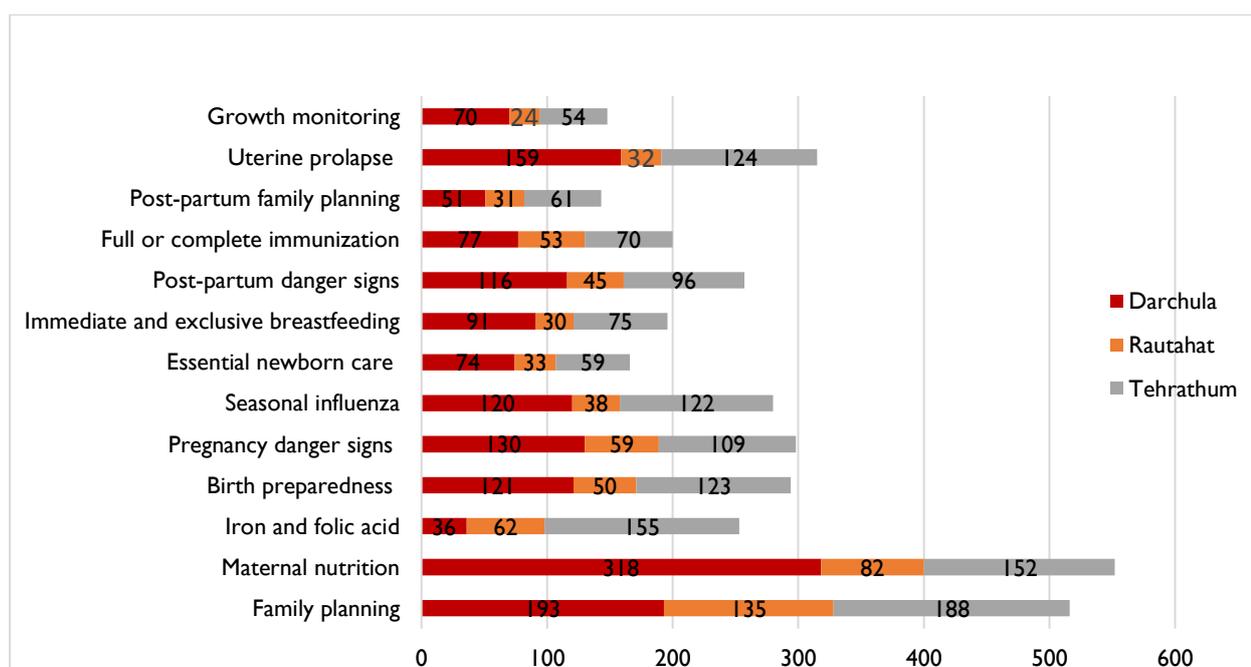


Figure 9: Number of complete calls by Health issue (data from IVR)

### 3.1.3 How did FCHVs feel Mobile Chautari influenced their knowledge of key health issue and communication skills?

*FCHVs felt that Mobile Chautari had supported them to recognise the value of communication aids and facilitating more effective discussion*

Across all three intervention districts, FCHVs felt that the use of Mobile Chautari had helped them learn about the value of effective communication aids and felt that this was a new and unique experience for them. They felt it helped communication with their beneficiaries and provided them with ways to make the HMG meetings effective. For many of them, the very experience of using a mobile phone and speaker and being trained in it was new learning for them.

Whilst it was difficult for FCHVs to talk about how their knowledge of how to communicate more effectively had changed, they were able to provide practical examples of how it had changed. For example, FCHVs discussed how the use of Mobile Chautari provided more structure to the HMGs and in Darchula, some FCHVs were able to cite the use of the specific communication model which Mobile Chautari provides – the **‘Ke, kina, Kasari’ model (translates as ‘What, Why and How’)**

*“The ways of closing meeting are changed- we used to close the meeting by telling them about what topics we discussed today, but now, after listening the Mobile Chautari content we discuss the topics of the contents and also discuss what we learned and what members of the mothers group learned and close the meeting.” - FCHV, medium user, Tehrathum*

They also felt that the use of Mobile Chautari had improved beneficiaries’ attentiveness when health topics were discussed. However, because it was such a new experience for FCHVs, across all three districts FCHVs felt they would benefit from more detailed training on effective communication skills. Though they had been through the two day Mobile Chautari training, they recommended that more detailed and top up training which focused on more effective facilitation skills, presentation style, how to approaching difficult members in the HMG and how to continue to use mobile phone effectively to communicate with their clients.

*FCHVs felt that Mobile Chautari enhanced their knowledge of key health issues such as uterine prolapse*

The health content covered in Mobile Chautari are all areas of maternal and child health which the FCHV should have received prior training on. As evident in the IVR data presented in the previous section, there were key health areas which received more calls and FCHVs did cite two key areas across all districts – uterine prolapse and family planning - as areas where Mobile Chautari had enhanced their knowledge of the issue. FCHVs felt that the content on uterine prolapse was new to them and the wider communities they serve. Other areas mentioned where FCHVs felt that they had learned more about the issues were across age of marriage, birth preparedness, benefits of exclusive breastfeeding, the importance of the chlorohexidine for neonatal care, post-partum danger signs and pregnancy care and nutrition.

*“The consumption of iron tablets should continue until 45 days post-delivery. And the colostrum milk feeding. We also inform the mothers about the family planning mentioned in the prompt card.”- FCHV, high user, Darchula*

FCHVs also reflected that their overall knowledge of key health issues may improve more if they use Mobile Chautari for a longer period. There were also indications that the exposure to Mobile Chautari had enhanced their understanding of health issues, which is very important for FCHV to then be able to communicate effectively with clients.

*“We can listen to and understand about various health issues. There is a huge difference if we compare our meetings today with those in past. Now we understand the reasons behind numerous problems in our body.”- Mother with child under 5 years, Darchula*

FCHVs with low exposure to Mobile Chautari were unable to provide examples of how their knowledge on health topics had improved. FCHVs in Rautahat felt that exposure to the content refreshed their learning on topics they had been trained in previously.

*“Had knowledge on health topics in mobile Chautari before also but Mobile Chautari helped to refresh the knowledge and be clearer on confusion.” – FCHV, high user, Rautahat*

**3.1.4 How did FCHVs feel Mobile Chautari influenced their confidence in communicating effectively?**

*FCHVs felt that Mobile Chautari had improved their confidence to talk about health issues and communicate with a more diverse set of clients*

In the formative research, young FCHVs reported it was difficult for them to communicate with their older clients, while older FCHVs also reported having difficulties to communicate with younger clients who were sometimes more educated than them, or they had better access to health information and facilities. In a series of statements to test how Mobile Chautari influenced FCHVs confidence in Tehrathum, 48 per cent felt that Mobile Chautari helps them communicate better with older women or mothers in law, and 45 per cent felt it helped them also communicate better with younger women (see below Table 5). Overall, nearly all (99%) of FCHVs felt that Mobile Chautari made their work more

effective, at the very basic level, for some this was about improving even confidence to talk at meetings:

*The knowledge has increased compared to before. Before I could not even speak. It was difficult for me even to give my introduction, I used to cover my face. But it is very easy nowadays.*” – FCHV, Medium user, Darchula

FCHVs also felt more confident in communicating with clients about health issues, this was because of the reference that Mobile Chautari plays. They reported it can remind them of what to discuss in the meeting and helps them to feel confident.

*There is a difference in my self-confidence. I might forget some things and might not understand other things, but this helps me to recall those and supports me due to which it has become very easy.*” - FCHV, medium user, Darchula

Health facility staff of intervention districts also emphasized positive change in confidence of FCHVs. According to them, Mobile Chautari is acting as trigger to make people listen to health content and tool for boosting confidence among FCHVs.

*“Before FCHVs were afraid to speak with the fear they would say something wrong. They now have the confidence to say what they know in HMG meeting in front of health workers and we support them when we attend meetings”*- Health facility staff, Darchula

**Table 8: How confident FCHVs are in performing their role and communicating with clients?**

How confident FCHVs are in performing their role and communicating with clients? <i>Out of FCHVs who had used the Mobile Chautari audio (n=292)</i>	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
<b>COMPREHENSION</b>					
Mobile Chautari audio helps my beneficiary to understand key health points more easily	0%	0%	0%	40%	60%
My beneficiaries find Mobile Chautari audio difficult to understand	16%	71%	3%	10%	1%
<b>COMMUNICATION</b>					
I find Mobile Chautari audio helps me better communicate with older women/MILs	0%	2%	1%	49%	48%
I find Mobile Chautari audio helps me better communicate with younger women	0%	0%	1%	54%	45%
I spend more time discussing health topics when using Mobile Chautari audio	0%	2%	3%	56%	39%
<b>EFFICACY</b>					
Mobile Chautari audio makes my work more effective	0%	0%	0%	44%	55%
I find the audio content more useful than the printed prompt cards	0%	5%	5%	43%	47%
I feel I have enough knowledge and experience that I do not need to use Mobile Chautari audio	0%	21%	9%	58%	12%
<b>BENEFICIARY RESPONSE</b>					
Since I started using Mobile Chautari audio in discussions, people are more respectful about the advice I give to them	0%	0%	2%	68%	29%
I feel that it is still difficult to convince the mother-in-laws on key health issues even if I use Mobile Chautari	5%	70%	6%	18%	1%

### 3.1.5 How did FCHVs feel Mobile Chautari changed the quality of their discussions and reach of their interactions?

#### Mobile Chautari provided a structure to HMGs which improved discussion

FCHVs felt that Mobile Chautari provided them with an effective way to organise the HMGs and ensure they stayed on track. For example, at a very basic level, the use of Mobile Chautari meant that FCHVs felt the conversations focused on health, rather than other topics (in the formative research it was found that these groups are often used to discuss savings issues). In Tehrathum, most of the FCHVs emphasized that after the introduction of Mobile Chautari, the priority has shifted to health issues compared to before when discussions on savings was the focus of the discussion and the main motivation for beneficiaries to attend. Survey data does not however, support this evidence of this change (see Appendix table 4), indicating that although some FCHVs reported in the qualitative research that they had noticed a change, this was not at a level it could be detected in the survey data for Tehrathum where baseline and endline measures covered what the content of the HMG was focusing on.

Mothers and mothers in law from Tehrathum also claimed that FCHVs mostly discussed the health issues rather than saving and credits and mostly discussion was held in health issues such as uterine prolapse and maternal nutrition.

*“Maybe it has increased more than before sister [Dr Asha]. I think the time is extended when we discuss it after listening to it and the dramas and we sit for a while after that too.” - FCHV, Medium user, Tehrathum*

Observation of the HMGs at the endline indicated that participants stayed throughout the meeting compared to before and FCHVs also felt that the use of tool helped them to more effectively start and end the meeting properly.

*“Earlier we could not conclude the discussion. People used to speak in different language and the discussions were long. But now with Mobile Chautari, everything is understandable.” - FCHV, high user, Tehrathum*

Though the survey data does not indicate a change in the duration of HMG meetings, there were indications from qualitative data (both from the perspective of FCHVs and beneficiaries) collected in Tehrathum that meetings were longer – owing to better engagement from beneficiaries.

*“Sometimes the meeting is finished within half an hour, sometimes it takes an hour if we discuss more. The moderator stands up and breaks the meeting at the end of it. The meetings are longer now because of Mobile Chautari.” – FCHV, medium user, Tehrathum*

*“Didi [sister] used to sit in the meeting for only 2-3 minutes but now she sits for about 1-2 hours. We have meeting from 1 PM to 3 PM. Sometimes it lasts for up to 4 also” – Mother of child under 5 years, Darchula*

Along with the beneficiaries, health facility staff also emphasized that Mobile Chautari has enabled to conduct discussions in HMG meeting in a more productive and succinct way.

*‘They might sometimes go off topic but with Mobile Chautari they have a proper guidance. They know how to ask questions, how to hold discussions and end it and there is not much out of content discussion. It is now time oriented and they are relaxed.’ - IDI with health facility staff, Darchula*

#### FCHVs felt that the reach and diversity of their HMGs had changed

FCHVs across three intervention districts also reported having more participation from diverse group of people in the meeting after using the Mobile Chautari tool. Previously, mothers in law and older family members did not allow their daughter in laws to attend the HMGs.

*“There used to be less participation in HMG meeting but now it is increasing. They come from far and want to listen to informative content on topics like uterine prolapse and family planning. They felt shy before but now they approach us first.” – FCHV, high user, Darchula*

*“Earlier it used to be only 8/10 of them but it has increased to 24/25 now. Most of them are pregnant mothers. They are 7 pregnant women in this tole (locality). They listen to it” - FCHV, high user, Darchula*

There were also reports from FCHVs from the qualitative data that FCHVs felt women were attending the HMGs more and that previously more men had attended when the focus was on savings. Survey data from Tehrathum however does not indicate that there were substantive shifts in the number of attendees or make up of meetings. There were a few groups with significant declines in attendance between baseline and endline in both districts but it is unclear the exact reasons for this (however the question asked pertained only to who attended the last HMG – (please see Appendix table 5).

*“There were a lot of male who used to come to meetings. Only 2-4 women used to come. The men used to tell the women not to go and say they will attend it instead. But now they tell women to attend the meetings because the FCHV plays Mobile Chautari that talks about a lot of women health-related issues which is more useful for them rather than for men.” - FCHV, medium user, Tehrathum*

#### FCHVs also felt that HMG participants were more attentive and engaged in coming to meetings

FCHVs felt that the introduction of Mobile Chautari had prompted participants to stay for more of the meeting and to express themselves better. Notably, FCHV who were highly engaged users across all three districts reported notable changes in participation, attentiveness, interest and willingness to attend HMG meetings among beneficiaries. Compared to before, communication, facilitation and overall schedule of meeting and its format had changed, and focus is on the audio content and sharing similar experiences related to it. FCHVs felt it has made their role convenient and equipped them with useful tool and the use of Mobile Chautari had meant people were more interested in what was being discussed.

*“Earlier they used to hurry home but not anymore. Now they ask how many times I will play Mobile Chautari and then only go to their houses.” – FCHV, high user, Darchula*

*“The people listen well. When we used to speak verbally the people did not listen well but when the audio is played through the mobile, through Mobile Chautari the people listen attentively when Asha didi [sister] speaks. They are happy.”- FCHV, high user, Rautahat*

#### **3.1.6 How did Mobile Chautari influence trust between FCHVs and beneficiaries their understanding of key health issues?**

#### FCHVs felt that Mobile Chautari helped to enhance the trust between themselves and the communities they serve

FCHVs felt that they already had the trust of their communities before the introduction of Mobile Chautari. They did feel however, that the use of the mHealth content helped her to gain better recognition of a reliable source of health information, because the information she imparted was being backed up by the audio content in the service and the voice of a doctor i.e. Dr Asha.

*“Yes, we used to believe her, but we believe her more now after we were made to listen to Mobile Chautari.” - FCHV, medium user, Tehrathum*

*“As they listen from the Mobile Chautari now they talk more. Earlier we had to say everything orally and they did not believe it as much. Now they trust us as everything is live from the Mobile Chautari through mobile phones. The trust is regained again, and they understand it as well.” – FCHV, medium user, Rautahat*

In the formative research, community members reported that they respected the FCHVs, but they often did not trust them in terms of their role as a health promoter. In the evaluation, FCHVs and HMG

beneficiaries both felt that they had trusted the FCHV but there was now an increased respect and recognition towards FCHV as a health promotor. Health facility staff also felt that the FCHVs use of the Mobile Chautari tool meant that community members trusted her more (compared to when she was just imparting information herself). Trust in the FCHVs health information remains an issue for some beneficiaries, however. Nineteen percent of FCHVs in Tehrathum felt that it was still difficult to convince mothers in law that their information was correct. Qualitative interviews during endline research, found that mothers in law were more difficult to impart health information to as they have entrenched attitudes and beliefs guided by superstition and they feel they have already lived a long life without practicing healthy behaviours anyway.

*“When the FCHV say it, people have doubts about it but when Mobile Chautari is saying the same thing, they get assured that it must be true when a tool is saying it.”* - Health facility staff, Tehrathum

#### Female community members reported some learnings from Mobile Chautari – notably around the common, yet taboo issue of uterine prolapse

The beneficiaries mentioned they gained knowledge after being exposed to content of Mobile Chautari. They reported being aware of various health related information mostly on family planning, uterine prolapse, importance of IFA and information on management of pregnancy related risks. They reported they were confident to implement those learnings in similar situations in future. As discussed above, uterine prolapse, family planning and IFA were all topic areas which received over 200 completed calls, according to the IVR data.

*“I will have appropriate birth intervals in between children. I will not rush from now on. I now know that I should not carry heavy loads as well.”* - Mother of child under 5 years, Rautahat

*“During pregnancy check-ups should be done during the fourth, sixth, eighth and ninth month. Iron and folic acid tablet should be taken. If taken in excess then symptoms like swelling of the stomach, diarrhoea occurs due to which preventive measures like not taking it with milk and taking it with water should be done”.* - Mother of child under 5 years, Rautahat

Uterine prolapse was commonly discussed by beneficiaries as a key area of learning. A common and taboo issue in Nepal, there is little communication material covering the issue. But women described key information they had gained around uterine prolapse from Mobile Chautari. For example, they cited preventive measures to avoid it which includes avoiding lifting heavy loads during the pregnancy and post-partum period, not giving birth too many children, avoiding tying waist bands tightly around the abdomen, not squatting after delivery and to go to the health post as soon as symptoms occur.

*“We usually tend not to disclose if our uterine is prolapsed. However, I liked the message of the program that we should share in case of any problem related to reproductive health. Concealing the problems and keeping it to oneself might only lead to complications.”* - IDI with mother of child under 5 years, Tehrathum

Beneficiaries also provided examples of knowledge they had gained around regular consumption of IFA tablets during pregnancy, postpartum care and effective new-born care. For example, the importance of provision of colostrum milk and applying the chlorhexidine soon after birth.

*“Mothers have gained the knowledge that they should be listening to the content I play in the HMG meeting. They will know from it about the consequences of their action and they can also share it to their neighbourhood.”* - Mother in law during FGD, Tehrathum

#### There were early indications of beneficiaries translating knowledge gained from Mobile Chautari into action

A key reported change taking place within beneficiaries' behaviour discussed by FCHVs, was increased discussion. FCHVs felt that the introduction of Mobile Chautari helped to increase discussion inside and outside HMGs as they felt beneficiaries were now sharing the information that they have gained from the HMG in their neighbourhood, and with families and friends. Beneficiaries provided examples of where they had shared recent information from HMGs with others. For example,

mothers shared the information on danger signs during the pregnancy, information on birth spacing and risks during the post-partum period.

*“I liked the information on consequences of lifting the water and heavy stuff. I did not have the information, so I used to lift before. Now I am aware and try to apply the learning in my own life and also share with my mother in law.” - Pregnant woman, Rautahat*

FCHVs reported they are noticing changes in the behaviour of the young mother and mothers-in-law, like mothers in law used to insist on daughters in law carry heavy weights during pregnancy and postpartum period but now they are aware of consequences and young mothers tend to emphasize on getting enough rest during pregnancy.

There were indications from both FCHVs and beneficiaries that they had taken some actions around healthier behaviour recently such as use of regular IFA, taking the necessary steps for preparing for a baby’s birth such as saving money and going for ANC. These changes were not, however, directly attributed to Mobile Chautari.

*“Pregnant woman did not take iron folic acid tablets before because they said that it would cause difficulty in childbirth if the child is very big. There is no misconception now. Now they have started taking calcium too.” - FCHV, medium user, Tehrathum*

*“I have implemented learnings such as focusing on diet during pregnancy and eating green vegetables, beans, eggs and meat products. I learnt that baby should be fed with breast milk till he reaches 6 months and should give additional food only after 6 months.” - Pregnant woman, Darchula*

## **3.2 WHAT IMPACT HAS BEEN DETECTED ON KEY OUTCOMES OF COMMUNICATION SKILLS, HEALTH KNOWLEDGE AND CONFIDENCE WHEN COMPARING INTERVENTION AND COMPARISON DISTRICTS?**

This section examines final key outcomes for FCHVs within the Theory of Change of health knowledge, communication skills and confidence between the intervention (Tehrathum) and comparison (Khotang) district. This section firstly looks at the profile of FCHVs across these two districts i.e. their socio-demographic profile, training they received since September 2019, and their access to mobile phones.

### **3.2.1 Demographic information and training undertaken by FCHVs during the intervention period**

The demographic information of FCHVs was analysed from same 658 baseline FCHVs who took part of endline, with a near equal number across both the intervention and comparison districts.<sup>16</sup> However, the proportion of Tehrathum FCHVs living in rural municipalities is higher, 68 per cent compared to 61 per cent in Khotang. Across both areas, the majority are younger and educated. Almost three quarters (74%) of FCHVs were under 50 years of age, there was no significant difference in the age distribution between the comparison and intervention groups. In contrast, there was a significant difference between the two districts in education level, with more FCHVs in Tehrathum having completed secondary school and fewer reporting no formal education than in Khotang. In terms of length of service, a greater proportion of FCHVs in Tehrathum have 30+ years of experience and fewer reported 10-19 years.

FCHVs across both districts were asked if they had received any training in the past five months (the intervention period). Only 52% of FCHVs in Tehrathum recalled the Mobile Chautari training without prompting, a likely result of the month-long festival season that took place immediately following the

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<sup>16</sup> Socio-demographic data and other key characteristics of FCHVs were only collected at the baseline survey, given that these characteristics were unlikely to change over the course of a short intervention period.

two-day training course (a limitation recognised in Section 2.4). During data collection for the endline research, a government-led training course was rolled out to all FCHVs across both districts, covering Measles and Rubella, and Immunisation. Although the topics are believed to have had little or no overlap with the subject of the Mobile Chautari intervention, 92% of FCHVs in Khotang reported being the recipient of training, nearly as high as the 97% in Tehrathum (please see Appendix table 6).

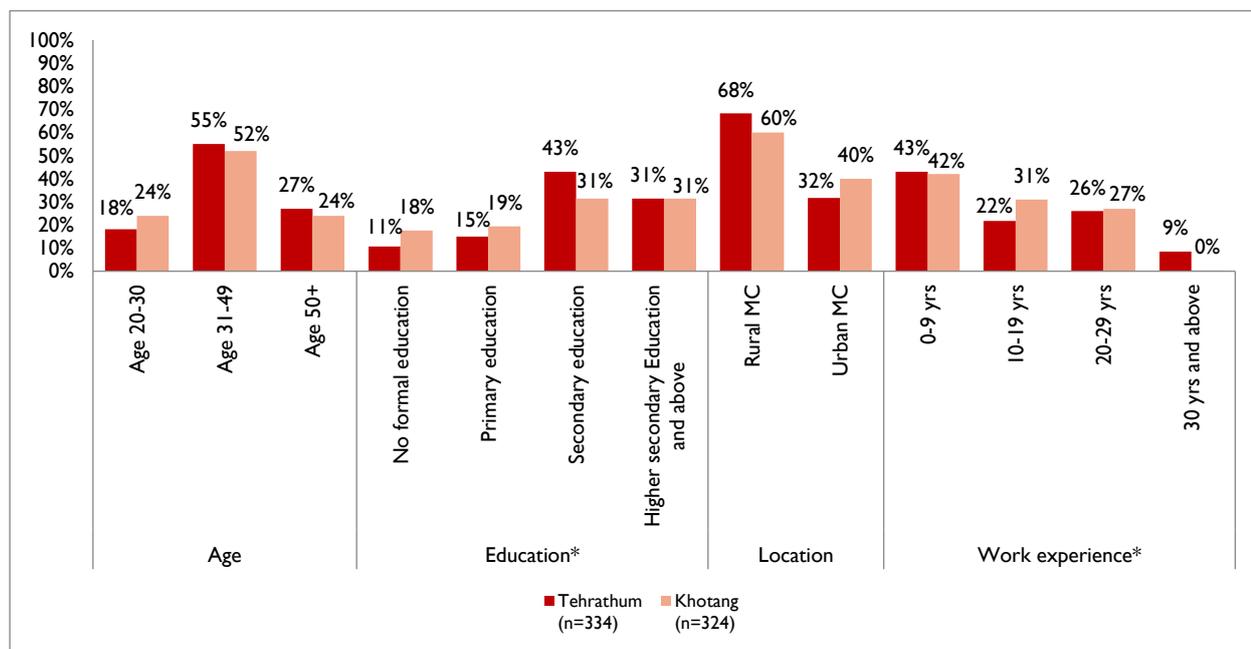


Figure 10: Demographic profile of FCHVs in Tehrathum and Khotang

Base: All survey respondents completing both baseline and endline (Total n=658), data collected at baseline.

\*Some differences are statistically significant with Pearson Chi-square value <0.05

### 3.2.2 FCHVs have regular access to a mobile phone

Mobile phone access is a prerequisite for use of the Mobile Chautari tool, therefore the data on mobile phone access was only administered during the baseline survey to assess mobile coverage and access. From the baseline survey, it was found that over 90 per cent of FCHVs in both districts reported having their own mobile phone. Out of the total interviewed FCHVs, 92 per cent in Tehrathum and 86 per cent in Khotang mentioned having ‘true access’, defined as access to a working mobile phone for more than 5 hours in a day. In addition, compared to older and less educated counterparts.

### 3.2.3 Detecting district level differences in key outcomes between intervention and comparison

The Difference in Difference method was designed to measure the change in levels of knowledge around health, communication skills, and shifts in levels of confidence in managing HMG meetings (Appendix 7).

FCHVs’ health knowledge was assessed through fifteen different questions on nine separate topics related to maternal and child health. These measures were identical at baseline and endline. The health module contained a mix of multiple choice and open-ended questions. Responses categorized as “correct” were summed to provide a total health score. Two methods of determining “correct” response were considered during analysis:

- 1) Factually accurate response against GoN and/or WHO recommendations, irrespective of whether it was covered by the Mobile Chautari content.
- 2) Factually accurate response but counting only those items that were covered by the Mobile Chautari content

Both of these methods were calculated during analysis, with the latter presented in this section, as this has the clearest link to the intervention<sup>17</sup>. (The scores as determined by the first method can be found in Appendix 8.) In considering the two approaches, it should be noted that use of the second method places an upper limit on the number of responses that could be considered correct, while the first method could have a virtually infinite number of accurate answers. In practice, this means that using the first method, the highest number of correct responses provided by FCHVs at endline for the health issues content was 85, while the highest number using the second method was 57.

Communication skills were assessed in much the same way using nine separate topics related to facilitation of an HMG and correct scores summed to provide a total communication score.<sup>18</sup>

FCHV's were also asked to rate their confidence, skills and resources to deliver their role, with a focus on facilitating HMG meetings, using fourteen separate topics. A five-point Likert Scale was coded so that a higher score equates to a more confident response and a lower score represents lower confidence. The items have been summed to provide a total confidence score.

For each of these three modules, the total baseline (pre) scores were subtracted from the endline (post) scores within each district individually. Finally, the pre vs. post scores in each district were compared to give an overall District Difference Score.

During analysis of the wider results, it was detected that 13 per cent of the FCHV sample in Tehrathum had not engaged with the Mobile Chautari audio at all during the period of the trial, most likely due to the timing of the rollout preceding the Kartik festival month, which suspended opportunities for practical use of Mobile Chautari. Therefore, the Difference in Difference analysis was conducted at multiple levels, beginning with a version using the total samples in both Khotang and Tehrathum, and a subsequent version filtering the Tehrathum findings to the 87 per cent who reported using the Mobile Chautari service. The former total-level view can be found in Appendix 8 (based on all factually accurate responses). For the purposes of the following discussion, the second, filtered, level of analysis is considered, in order to provide a clean comparison of Mobile Chautari users against the comparison district, and taking into account correct responses as contained in the Mobile Chautari tool (Table 6 below). However, it should be noted that the differences between the two approaches are quite small and the direction of findings remains the same.

The results below show an overall increase for both health knowledge and communication skills and self-assessed confidence scores in Tehrathum. The gains were found to be modest, but in line with expectations when taking into account short period t of the pilot intervention. However, an unexpected result was the comparatively greater increase in all measures in the comparison district, Khotang. The result of these shifts is shown below, with an overall deficit for Tehrathum when comparing the improvements in the intervention district to the advances in the comparison area, i.e. the Difference in Difference approach. The reason for Khotang's gains has been subject to extensive investigation, (please see discussion in "Investigating DiD Results" box below).

Therefore, the results below show that:

- For **Health Knowledge Scores**, Tehrathum made gains of 1.5 points compared with 3.1 in Khotang, resulting in a -1.5 deficit for Tehrathum vs. Khotang.
- For **Communications Knowledge Scores**, Tehrathum made gains of 4.7 points compared with 6.0 in Khotang, resulting in a -1.3 deficit for Tehrathum vs. Khotang.

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<sup>17</sup> In this version, only fourteen of the fifteen questions in the Health module were covered in the Mobile Chautari content, therefore one question is excluded from this version of the analysis.

<sup>18</sup> The nine topics on communication align with the Mobile Chautari content and were developed to respond to the formative research and FCHV user testing during the design phase.

- For **Confidence Scores**, Tehrathum made gains of 0.5 points compared with 2.8 in Khotang, resulting in a -1.9 deficit for Tehrathum vs. Khotang.

Confidence intervals are provided and show that a) with the exception of the Tehrathum Confidence Scores, total scores have improved significantly across both districts and b) the comparative results are significantly different on the Confidence Scores.

Overall, these results suggest that there has been some positive impact on FCHVs' knowledge in Tehrathum, albeit to a lesser degree than might be expected from a full rollout and a longer measurement period. While the confidence scores have seen negligible change, this may be attributed to a variety of factors, which could include initial uncertainty arising from a change to working practices, a lack of time for FCHVs to embed Mobile Chautari in their repertoire, or an unintended research effect. It is also necessary to complement the core Difference in Difference findings with behavioural data from the IVR monitoring, as well as the qualitative research and observation work, to build an overall picture of the findings, as outlined above.

**Table 9: Difference in Difference Analysis among Total Khotang FCHVs vs. Tehrathum FCHVs who used Mobile Chautari, Health Scores Correct According to Mobile Chautari Content**

Khotang (n=324) vs. Mobile Chautari users in Tehrathum (n=239)						
Health Knowledge Score	Sept 2019	Feb 2020	Difference (Sept-Feb)	Proportional % change	Lower Confidence Interval	Upper Confidence Interval
<b>Khotang (comparison)</b>	24.0	27.1	<b>3.1</b>	13%	1.91	4.24
<b>Tehrathum (intervention)</b>	23.5	25.0	<b>1.5</b>	7%	0.58	2.46
<b>District difference</b>	<b>-0.5</b>	<b>-2.1</b>	<b>-1.5</b>			
<b>Communication skills Score</b>						
<b>Khotang (comparison)</b>	10.7	16.7	<b>6.0</b>	56%	5.13	6.79
<b>Tehrathum (intervention)</b>	10.1	14.8	<b>4.7</b>	47%	3.90	5.39
<b>District difference</b>	<b>-0.6</b>	<b>-1.9</b>	<b>-1.3</b>			
<b>Confidence Score</b>						
<b>Khotang (comparison)</b>	54.6	57.4	<b>2.8</b>	5%	2.22	3.32
<b>Tehrathum (intervention)</b>	56.8	57.3	<b>0.5</b>	1%	-0.39	1.42
<b>District difference</b>	<b>1.8</b>	<b>-0.1</b>	<b>-1.9</b>			

### **Investigating DID results**

Despite the positive direction of change in Tehrathum, the Difference in Difference analysis takes into account any changes observed in the comparison district, thereby resulting here in negative 'district difference' scores. This method assumes that a comparison district will provide a benchmark of what might be expected in the absence of the intervention, therefore the significant change in Khotang warrants consideration. A number of possibilities are discussed below.

#### **Other initiative(s) or change event(s) in Khotang**

A government-led training scheme focusing on the topics of measles, rubella and immunisation was rolled out across both districts during the endline data collection. These subjects are not thought to have had much or any overlap with the topics addressed by Mobile Chautari. Furthermore, FCHVs in both districts were targeted for this training, suggesting that neither group should have benefited more than the other. While some other unknown change event cannot be ruled out, no evidence has been found that any initiatives targeting FCHVs in Khotang had been deployed during this period.

### **Imperfect conditions**

Please see section 2.7 ('Limitations of the Study') for a discussion of possible confounding effects related to the short intervention period, the timing of the training, and constrained resources.

### **Survey health impacts**

Investigations into possible survey impacts have been underway. However, to date, there has been no evidence found of issues such as respondent fatigue, flaws with the research instrument, or sample bias which might have impacted the results.

### **Enumerator effects**

While data collection tools appear to have been appropriately designed, and any misconduct on the part of the fieldwork organisation ruled out, there are signs that unintended differences in the application of the data collection tool by individual enumerators may have been a contributing factor. An investigation into response patterns suggests a degree of clustering of high- and low-scoring FCHVs among different members of the interviewing team and raises the possibility that the extent of question probing may have been subject to individual differences. With a research approach that relies on summing of correct or positive scores to determine impact, small differences in probing techniques, coupled with field team composition variations<sup>19</sup>, can lead to effects on the results. One enumerator from Khotang, whose interviews were uniformly clustered towards the high-scoring end of the range, was pinpointed as a particular outlier. For the purposes of investigation only, a third Difference in Difference analysis was conducted, looking at Mobile Chautari users in Tehrathum compared with the comparison sample in Khotang but excluding the interviews carried out by this enumerator. To understand the role of enumerator effect, these illustrative results are shown below (based on correct response for health knowledge according to Mobile Chautari content):

- For **Health Knowledge Scores**, Tehrathum made gains of 1.5 points compared with 0.4 in Khotang, resulting in a 1.1 increase for Tehrathum vs. Khotang.
- For **Communications Knowledge Scores**, Tehrathum made gains of 4.7 points compared with 5.3 in Khotang, resulting in a -0.6 deficit for Tehrathum vs. Khotang.
- For **Confidence Scores**, Tehrathum made gains of 0.5 points compared with 2.7 in Khotang, resulting in a -1.7 deficit for Tehrathum vs. Khotang.

As this analysis shows, differences in interviewing technique may have had a significant impact on scores, particularly in terms of knowledge metrics. It is important to note, however, that the patterns and variations are complex, making it difficult to attribute effects conclusively.

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<sup>19</sup> These included differences in field team size and a different proportion of enumerators who worked on both baseline and endline data collection by district. Please refer to 'Additional detail on methodology' in Appendix 2.

## 4 CONCLUSIONS AND RECOMMENDATIONS

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### 4.1 CONCLUSIONS

For Mobile Chautari to have any meaningful effect on FCHVs and beneficiaries and for the theory of change to hold up, FCHVs must use the tool. The evaluation provides evidence that there is FCHV enthusiasm and engagement for the Mobile Chautari tool without any incentives (other than government transport allowance for the two days of training) and with limited integration into the health supervision system. In line with project expectations, there are conditions which influence take up of a mHealth service by FCHVs, which include mobile access, reliable mobile reception and mobile literacy. It should be noted however, that there were some issues with the take up of Mobile Chautari beyond mobile access such as understanding it was a free service, understanding that it could be used from unregistered numbers or having access to a speaker from the health post. This indicates that there are still technical or logistical adjustments to be made to the service that will improve uptake.

Once FCHVs are using the tool the first level of the Theory of Change hypothesised that Mobile Chautari would improve the confidence, health knowledge and communication skills of FCHVs. While these have not been detected in the difference in difference analysis, there is strong evidence to suggest this is owing to enumerator effects and so it is not possible to draw conclusive answers from this analysis. However, the data from Tehrathum shows an overall increase for both health knowledge and communication skills and self-assessed confidence scores. The gains were found to be modest, but in line with expectations when considering the limitations within the short period of intervention.

In the next level of the theory of change we hypothesised that interactions with beneficiaries would be more effective. A key determinant of an effective interaction is that beneficiaries engage with the tool and this was evident from the qualitative data across all three pilot sites. It was evident that a key driver of engagement was the audio content using a range of production formats (songs, drama), the trusted character of Dr Asha, and having the content in the local language. These were important, entertaining and engaging aspects of the content which helped to prompt engagement with the tool from FCHVs and beneficiaries alike.

There was also evidence from the FCHVs, researcher observations and communities themselves that Mobile Chautari is improving the interactions though changing the structure and dynamics of the HMGs. FCHVs feel that Mobile Chautari has enhanced their interaction with their clients. Most notably, they cited that it had provided a clear structure to the HMGs and provided content that was useful to them and their clients. FCHVs also reported that they feel more confident and have noticed changes in the makeup and attendance of their HMGs.

The third level of the theory of change hypothesises that mobile Chautari will improve: beneficiary trust in the health content and FCHVs; health knowledge; and self-efficacy, which together would support healthier decisions and ultimately improve health outcomes. While the pilot period is too short to measure these impacts conclusively, we did discover some encouraging reports from beneficiaries of improved trust and knowledge and sharing their learning with family members and neighbours.

Given the short intervention period and limitation in the DiD, it is not possible to draw robust conclusions on the longer-term outcomes. There is evidence to suggest the project could benefit from revisiting the Theory of Change and adjusting our assumptions on how Mobile Chautari is working, for example, focusing more on how Mobile Chautari is playing an important role supporting FCHVs to structure their conversations with clients particularly on more sensitive issues and supporting more inclusive discussions focusing on purely health issues.

### 4.2 RECOMMENDATIONS

In a short period, Mobile Chautari has shown encouraging signs of uptake and engagement from FCHVs and beneficiaries and there is evidence of improved health interactions between FCHVs and beneficiaries. Overall, this supports scale up of the intervention with some modifications to further enhance the benefits and reach of the tool.

Since the covid-19 pandemic has spread across the world any scale up of Mobile Chautari must be sensitive to the new world we live in. While Mobile Chautari is not suitable for use at HMG meetings in the current climate, where social distancing is not possible, it's unique design of audio content delivered by a mobile phone and speaker could provide powerful and up to date information to beneficiaries with some relatively simple adaptation. The recommendations in this report do not attempt to respond to the evolving situation of the pandemic, this will be addressed further in the final project report, and instead focus on the Mobile Chautari in the pre-pandemic conditions present during the evaluation and which should still be applicable post-pandemic.

**Continue with audio format and style.** The audio content has been well received by FCHVs and beneficiaries, where it proves both engaging and supports better structure and flow to health discussions. We recommend continuing with the structure, format and style of the audio content without significant changes and to continue providing these in local languages.

**Additional prompt cards for hard of sight and low literate FCHVs.** The IEC cards were well received by most FCHVs, particularly for their light weight and handy size, and were used for their own learning and interest as well as alongside the audio content at HMGs. We would recommend continuing with the IEC cards in their current form and style. However, a second version could be produced and offered to the hard of sight and low literate FCHVs that did not, or could not, use the piloted cards. These could be larger in size and make use of more graphics.

**Continue with IVR system with tweaks and improved FCHV support.** The IVR system has shown to be a good system of audio content delivery for many FCHVs and while more can be done to expand its use by more FCHVs it is unlikely to ever achieve universal take up. There was some confusion in whether Mobile Chautari was free to access and could be accessed from different phones and for some it was beyond their mobile skills. The confusions in accessing the system and some of the difficulties using the system could be resolved with clearer training and better use of FCHV supervisors (Auxiliary Nurse Midwives or Staff Nurses) as co-trainers and ongoing points of support to resolve problems. The system could be further simplified with the adoption of a single, preferably short code, toll free number for each language<sup>20</sup>. Whilst mobile telecoms infrastructure has rapidly expanded in Nepal in the past decade, there were still reports that in some mountainous areas the mobile coverage was not sufficient to support stable phone calls. Any scale up of the tool should accept this as a limiting factor of an IVR system in these areas until such time as the mobile infrastructure is further improved.

**Supply more speakers.** The audio content is played to HMG participants via a speaker which FCHVs plug into their mobile phone. While this worked well for many FCHVs access to speakers was also sighted as a restriction for using Mobile Chautari<sup>21</sup>. Having to collect and return the speakers was a common disincentive reported by many FCHVs for using Mobile Chautari. Supplying more speakers for use by FCHVs or preferably by issuing each FCHV with her own speaker would likely increase uptake of Mobile Chautari and increase the reach to beneficiaries.

**Engage FCHVs in continued research and learning.** In any future scale up it would also be recommended to continue using the pilots successful approach to engaging FCHVs with any new content production or design changes. These would include FCHVs user testing any new audio and prompt card designs as well as engaging FCHVs with further scale up monitoring and evaluation. With a phased approach to scaling up, research and feedback can be used to understand any issues with uptake and usage in new roll out areas and the design and implementation of Mobile Chautari in subsequent roll out areas can be adjusted.

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<sup>20</sup> Due to time constraints and the long lead in time to set up cross operator toll-free lines with the Nepal Telecom Authority the pilot provided two numbers for each language, one toll-free number for NTC SIMs and another for Ncell SIMs.

<sup>21</sup> The pilot provided speakers to Health Facilities to loan out to FCHVs for their HMG meetings with a ratio of one speaker to three FCHVs in Darchula (mountainous district), one speaker to 3.5 FCHVs in Tehrathum (hill district) and one speaker to 4.5 FCHVs in Rautahat (terai district).

The DID investigation for this pilot has been inconclusive and a further impact evaluation is recommended once there is more comprehensive knowledge and understanding of how the Mobile Chautari tool is working. Recommendations for future research would include-

- Closer monitoring and evaluation of the training days and observation of FCHVs using the tool in HMGs and other types of interaction, in order to more accurately assess how it is working, why and in what contexts.
- Monitoring and evaluation of a more refined set of intermediate and specific outcomes where difference could be more accurately detected.
- An impact evaluation conducted over a longer intervention period could help provide more robust evidence to effectively measure if there is a causal effect of mHealth tools and ongoing monitoring of the comparison group comparison should also be built into the research design.

## 5 APPENDICES

**Appendix 1: Difference in Difference Analysis among Khotang FCHVs (excluding interviews conducted by enumerator 13) vs. Tehrathum FCHVs who used Mobile Chautari, Health Scores Correct According to Mobile Chautari Content**

<b>Khotang excl. enumerator 13 (n=276) vs. Mobile Chautari users in Tehrathum (n=239)</b>						
<b>Health Knowledge Score</b>	Sept 2019	Feb 2020	<b>Difference (Sept-Feb)</b>	Proportional % change	Lower Confidence Interval	Upper Confidence Interval
<b>Khotang (comparison)</b>	23.6	24.0	<b>0.4</b>	2%	-0.57	1.41
<b>Tehrathum (intervention)</b>	23.5	25.0	<b>1.5</b>	7%	0.58	2.46
<b>District difference</b>	<b>-0.1</b>	<b>1.0</b>	<b>1.1</b>			
<b>Communication Knowledge Score</b>						
<b>Khotang (comparison)</b>	10.3	15.6	<b>5.3</b>	51%	4.73	5.77
<b>Tehrathum (intervention)</b>	10.1	14.8	<b>4.7</b>	47%	3.90	5.39
<b>District difference</b>	<b>-0.2</b>	<b>-0.8</b>	<b>-0.6</b>			
<b>Confidence Score</b>						
<b>Khotang (comparison)</b>	54.5	57.2	<b>2.7</b>	5%	2.13	3.35
<b>Tehrathum (intervention)</b>	56.8	57.3	<b>0.5</b>	1%	-0.39	1.42
<b>District difference</b>	<b>1.8</b>	<b>0.1</b>	<b>-1.1</b>			

## Appendix 2- Additional detail on methodology

### Sampling strategy

For the quantitative element of the evaluation, the sampling strategy was based on the method set out and used at baseline<sup>22</sup>. As before, this consisted of a target sample of up to 800 FCHVs, split as equally as possible across Tehrathum and Khotang, and taking into account the same individual and community level characteristics incorporated previously. For the purposes of the quasi-experimental design being followed, efforts were made to include as many FCHVs as possible from the 363 in Tehrathum and 371 in Khotang who had taken part at baseline. The selected FCHVs were invited to the local health facility for the research.

A total of 750 interviews were achieved, of which 658 FCHVs had participated at both stages before and after the intervention period, 334 in Tehrathum and 324 in Khotang. This common sample of 658 is therefore used for all analysis comparing baseline and endline data.

Districts	Baseline Sample	Endline Sample	Baseline & Endline Common Sample
Tehrathum	363	370	334
Khotang	371	380	324
<b>Total</b>	<b>734</b>	<b>750</b>	<b>658</b>

In Tehrathum, qualitative interviews were administered after the quantitative survey. In Darchula and Rautahat, where quantitative research did not take place, qualitative interviews were undertaken directly. A total of 78 IDIs, 6 FGDs, and 6 observations were conducted with FCHVs, members of HMG meetings (mothers of child(ren) under 5, pregnant women and mothers-in-law), and health facility staff including health coordinators.

For the selection of FCHVs, initially 16 individuals were drawn from the IVR backend data system (6 high, 6 medium and 4 low users) and additional effort was made to include different ages, ethnic groups, educational background, years of experience, and locations across each intervention district. In Tehrathum, the selected FCHVs were drawn from the 363 FCHVs who took part in the baseline, while in Darchula and Rautahat the sample was selected from the 200/200 trained FCHVs. Of the 12 high and medium Mobile Chautari users, 2 FCHVs were further selected in each district for observation of the HMG meetings, totalling 6 observations.

For the selection of mothers, a snowballing technique was utilised to ensure all were acquainted with Mobile Chautari. The 6 FCHVs selected for observation were consulted to identify one mother each from their HMG meeting for the interview. The remaining sample was selected from other high and medium use FCHVs who took part in IDIs. The priority was given to pregnant women (preferably for the first time) and mothers with a child under 2 years who attended at least one meeting in the last 4 months where Mobile Chautari was used. Similarly, the same snowballing technique was applied for the selection of the mother-in-law in each intervention district. In addition, health facility staff (either ANM or with knowledge of Mobile Chautari and supervisory responsibility of FCHV activities) were selected from the FCHVs who took part in observation. Finally, one health coordinator who was familiar with Mobile Chautari and active in their district was selected for the interview.

### Quality control

- I. Monitoring and supervision

<sup>22</sup> For more detail, refer to baseline report December 2019

The monitoring and supervision of field activities was overseen by the BBC Media Action research team. There was regular communication between the Anweshan team leader and the BBC Media Action research supervisor from the Kathmandu office. BBC Media Action ensured the contracted enumerators and supervisors had extensive experience and familiarity with mHealth work. In addition, where possible, field researchers were selected from the team who conducted the formative and baseline surveys<sup>23</sup> so they could ensure the highest quality of data collection.

BBC Media Action is committed to undertaking research that is of the highest standard and in line with General Data Protection Regulation (GDPR) requirements of the EU, and has ensured that contracted staff and organisations adhere to the same standards while dealing with both research data and participants' personal information. The BBC Media Action research teams in Nepal and in London worked closely with the contracted researchers to develop a clear plan for quality assurance of data collection processes. This included at least 5 per cent spot checks, 15 per cent back checks, and 10 per cent accompanied qualitative interviews by senior researchers in the field. BBC Media Action's research team made surprise visits to ensure research field teams were following the process properly.

## 2. Data management and quality assurance

The contracted field teams were responsible for management of both quantitative and qualitative data under the supervision of BBC Media Action. Data management included processing, coding and re-coding, entering into SPSS and cleaning of quantitative data, and producing transcripts of the qualitative data in English. To ensure the protection of research participants' privacy, BBC Media Action collected the minimum amount of personal data needed. Other processes to protect both research data and personal information were employed, including:

- Using identification numbers in place of FCHV names in the data sets during analysis
- Using password protected files while transferring datasets and personal information
- Employing strict data security measures to ensure the BBC Media Action server is well protected to prevent any data breaches

The independence and integrity of BBC Media Action's research is underpinned by an extensive quality assurance framework and adherence to the highest standards of rigour. The overarching framework used, Assuring Integrity in Measurement (AIM), was developed drawing on existing research standards, protocols and guidelines (e.g. BOND's evidence principles, MRS Code of Conduct). AIM incorporates a formal review and sign off process at each stage of the research. In-country research staff play a key role in quality assurance during fieldwork, including cognitive and pilot testing of instruments, extensive briefing and training of fieldwork teams and supervising the quality of data collection.

The field researcher or the enumerator collecting the data obtained informed consent (verbal or written) before proceeding with any research method, to safeguard data confidentiality. The research design and the data collection tool were reviewed by NSSD, NHSSP 3 and the research and project teams from BBC Media Action in Nepal and London to ensure the quality.

The research strategy, including ethical principles, was designed by BBC MA and involved close working with NSSD, NHSSP and MEOR. The final design was submitted to and received formal ethical approval from the Nepal Health Research Council (NHRC) on 14 August 2019.

## 3. Pretesting and field researchers' training

The same quantitative tool was used at endline as in the baseline survey with minor changes. Two rounds of pretesting were undertaken by the research team during endline. As some of the field researchers

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<sup>23</sup> Out of 12 field researchers in Tehrathum, 5 had participated in both the baseline and endline surveys, whereas in Khotang, out of 7 field researchers, 4 had taken part in both.

were new to the study at endline stage, after completion of the field researchers' training, one more round pretesting was done in Godavari Municipality in Lalitpur district to familiarise researchers with the tool and the validity of each question. Pretesting of the qualitative tool was also carried out. As part of this, BBC Media Action's research team provided a demonstration of the Mobile Chautari tool and recruited two FCHVs to conduct an HMG meeting so that field researchers could trial the observation and qualitative interviews.

Field researchers were trained by the BBC Media Action and Anweshan research teams and instructed to prioritise respondents' privacy and comfort above other considerations. All field researchers were given five days of extensive training, covering the theoretical aspects of both quantitative and qualitative data collection approaches, as well as research ethics. In addition to covering general research principles and practices, enumerators were given specific instruction related to the method employed in this study, which included extensive discussion of the quantitative tool, role playing for practice in its deployment, and opportunities for enumerators to ask questions, provide feedback and engage with the materials through group work. As part of this, the BBC Media Action research team provided a briefing on the research aims and created a strong environment for evaluation to the researcher's nuanced understanding of both the formative research and baseline study conducted for this project and programming content.

The researchers from Tehrathum, Darchula and Rautahat were trained on use of the Mobile Chautari tool, as well as the topics covered in the audio and on the prompt cards. In Khotang, the field researchers were briefed in overall terms about the intervention happening in the three intervention districts.

### **Data analysis**

The BBC Media Action research team has conducted all analysis using the statistical software programme SPSS for quantitative data and excel for qualitative.

The quantitative data analysis was carried out in two parts. Descriptive analysis was undertaken to look at the behaviours and experiences of FCHVs during the intervention period, with particular focus on practical use of Mobile Chautari in the treatment district. The Difference in Difference analysis was used to investigate the levels of knowledge and efficacy in both districts and with reference to changes since Baseline. The latter relied on summing of correct or positive scores and comparing the mean scores before and after the intervention. For both descriptive and Difference in Difference analysis, results were subject to tests of statistical significance using Chi-square, T-tests, and Mc Nemar as appropriate.

All qualitative data were initially transcribed in Nepali and translated into the English. The BBC MA research team prepared the codebook based on the initial data received from the field and later code book was extended and finalised based on all transcriptions across three intervention districts. All qualitative transcripts were coded into the excel sheet and written the summary of each districts based on major themes and research questions.

The analysis and report have been reviewed and signed off by the Senior Research Manager based in London, in order to provide an impartial and independent assessment of quality and integrity (in line with our AIM process outlined above).

### Appendix 3- Preparation and Facilitation of HMG Meetings by FCHVs

		Baseline (N=658)		Endline (N=658)	
		Tehrathum	Khotang	Tehrathum	Khotang
<b>What materials/aids did you use in the last HMG meeting?</b>					
<b>Flip chart</b>		78%	92%	32%*	78%*
<b>Posters</b>		16%	23%	7%*	21%
<b>Audio/visual aids</b>		3%	3%	4%	0%*
<b>Pamphlets</b>		10%	7%	4%*	11%
<b>Demonstration demonstration</b>	<b>(like food/recipe)</b>	11%	13%	1%*	3%*
<b>None</b>		11%	5%	11%	16%*
<b>Health related books</b>		6%	4%	9%	10%*
<b>Mobile Chautari tool</b>		-	-	63%	0%
<b>How long did you spend preparing for your last HMG?</b>					
<b>I do not prepare</b>		4%	1%	13%*	16%*
<b>&gt;60 min</b>		64%	85%	76%	77%
<b>61-120 min</b>		21%	13%	5%*	5%
<b>&gt;120 min</b>		9%	1%	1%*	2%
<b>Don't know/can't remember</b>		2%	1%	4%	1%
<b>How long was your last meeting?</b>					
<b>0-60 min</b>		50%	30%	50%	29%
<b>61-120 min</b>		39%	51%	42%	51%
<b>&gt;120 min</b>		9%	19%	8%	20%

\* denotes the finding is significantly different between baseline and endline at 95% confidence interval

#### Appendix 4- Issues Discussed During Last HMG Meeting as Reported by FCHVs

	Baseline (N=658)		Endline (N=658)	
	Tehrathum	Khotang	Tehrathum	Khotang
<b>Majority of content covered in last HMG meeting</b>				
<b>Health related issues</b>	80%	56%	74%	45%*
<b>Others issue like saving, interest and investment</b>	19%	44%	25%	54%

\* denotes the finding is significantly different between Tehrathum and Khotang at 95% confidence interval

## Appendix 5- Measures of Interaction between FCHVs and Beneficiaries

	Baseline (N=658)		Endline (N=658)	
	Tehrathum	Khotang	Tehrathum	Khotang
<b>Participants in last HMG meeting</b>				
<b>Pregnant women</b>	44%	58%	33%*	56%
<b>Recently delivered women</b>	20%	14%	9%*	9%
<b>Mothers having under 2 year of child</b>	59%	83%	51%	78%
<b>Mothers having under 5 years of child</b>	73%	88%	69%	84%
<b>Other mothers</b>	82%	69%	70%*	69%
<b>Mothers-in-law</b>	70%	83%	81%*	87%
<b>Male</b>	14%	36%	16%	23%*
<b>Group size at last HMG meeting</b>				
<b>1-9</b>	53%	59%	63%	65%
<b>10-19</b>	39%	30%	32%	26%
<b>20+</b>	10%	10%	4%*	8%
<b>Household visits made in past 30 days</b>				
<b>Yes</b>	70%	84%	96%*	98%

\* denotes the finding is significantly different between Tehrathum and Khotang at 95% confidence interval

## Appendix 6: Training Received by FCHVs During Intervention Period

Training FCHV received	Tehrathum (n=334)	Khotang (n=324)
Received training	97%	92%*
<b>Health Topics Covered in Training among FCHVs who Recalled Receiving Training</b>		
Measles and Rubella Training	90%	47%*
Immunization	3%	50%*
Mobile Chautari tool	51%	-
Child Nutrition	0%	13%*
Maternal nutrition	0%	11%*
FCHV's recruitment and refresher training	7%	1%*
Vitamin A	1%	5%*
Abortion	5%	0%*
Neonatal health care	1%	1%
Acute Respiratory Infection (ARI)	0%	1%

\* denotes the finding is significantly different between Tehrathum and Khotang at 95% confidence interval

## Appendix 7: Topics and Questions Assessed using the Difference in Difference Analysis

Table- Overview of health knowledge items by health topic		
Topic	Question	Question Type
<b>Topic 1: Iron Folic Acid</b>	What is the recommended advice that an FCHV might provide to clients about how often a woman should take iron and folic acid tablets during pregnancy?	Single code – multiple choice
	<i>For how long during pregnancy should IFA tablets be taken?<sup>24</sup></i>	Single code – multiple choice
	What is the recommended advice that an FCHV might provide to clients about why pregnant women should take Iron and Folic Acid tablets during pregnancy?	Multicode – depth of knowledge
<b>Topic 2: Birth Preparedness</b>	What is the recommended advice that an FCHV might provide to clients about the recommended steps a pregnant woman and her family can take to prepare for delivery?	Multicode – depth of knowledge
<b>Topic 3: Danger Signs - Pregnancy</b>	What is the recommended advice that an FCHV might provide to clients about the danger signs <b>during pregnancy</b> for which pregnant women should go to a health facility immediately?	Multicode – depth of knowledge
<b>Topic 4: Flu Prevention</b>	What is the recommended advice that an FCHV might provide to clients about some of the recommended ways to reduce the risk of passing influenza to other people?	Multicode – depth of knowledge
<b>Topic 5: Breast Feeding</b>	What is the recommended guidance for when a mother should start breastfeeding after delivery?	Single code – multiple choice
	What is the recommended advice that an FCHV might provide to clients about why she should start breastfeeding immediately?	Multicode – depth of knowledge
<b>Topic 6: Essential New-born Care</b>	When should a baby be bathed in water for the first time?	Single code – open-ended response
	How should a baby be kept warm immediately after delivery?	Multicode – depth of knowledge
	What is the recommended advice that an FCHV might provide to clients about what should be put on the cord after delivery?	Multicode – depth of knowledge
<b>Topic 7: Post-Partum Danger Signs</b>	What are the more common post-partum danger signs?	Multicode – depth of knowledge
<b>Topic 8: Family Planning</b>	What is the recommended advice that an FCHV might provide to clients about some of the benefits of planning if or when to have a baby?	Multicode – depth of knowledge
	What is the advantage of having pregnancy after the age of 20 years?	Multicode – depth of knowledge
<b>Topic 9: Uterine Prolapse</b>	What is the recommended advice that an FCHV might provide to clients about some of the ways to reduce the risk of uterine prolapse?	Multicode – depth of knowledge

<sup>24</sup> Not included in Mobile Chautari content, therefore excluded from the Health Scores in the Difference in Difference analysis when marking only correct answers according to MC content.

Table 2 – Overview of communication knowledge by topic		
<b>Topic 1: Planning and preparation</b>	What are the steps an FCHV can take to plan/prepare for a successful Health Mothers Group meeting?	Multicode – depth of knowledge
	What are some of the ways an FCHV can improve attendance at a Health Mothers Group meeting?	Multicode – depth of knowledge
	What’s a good way to decide what topic to cover in a Health Mothers Group meeting?	Multicode – depth of knowledge
<b>Topic 2: Awareness and understanding</b>	What are the elements of a successful Health Mothers Group meeting?	Multicode – depth of knowledge
<b>Topic 3: Facilitation skills</b>	What might you do with participants in a Health Mothers Group meeting who dominate the discussion?	Multicode – depth of knowledge
	What might you do with members who are silent or reluctant to speak in the Health Mothers Group meeting?	Multicode – depth of knowledge
	Which of the following is a good response if you do not know the answer to a question at a Health Mothers Group meeting?	Single code – multiple choice
	What steps can an FCHV take to close the Health Mothers Group meeting?	Multicode – depth of knowledge

Table 3 – Overview of confidence scores by topic		
<b>Topic 1: Skills</b>	Overall, I feel that I have enough skills, experiences and abilities to carry out my role with confidence	5-point Likert scale
	My clients show that they trust my skills and abilities as an FCHV	5-point Likert scale
	The clients at the HMG always listen carefully to what I have to say	5-point Likert scale
	I feel I am able to reach all the target women (example- different caste, ethnicity, age) in my catchment areas	5-point Likert scale
<b>Topic 2: Communication</b>	I am confident that I can motivate clients who show low interest in attending Health Group Meetings	5-point Likert scale
	I am confident in engaging with clients that are reluctant to talk to FCHVs	5-point Likert scale
	I am confident that I have enough skills, experiences and capabilities in engaging with clients that are reluctant to talk to FCHVs	5-point Likert scale
	I can keep clients on topic in the HMG	5-point Likert scale
	I feel I can help clients discuss health problems and share their perspectives	5-point Likert scale
	I am confident that I can get more mothers to use health services like receiving the ANC, PNC and delivery services	5-point Likert scale
	I am confident and able to involve marginalized women in HMGs including adolescent girls, Dalit women, and women living in difficult to reach areas	5-point Likert scale
<b>Topic 3: Difficult situations</b>	I don’t know how to respond to difficult question from my clients	5-point Likert scale (reverse coded)

	I don't know how to deal with disruptive people in the HMG	5-point Likert scale (reverse coded)
<b>Topic Resources</b>	<b>4:</b> I feel that I have resources to carry out my role with confidence	5-point Likert scale

**Appendix 8: Overall Difference in Difference Analysis among Total Khotang FCHVs vs. Total Tehrathum FCHVs Based on Factually Accurate Response against GoN and/or WHO Recommendations**

<b>Khotang (n=324) vs. Tehrathum (n=334)</b>						
<b>Health Knowledge Score</b>	Sept 2019	Feb 2020	<b>Difference (Sept-Feb)</b>	Proportional % change	Lower Confidence Interval	Upper Confidence Interval
<b>Khotang (comparison)</b>	29.7	36.1	<b>6.4</b>	22%	4.67	8.10
<b>Tehrathum (intervention)</b>	28.6	31.1	<b>2.5</b>	9%	1.43	3.52
<b>District difference</b>	<b>-1.1</b>	<b>-5.0</b>	<b>-3.9</b>			
<b>Communication Knowledge Score</b>						
<b>Khotang (comparison)</b>	10.7	16.7	<b>6.0</b>	56%	5.13	6.79
<b>Tehrathum (intervention)</b>	10.0	14.6	<b>4.6</b>	47%	3.94	5.18
<b>District difference</b>	<b>-0.7</b>	<b>-2.1</b>	<b>-1.4</b>			
<b>Confidence Score</b>						
<b>Khotang (comparison)</b>	54.6	57.4	<b>2.8</b>	5%	2.22	3.32
<b>Tehrathum (intervention)</b>	56.4	57.0	<b>0.6</b>	1%	-0.20	1.32
<b>District difference</b>	<b>1.8</b>	<b>-0.4</b>	<b>-2.2</b>			