

# **Promoting latrine use in rural Karnataka using the risks, attitudes, norms abilities and self-regulation (RANAS) approach**

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## Note to readers

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## Executive summary

The Swachh Bharat Mission (SBM) has given impetus to sanitation in the country more than ever before, with the explicit agenda to make India open defecation (OD) free by 2nd of October 2019. While the Mission has been very successful in boosting latrine coverage, actual latrine use (LU) remains low in many areas of the country. The aim of this study was to develop and rigorously evaluate low-cost and scalable behaviour change interventions to promote latrine use in rural India. “What works and why?” best summarizes the evaluation questions of this impact assessment.

The study was carried out in Raichur district, a district in Northern Karnataka that has poor development indicators (International Institute of Population Sciences and ICF, 2017). We used the risks, attitudes, norms, abilities and self-regulation (RANAS) approach to tailor the interventions to the actual mind-set of the target population. Thus, the campaign aimed at changing exactly the drivers and barriers of latrine use in the target population. We used a cluster-randomized trial (N=1945) with one intervention and one control group to rigorously evaluate the campaign.

Data were collected through standardized face-to-face interviews before the campaign (baseline survey) and after the campaign (end line survey). In addition to measuring latrine use through reports and spot-check observations, we also measured the behavioural factors potentially steering latrine use. This allowed us to also determine the mechanisms of actions through which the campaign achieved its impact.

Results yielded that in both, treatment and control arm, latrine use and safe disposal of child faeces changed by more than 15%, respectively 30%. This suggests that external factors had a strong influence on the project outcomes. Intensive government activities to promote and monitor latrine use were revealed by qualitative data collection and our findings suggest that these substantially impacted latrine use and safe disposal of child faeces or the way in which people reported to the survey questions.

On top of this, our campaign triggered statistically significant increase in latrine use by approximately 5% to almost 100% at end line. Significant changes not only reported in latrine use but also the spot-check observations corroborated these results. Insignificant effects on safe disposal of child faeces suggest that our campaign did not create an added value for this outcome.

Key recommendations for programme managers, policymakers, donors and researchers are as follows:

- Latrine use behaviour change to be positioned as an important component of the Open Defecation Free (ODF) sustainability agenda at all levels (from district to the National level). Behaviours change strategies to be positioned to promote latrine use behaviours, as well as to sustain latrine use behaviours over time in both open defecation declared districts and those that are yet to be declared. Further, sustained behaviour requires all community members.
- Behaviour change strategies and activities identified as effective in this study and others (under this grant window) to be incorporated into ongoing SBM campaigns on latrine use promotion by building capacities of government functionaries and development partners, implementing organizations

- Key behaviour change messages must be reinforced multiple times using different activities (that address different drivers)
- Cultural and contextual sensitivities related to latrine use (e.g., overt and public display of campaign materials in households, water availability) must be taken into consideration and addressed to implement a successful behaviour change intervention

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## Abbreviations and acronyms

AWC	Anganwadi centre
CEO	Chief Executive Officer
DS	District Secretary
EO	Educational Officer
GP	Gram Panchayat
HH	Household
ICC	Intra-class correlation coefficient
LU	Latrine use
OD	Open defecation
ODF	Open defecation free
OBC	Other backward classes
PDO	Public Development Officer
RANAS	Risks, Attitudes, Norms, Abilities, Self-regulation
SC	Scheduled caste
SDMC	School Development and Monitoring Committee
SHG	Self-help group
ST	Schedule tribe
VHSNC	Village Health Sanitation and Nutrition Committee

# 1 Introduction

The Swachh Bharat Mission (SBM) has given impetus to sanitation in the country more than ever before, with the explicit agenda to make India open defecation free by 2nd of October 2019. The Mission has focused on toilet construction and usage promotion, with policy and ground level experiences emphasizing the importance of sustained toilets use for open defecation free (ODF) sustainability. (Government of India, Ministry of Drinking Water and Sanitation, 2018) In this context, understanding people's motivations to use or not use toilets is critical.

The Ministry of Drinking Water and Sanitation, the nodal ministry for SBM, is cognizant of the role of behaviour change for latrine use, and is keen to implement approaches that can encourage use and sustain use of toilets. SBM follows the *community approaches to sanitation* (CAS) marking a paradigm shift from the traditional approach that focuses on toilet construction to a community led and participatory approach that uses triggering tools (drawing from Community Led Total Sanitation) and the creation of an enabling environment (drawing from the Community Approaches to Total Sanitation) (UNICEF, 2009). A comparison between the traditional and community approach highlights that the differences arise from community led approaches being rooted in and driven by communities, and the use of social and behaviour change communication methods. Catalysing community engagement for sanitation without subsidies, identification of champions within the communities, praising progress and making sanitation aspirational were some of the success elements highlighted in sanitation programming in countries like Nepal, Zambia and Sierra Leone. (UNICEF, 2009)

Null findings in recent field experiments cast substantial doubts on the efficacy of water sanitation and hygiene (WaSH) interventions to improve beneficiaries' health (Humphrey et al., 2019, Stewart et al., 2018, Tofail et al., 2018). These studies have triggered a lively debate whether and in which contexts WaSH interventions can improve child health and development (Arnold et al., 2018, Coffey and Spears, 2018, Cumming and Curtis, 2018). Cumming and Curtis (2018) suggest that the results might not be generalizable to populations with initial low latrine coverage and use, while Coffey and Spears (2018) report observational evidence that, in contrast to Kenya and Bangladesh, latrine use in India was indeed related to improved child health.

From a behavioral perspective, the above field experiments did not consider an important intermediate step when testing intervention effects on health outcomes: behaviour. Merely providing an improved latrine or other WaSH infrastructure and exposing study participants to behavior change communication is unlikely to results in intended health effects if the interventions do not actually trigger behavior change. It remains unclear whether the multiple interventions actually triggered behavior change such as substantially increasing the frequency of handwashing or latrine use. However, changes in behaviour are a precondition for health effects to materialize.

From this perspective, developing effective behavior change interventions is highly relevant, both in the context of ongoing research on the efficacy of WaSH interventions and the ongoing Swachh Bharat Mission in India.

A systematic review of behaviour change approaches to sanitation behaviour and handwashing found four promotional approaches: 1) community based approaches; 2) social marketing approaches; 3) sanitation and hygiene messaging; and 4) elements of psycho-social theory. The review notes that community-based approaches yielded the most “consistent results” for sanitation outcomes such as latrine use, open defecation, and safe disposal of excreta. At the time of the review, there was limited evidence on the use of psychosocial theories to promote sanitation and hygiene behaviours. The review also found no evidence that any of the four approaches had “consistent effects on behavioural factors of knowledge, skills and attitudes” (De Buck et al, 2017).

Psycho-social theories for behaviour change has found support from environmental and health psychology that has focused on strategies that can trigger changes in behaviour by shifting mind-sets or the underlying drivers of behaviour. Mosler (2012) and Mosler and Contzen (2016) draw upon this to propose the Risks, Attitudes, Norms, Abilities, Self-Regulation (RANAS) approach that identifies potentially relevant factors for behaviour change based on psychological theories. The RANAS approach is used to promote water, sanitation, and hygiene (WASH) behaviours by triggering a systematic behaviour change through population-tailored interventions (Water Supply & Sanitation Collaborative Council, 2015).

While the RANAS approach has been intensively tested to promote hygiene behaviours and, safe drinking water consumption (Friedrich et al., 2018, Friedrich et al., 2017, Seimetz et al., 2017, Friedrich and Mosler, 2016, Inauen et al., 2016, Contzen et al., 2015, Contzen and Mosler, 2015, Lilje et al., 2015, Stocker and Mosler, 2015, Sonogo and Mosler, 2014, Tamas et al., 2013, Inauen and Mosler, 2013, Huber and Mosler, 2013, Mosler et al., 2010), the approach has not as rigorously been tested to develop behavior change interventions promoting latrine use.

Eawag and WaterAid India, in this impact assessment, study the effectiveness of the RANAS approach to promote latrine use in Raichur district, India. The key outcomes of this study were the changes in reported latrine use of all household members, changes in signs of use at household latrines measured through spot-check observations and reported safe disposal of child faeces. Only households having a functional latrine were included in this study. Raichur, a district in North Karnataka that has poor development indicators, has five talukas (blocks): Raichur, Manvi, Devadurga, Sindhanur, and Lingasugur. As per the 2011 census, Raichur has a population of 1,924,773. In terms of latrine construction, the district was lagging behind as none of the 180 gram panchayats\* had been declared open defecation free when this project commenced in October 2017. Given this scenario, we anticipated efforts to increase latrine coverage during this project implementation period.

SBM's clear-cut agenda at the national, state and district levels poses several challenges for behaviour change interventions, particularly in relation to the demand for evidence that such interventions complement latrine construction efforts. Two independent assessments on sanitation coverage and toilet usage under the Swachh Bharat Mission has found high rates of coverage and usage as of 2019. The first National Annual Rural Sanitation Survey (NARSS) was conducted on 2017-18, and the second round was conducted in 2018. Findings from both are presented below:

Table 1: Findings from the National Annual Rural Sanitation Survey (Rounds 1 and 2)

<b>Key findings</b>	<b>NARSS Round 1 (2017-18)</b>	<b>NARSS Round 2 (2018-19)</b>
Proportion of rural households having access to sanitation	77.0	93.1
Proportion of people who had access to toilets and used them	93.4	96.5
Proportion of villages which were previously declared and verified as ODF were confirmed to be ODF.	95.6	90.7
Proportion of villages surveyed found to have minimal litter and minimal stagnant water	70	95.4

While the impact assessment of the RANAS approach commenced before the NARSS Round 1, findings from both rounds have implications for the relevance of the present study.

This report describes the RANAS intervention and design process (section 2), the implementation process (section 2), the evaluation design (quantitative) and qualitative study (section 3), the findings (section 4), and a discussion of study implications learnings (section 6), and recommendations (section 7).

## **2 Intervention**

### **2.1.1 Description**

The current intervention design builds upon a qualitative formative research study done in March-April 2017 in Raichur, Karnataka and Kamareddy, Telangana that resulted in the design of a behaviour change intervention to promote latrine use based on the RANAS model. This was the Phase I component of the study. This intervention was developed further by identifying the main drivers and barriers to latrine use using quantitative evidence, the behaviour change techniques (BCTs) that can target these drivers and barriers, and the most suitable communication channels to deliver the BCTs. In the current study, an impact assessment has been designed to rigorously evaluate the proposed RANAS intervention using a cluster-randomized trial with one intervention and one control group. This will help quantify the extent to which the RANAS intervention increased latrine use among households that have a latrine.

Using the findings from the baseline analysis, the research team used the RANAS catalogue of BCTs (Mosler and Contzen, 2016). For each behavioural factor potentially steering the behaviour to be changed, the RANAS catalogue proposes BCTs to change it, based on extensive evidence from environmental and health psychology. The BCTs selected for this intervention correspond to the factors that were identified during baseline as the strongest predictors for latrine use.

### **Intervention design**

Our hypothesis was that consistent latrine use can be brought about with changes in people's mind-sets with respect to the predictors identified as relevant from the baseline assessment. The intervention design was developed with various components viz. 1) the behaviour change technique to be used, 2) effective communication channels and materials, 3) the appropriate intervention areas to work in for each type of target individuals, and 4) specific activities to be carried out in each of these intervention areas.

An intervention matrix was developed (see Annexure I) detailed protocols made for each of the four intervention strategies. The intervention strategies comprised of an initial village level community meeting, first household level visit, a phone call reminder and a follow up household level visit, and lastly, a mothers' meeting at the local Anganwadi Centre<sup>1</sup>. We developed protocols for each intervention strategy and related sub-activities, with simple instructions and steps on how to conduct each session.

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<sup>1</sup> Anganwadi centre is an early childhood care centre through which Integrated Child Development Services (ICDS) are given.

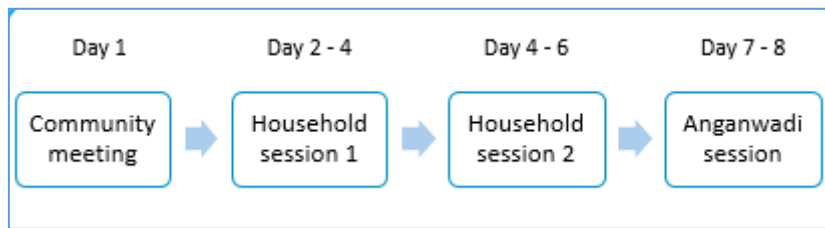


Figure 1: Mode of intervention delivery in the treatment villages.

The intervention was implemented in Raichur, North Karnataka, by WaterAid's long-term implementation partner Swami Vivekananda Youth Movement (SVYM), an organization well versed with implementing WASH interventions in the district. Their familiarity with the region and communities, intense involvement in community led total sanitation and latrine construction efforts, and understanding of the complexities of latrine use, made them an ideal implementation partner. The implementation staff comprised of 14 interpersonal communicators (four women and 10 men), two supervisors and a co-ordinator. They received rigorous training on the RANAS model and intervention implementation to carry out the intervention in the same manner in all of the intervention villages.

A pair of promoters were in-charge of each village. On the first day, the pair visited the village, met community representatives (Gram Panchayat members<sup>2</sup>, front line workers and other village level leaders), scheduled a date, venue and time for a community meeting. They also spent the day mobilising the community for the community meeting. On the day of community meeting, at the scheduled time, an additional team of three members comprising two mobilisers exclusively trained to conduct community meetings and one technician responsible for setting up the speakers and projector conducted the community meeting. After the community meeting, the promoters carried out the first round of household visits over 2-3 days, depending on the size of the village. The second round of household visits were carried out in such a way that the gap time for each house between the two visits would be at least three days. The second round of household visits were completed in two days. This was followed by meetings with the mothers and caregivers at the Anganwadi centres. On average, the comprehensive intervention was delivered in a village within 7-8 days.

The team undertook two rounds of rigorous intervention protocol pretesting of all four strategies including behaviour change materials to fine-tune the intervention design in terms of approach, language, conduct and flow of the activities within sessions, and scheduling of the intervention strategies. This exercise helped the implementation team to prepare for implementation and helped identify logistical and other challenges in intervention delivery, and identify solutions for major barriers. Each intervention strategy is discussed below.

<sup>2</sup> A Gram Panchayat is a basic unit of governance at the grassroots level. There is a Panchayat for every village or a group of villages.

Table 2: Strategy 1 - Community meeting

<b>Intervention Strategy 1</b>	<b>RANAS factors targeted</b>	<b>Behaviour change technique used</b>	<b>Activities implemented</b>
Community meeting	<ul style="list-style-type: none"> <li>• Beliefs about costs and benefits</li> <li>• How-to-do knowledge</li> <li>• Personal importance</li> </ul>	<ul style="list-style-type: none"> <li>• Inform about and assess costs and benefits,</li> <li>• Provide instruction and</li> <li>• Provide positive group identity</li> </ul>	<ul style="list-style-type: none"> <li>• Audio playing why and how Mallanna, a farmer who used to practise OD switched to Latrine use followed by an interactive session on advantages of LU and disadvantages of OD depicted on posters hung up on a clothesline.</li> <li>• Dissemination of pit-emptying information through a poster and distribution of handouts</li> <li>• Video clips of people who regularly used latrine within the village and a video of model village Gonniganur, where the entire community used toilets for defecation.</li> <li>• An interaction where participants discuss what makes them pride of their village and themselves as families and individuals, discuss why latrine use is a matter of pride and leadership. Buzzwords like leadership, being intelligent, and caring for the family are elicited and</li> <li>• The meeting ends with seeking commitment through sloganeering.</li> </ul>

Community mobilisation efforts with village level officials, prior to the community meeting helped to get their buy-in, and was instrumental in encouraging community members to attend the meeting.

Creating and showing videos of regular latrine users in the village as role models during the community meetings aimed to address RANAS factors related to costs and benefits of toilets and personal importance. An audio-play of the story of Mallanna, discussion regarding attitudes towards open defecation and latrine use were carried out to target attitudes towards promoting latrine use.

Table 3: Strategy 2 - Household visit

<b>Intervention Strategy 2</b>	<b>RANAS factors targeted</b>	<b>Behaviour change technique used</b>	<b>Activities implemented</b>
Household visit	Others behaviour Barrier Planning Remembering Action Planning	Prompt public commitment BCT 30 Prompt coping with barriers / BCT 32 Prompt to resist social pressure Use memory aids and environmental prompts Prompt specific planning	<ul style="list-style-type: none"> <li>Family photo for the commitment poster and Interaction with all family members</li> <li>The family members are asked if they have experienced barriers to latrine use and for their ideas on how to overcome them. If they do not have coping ideas spontaneously, the promoter suggests barriers plans from other families.</li> <li>Reminder stickers on the lota/ water containers</li> <li>Daily activity planning using a visual planning form with male members – to help make review and plan their day to include toilet use as a part of his daily routine. Each male participant was given a planning sheet and stickers that represented different activities they undertook during a regular day (e.g., waking up, bathing, going to the field/to work, eating etc.) the participant was asked when they go for open defecation during the day, and are engaged in a discussion as to how and when exactly they can chose to use the toilet instead of defecating in the open.</li> </ul>

The community meetings aimed to facilitate better reception for the intervention at the household level. Timing of intervention delivery was the most critical step in successfully carrying out the household visits especially for sessions that require all household members to be present. Hence, the teams scheduled appointments before 10 in the morning and after 4.30 in the evening. The team faced refusals from several households saying that they already used the latrine or had attended the community meeting. The team had to devise innovative ways to convince them and successfully engage primary intervention household. Most household level participants were open to taking and receiving their family photo. Male participants engaged in the routine planning activity because of its personal nature, particularly the connection with their daily routine. Personal visits to their houses, in-depth discussions about latrine use through these interactive/ engaging activities appeared to generate interest and openness in the households. Home visit activities were designed to address many of the RANAS factors identified as relevant for latrine use, and are an important component of the intervention. Household visits and public meetings were chosen as the main communication channel for this intervention because the formative study yielded that participants preferred them to other communication channels.



Table 4: Strategy 3 - Phone call reminder and follow up household visit

Intervention Strategy 3	RANAS factors targeted	Behaviour change technique used	Activities implemented
Phone call reminder and follow up Household visit	Remembering  Action Control   Confidence in recovery Other's behaviour	BCT 34 Use memory aids and environmental prompts BCT 27 Prompt self-monitoring of behavior / BCT 29 Highlight discrepancy between set goal and actual behavior BCT 25 Prompt coping with relapse BCT 10 Prompt public commitment	<ul style="list-style-type: none"> <li>Participant receives a phone call reminder shortly before the time when he used to go for OD.</li> <li>Participant is asked on the phone if he used the latrine. The commitment of using the toilet is highlighted.</li> <li>In case of relapses to OD, participant is told that relapses are normal for such a behavior.</li> <li>Family photo for the commitment poster displaying the photo is put up outside their house on a template featuring the campaign character and slogan.</li> </ul>

For the phone call activity, male promoters called male household members primarily on their mobile numbers, collected during the first household visit. The calls were made to male members who undertook the routine planning activity by the promoters to remind them of their commitment to use toilets and to encourage and reinforce their ability to use the toilet (in line with the RANAS factor identified and the BCTs to address these factors). The calls were made once or twice in a span of two to three days before the second household visit.

The phone call reminders were received well by most intervention recipients mostly because of the personal rapport built over time during the household visits. During the second household visit, the families were happy to meet the promoter again, and were open to receiving the family photo and to display their commitment to latrine use in public.

Table 5: Strategy 4 - Session for mothers and care-givers at Anganwadi centres (AWCs)

Intervention Strategy 4	RANAS factors targeted	Behaviour change technique used	Activities implemented
Session for the mothers and care-givers at AWCs	Health knowledge Vulnerability Feelings – Disgust  How-to-do knowledge / Confidence in performance  Vulnerability Feelings – Nurture Commitment	BCT 1 Present facts BCT 3 Inform about and assess personal risk / BCT 8 Describe feelings about performing and about consequences of the behavior BCT 15 Provide instructions / BCT 18 Prompt guided practice  BCT 36 Prompt to agree on a behavioral contract	<ul style="list-style-type: none"> <li>• Inform why child feces are likely to be a great danger for children</li> <li>• Each participant draws a household map of where the child normally defecates and plays. Transfer of feces from defecation to the playing area is visualized by colors. Discussion focusing on disgust and health consequences.</li> <li>• Using posters, participants are informed on how child feces should be safely handled. Using chalk, Anganwadi teacher draws a toilet pan on the floor and participants practice with their children. Each participant creates a second household map. This map includes the toilet and stickers showing the mother assisting the child with latrine use or safely disposing child feces. The participants make the following commitment: whenever my child has to defecate, I take it to the toilet and safely dispose the feces. This is graphically documented on the template and the participant signs it.</li> </ul>

Anganwadi sessions conveyed key messages using visual aids and activity-based exercises to facilitate interaction and retention among the mothers. However, feedback from the anganwadi workers immediately after the session emphasized that mothers/caregivers required message reinforcement over several sessions and continued support to practice safe disposal of child faeces will be required for that behaviour to become ingrained.

### 2.1.2 Theory of change

The theory of change of this project is depicted in Table 6. Using inputs and resources in the form of a systematically designed behaviour change campaign presented above and well-trained project and field staff, the intervention activities were implemented. Outputs were the participation of target individuals in these activities.

The intervention activities had been specifically designed to change the behavioural factors steering latrine use and safe disposal of child faeces in the target population<sup>3</sup>. By implementing the activities, behavioural factors were thus supposed to change and become more favourable for latrine use (Outcome Level 1). As a consequence of these changes in behavioural factors, behaviour changed (Outcome Level 2) which, in turn, improved health in targeted villages.

The first assumption of the theory of change is that the target audiences of interventions are willing to participate. Intensive pretesting and subsequent revisions of the interventions suggest high acceptability of the interventions and thus high willingness to participate. The second assumption of the theory of change is that behavioural factors can be manipulated through intervention activities and that behavioural factors steer behaviour. Existing and published evidence from other contexts support the assumptions. (Friedrich et al., 2018, Huber et al., 2014, Inauen and Mosler, 2013, Mosler, 2012).

For this study, behavioural factors steering latrine use in the target population, were identified through both qualitative and quantitative formative research. The findings revealed that latrine use was closely linked to the mind sets and beliefs of participants. The psycho-social factors, which the RANAS model postulates to steer sanitation behaviours, explained latrine use well in the study population. The following behavioural factors were identified to be most relevant:

- Positive attitudes towards open defecation (negative correlation),
- Perception of others' behaviour (positive correlation),
- Perception that latrine use was right whereas open defecation was wrong (personal norm, positive correlation),
- Respondent's awareness of his or her goal to use the latrine (action control, positive correlation).
- Additional factors included the perceived ease and ability to use the latrine, negative attitudes towards latrine use, such as costs and negative emotions, and forgetting to use the latrine despite good intentions.

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<sup>3</sup> For example, the qualitative formative research had identified strong habits of specific morning routines which included OD as one of many activities in a sequence. The baseline survey had identified habit for OD to correlate strongly with OD and action control of LU to correlate with LU. As a consequence, one intervention activity was designed to support participants to plan how to modify their morning routine in order to be able to include latrine use.

Table 6: Theory of change.

Logistical framework			Key assumptions	Applied theory
<b>Input / Resources</b>	Materials and protocols of systematically designed behaviour change interventions, capacitated project management staff and local promoters			
<b>Activities</b>	Intervention implementation through NGO promoters at village meetings, households visits and phone calls with male household members as primary target audience and other family members as secondary target audience.	Intervention implementation through Anganwadi workers in Anganwadi Centre (AWC) parents meetings with children's caregivers as primary target audience.		
<b>Outputs</b>	All adult family members participating in the intervention	Children's caregivers participating in the intervention	Participant are willing to participate.	
<b>Outcome (Level 1)</b>	Change in the psychosocial factors steering latrine use of participants	Change in the psychosocial factors steering safe disposal of child faeces of caregivers.	Interventions change the intended psychosocial factors.	Social cognitive theory, RANAS model
<b>Outcome (Level 2)</b>	All adult household members consistently and correctly use their household latrine for defecation.	Caregivers assist their children in using the latrine and safely dispose child faeces.	Latrine use is steered by psychosocial factors.	Social cognitive theory, RANAS model
<b>Impact</b>	Improvement in health indicators		Latrine use impacts health.	Faecal-oral route of disease transmission

### **2.1.3 Monitoring plan**

The purpose of the intervention monitoring plan was to ensure uniform delivery of the intervention as per the agreed protocols throughout the intervention phase in all the intervention villages. The monitoring checks for intervention implementation were only conducted in the intervention group. A monitoring team of two supervisors, a project co-ordinator and the WAI team was constituted. Quality monitoring checklists with indicators on adherence to protocols in terms of timing, content, correct use of materials, and engagement with participants were developed for the team to document their observations every day. Based on this checklist, the team shared feedback, debriefed the promoter and followed up until the session was conducted as per protocol. The two supervisors were in charge of 3-4 teams each and undertook random accompaniments on a daily basis with the implementing field teams. The project co-ordinator also undertook random accompaniments with the team once a week. WAI conducted monitoring visits to the field every fortnight for 3-4 days and carried out random checks with all field teams. WAI team member conducted detailed debriefing with the implementing team. Adherence to protocols and uniform delivery of the intervention was reiterated during every visit.

In addition to this, an intervention tracking system using a village-wise and household wise sheet was developed. Using this sheet, SVYM would report the intervention progress on a weekly basis with WAI. This was based on field reports and daily WhatsApp updates. At the end of every month, a team review was held to assess intervention progress against plans. Field data from each team member for the month was triangulated with the weekly updates and daily updates from the supervisors. This was done to arrive at the actual number of households reached and the actual number of villages completed. Based on the variance, a revised field implementation was developed by the supervisors and the field team for the intervention for the next month until completion.

## **3 Evaluation**

### **3.1 Primary and secondary questions**

“What works and why?” best summarizes the research questions of this impact assessment.

**WHAT WORKS:** The principal aim of this impact assessment is to quantify to which extent the intervention increased latrine use of beneficiaries.

**WHY:** The second aim of this impact assessment is to quantify the mechanisms of action of the tested interventions. The risks, attitudes, norms, abilities and self-regulation (RANAS) model postulates that interventions have to change the behavioural factors which steer the behaviour and that changes in behavioural factors lead to behaviour change.

This led to the following hypotheses:

Hypothesis 1: In intervention households, increases in latrine use are statistically significantly higher than in control households.

Hypothesis 2: Changes in behavioural factors postulated in the RANAS model mediate changes in latrine use.

Hypothesis 3: In intervention households, improvement in safe disposal of child faeces is statistically significantly higher than in control households.

### **3.2 Evaluation design and methods**

We used a pair-matched cluster-randomized design with one treatment and one non-intervention control arm. In order to minimize spill over to the control group, randomization was done at Gram Panchayat (GP) level. Only one village per GP was selected randomly. Although the number of clusters was relatively high, simple randomisation may have resulted in an unbalanced allocation regarding latrine coverage, use and SBM activities. We thus chose a pair-matched design, using baseline latrine use as matching variable.

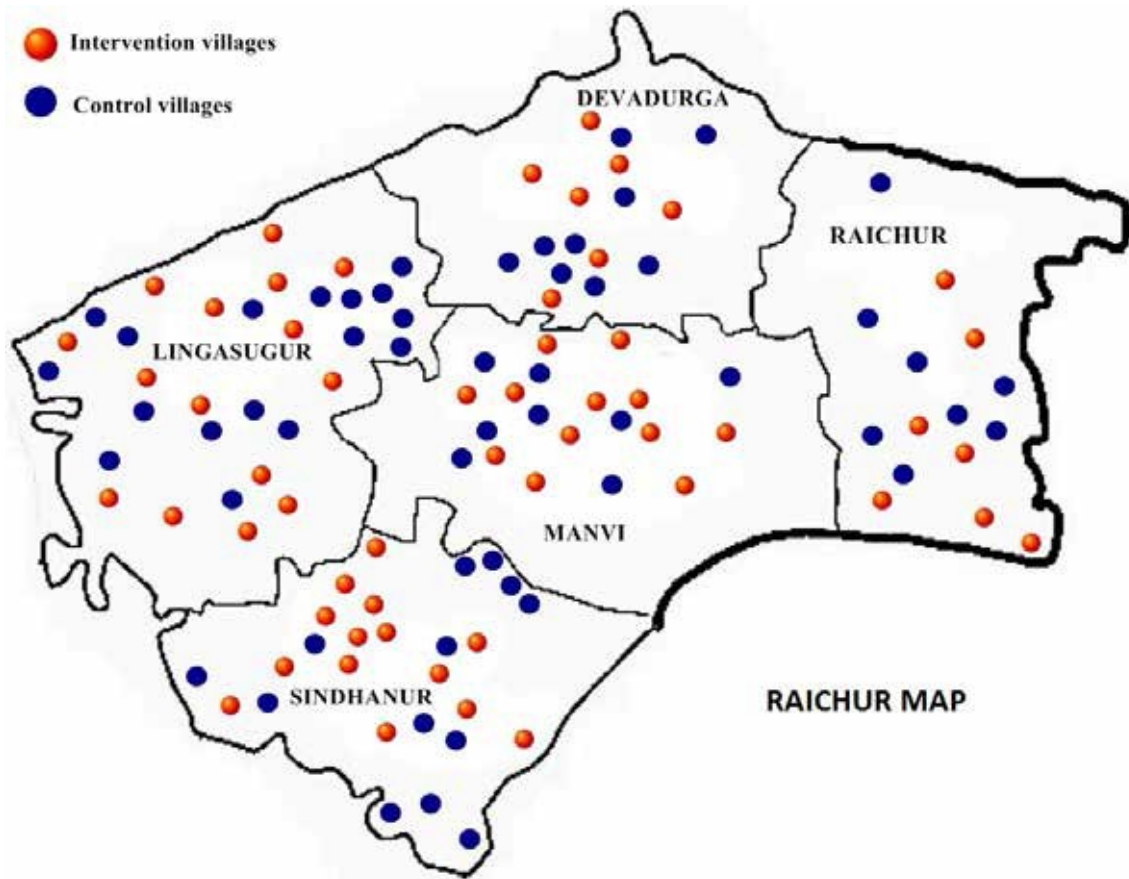


Figure 2: A map of the study areas

Allocation of villages to the treatment or control arm was done on village level. First, latrine use of all household members was computed for each village. The two villages being most similar in terms of latrine use were paired. Finally, for each villages a random number was computed using Microsoft Excel's Rand() function. In each pair, the village with the higher number was allocated to the control condition and the village with the lower number was allocated to intervention. The evaluation design and flowchart of the sample are represented in Figure 3. We will report intention to treat effects throughout this report. This means that all baseline participant, irrespective of intervention participation, were included in the endline survey and analysis. We chose this design to maintain the random selection of participants.

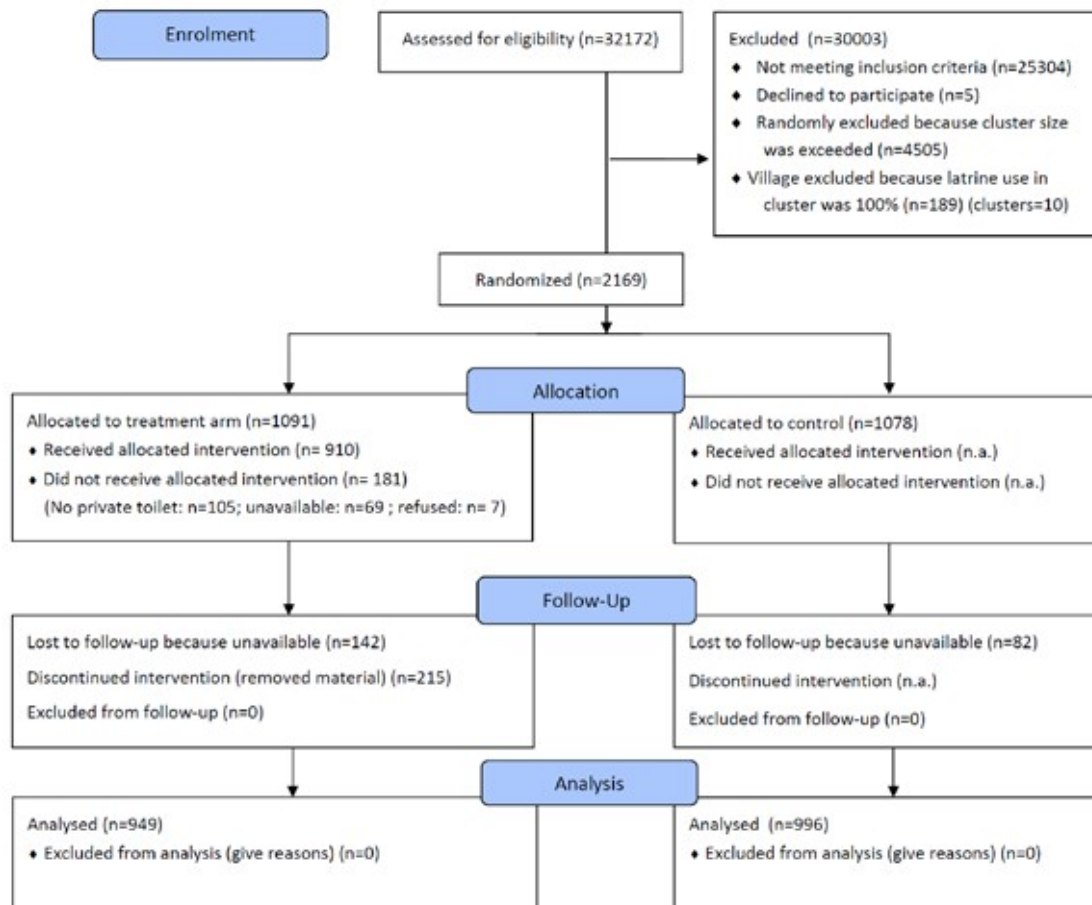


Figure 3: Flow chart of the sample. Numbers refer to number of households.

The sample size has been adjusted for the clustering of the sample. Baseline data yielded a mean latrine use of 79.0 % (SD=35.6) with an intra-cluster correlation coefficient (ICC) amounting to 0.202. Aiming to achieve a power of 0.8 and alpha-probability of 0.05, a minimal detectable effect size of 10% change in outcome and a cluster size of 15 households yielded a minimal sample size of 1221 households across 81 villages. Considering attrition rate of 25% yielded 20 households per village. Before baseline we had anticipated lower mean latrine use and a slightly higher ICC and consequently, more village had been included into the baseline survey. After baseline, we decided to remove 10 villages from the study, which already reported 99% or 100% latrine use. We decided to keep all other villages in the study to get maximum statistical power possible. The timeline of the impact evaluation is presented in Figure 4.



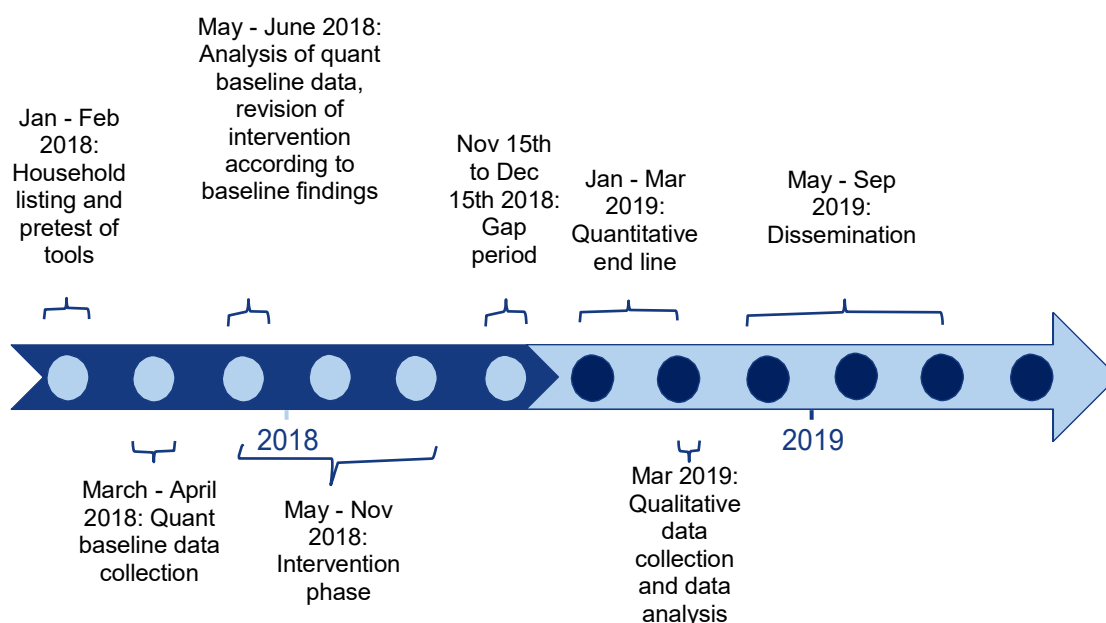


Figure 4. Timeline of the study.

### 3.3 Ethics

This study was approved by the institutional review board at the Faculty of Arts, University of Zurich.

In a specific training session on good field practices, enumerators and promoters were trained on how to communicate with respondents from the moment of first interaction to the completion of the interview or the intervention session. This session included basic social skills such as greeting and thanking the participant, taking informed consent in a standardized way, tactfully handling hesitant participants, creating a positive rapport, and basic rules for asking questions. For interviewers, a checklist with dos was compiled as a summary of this briefing. This was also used by supervisors during accompanied interviews and interviewers were debriefed accordingly.

Participants' confidentiality was protected during all stages of the evaluation. During data collection, enumerators were instructed to create a private setting for the interview with the respondent to the extent possible. Data were entered on CAPI devices and were only accessible to the enumerators. Once the data were submitted online, they were only accessible to the data managers of the hired data collection agency. After receiving the final data set, identified data were separated from the data set and stored in a separate file. We did not share findings with participants.

### 3.4 Sampling and data collection

Villages were selected according to the following procedure:

- Compile a list of all villages in Raichur district which match the inclusion criteria,

- To each village, allocate a random number between 0 and 1 using the RAND() function in Microsoft Excel,
- Allocate ranks within the villages of each GP based on the random number,
- Select villages ranked 1,
- Sort the file by the random number and select the first 120 villages for the trial and following four villages for qualitative data collection.

According to SBM data (MDWS, 2018) 250 villages out of, in total, 1071 villages in Raichur district were eligible for inclusion in the study.

Households were selected using a similar procedure:

- Select all households with a functioning latrine according to census data,
- To each households, allocate a random number between 0 and 1 using the RAND() function in Microsoft Excel,
- Sort the households by the random number and select the first 20 households for the trial,
- Select the next 10 households as back-up households, in case of locked households or refusals.

In the census survey, 32172 households were listed. Out of these 21% (6868 households) had a functioning latrine and were eligible for the study<sup>4</sup>. The baseline sample includes data from 2328 households, which corresponds to 34% of eligible households. We excluded 10 villages after baseline, because self-reported latrine use was 99% or higher. This yielded a final sample size for the impact assessment of 2169 participants from 110 villages.

Within households, participants were selected as follows:

- Select all household members aged 18 or above,
- To each household member, allocate a random number between 0 and 1 using the RAND function in Microsoft Excel,
- Within each households, sort the members by the random number and select the first member to be the key respondent for interviews,
- The next household member in the random sequence was selected as back up.

The sample for the qualitative study (conducted after the intervention) constituted a sub-sample of end line participants. From control and treatment arm three and two villages respectively, for which end line had revealed a strong increase in latrine use, were selected. In addition one control village, where latrine use had drastically decreased was selected. From these six villages, participants from the end line survey were randomly selected for qualitative data collection. The tools used to collect qualitative data primarily aimed to gather information to identify sanitation-related activities in relation to promotion of latrines that have occurred in the trial villages during the past year, to assess if these activities, seasonal changes, social pressure or survey effects may account for increases in self-reported latrine use and spill-over effects if any between intervention and control villages. The methods of data collection included 18 in-depth interviews with randomly sampled respondents of trial villages, six focus group discussions with key village level

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<sup>4</sup> The inclusion criteria of latrine coverage of at least 30% referred to government data, which was used to select villages. Actual latrine coverage, as revealed by the census survey, was substantially lower leading to the average latrine coverage of 21%.

representatives including the gram panchayat representatives, school teachers, front-line workers, Self-help group (SHG) members, Village Health Sanitation and Nutrition Committee (VHSNC) members, etc. In-depth interviews were also carried out with six Anganwadi Workers to understand extent of sanitation-related activities in promotion of safe disposal of child faeces among the mothers. In addition to this, key informant interviews with the district level SBM consultant and the District Secretary regarding SBM-activities towards promoting latrine use were undertaken.

For quantitative data collection at baseline and end line, we used two tools: First, a structured, quantitative face-to-face questionnaire and, second, structured, quantitative spot-check observations of the household latrine. The same tools were used in control and intervention arm. The questionnaire was administered by trained enumerators in the local language Kannada. The key objective of the questionnaire was to measure reported latrine use of all households members, self-reported latrine use of the key respondent and the behavioural factors potentially steering latrine use of the key respondent. The key objective of the spot-check observations was to obtain a more objective measure of latrine use. The observations were performed after the interview at the end of the household visit. The questionnaire was intensively pre-tested, both qualitatively and quantitatively.

A rigorous monitoring plan was devised through a carefully planned team structure and a responsive system for constant monitoring and quality control during baseline and end line data collection. The main purpose of the monitoring system was two-fold: 1) to ensure that the respondents interviewed during baseline were reached out to during end line as well; 2) the end line survey is undertaken in exactly the same way as during baseline (as per the protocol). To enable this, there were seven supervisors trained to monitor 14 enumerators using a monitoring check list of key pointers of protocol adherence during the interviews. Every team comprised of one supervisor and two to four enumerators depending on the village size being targeted. The supervisors were trained separately and thoroughly in RANAS approach and participated in the initial pilot exercise of the end line tool. This was followed by prior on-field exposure to the actual data collection process including its challenges, protocol to be followed during data collection and handling of field level challenges. While the structured spot-checks of the latrine were conducted in both intervention and control group, so were the monitoring checks for data collection.

The supervisors were tasked with accompaniments and back-checks to check for quality of surveys being conducted in addition to the task of ensuring that the targeted number of calls are met for the day. In order to ensure that the enumerators accomplished their targets for the day, a micro level plan was developed with details of the selected HHs along with their addresses, phone number, caste, surnames and availability. This helped the interviewers plan their time for the day and schedule calls as per targets.

The complex tool was easier to navigate through by use of hints and instructions to Interviewers wherever needed. Based on observations made during the accompaniments, the enumerators were debriefed immediately after the calls in order to facilitate improvement in their performance in the subsequent interviews.

To monitor the field team, three field executives were put in place. Their role was to randomly observe and support the field teams every day and monitor for adherence of the data collection process as per the agreed protocol.

Once data was derived from the CAPI platform, both the field manager and data manager checked for the actual count of records against the extraction count, data consistency based on the consistency checks provided by core team, shared erroneous records/data with core team and subsequently the field team for suspected anomalies and ensured validation of core indicators as per set procedures.

Data dumps that were shared within WAI-EAWAG on a weekly basis were analysed interviewer-wise for its reliability and feedback shared with Nielsen. With periodic data reviews and feedback sharing, the field teams were re-oriented on the correct interview methods, commonly occurring errors and missed out items and in turn help improve data quality.

Core team members from Nielsen, WaterAid and EAWAG undertook monitoring visits in both intervention and control villages, throughout the data collection process. Random accompaniments with the field team and observation of the data collection process followed by immediate one-on-one and team-wise debriefing as per the observation checklist were undertaken.

Post-completion of data collection process, an exercise of matching identifiers like gender, age and relationship with Head of household between baseline and end-line was undertaken to ensure that the correct respondent was interviewed.

The data collection agency and team were not informed about treatment and control villages, and were trained to carry out data collection in the same manner across all villages in the study.

### 3.5 Outcomes and data analysis

The primary outcomes of this study were as follows:

1. Latrine use household is an aggregate measure of latrine use across all households' members the last time they defecated. It ranges from 0 (indicating none of the household members used the latrine) to 1 (indicating all household members used the latrine).
2. Safe child faeces quantifies safe disposal of child faeces in the household on the day preceding data collection. It ranges from 0 (indicating that none of the child faeces were safely disposed) to 1 (indicating that all of the child faeces were safely disposed).
3. Observation index is an index summarizing signs of use measured through spot-checks observations of the latrine. It ranges from 0 (indicating that all spot-check items suggest that the latrine is being used) to 1 (indicating that none of the spot-check items suggest that the latrine is being used).<sup>5</sup>

To assess whether the intervention had statistically significantly increased these outcomes, we computed multilevel linear models explaining change in latrine use across

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<sup>5</sup> The following items were used to compute the index with equal weights: Is the latrine being used for some other purpose?; Is the squatting pan clogged with leaves/dirt/other materials?; Water container, like lota, mug, or coke bottle, (for washing after defecation) in the latrine?; Slippers outside or inside the latrine?; Is there electric light in the toilet?; Are there supplies to clean the latrine pan (i.e. toilet brush, cleaning fluid like Harpic)?; According to your (enumerator's) judgement, does the latrine look like it is likely being used?.

households members and change in safe disposal of child faeces through treatment arm and baseline values of the respective outcome. The following specification was used:

$$Y_{ij} = (b_0 + u_{0j}) + b_1X_{ij} + b_2Z_{ij} + b_3Z_{ij}*X_{ij} + \epsilon_{ij}$$

$Y_{ij}$ : change in outcome for household i, in village j

$b_0$ : fixed intercept

$u_{0j}$ : deviation from fixed intercept in village j

$b_1$ : fixed effect of the treatment

$X_{ij}$ : treatment condition of household i in village j

$Z_{ij}$ : baseline value of outcome for household i in village j

$\epsilon_{ij}$ : error of household i in village j

Adding random slopes to the models resulted in redundant covariance estimates and did not statistically significantly improve the model fit. Thus random slopes were not included. All participants were included in the analyses.

We only selected villages, which were at least 5 km away from any other study village. In addition, only one village per Gram Panchayat was included in the study to avoid spill over through local leaders. Through these two measures, we do not expect any spill over from the treatment to the control. However, contamination of the control cannot be categorically ruled out. If not on a daily basis, villagers from control and intervention villages might have met at market days when visiting neighbouring villages.

We do not expect control participants to have compared themselves with intervention participants. First control participants did not know that there is an intervention and that they are part of the control. Second, they probably met few intervention participants and were unlikely to compare their own behaviour with intervention participants' behaviour. Consequently, we do not expect John Henry effect to have been a major origin of bias.

Both, individuals of control and treatment, were aware that they are part of a study. We learned from district government officials and local leaders that SBM activities had intensified in the district from July 2018 in terms of monitoring checks at the household level, and SBM Information, Education and Communication activities on latrine use at the community level potentially exposing control villages to several activities on latrine construction and use (more details are discussed under the qualitative findings later in this report). Therefore, reactivity, for example in the form of over-reporting of latrine use, was probably similar in both study arms and we do not expect that Hawthorne effect was a major source of bias.

In order to test the mediation hypothesis (Hypothesis 2), a multiple mediation model was computed using the PROCESS Macro in SPSS. Intervention condition was included as dependent variables in the model. Changes in behavioural factors which correlated significantly with the intervention condition were included as mediators. The change in latrine use of the main respondent was included as dependent variable. We chose change in latrine use of the main respondent because behavioural factors were measured only for the main respondent and not for all household members.

## 4 Findings

### 4.1 Intervention implementation fidelity

The intervention consisted of four elements:

1. Community meeting
2. Household visit
3. Phone call reminder and a follow up household visit
4. Anganwadi centre meeting

Originally, we had planned to undertake two household visits wherein all family members were to be present. The activities requiring presence of all household members were clubbed during the first visit to the household and the follow up household visit was done when maximum number of household members were present because of logistical and time constraints.

Implementation fidelity was checked in two ways. First, monitoring data from the implementation team yielded that 910 out of the 1091 households which were allocated to the intervention condition received the intervention while 181 did not receive the intervention (compare the flowchart of the sample in Figure 3). Second, we included survey questions and observations of intervention material in the end line survey. Results are presented in Table 7. In about 73 % of treatment households, the survey respondent stated that at least one household member had participated in the community meeting. This is corroborated by the observation of handouts, which had been distributed during the meeting in 64% of households. Participation of the survey respondent in the meeting was noted. This was corroborated by an open intervention check item, in which the respondent was requested to recall specific activities of the community meeting. 68% of respondents could recall at least one specific activity.

In 84% of households, at least one household member was reported to have participated in the household visit. This is corroborated by the fact that at least one item of the intervention material was observed in 78% of households. Participation of main respondent was similarly high, although only 35% of respondents could actively recall a specific activity from the meeting.

(Self) reported participation in the phone call amounted to roughly 70% while participation in the AWC meeting was at 80%. However only 45% of the main respondents could remember a specific activity of the meeting.

Participation in the community meeting of men was slightly higher than participation of women: 73% of interviewed men reported participation as compared to 63% of women. For the AWC meetings, there was a slightly more number of women reported knowing whether a family member attended the AWC meeting than men.

Table 7: Implementation fidelity.

Activity	Control		Treatment	
Indicator of implementation fidelity	M	SD	M	SD
<b>Community meeting</b>				
Participation by at least on HH member	3.3	17.8	72.8	44.5
Handout observed	0.8	9.1	63.6	48.2
Participation by main respondent	3.0	16.9	68.1	46.6
Main respondent remembers specific activity	3.0	16.9	67.7	46.8
<b>Household visit</b>	0.0	0.0	0.0	0.0
Participation by at least on HH member	4.2	20.1	84.0	36.6
Commitment photo observed	1.3	11.2	74.1	43.8
Action plan observed	1.4	11.6	72.0	44.9
Sticker observed	1.3	11.2	73.1	44.4
At least on material observed	1.6	12.5	78.4	41.2
Participation by main respondent	4.1	19.9	83.2	37.4
Main respondent remembers specific activity	0.7	8.6	35.7	47.9
<b>Phone call<sup>§</sup></b>	0.0	0.0	0.0	0.0
Participation by at least on HH member	1.8	13.3	69.9	45.9
Participation by main respondent	1.4	11.6	66.1	47.4
<b>Anganwadi centre meeting<sup>&amp;</sup></b>	0.0	0.0	0.0	0.0
Participation by at least on HH member	2.5	15.6	79.1	40.7
Participation by main respondent	2.0	14.0	75.4	43.1
Main respondent remembers specific activity	1.2	10.7	45.4	49.8

Note: N=949 in control arm. N = 996 in treatment arm. <sup>§</sup> Due to a programming error, sample N = 664 in control and N = 869 in treatment arm. <sup>&</sup> Due to programming error, sample N = 601 in control and N = 795 in treatment arm. All values represent percentages.

Taken together, the quantitative evidence from the intervention check suggests high participation in the community meeting by at least one household member. Presence of intervention material in most households also suggest that almost all household were reached. The discrepancy between high self-reported participation in the household visits and AWC meetings and considerably lower ability requires explanation.

With SBM striving to make India open defecation free by October 2019, intensive latrine promotion happened in Raichur district. Qualitative analysis revealed that in both intervention and control area a number of government activities to promote latrine use, in addition to toilet construction, were undertaken. In all the six villages where the qualitative survey was undertaken, it appeared that the local government/ Gram Panchayat has been extensively involved in toilet construction over the past one year (2018) given the number of new toilets constructed. This was emphasized by respondents who had been residing in the villages for many years (many since birth). According to most respondents, over the past year (2018) many houses in their villages had constructed toilets. Government officials (Public Development Officers) Gram Panchayat members, frontline workers, school teachers actively followed up with the households until toilets were constructed. Government officials and agents used various means to encourage households to construct toilets including emphasizing health benefits of toilets, and subtle and overt pressure tactics (e.g. threats by Gram Panchayat that ration cards and job cards will be confiscated if the household does not have toilets, standing outside toilets till they were cleared of other materials stored in the toilet). In addition to toilet construction, the government carried out significant toilet related

awareness activities in all the villages under SBM. In all the villages, the in-depth interviews found that activities like street-plays, house visits, mike announcements, mothers' meetings in AWCs and Village Health Sanitation and Nutrition Committee (VHSNC) meetings to sensitise the communities to the benefits of latrine use were undertaken under SBM. Key messages emphasized the importance of toilets for disease prevention, explained using faecal-oral route of transmission of diseases. Community members recalled being told how *mosquitoes* can transmit germs from faeces to food and water, adversely affecting the health of the people. Messages also emphasized the convenience of latrines, and how open defecation makes the village look dirty. In the intervention villages, respondents shared how SVYM carried out awareness activities through village meetings, household visits, taking photographs and putting up stickers in the houses telling people to use toilets.

*"There was a community meeting. Some Government people also came house-to-house telling people to use toilets. Awareness activities have been carried out about how bad open defecation is for our health. Sometimes, wherever toilets were used for storage purposes, they would even wait until the household members took out all the scrap materials from the toilet and kept the toilet ready for use."* – Household Respondent, Interview

Data from the FGDs supported the observations made by individual respondents. Those actively engaged in SBM activities in communities were Government representatives such as the Gram Panchayats, the front-line workers, school teachers and sometimes self-help group members, VHSNC and School Development and Monitoring Committee (SDMC) members. All the six focus groups revealed that toilet construction activities in their villages intensified in 2018 along with tremendous awareness generation activities that were carried out both at village level and household level especially in those villages which were closer to the taluka or district headquarters wherein Public Development Officers (PDOs) and Educational Officers (EOs) were directly involved in the awareness activities.

*"By Nov 1<sup>st</sup> 2018 (Kannada Rajyotsava), we had 2,70,000 toilets and still we had to construct 16,000 more to become ODF. We tried to complete the target by Nov 14<sup>th</sup>. Now, we have 3000 pending due to migration issues and 12,9997 more to be constructed by Mar 31<sup>st</sup> 2019. As on date (1<sup>st</sup> Feb 2019), we have about 900 ODF villages."* - District SBM Consultant, Raichur.

In-depth interviews with Anganwadi workers also revealed that under the Integrated Child Development Services (ICDS), meetings with mothers were organised every week under the Government of India's Nutrition Mission or POSHAN Abhiyan. The Primary Health Centre doctor would visit the anganwadi centre and explain the importance of safe disposal of child faeces for the growth and development of the child.

*"We have spent 14 Lakhs on awareness activities in all taluks to carry out door-to-door awareness. Under Poshan Abhiyan, all the 2500 AWCs have been given 2000 rupees each to conduct meetings with mothers and sensitise them on safe disposal of child faeces."* - District Secretary, Raichur.

All in all, these activities may have resulted in increased self-reported participation of households in the intervention, and suggests that since the government-led SBM activities also included multiple household visits and AWC meetings, it is possible that



the treatment participants, and small proportion of control village households may have confused the government activities and the RANAS intervention.

The data from the control group suggest that up to 4% of control households were exposed to intervention activities. However, results of our qualitative analysis suggests that in the control villages studied (under the qualitative study), participants had never seen our campaign materials before when showed the materials during the focus group discussions. This suggest that no contamination of the control had taken place. Control households reporting intervention participation may have confounded this study's intervention to the intensive SBM activities, simultaneously happening in the study area.

The qualitative study asked respondents how often they visited other villages. Most of male respondents visited villages located at a distance of 2 kilometres to 40 kilometres. Women typically travelled only when they needed to visit their parental home or the hospital when unwell. The frequency of visiting other villages varied from two to four times a year. When probed as to whether they would talk about latrine use during these visits, majority were surprised as to why they would talk about toilets when visiting other villages. On probing further, a few respondents recalled discussing delays in reimbursements, and checks by government officials to verify and encourage toilet use the. During the FGDs, none of the participants and anganwadi centres in control villages recognised the materials that were used as part of the project in the intervention villages. This suggests that it may not be a spill over from the RANAS campaign in the control households but participants referring to other SBM related activities not part of this project.

Of all households who received the RANAS intervention, only 20% - 30% of households did not report participation in the intervention, and no intervention materials were seen in these households. Our qualitative results suggests that since all the materials were put up in open spaces around the household, when neighbours or guests visited the household particularly during festivals or any family gatherings (during the festival season of Dussera and Diwali), the materials showing latrine use may have been embarrassing to the participants and thus, may have been removed intentionally. While the reminder stickers were water-proof, some had peeled off the lota during use or had been pulled off by little children in the household. In addition, there were few houses where the posters did not stick as the walls were powdery, rough and coated with limestone.

Finally, the finding that only 35% of respondents could remember at least one specific activity from the household visit requires an explanation. Despite this value, the presence of intervention material in 78% of households at follow-up provides evidence that at least this proportion of households was reached by household visits. In line with this, a similar share of intervention respondents stated to have participated in the intervention. We thus assume that although participating in the activities of the household visits, participants might have forgotten the specific activities or confounded them with other household visits. This is plausible given the number of other activities implemented under SBM during the time of the intervention of this study.

Referring to the theory of change, our data suggest that the project outputs were achieved for the majority of respondents.

## 4.2 Impact analysis

### 4.2.1 Descriptive statistics and balance tables

Descriptive statistics of the qualitative sample are presented in Table 8 and descriptive statistics of the quantitative sample are presented in Table 8 . In addition to data for the overall quantitative sample of 1945 study participants, data disaggregated by sex, age group and caste are presented.

Table 8: Socio-demographic characteristics of qualitative sample.

	M	SD
Female respondent (%)	66.7	48.5
Age of respondent (years)	36.1	13.4
HH size (members)	5.0	2.4
HHs which own a house (%)	100.0	0.0
HHs which own agricultural land (%)	94.4	23.6
Size of land owned (acres)	5.4	4.5
HHs which have ration card (%)	94.4	23.6
Highest level of education in the HH (years)	8.6	4.5
Muslim HHs (%)	5.6	23.6
Christian HHs (%)	0.0	0.0
HHs which belong to SC/ST (%)	66.7	48.5
HHs which belong to OBC (%)	22.2	42.8

Note: N=18.

Table 9: Socio-demographic characteristics of overall sample and subgroups

	Overall sample		By sex				By age group				By caste			
			Male (n=941)		Female (n=1004)		Age < 60 (n=1723)		Age 60+ (n=222)		Regular (n=380)		SC/ST/OBC (n=1565)	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Female respondent (%)	51.6	50.0					51.8	50.0	50.0	50.1	48.9	50.1	52.3	50.0
Age of respondent (years)	38.4	13.9	38.9	14.0	38.0	13.7	35.1	10.8	64.5	4.5	40.2	13.5	38.0	13.9
HH size (members)	5.0	2.4	5.0	2.3	4.9	2.5	5.0	2.4	4.8	2.6	4.4	2.1	5.1	2.5
HHs which own a house (%)	99.0	10.1	99.3	8.6	98.7	11.3	99.0	10.2	99.1	9.5	98.9	10.2	99.0	10.1
HHs which own agricultural land (%)	79.9	40.1	81.8	38.6	78.1	41.4	80.2	39.9	77.5	41.9	82.6	38.0	79.2	40.6
Size of land owned (acres)	4.5	7.4	4.7	8.2	4.2	6.6	4.3	7.1	5.6	9.3	5.5	7.2	4.2	7.5
HHs which have ration card (%)	93.2	25.2	92.9	25.7	93.5	24.6	93.5	24.7	91.0	28.7	90.2	29.7	93.9	23.9
Highest level of education in the HH (years)	9.7	4.8	10.0	4.7	9.5	4.8	9.9	4.6	8.4	5.6	10.8	4.7	9.5	4.8
Muslim HHs (%)	4.6	21.0	5.3	22.5	4.0	19.6	4.5	20.7	5.9	23.5	1.1	10.2	5.5	22.8
Christian HHs (%)	1.0	9.8	0.6	8.0	1.3	11.3	1.1	10.4	0.0	0.0	0.3	5.1	1.2	10.7
HHs which belong to SC/ST (%)	44.2	49.7	45.0	49.8	43.4	49.6	44.5	49.7	41.4	49.4	0.0	0.0	54.9	49.8
HHs which belong to OBC (%)	36.3	48.1	34.4	47.5	38.0	48.6	36.1	48.0	37.8	48.6	0.0	0.0	45.1	49.8

Note: N = 1945.

Socio-demographic characteristics and baseline values of outcomes for treatment and control arm are presented in Table 10. At baseline, latrine use was relatively high at 77%, corroborated by a similarly high observation index. In contrast, safe disposal of child faeces was low. Independent sample t-tests yielded no statistically significant differences with regard to socio-demographics. However, minor but statistically significant difference were detected for the latrine observation index and habit strength for open defecation. Handwashing facilities with soap and water were considerably more frequently observed in the treatment arm than in the control arm.

Table 10: Balance table

	Control		Treatment		Difference	T-test for equality of means		
	M	SD	M	SD		t	Df	p
Female respondent (%)	51.95	49.99	51.31	50.01	0.64	0.284	1943	0.776
Age of respondent (years)	38.91	13.82	37.94	13.91	0.98	1.551	1943	0.121
HH size (members)	5.01	2.39	4.89	2.42	0.12	1.089	1943	0.276
HHs which own a house (%)	98.84	10.71	99.10	9.47	-0.26	-0.560	1942	0.575
HHs which own agricultural land (%)	80.80	39.41	79.02	40.74	1.79	0.981	1942	0.326
Size of land owned (acres)	4.78	7.63	4.15	7.22	0.63	1.875	1934	0.061
HHs which have ration card (%)	93.57	24.55	92.87	25.74	0.69	0.608	1942	0.544
Highest level of education in the HH (years)	9.71	4.77	9.75	4.79	-0.05	-0.218	1942	0.827
HHs which belong to SC/ST/OBC (%)	79.56	40.35	81.33	38.99	-1.77	-0.983	1943	0.326
Latrine use household (%)	77.40	36.51	77.54	36.26	-0.14	-0.084	1943	0.933
Safe child faeces (%)	11.89	30.47	10.30	26.16	1.59	0.565	407	0.572
Latrine observation index	70.37	26.76	68.17	28.17	2.20	1.766	1943	0.078
Handwashing facility (%)	47.84	49.98	39.56	48.92	8.28	3.693	1943	0.000
Latrine use main respondent (%)	76.20	35.61	78.43	33.57	-2.23	-1.421	1943	0.156
Habit OD	0.27	0.30	0.24	0.28	0.04	2.768	1943	0.006
Habit LU	0.72	0.30	0.73	0.28	-0.01	-1.110	1943	0.267
Intention LU	0.77	0.26	0.77	0.25	0.00	0.209	1943	0.834

Note: N=1945

#### 4.2.2 Research analyses

For each study arm and outcome, baseline and end line values and change scores are presented in Table 11. In addition, ICCs and the differences in change scores are reported. Effects of the intention to treat are reported which means that all participants of the respective group are included in the computation, irrespective of the self-reported participation in the intervention. Excluding self-reported non-participants would have biased the results because it would have compromised the randomized design of the study.

The data show that latrine use across household members in the treatment arm increased by 20% and amounted to 97% at end line. Latrine use in the control arm increased by 15% to 92% at end line. The difference in the change of latrine use was statistically significant<sup>6</sup>,  $F(1, 192.756) = 4.567$ ,  $p = 0.034$ . The latrine observation index increased by 7% to 77% in the control group and by 13% to 81% in the treatment group. The difference in change scores between groups was statistically significant,  $F(1, 290.515) = 5.636$ ,  $p = 0.018$ . This means that both household level outcomes indicated that latrine use increased. Consequently, Hypothesis 1 is accepted.

Safe disposal of child faeces increased by 36% in the control as compared to 32% in the treatment group. The difference in changes was not statistically significant,  $F(1, 109.047) = 0.204$ ,  $p = 0.653$ . Consequently, Hypothesis 3 is rejected.

Qualitative study participants reported high levels of latrine use. Out of the 18 households participating in the qualitative study, a majority had functional toilets that appeared to be in use. Only five were observed to be used for purposes other than defecation. Fifteen household members reported that they almost always used the toilet, but there were few households (3) which reported that none of the members used the toilet for defecation. Observations of 15 household toilets suggested that 10 of them were in use given the presence of a bucket of water, cleaning materials and sometimes, all of which were placed in the toilet itself. In the observed households, handwashing spaces in proximity to the toilet were conspicuously absent.

On perceptions of latrine use, the FGD participants divulged that latrine use had increased over the past year but not as much as desired. They shared that there were instances where only some of the household members used the toilet and many instances where the toilets looked like they were used. The groups observed that since open defecation was a habit since generations, change in difficult in such a short span of time. Continued awareness activities, persistent latrine checks for usage and continued pressure from the government were noted as crucial for promotion of latrine use.

*"We visited houses, checked their toilet and told them to use it if they were not using it. We did this twice in our village. About two months ago, we also visited other villages to check if they were using it."* – School teacher, FGD.

For changes in the remaining outcomes statistical significance tests were not computed in order to not inflate false discovery probability. However, comparison of mean values suggests that observed availability of a handwashing station near the latrine decreased in the control group but increased in the treatment group. Only for two of the remaining outcomes differences in change scores larger than 5% were observed. Perceived barriers to latrine use increased in the control by 10% but decreased in the treatment group by 4%. Perceived difficulty of water collection during the hot season increased by 3% in the control but decreased by 4% in the treatment group. Other behavioural factors, in particular vulnerability (the perceived likelihood of contracting a disease when

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<sup>6</sup> Since hypotheses were directed, p-values of .1 need to be considered statistically significant if testing for single outcomes. Correcting for testing of multiple outcomes using Benjamini & Hochberg procedure yielded that p-values of the first, second and third outcome would need to be lower than 0.033, 0.067 and 0.1 respectively to be considered statistically significant.

practicing OD), attitudes towards OD and perception of others behaviours changed similarly on both intervention arms.

Inter-cluster correlation coefficients for all outcomes are also presented in Table 11. Data from all households was used to compute the ICCs. ICCs are generally low, this suggests that participants across villages were relatively similar to each other, or in other words, that the village effect on outcomes was relatively small.

Table 11: Baseline, end line and change scores of all outcome variables for control and treatment arm.

Outcome		ICC	Control				Treatment								Difference in difference	
			BL		EL		Change		BL		EL		Change			
			M	SD	M	SD	M	SD	M	SD	M	SD	M	SD		
Main outcomes	Latrine use household (%)	0.24	77.40	36.51	92.42	24.92	15.02	44.11	77.54	36.26	97.10	15.31	19.57	39.39	4.55	*
	Safe child faeces (%)	0.14	11.89	30.47	47.38	48.04	35.83	56.83	10.30	26.16	42.45	46.84	32.06	52.70	-3.77	
	Latrine observation index	0.24	70.37	26.76	77.18	22.99	6.80	34.43	68.17	28.17	81.25	18.45	13.08	32.84	6.28	*
Additional outcomes	Handwashing facility (%)	0.20	47.84	49.98	44.36	49.71	-3.48	67.02	39.56	48.92	46.29	49.89	6.73	69.20	10.20	£
	Latrine use main respondent (%)	0.23	76.20	35.61	90.22	24.67	14.03	43.28	78.43	33.57	94.64	16.84	16.22	37.52	2.19	£
	Habit OD	0.21	0.27	0.30	0.13	0.23	-0.15	0.37	0.24	0.28	0.09	0.15	-0.15	0.32	0.00	£
	Habit LU	0.27	0.72	0.30	0.85	0.22	0.13	0.38	0.73	0.28	0.87	0.16	0.14	0.33	0.01	£
	Intention LU	0.21	0.77	0.26	0.82	0.20	0.05	0.33	0.77	0.25	0.85	0.15	0.08	0.30	0.03	£
Risks	Health Knowledge	0.23	0.71	0.12	0.71	0.14	0.00	0.18	0.73	0.11	0.74	0.14	0.01	0.17	0.01	£
	Vulnerability	0.27	0.43	0.32	0.65	0.31	0.22	0.46	0.40	0.32	0.66	0.30	0.27	0.45	0.05	£
	Severity	0.18	0.76	0.15	0.77	0.13	0.01	0.20	0.76	0.13	0.77	0.12	0.01	0.17	0.00	£
Attitudes	Attitudes LU positive	0.25	0.74	0.21	0.79	0.19	0.05	0.28	0.75	0.19	0.82	0.15	0.06	0.24	0.01	£
	Attitudes LU negative	0.30	0.16	0.17	0.11	0.16	-0.05	0.23	0.13	0.16	0.09	0.12	-0.04	0.20	0.01	£
	Attitudes OD positive	0.19	0.21	0.23	0.11	0.18	-0.09	0.29	0.17	0.22	0.08	0.13	-0.09	0.25	0.00	£
	Attitudes OD negative	0.21	0.64	0.19	0.74	0.18	0.11	0.25	0.65	0.17	0.75	0.14	0.10	0.22	-0.01	£
Norms	Others behaviour	0.15	0.62	0.17	0.71	0.13	0.09	0.20	0.62	0.16	0.73	0.11	0.11	0.20	0.02	£
	Personal norm	0.23	0.73	0.23	0.77	0.19	0.04	0.30	0.72	0.22	0.79	0.14	0.07	0.27	0.03	£
	Others' (dis)approval	0.35	0.65	0.21	0.71	0.21	0.05	0.30	0.65	0.21	0.73	0.18	0.07	0.29	0.02	£
Abilities	How-to-do knowledge	0.31	0.55	0.11	0.53	0.10	-0.02	0.15	0.53	0.11	0.53	0.09	0.00	0.14	0.03	£
	Confidence in performance	0.21	0.76	0.23	0.80	0.19	0.04	0.30	0.77	0.22	0.83	0.14	0.07	0.26	0.02	£

Outcome		ICC	Control					Treatment					Difference in difference			
			BL	SD	EL	Change	BL	SD	EL	Change						
			M		M		M		M		M	M				
Self-regulation	Confidence in continuation	0.26	0.66	0.22	0.71	0.20	0.05	0.30	0.65	0.21	0.74	0.17	0.09	0.27	<b>0.04</b>	£
	Confidence in recovery	0.21	0.71	0.26	0.72	0.21	0.01	0.34	0.71	0.25	0.76	0.19	0.05	0.31	0.03	£
	Action Planning	0.22	0.39	0.19	0.40	0.16	0.01	0.25	0.37	0.18	0.42	0.15	0.06	0.23	<b>0.05</b>	£
	Action Control	0.17	0.68	0.27	0.74	0.21	0.06	0.34	0.68	0.25	0.76	0.17	0.08	0.31	0.02	£
	Hindrance	0.23	0.20	0.40	0.30	0.46	0.10	0.58	0.26	0.44	0.22	0.42	-0.04	0.59	<b>-0.14</b>	£
	Coping planning	0.25	0.77	0.34	0.94	0.16	0.17	0.37	0.79	0.34	0.95	0.14	0.16	0.36	-0.01	£
Context: Water access	Forgetting	0.13	0.09	0.29	0.06	0.24	-0.03	0.36	0.10	0.30	0.05	0.21	-0.05	0.37	-0.02	£
	Commitment	0.21	0.72	0.23	0.77	0.19	0.05	0.30	0.71	0.23	0.79	0.15	0.08	0.28	0.03	£
	Difficulty water collection now	0.36	0.26	0.35	0.20	0.32	-0.06	0.49	0.22	0.33	0.18	0.30	-0.04	0.45	0.01	£
	Difficulty water collection during hot season	0.32	0.59	0.41	0.62	0.39	0.03	0.58	0.64	0.39	0.60	0.38	-0.04	0.53	<b>-0.07</b>	£

Note: £ No significance test computed. Since hypotheses were directed, p-values of .1 need to be considered statistically significant if testing a single outcomes. Correcting for testing of multiple outcomes using Benjamini & Hochberg procedure yielded that p-values of the first, second and third outcome would need to be lower than 0.033, 0.067 and 0.1 respectively to be considered statistically significant. Significance levels were obtained by modelling the respective outcome variable depending on experimental condition, the baseline value of the outcome and the interaction of the two variables. The relationship between the intervention and the respective outcome showed significant variance in intercepts across participants. Adding random slopes to the models resulted in redundant covariance estimates and did not statistically significantly improve the model fit. To not inflate the changes of false discovery, tests were only computed for the main outcomes of the study.



In order to reveal the mechanisms of action through which the intervention changed latrine use and to test Hypothesis 2, we performed a mediation analysis with treatment as the independent variable, changes in behavioural factors as mediators and latrine use of the main respondent as independent variable. Preliminary correlation analyses yielded that changes in negative attitudes towards latrine use, in the perceptions of other people's latrine use, in knowledge of how to correctly use and maintain the latrine (how-to-do knowledge), in confidence in ability to continuously use the latrine, in the level of planning of when to use the latrine during the daily routine (action planning<sup>7</sup>), in perceived hindrances, and in perceived expenditure of time for water collection during the hot season were triggered by the intervention. Only these factors were included as mediators in the model.

Results of the multiple mediation analysis are presented in Figure 5. Solid boxes around mediators indicate significant indirect effects. The arrows on the left of the diagram indicate effects of the treatment on changes in a behavioural. Behavioural factors were the intermediate outcomes in the theory of change. The numbers next to the arrows indicate unstandardized coefficients of single regression models predicting changes in each behavioural factor from treatment. Levels of significance are represented by asterisks (\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ ). In line with the preliminary correlations, the model shows that the intervention triggered marginal increases in the perception of others' behaviour, how-to-do knowledge, confidence in continuation, and action planning. The strongest effect of the intervention was detected on hindrance: the intervention decreased the number of hindrances to latrine use, which participants reported.

The arrows on the right of the diagram indicate the relation between changes in the behavioural factors of the model and latrine use. The numbers indicate unstandardized coefficients of a multiple regression model, predicting the change in latrine use from change in behavioural factors. The strongest effect was detected for others' behaviour, followed by negative attitudes towards latrine use, confidence in continuation, how-to-do knowledge, hindrance (negative effect) and perceived difficulty of water collection during the hot season (negative effect). Together the changes in these factors explain 60% in changes in latrine use from baseline to endline.

Combining both the sides of the model indicates the extent to which changes in behaviour factors (level 1 outcome in the theory of change) triggered by the intervention (output) translated into changes in behaviour (level 2 outcome in the theory of change). Solid /dashed boxes around behavioural factors indicate for each behavioural factor whether this indirect effect was statistically significant / not significant. For negative attitudes towards latrine use, we learned that changes in this factor were related to changes in latrine use. However, the intervention did not trigger any changes in this factor. Accordingly, the mediation model did not yield a statistically significant indirect effect, indicated by the dashed box. For others' behaviour, in contrast, both pathways

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<sup>7</sup> Action planning is both an intervention (planning activity with participants) and behavioural factor (the level of detail of the plans which the participant can report).

were significant. This means that the intervention triggered an increase in others' behaviour and that this increase was related to an increased in latrine use. Similarly, significant indirect effects were detected for how-to-do knowledge, confidence in continuation and hindrance. In this vein, the intervention successfully increased the level of action planning in participants. In contrast however, this increase in action planning did not translate into a change of behaviour. Thus now significant indirect effect was detected. Conversely, difficulty of collecting water during the hot season was negatively associated with changes in latrine use. However, the intervention did not trigger any change in this and the indirect effect was thus not significant.

Taking all indirect effects together, they fully explain the effect of the treatment on latrine use. The remaining direct effect of the intervention, as illustrated by the dashed arrow from intervention to latrine use, was insignificant. This means that the mediation accounts for the mechanism of action of the intervention. Accordingly, Hypothesis 2 is accepted. This suggests that the assumptions of the theory of change at outcome level 1 and 2, namely that the intervention changes behavioural factors and that behavioural factors steer latrine use are met.

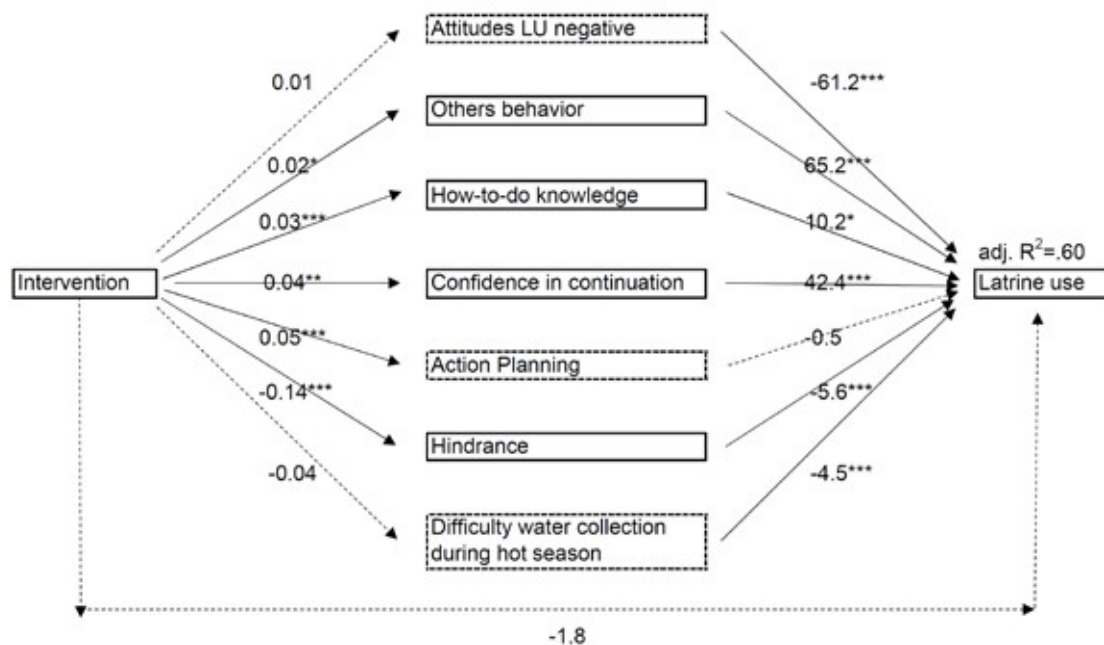


Figure 5: Results of multiple mediation analysis.

With regard to the ongoing activities to promote latrine use, which were not part of our study, qualitative results yielded the following motivators in the study population. When asked as to why toilets are used for defecation, the common responses from the individual respondents was that toilets were convenient, good for their health, and helps keep the village clean. It was evident from their responses that awareness generation activities focussed on disseminating the important link between toilets and its benefits in terms of disease prevention. The respondents felt that the awareness activities helped most of the community members to start using toilets.

*“When village officials visit houses and check toilets, people become alert and start using toilets.” – ASHA worker, FGD*

*“There is pressure from the PDO to keep our village clean. In the mornings, GP members and PDOs tell a lot about it to people who go out to defecate on why we must keep our village clean. They even came and checked our toilets at least twice in the past one year. Pressure to use has increased in the past one year not just from the gram panchayat but also from people around us.” – Village, IDI.*

The qualitative study did not probe for differences in toilet use and non-use among men and women, as the quantitative study did not reveal significant gender differences. Among those who reported not using toilets, the main barriers reported included limited water availability during the summer months, habit of defecating in the open, long working hours in the field typically located away from their homes, large family size that made it difficult for everyone to use the single latrine in the morning. It is important to note that these barriers were noted both during interviews and focus group discussions, and reflect perceptions of barriers faced by the community. The relative importance of these barriers was not discussed. While families using latrines may have overcome these barriers, family not using the latrine consistently may not have been able to overcome these barriers through shifts in underlying psychological factors.

#### **4.2.3 Drop-out analysis**

Table 12 presents baseline values of socio-demographics and outcome variables for participants who were recovered at follow-up and hence included in the evaluation and participants who were not recovered and thus dropped out of the study. With regard to socio-demographics no statistically significant differences are revealed. With regard to outcomes, safe handling of child faeces at baseline was higher in the evaluation sample than in dropouts.

Table 12: Socio-demographic characteristics and outcomes for sample of the impact assessment and dropouts

Variable	Evaluation sample		Dropout		Mean difference	T-test for equality of means		
	M	SD	M	SD		t	df	P
Female respondent (%)	51.62	49.99	50.89	50.10	0.73	0.206	2167	0.837
Age of respondent (years)	38.41	13.87	35.89	14.55	2.53	2.567	2167	0.010
HH size (members)	4.95	2.41	4.84	2.37	0.11	0.636	2167	0.525
HHs which own a house (%)	98.97	10.09	97.77	14.81	1.20	1.185	247.441	0.237
HHs which own agricultural land (%)	79.89	40.09	81.70	38.76	-1.81	-0.642	2166	0.521
Size of land owned (acres)	4.46	7.43	4.14	6.98	0.31	0.596	2156	0.551
HHs which have ration card (%)	93.21	25.16	93.75	24.26	-0.54	-0.305	2166	0.760
Highest level of education in the HH (years)	9.73	4.78	9.45	4.84	0.28	0.827	2166	0.409
HHs which belong to SC/SI/OBC (%)	80.46	39.66	83.48	37.22	-3.02	-1.142	284.580	0.254
Latrine use household (%)	77.47	36.37	73.39	39.40	4.08	1.480	268.617	0.140
Safe child faeces (%)	11.12	28.44	2.08	14.43	9.03	3.594	97.262	0.001
Latrine observation index	69.25	27.51	65.37	29.62	3.88	1.868	269.193	0.063
Handwashing facility (%)	43.60	49.60	44.20	49.77	-0.60	-0.171	2167	0.865
Latrine use main respondent (%)	77.34	34.59	74.15	37.75	3.19	1.206	267.908	0.229
Habit OD	0.25	0.29	0.29	0.32	-0.03	-1.515	267.291	0.131
Habit LU	0.72	0.29	0.69	0.31	0.03	1.597	270.602	0.111
Intention LU	0.77	0.26	0.75	0.28	0.02	1.037	268.032	0.301

Note: N (Evaluation sample) = 1945. N (Dropout)=224.

#### 4.2.4 Heterogeneity of impacts

Table 13 to Table 18 present selected outcomes disaggregated by sex, age group and caste. Since this study was not powered to perform sub-group analysis, statistical significance tests are not computed.

Table 13: For male respondents: Baseline, end line and change scores of selected outcome variables for control and treatment arm.

Outcome		Control						Treatment						Difference in difference
		BL		EL		Change		BL		EL		Change		
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	
Main outcomes	Latrine use household (%)	79.03	35.31	90.42	27.87	11.39	44.09	80.22	34.75	96.89	16.53	16.66	38.38	5.27
	Safe child faeces (%)	9.89	28.01	50.40	47.30	39.15	53.08	6.10	21.52	45.44	48.14	39.25	54.51	0.11
	Latrine observation index	72.43	25.62	75.81	24.67	3.38	34.78	69.72	27.27	81.38	17.67	11.66	31.54	8.28
Additional outcomes	Handwashing facility (%)	50.00	50.05	41.23	49.28	-8.77	68.02	38.14	48.62	45.57	49.85	7.42	69.43	16.19
	Latrine use main respondent (%)	75.96	35.86	88.40	27.54	12.44	44.80	79.28	32.73	93.99	18.49	14.71	37.47	2.26
	Habit OD	0.29	0.31	0.14	0.25	-0.15	0.38	0.23	0.27	0.09	0.17	-0.14	0.33	0.01
	Habit LU	0.71	0.31	0.84	0.25	0.12	0.39	0.74	0.28	0.87	0.17	0.14	0.33	0.01
	Intention LU	0.78	0.25	0.81	0.21	0.03	0.32	0.77	0.25	0.84	0.16	0.07	0.30	0.04

Table 14: For female respondents: Baseline, end line and change scores of selected outcome variables for control and treatment arm.

Outcome		Control						Treatment						Difference in difference
		BL		EL		Change		BL		EL		Change		
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	
Main outcomes	Latrine use household (%)	75.89	37.55	94.27	21.72	18.38	43.90	74.99	37.49	97.31	14.07	22.32	40.16	3.95
	Safe child faeces (%)	13.76	32.62	44.40	48.75	32.67	60.27	13.27	28.71	40.33	45.95	27.07	51.05	-5.61
	Latrine observation index	68.47	27.66	78.44	21.28	9.97	33.84	66.70	28.95	81.13	19.18	14.43	34.01	4.46
Additional outcomes	Handwashing facility (%)	45.84	49.88	47.26	49.98	1.42	65.78	40.90	49.21	46.97	49.96	6.07	69.04	4.65
	Latrine use main respondent (%)	76.42	35.41	91.91	21.56	15.49	41.82	77.61	34.36	95.26	15.10	17.65	37.55	2.16
	Habit OD	0.26	0.29	0.11	0.20	-0.14	0.36	0.24	0.29	0.08	0.13	-0.16	0.32	-0.01
	Habit LU	0.72	0.30	0.86	0.20	0.14	0.37	0.73	0.29	0.88	0.15	0.15	0.33	0.01
	Intention LU	0.76	0.27	0.83	0.19	0.07	0.33	0.76	0.26	0.85	0.13	0.09	0.29	0.02

Table 15: For respondents younger than 60 years: Baseline, end line and change scores of selected outcome variables for control and treatment arm.

Outcome		Control						Treatment						Difference in difference
		BL		EL		Change		BL		EL		Change		
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	
Main outcomes	Latrine use household (%)	77.66	36.67	92.00	25.57	14.34	44.57	78.09	35.88	96.99	15.61	18.90	39.27	4.57
	Safe child faeces (%)	11.51	29.83	47.00	47.73	36.16	56.97	9.31	24.55	43.30	46.87	33.30	51.14	-2.86
	Latrine observation index	70.10	27.06	77.08	23.06	6.98	34.59	68.43	27.98	81.22	18.57	12.79	32.57	5.81
Additional outcomes	Handwashing facility (%)	46.59	49.91	44.92	49.77	-1.67	66.15	38.71	48.74	46.05	49.87	7.34	68.25	9.01
	Latrine use main respondent (%)	76.18	35.59	89.74	25.39	13.56	43.74	78.44	33.48	94.62	16.91	16.18	37.49	2.62
	Habit OD	0.27	0.30	0.13	0.23	-0.14	0.37	0.23	0.28	0.09	0.15	-0.15	0.32	-0.01
	Habit LU	0.72	0.30	0.85	0.23	0.13	0.38	0.73	0.28	0.88	0.16	0.14	0.33	0.01
	Intention LU	0.77	0.25	0.82	0.20	0.05	0.33	0.77	0.25	0.85	0.15	0.08	0.30	0.03

Table 16: For respondents 60 years or elder: Baseline, end line and change scores of selected outcomes for control and treatment arm.

Outcome		Control						Treatment						Difference in difference
		BL		EL		Change		BL		EL		Change		
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	
Main outcomes	Latrine use household (%)	75.45	35.39	95.58	19.18	20.13	40.30	73.08	39.08	97.98	12.70	24.90	40.12	4.77
	Safe child faeces (%)	14.17	34.54	50.00	50.80	33.65	56.98	18.18	36.34	34.72	46.86	21.67	64.91	-11.99
	Latrine observation index	72.45	24.46	77.93	22.60	5.48	33.34	66.10	29.72	81.56	17.56	15.45	35.05	9.97
Additional outcomes	Handwashing facility (%)	57.14	49.71	40.18	49.25	-16.96	72.15	46.36	50.10	48.18	50.20	1.82	76.60	18.78
	Latrine use main respondent (%)	76.29	35.96	93.82	18.07	17.53	39.71	78.30	34.45	94.85	16.40	16.55	37.94	-0.98
	Habit OD	0.28	0.30	0.09	0.15	-0.18	0.33	0.24	0.29	0.08	0.14	-0.17	0.33	0.02
	Habit LU	0.71	0.30	0.86	0.18	0.15	0.34	0.71	0.30	0.87	0.15	0.16	0.33	0.01
	Intention LU	0.75	0.28	0.84	0.15	0.08	0.32	0.76	0.27	0.85	0.15	0.08	0.31	0.00

Table 17: For HHs from general caste: Baseline, end line and change scores of selected outcome variables for control and treatment arm.

Outcome		Control						Treatment						Difference in difference
		BL		EL		Change		BL		EL		Change		
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	
Main outcomes	Latrine use household (%)	88.15	26.72	98.07	11.61	9.92	29.48	89.80	27.45	97.73	13.84	7.93	30.62	-1.99
	Safe child faeces (%)	8.75	27.47	61.36	48.06	50.00	57.32	16.05	30.48	41.09	43.98	27.88	58.64	-22.12
	Latrine observation index	79.16	21.82	83.51	17.00	4.34	27.61	78.49	23.50	87.10	13.62	8.60	27.44	4.26
Additional outcomes	Handwashing facility (%)	55.15	49.86	51.55	50.11	-3.61	69.32	51.61	50.11	59.68	49.19	8.06	68.10	11.67
	Latrine use main respondent (%)	85.63	26.74	95.79	13.00	10.16	29.12	88.82	24.33	96.15	14.42	7.33	27.98	-2.83
	Habit OD	0.20	0.24	0.08	0.12	-0.12	0.26	0.15	0.21	0.07	0.12	-0.08	0.25	0.04
	Habit LU	0.78	0.24	0.89	0.14	0.11	0.27	0.81	0.21	0.89	0.13	0.07	0.26	-0.04
	Intention LU	0.82	0.23	0.84	0.13	0.03	0.25	0.83	0.20	0.85	0.12	0.02	0.24	0.00

Table 18: For HHs from SC/ST/OBC: Baseline, end line and change scores of selected outcomes for control and treatment arm.

Outcome		Control						Treatment						Difference in difference
		BL		EL		Change		BL		EL		Change		
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	
Main outcomes	Latrine use household (%)	74.64	38.15	90.97	27.13	16.33	47.07	74.72	37.45	96.96	15.64	22.24	40.69	5.91
	Safe child feces (%)	12.62	31.16	44.44	47.63	32.66	56.41	9.39	25.39	42.64	47.31	32.73	51.85	0.07
	Latrine observation index	68.12	27.45	75.55	24.04	7.44	35.96	65.80	28.63	79.91	19.15	14.11	33.89	6.67
Additional outcomes	Handwashing facility (%)	45.96	49.87	42.52	49.47	-3.44	66.47	36.79	48.25	43.21	49.57	6.42	69.49	9.86
	Latrine use main respondent (%)	73.77	37.18	88.79	26.68	15.02	46.19	76.04	34.93	94.30	17.34	18.26	39.12	3.24
	Habit OD	0.29	0.31	0.14	0.24	-0.15	0.39	0.26	0.29	0.09	0.16	-0.17	0.33	-0.01
	Habit LU	0.70	0.32	0.84	0.24	0.14	0.40	0.71	0.30	0.87	0.17	0.16	0.34	0.02
	Intention LU	0.75	0.26	0.81	0.21	0.06	0.34	0.75	0.26	0.84	0.15	0.09	0.31	0.03

Comparing effects on male versus female main respondents yielded that changes reported by female respondents are generally higher than the changes reported by male respondents. This is surprising because not only individual measures of latrine use show these difference but also household level measures. However, differences are relatively small and statistical significance was not assessed.

Comparing effects on respondents aged less than 60 years with those aged 60 or above, latrine use of elder respondents increased slightly less in the treatment group than in the control. Among respondents, aged less than 60 years, in contrast, increase in latrine use was slightly stronger in the intervention group than in the control. However, differences are relatively small and statistical significance was not assessed.

Disaggregating the data by caste revealed that, for SC/ST/OBC households, baseline values of outcomes were generally lower than for households from general caste. All outcomes except availability of a handwashing station increased in both subgroups and in both intervention and control arm. In intervention households, however, increases in SC/ST/OBC households tended to be stronger than in general caste households. This resulted in similar end line values across outcomes in both sub groups. These data suggest that the intervention was able to reach marginalized groups in a community, reducing caste differences observed at baseline.



## 5 Cost analysis

The total budget for the study was estimated to be USD 349548 (actual project cost will be calculated at the end of the project period). This total project costs includes 1) study design and preparation; 2) data collection; 3) data analysis; 4) stakeholder engagement for evidence uptake; 5) study management and monitoring; and 6) capacity building. The cost of the evaluation (i.e., census, baseline and endline) across treatment and control arms was USD 115787.

The cost of delivering the intervention per household was estimated taking into consideration implementation costs (including pre-testing of campaign strategies and materials, finalization of materials, training, implementation and monitoring).

A total of 2627 households were reached through the intervention. The total costs of implementation are presented in the table below:

Table 19: Costs of implementing RANAS intervention in Raichur Treatment Villages

	INR	USD
Project Co-ordinator (n=1)	2,57,400	4021.875
Field Supervisor (n= 2)	5,40,000	8437.5
Interpersonal communicators (n= 14)	10,80,000	16875
		0
Finance Officer (n=1)	1,20,000	1875
Travel for Project Co-ordinator	45,000	703.125
Travel for Field Supervisor	90,000	1406.25
Travel for Interpersonal communicators	5,40,000	8437.5
Training Cost for Interpersonal communicators	2,53,000	3953.125
Community Mobilisation Meetings	93,000	1453.125
Stationary	13,500	210.9375
Communication cost for Field staff	67,500	1054.688
<b>Total implementing costs</b>	<b>33,29,400</b>	<b>52021.88</b>

The cost of implementing the intervention per household is USD 19.8.

A quick analysis of SBM activities suggests that SBM IEC activities may have addressed RANAS factors as well (see Figure below). The difference between SBM activities and RANAS activities under this intervention is the way they addressed the RANAS factors. SBM, for instance, may have used pressure tactics to trigger changes in norm factors (e.g., checks by Gram Panchayat, vigilance committees focused on those who do not use latrines), whereas RANAS intervention focused on other's behaviour (of latrine use) and approval of toilet use. Tackling attitude factors was common under SBM and this RANAS intervention; however, SBM tends to focus on disgust and *fear* of non-use, and

potential health risks involved, while the RANAS intervention focused on feelings of personal importance and pride in using toilets.

This brief analysis suggests that elements of this RANAS intervention can be incorporated into ongoing SBM activities, given that both may address the same psychological factors (directly like RANAS or indirectly like SBM). However, SBM activities will have to be modified in terms of messaging to tackle these factors. The costs of doing so, however, is difficult to estimate. Initial discussions with District Administration in Raichur suggests that they are open to incorporating some RANAS activities and do not anticipate high costs in doing so.

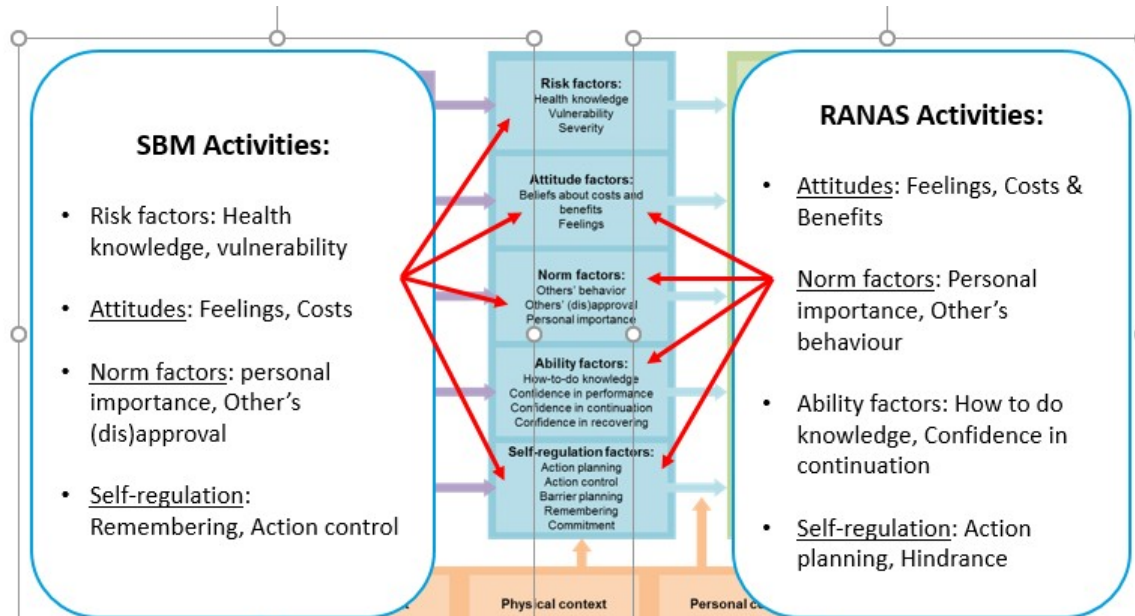


Figure 6: Comparison of behavioural factors targeted by SBM and RANAS activities.

## 6 Discussion

### 6.1 Introduction

The objective of this impact assessment was to rigorously evaluate a population-tailored behaviour change campaign which promoted latrine use and safe disposal of child faeces in Karnataka, India. The hypotheses were as follows:

- Hypothesis 1: In intervention households, increases in latrine use are statistically significantly higher than in control households.
- Hypothesis 2: Changes in behavioural factors postulated in the RANAS model mediate changes in latrine use.
- Hypothesis 3: In intervention households, improvement in safe disposal of child faeces is statistically significantly higher than in control households.

The results presented in this report revealed a statistically significant effect of the intervention on latrine use which amounted to approximately 5% difference between the intervention and the control group. The positive effect of the intervention on reported latrine use is corroborated by the significant effects of similar magnitude on observed signs of toilet usage which are aggregated in the latrine observation index. However, effects were smaller than anticipated which calls for a robust explanation.

The data show that in both treatment and control group, substantial increases of latrine use were noted. Looking at the absolute values at end line, latrine use in the treatment group amounted to 97% as compared to 92% in the control. This suggest that the intervention achieved to promote latrine use among the most change resistant population. At the same time this suggest that the detected effects were constraint by a ceiling effect.

Considering safe disposal of child faeces, no statistically significant effect was detected. This suggests that the Anganwadi Centre session specifically designed to promote safe disposal of child faeces did not work to change the target behaviour. This may be due to the fact that the intervention comprised only one AWC meeting and was thus substantially lower in intensity. Another potential reason is that the AWC intervention did not target the correct behavioural factors since the intervention had not been designed based on a quantitative doer/non-doer comparison but based on qualitative findings only.

The significant increases of latrine use and safe disposal of child faeces in both groups requires exploration, as the control condition of this trial was a no-intervention control. Given the quantitative findings, the qualitative study focused on understanding SBM related activities and their potential intensity in the control and intervention villages during the intervention period. We are unable to disentangle the effects of SBM and our intervention because SBM activities were intensive in the entire study area. Discussions with the office of the District collector yielded that SBM activities were implemented across Raichur district with similar intensity. With regard to our study, this suggest that intervention and control arm had similar exposure to SBM activities. The areas of qualitative inquiry do provide some insights into the potential mechanisms of action which could have led to the detected increase in reported latrine use across study arms:

First, with pressure to declare India open defecation free by October 2019, latrine promotion efforts increased in Raichur district from July 2018 as compared to previous months (keeping in mind that the State wanted to declare ODF status by November 2018). These activities could have triggered substantial increases in reported latrine use across the district.

Increased pressure to use latrines especially over the past one year was noted in all the villages. Surprise spot-checks of the household toilets, “meet and greet with a rose” of people returning from open defecation early mornings and late evenings by the gram panchayat members, sometimes even threats of confiscation of ration card and job cards, exert pressure (subtle or overt) to use toilets or report toilet use. These pressure tactics including confiscation of ration cards or any other benefits were reported only in four out of 18 in-depth interviews when the respondents were specifically asked about the pressure perceived in the village to use toilets. One group out of the six, revealed that withdrawal of benefits was one of the tactics used to get people to use toilets. Many respondents opined that if the government doesn’t pressurise communities, people will not use toilets.

“The Government did survey our village twice. We ourselves did it because we doubted if people were using the toilets. We checked houses and observed their toilets. If this were not used, we would call the families and insist that they have to start using the toilet. We sometimes try to tell them that we will cut rations, job cards.” GP member, FGD. The district officials acknowledged that getting people to actually use toilets, the biggest challenge, had improved.

“There is water scarcity, defecating in the open feels more free, problems with people’s attitude towards toilets and this has been an old habit most difficult to break. Earlier toilet use was about 20% but now it has improved to 40%.” – District SBM Consultant.

Second, the promotion activities may have been implemented in combination with similarly intensive monitoring and/or measurement of latrine use across villages, which may have introduced a substantial repeated measurement bias, leading to over reporting of latrine use.

FGD participants, who were engaged with SBM at a village level , including the GP members, front line workers, schoolteachers, SHG members, VHSNC members, affirmed that they undertook household level observations to check if people had toilets and if they actually used it. It also came to light that there were GP level teams constituted by the PDOs. These teams carried out cross GP verification whereas one GP team visited households of another GP to check for toilet use.

“People from other villages have come to our village to check if we are using toilets. We have also gone to their villages to do the same. This has happened twice in the last six months.” – GP member, FGD.

Third, seasonal effects may have contributed to the substantial increase between baseline and end line in both groups. Baseline was conducted from February to April 2018 which is the beginning of the hot season in Raichur and when water supply is minimal and erratic. In contrast, the end line was conducted in the cool season from December 2018 to end January 2019. During this time, water is more readily available. Lack of water to flush the latrine during baseline and potentially better water availability

during end line may explain why reported latrine use was higher at end line in both groups.. During summers, most respondents admitted that they would invariably go out to defecate in the open. “But when there is less water, we all go out to defecate. This usually happens in the summer.” Interview respondent

This is partly corroborated by the results presented in Table 11. The perceived difficulty of collecting water during the current season for flushing the latrine decreased across the sample from baseline to end line: Water collection was perceived easier at end line than at baseline. However, the difference between perceived difficulty of collecting water during the current seasons and perceived difficulty of collecting water during the hot season was similar for BL and EL. This suggests that during both measurement points, participants judged water collection to become similarly more difficult during the hot season.

With regard to Hypothesis 2, the data analysis yielded the intervention effects on latrine use were mediated by changes in behavioural factors. The following mechanisms of action were revealed: The intervention increased the perception that other people used the latrine frequently, made participants more knowledgeable of how to use and maintain the latrine, bolstered their confidence in being able to use the latrine consistently, and removed barriers. These changes in mind set were, in turn, related to changes in latrine use. These mediating factors accounted for the full effect of the intervention on behaviour change. It is important to note that these results refer only to the effect of this study's intervention on behaviour. The effects of SBM activities and external factors on behaviour cannot be identified because of the lack of a strict non-intervention control arm without SBM activities. It is thus possible that mechanisms, beyond those identified in the mediation model, accounted for the change in behaviour across study arms.

Existing evidence on promoting latrine use in India, has been comprehensively summarized by Lahiri et al. (2017). The authors reviewed findings from 11 studies and categorised them into (1) community mobilisation including CLTS, (2) construction of latrines, (3) subsidies, and (4) IEC campaigns. The authors define community mobilisation as “Bringing together members of a community to achieve a specified outcome” (p 10) and IEC campaign as “to raise awareness in the target population, with the subsequent expectations that its behaviour will change positively.” (p 10). Parts of our intervention, in particular the community meeting can be seen as community mobilisation and IEC campaign. The aim of the meeting was to generate awareness of the advantages of latrine use and the disadvantages of open defecation and to ignite the perception in participants that open defecation was inconsistent with their values and morally wrong. In particular the household visits, however, which included reminders, action planning, coping planning and a photo commitment clearly go beyond the given categories. These activities aimed at supporting individuals to put their good intentions of using the latrine into practice and can be described as self-regulation interventions. To our knowledge similar intervention have not been tested to promote latrine use in India.

With regard to the effects on behaviour, Lahiri et al. (2017) report four impact evaluations. The estimates of intention to treat effects reported in these studies are between 10% and 27% and are considerably higher than the effects detected in our study. However, considering the absolute values reveals that none of these studies achieved almost complete end line latrine use. With regard to drivers and barriers of latrine use, our

findings also extend the evidence base further. Mediation results showed that increases in the perception of how frequently other people use the latrine, the knowledge on how to use and maintain the latrine, and the confidence to be able to consistently use the latrine and decrease in reported barrier correlated with higher latrine use. To our knowledge this is the first study revealing these factors as important determinants of latrine use and demonstrating how to change them.

This study has important limitations. First, the evaluation is primarily based on self-reports and reports. Although the detected increases in latrine use is consistent with spot-check observations, spot-check observations seem to give little information about the frequency in which latrines are used by individuals but rather constitute a household level proxy of whether the latrine is used at all or not. Second, with regard to the revealed mechanisms of action of the intervention through behavioural factors, the direction of causality between the changes in behavioural factors and changes in behaviour cannot be determined. This would require collection of intensive time-series data which was beyond the logistical feasibility of this study.

The findings of this study come at a critical time, with SBM aiming to achieve 100% ODF status by October 2019. The latest NARSS has revealed high coverage and usage of toilets among those who have access to toilets. In this context, the role of evidence based behaviour change strategies must be carefully presented to show its value in engendering and sustaining latrine use behaviours. Since this study coincided with an active phase of SBM implementation in Raichur, latrine promotion activities may have affected the impact of the RANAS approach. With SBM promotion activities at a high during and immediately after the intervention, people may have felt immediately motivated to use the latrine and to report latrine use. Behaviour change interventions can play an important role in sustaining these changes, and ensuring that everyone in the community is reached with behaviour change messages.

## **6.2 Policy and programme relevance: evidence uptake and use**

Several stakeholder engagement activities, particularly with district level officials, were carried out from the start of the study.

At the district level, periodic meetings with district administration facilitated regular sharing of project progress and elicited support from them for smooth implementation of the evaluation as well as the intervention in the trial villages. National and State level engagements with Ministry of Drinking Water and Sanitation, Department of Panchayat Raj ensured that the departments were appraised of the project progress to spark their interest in study findings. Findings are yet to be shared at the National and State levels due to the upcoming elections.

Internal dissemination events with WaterAid India teams and partners (spanning 11 States) about the baseline findings, intervention implementation and end line findings were carried out. External disseminations, with the International Public Policy Network at a conference in Delhi University (in February 2019) and UNC Water and Health conference (October 2018) were carried out.

Given that end line was completed in January 2019, data analysed in February 2019 and evaluation findings submitted to donor in March 2019, final dissemination events were

planned for April-June 2019 after approval from the donor. With the upcoming Lok Sabha (i.e., Parliamentary) elections, dissemination of findings in the month of April has been restricted to District Administration as well as key WASH sector players and NGOs engaged in behaviour change interventions.

Key points raised by stakeholders during dissemination meetings related to the following:

- Contextual nature of behaviour change intervention such as RANAS
- Scalability of the RANAS intervention
- Feasibility of a behaviour change intervention given its intensity
- Relevance of any behaviour change intervention given that the latest NARSS survey shows high rates of usage among those having a toilet

In terms of uptake, SVYM has already planned to implement RANAS activities in other villages of Raichur, and the Raichur district administration is keen to implement some of the intervention activities as well. A practice note with practical guidance on the implementation of RANAS is being developed for this purpose.

A reflection exercise within the study team highlighted that a dissemination activity on the RANAS impact assessment alone may not be the most effective way for stakeholders to use the findings. A more effective way may be to hold a behaviour change workshop where different types of behaviour change models are shared and discussed to identify which approach, strategy, and activities can potential work for different stakeholders.

This study offers important learnings for other districts in India, which are in the phase of yet-to-be declared open defecation free. These districts are currently witnessing increased construction activities, and are well placed to receive strong, positive, and constructive messaging on latrine use. District administration in these districts can incorporate relevant RANAS activities into their ongoing IEC/BCC plans to encourage latrine use. In districts that have achieved ODF status and are now faced with issues related to slippage, RANAS activities, particularly those addressing factors related to confidence in using latrine, overcoming barriers to latrine use, perceptions that others in the community frequently use latrines, can be incorporated into ongoing SBM activities.

The relevance of the study findings for sanitation related policy and practice must be considered and presented to decision makers and program implementers in light on the following:

- The study was conducted during a phase of intensive SBM activities. The intervention implementation in particular, coincided with intensive latrine promote in Raichur (July 2018 onwards).
- The findings of this study come at a time when the Second National Annual Rural Sanitation Survey findings reveal high rates of coverage (93.1%) and toilet usage (96.5%). Given this, the relevance of this and other behaviours change studies must be positioned as being a part of the ODF sustainability agenda, having the potential not just to engender universal and consistent latrine use, but also to sustain these behaviours over time.
- Raichur is yet to be declared ODF. With increased latrine construction, components on the RANAS intervention can be implemented to encourage and sustain usage among households who now have latrines.
- The activities implemented differed under SBM and RANAS, but may not have been perceived so by the communities. SBM strategies used to promote latrine are

often based on verification of latrine ownership and signs of latrine use, with actions undertaken by local government and other prominent village members (e.g., teachers) to ensure that households are able to use latrines. Some of these actions may be perceived as pressure tactics and may have resulted in over reporting of latrine use. A recent paper by Gupta et al (2019) on a study in four northern Indian States suggests the use of coercive tactics and sanctions to promote latrine use.

- Baseline latrine use in households that had latrines was quite high. Increases in latrine use suggests that interventions (related to SBM and RANAS) implemented from May 2018 onwards were able to engender latrine use in those households that has thus far may have been *resistant* to latrine use or used toilets inconsistently.
- The relevance and importance of behaviour change interventions is not just to promote use but to also sustain latrine use. While this was not the scope of this study, it is an important consideration for policy and practice during the next phase of India's sanitation policy.
- The study has identified psychological drivers that are most strongly associated with latrine use, and developed intervention strategies and activities to address them. The overarching intervention modalities deployed by the RANAS intervention (community meetings, household visits, anganwadi sessions) are in line with SBM modalities. This presents scope for incorporating successful behaviour change activities that tackle underlying drivers into SBM activities.
- Intervention activities in this study were positive (in terms of messaging) and interactive, and refrained from using strategies that pressurised households and communities.
- Cultural and contextual sensitivities related to latrine use promotion (e.g., display of materials on latrine use prominently and publically displayed in households, water availability) must be factored into the design of campaign materials and activities.

## **6.3 Challenges and lessons**

### **6.3.1 Census and Baseline phase:**

#### *6.3.1.1 Selection of villages for the trial*

The use of the SBM data to select villages for inclusion into the study proved to be an issue as the SBM data tended to overestimate latrine coverage. As a result, certain villages selected for census did not have adequate number of functional latrines for it to be considered for the baseline data collection.

#### *6.3.1.2 Identifying eligible households during Census*

The census tool was a simple tool that was explained in detail to the data collection agency. Supervision and feedback was provided to all census teams during census rollout as well. Despite this, a critical question on the presence of a household latrine was misinterpreted by several interviewers, and consequently asked incorrectly, resulting in faulty data regarding the number of households with a functional latrine. The data collection agency had to collect census data from a set of 30 new villages, to replace villages where not enough households with latrines were listed. To assist with this, SVYM and WaterAid had to undertake screening of new villages to ensure that at least 30



households in a newly selected village had functional latrines, before passing on this list to the data collection agency to carry out the census.

#### **6.3.1.3 Establishing baseline**

The baseline questionnaire was quite complex and called for substantial training of all members who were involved in data collection. At the same time, many enumerators' skills and level of commitment to the survey was poor and supervision and logistical planning and support provided by the data collection was insufficient during the baseline survey. To assist with baseline data collection, team members from Eawag and WaterAid worked closely with senior members, supervisors and enumerators from data collection agency, monitoring data collection on a weekly basis.

### **6.3.2 Intervention phase:**

#### **6.3.2.1 On Community mobilisation:**

Meeting the village level officials before mobilisation, was identified as most crucial instrumental in making the community meetings a success. Getting people to actually be there in the meeting and on time required additional efforts of mobilisation on the day of the meeting as well. Reaching the identified venue early for the meeting and reminder announcements around the village several times right before the meeting was also identified as important in mobilising the community for the meeting.

#### **6.3.2.2 Community meetings:**

Disruptions and complaints from the participants that they did not get reimbursements from the government were common. Once they were informed about the specific aim of this campaign, the mobilisers collected details and helped facilitate release of payment through interaction and follow up with GPs/ PDOs and also with District Administration. There have been pressure from the community to address other pressing issues in the villages like poor transport, road connectivity, water supply and electricity. The teams were asked a lot of times: "Why do you do interventions on only latrine use? Why don't you help improve roads and means of transport to our village?" This highlighted that fact that the community did not see open defecation as a problem that needed an intervention. After convincing the community that - latrine use alone and its benefits on the health of the village, was the purpose of the intervention but would however discuss these issues when they meet PDOs or District officials, were the meetings carried out.

#### **6.3.2.3 Household visits**

Most household level participants seemed happy about posing and receiving their family photo. The participants also enjoyed the routine planning activity because it was about their day and they were happy that outsiders were interested in their typical day. Personal visits to their houses, engaging conversations about importance of latrine use through these interactive activities centred on them generated a lot of interest in the households.

However, in few households, as soon people knew that the visit was about latrine use, some reluctance was observed. There were even refusals from households - "We have heard everything from the meeting at the village level. We are not interested! We don't need this." Only when the team took additional efforts and convinced them of the benefits

this would have on their health, did the households permit. The team needed to talk about health in a maxim of 20% of households. Availability of all household members between 10 AM and 4.30 PM was the biggest challenge noted. Hence, the teams scheduled appointments before ten AM and after 4.30 PM. In a few households, family members did wonder why they received the intervention and not their neighbours. Another important factor during the phone call exercise was that if it was a female participant, the team had to schedule prior appointments with male member of the household in order to carry out the household visits. There was strong resistance palpable from the male members of the households especially when the promoter was male.

As for the reminder stickers, despite being water-proof, sometimes on subsequent visits would not be in place. They would have fallen off during use of lota for agricultural purposes or be pulled off by little children in the household during use. Besides, there were few cases wherein the walls in the houses do not help stick well since they are powdery, rough and just coated with limestone. Some members of the team also reported that there were even instances of people pulling off the cello tape and the stickers intentionally because they found it embarrassing. Few others refused to keep the routine planning on the wall considering that there were guests/ neighbours coming to their houses particularly during festivals and this is about latrine use.

Since some respondents and families may have found the reminder stickers and routine planning posters embarrassing to display, they removed these campaign materials. This could have undermined the intervention in those households.

The phone call reminders were received well by most respondents mostly because of the personal rapport built over time during the household visits. However, there were few instances where responses were not positive particularly since the calls were made in the mornings or at a time noted as usual time for defecation. "Why do you follow up with me like this?", "This is something personal. Why are you bothering me so much?" and saying so people have abruptly disconnected the calls even.

#### *6.3.2.4 Anganwadi sessions:*

Subsequently, the repeated points of contact and feel-good experiences during the community meetings and two household visits made the village representatives constantly follow up with the field team members and ask - "When are you doing the Anganwadi session?" Due to a closed network among the Anganwadi workers, teachers of neighbouring villages were complaining that the promoters did not do a similar exercise in their respective villages. For the AWC session, it was felt that additional mobilisation efforts were needed to ensure that all eligible mothers from the intervention households were present. "When we talk to Anganwadi teachers, she will call all mothers who have toilets, but when she calls, she would not have given focused attention to mobilise our baseline participants."

### **6.3.3 End line survey:**

#### **6.3.3.1 Identification of correct respondents for end line:**

Considering that the study was based on psychosocial factors, it was a key mandate that the same respondents interviewed within the selected households during baseline be interviewed again during end line. Strategies to identify the correct respondents by use of relevant identifiers from baseline including name, age, gender and relationship with head of household were devised. In addition, rigorous training and monitoring of field team, quality checks between baseline and end line identifiers helped ascertain correct selection of respondents.

#### **6.3.3.2 Availability of specific respondents at the time of visits**

Unlike during baseline, most of the times, availability of respondents at the time of visits to the village, did not turn out to be as big a challenge thanks to the timing of the survey. It was pre-harvest season (early Dec to mid-Jan). Issues with availability of respondents was observed in some cases, when there were temporary migration of the specific respondents to other villages/ cities for alternate means of income, water scarcity issues in some villages because of which entire families had migrated to other villages, etc. This was tackled through prior appointments with the specific respondent, multiple visits to the same household at a time most convenient to the respondents.

#### **6.3.3.3 Means of transport to remote villages and travel times between households within large villages**

As experienced during baseline, villages with low connectivity were identified and visits to these villages scheduled once stay and travel arrangements for the specific survey teams were made in accordance. In most cases, the strong team of supervisors were stationed at taluka and district headquarters most of the times equipped with a personal vehicle. In large and remote villages, the supervisors ensured that the field enumerators reached the households on time.

#### **6.3.3.4 Evaluation of the intervention during end line**

During Intervention checks at end line, some intervention households had reported not to have participated in the intervention. Possible reasons identified were anxiety and fear of retribution because they have removed all visible signs of the intervention materials and hence, would feel safer when they deny being part of the intervention itself during End-line survey. Besides, all the materials were put up in open spaces around the household. When neighbours or guests come to visit the HHs, the promoters divulged that the materials showing latrine use may become a source of embarrassment to the participants, especially during festivals or any family gatherings.

It also came to light that the participants might fear that, if they confirm participation in the intervention to the end line team, they will be subjected to another time-consuming process. To avoid further contact, some intervention households stated that they were not exposed to the intervention. Village level officials recognize SVYM but it is unlikely that households would remember SVYM considering that these villages are new areas for the SVYM team. However, they are highly likely to recollect when intervention related to latrine use is mentioned.

## 7 Conclusions and recommendations

This impact assessment showed that the combination of SBM activities and the population-tailored RANAS interventions of this study effectively increased latrine use to 97%. A modest but statistically significant added effect of the RANAS of approximately 5% behaviour change was demonstrated despite intensive efforts to promote and monitor latrine use by other actors in the study area and high latrine use already before the beginning of the impact assessment. Significant changes not only in reported latrine use but also in the spot-check observations corroborate these results. Insignificant effects on safe disposal of child faeces could either be attributed to the lower intensity of our intervention (only one AWC meeting) or to the fact that the intervention was not rigorously designed based on quantitative doer/non-doer analyses but on qualitative findings only.

Substantial increases in latrine use and safe disposal of child faeces in the control group were revealed. Although our study design does not allow to draw a direct causal link, intensive activities by the government to promote latrine use are the most likely trigger for at least part of this change. Our results thus suggest that the ongoing SBM activities successfully promote latrine use, and other government initiatives under the Nutrition Mission/POSHAN Abhiyan promote safe disposal of child faeces. Future studies would be needed to disentangle the effects of these activities from seasonal effects and repeated measurement biases.

Our findings suggest that the RANAS approach was an effective tool to design a behaviour change intervention in this challenging setting. It also shows that interventions beyond risk communication and awareness raising can play a crucial role to prompt those individuals to change who have resisted previous attempts. Our results suggest that understanding the target audiences mind-set first and, based on this understanding, systematically develop interventions could be a promising approach to also change other target behaviours.

The study presents recommendations to key stakeholders as follows:

### Policy-makers and Programme participants

An analytical review of SBM IEC and BCC strategies can be undertaken with recommendations on how existing SBM and activities can be strengthened by incorporating evidence-based, promising and effective behaviour change strategies and activities. Such an analysis and recommendations can enable States to allocate funds to intensify behaviour change campaigns under SBM using positive, interactive, constructive activities, in ODF and non-ODF Gram Panchayats.

At the National and State level, Women and Child Development Department can leverage the POSHAN Abhiyan and other ICDS platforms to promote and reinforce latrine use behaviours, including safe disposal of child faeces. The focus here needs to be on reinforcing key messages through repeated sessions with caregivers attending anganwadi meetings.

District administration can draw upon behavior change approaches to modify SBM activities to be more interactive and inclusive to reach the marginalized members and households of a community. This can be done by identifying those who do not have toilets or who have recently built toilets (often an indicator of the *last mile*). Key activities

that address the following RANAS factors into ongoing SBM IEC/BCC activities in non-ODF Gram Panchayats and Districts: Others behaviours, how-to-do knowledge, confidence in continuation, action planning, overcoming hindrances maybe incorporated. Emphasis should be on replacement of pressure based tactics with positive messaging focused on the key drivers of latrine use.

While incorporating behaviour change activities into ongoing SBM activities, a systematic and structured approach must be followed to select the most appropriate activities, implement in a manner so as to reach the entire community (and all members of a household), and ensure periodic reinforcement of behaviour change messages (at least three times).

District level stakeholders can organize district and block level trainings on latrine use behaviour change strategies and activities with local institutions and community members engaged in SBM activities. Capacity building activities can be supported through the allocation of budgets or directives issued by the District administration that IEC budgets under SBM can be used for trainings and for the development of campaign materials. During trainings, the relevance and potential impact of behaviour change activities that address the underlying psychological factors must be stressed. This will help government agents engaged in latrine promotion activities on the ground to go beyond awareness generation to address key behavioural issues such as habit, self-efficacy, attitudes, and social norms. Sensitising block level and GP level players on the behaviour change techniques that can potentially address the underlying RANAS factor (e.g., personal norms, social norms, costs and benefits of latrine use) can be implemented through certain strategies (e.g., community meeting) and activities (e.g., activities like the video that increased perceptions that others in the community use latrines)

Of crucial importance is devising and implementing solutions to ensure water availability to communities and households throughout the year, especially in the summer season.

Programme managers, civil society organizations:

It is recommended to the NGOs engaged in behaviour change activities, that an initial formative research in intervention communities be conducted to identify whether the RANAS factors found to be relevant in this study hold true for that community. Based on this formative research, behaviour change techniques and relevant intervention materials from this study or those being used under SBM to address the underlying drivers of latrine use can be used to trigger the process of behaviour change.

Researchers, donors:

The main recommendation to institutions engaged in research is to conduct studies on how behaviour change interventions such as RANAS, sustain behaviour change in communities over time (6 months, 12 months, 18 months post intervention). Identifying other methodologies (e.g., longitudinal studies, immersive research) to verify usage of toilets, beyond surveys, spot checks, and qualitative interviews and FGDs that allow for long term and in-depth understanding of the behaviour and contexts of individuals, families and communities also needs to be explored. A comparative review of IEC and BCC strategies used under SBM and by other behaviour change interventions (e.g.,

under the 3ie grant window), suggesting how impactful behaviour change strategies may be incorporated into SBM activities at scale and with minimal additional resources.

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## Appendix

## **Appendix A1: Tools used for the qualitative data collection**

**Form A: In-depth Interview– Household members:**

**Consent:** My name is Dr Tejaswi B and I have come from WaterAid India to conduct a survey to understand the things that have happened in your village over the past year. I am not from the government. So, whatever you share with me remains a secret and will not be shared with anyone in your village. I want to find answers to some questions we have about latrine use. Your answers will help us understand how we can help your community better.

Now, I would like to know from you all that has happened in your village with regard to promotion of latrines. Would you help me? If you agree to participate in this survey - we will ask for your opinions and thoughts and try to understand if there are any specific issues faced by the community when it comes to latrine use. This will take approximately 30-40 minutes. Your participation in this survey is voluntary. It is your choice whether to participate or not. If you choose not to participate, there will be no adverse consequences. You may choose to terminate the survey at any point without any hesitation or fear. Like I said before - if you choose to participate, your identity and your responses will be kept confidential.

Do I have your permission now to proceed?

Date:

Place:

Signature/ Thumb impression of the respondent:

***Background Information***

1) Name of the GP	
2) Name of the village	
3) Type of village (Tick the relevant answer)	I. Intervention II. Control
4) Name of the respondent	
5) Age of the respondent (in years)	
6) Occupation of the respondent	
7) Date of interview	
8) HH ID number	
9) Since when have you been a resident of this village? (In years)	
10) Could please tell me all that has happened in your village, over the past one year with regard to promoting latrines? (Pointers for probing: SBM, other schemes – NHM, ICDS, etc., SVYM, other NGOs – What exactly happened? Where and how was it done? What were the activities carried out? What were the key messages delivered? Who delivered it?)	
11) Were there any surveys conducted over the past year with regard to latrine construction and/ or latrine use?(Pointers for probing: Who conducted	

these surveys? When was it done? What did they ask about? How many times was it done? What did you think about it? Why were they carrying out these surveys? Did you feel like not telling them the truth about your latrine use?)			
12) When the latrine was constructed, why? Who all use it at home? If there was a situation that someone in your family did OD – why would they do this? Has such a situation ever happened? I have heard that summer and monsoon season pose more challenges – how do these two seasons affect your family? How difficult is it for you to use the latrine, then?			
13) Why do you use the latrine for defecation? What motivates you to use it? Did any of these programmes/ activities by – SBM, SVYM, or any NGOs help you switch to latrine use? What about these activities made you switch to latrine use?			
14) Did you ever feel pushed by others in your village to use the latrine? What were some of the <b>conditions</b> imposed on families in your community if they did not build latrines? What checks are there for construction and usage? Was there any punishment given out to those who did not use the latrines? How did the pressure to build latrines increase over the year? Has this pressure increased over the past year?			
15) How often do you visit other villages? Can you name those villages? How far are they? During these visits, do you talk about latrine use?			
16) Observe - Current access to and use of toilet facility in the household:			
		Toilet facility	Hand wash facility
	Presence of a Functioning facility - Yes or No  Describe the facility. (Presence of structure, does it appear to be in use, is there soap and water? cleaning materials?)		

**Form B: Tool for FGD**

**Name of village:**

**Type of village: Intervention/ Control****Members in the group:**

SI #	Name of the member	Position in the village

Questions	Points raised in the discussion
<b>Participants: At least 5-6 in number including GP members, FLWs, school Headmasters, active community members, etc.;</b>	
1. What are the SBM-related activities that have happened in your village over the past one year in relation to promoting latrines? (Pointers: Include construction and use; What was done? When was it done? Who did it? How was it done? What were some of the core/key messages you remember? Segregate activities based on construction or use)	
2. Who were the other NGOs involved in promoting latrine? What was done? When was it done? And how was it done?	
3. Which of these activities, according to you, helped more people to start using latrines? Why?	
4. What were the other activities carried out in your neighboring villages with regard to promoting latrines? Who conducted them? How was it done? When was it done? What were the core key messages delivered?	
5. Were there any surveys conducted over the past year with regard to latrine construction and/ or latrine use? (Pointers for probing: Who conducted these surveys? When was it done? What did they ask about? How many times was it done? What did you think about it? Why were they carrying out these surveys? Did anyone feel like not telling them the truth about latrine use?)	
6. Do any of you remember seeing materials like these in your village or any other village? (Show – Reminder stickers) If yes – Where did you see it? Who do you think used them? Why was it used?	
<b>Form C: Tool for Anganwadi Workers – Key Informant Interviews</b>	
<b>Participants: AWWs from Control and intervention villages</b>	

<b>To be administered by SVYM Field Team</b>	
1. According to you, how do the mothers in your village generally dispose child faeces? (Pointers for probing: Where? What? How?)	
2. Where do mothers get information on how to dispose child faeces? What are the activities that have happened in your village over the past one year in relation to promoting disposal of child faeces? (Pointers: What was done? When was it done? Who did it? How was it done? What has SBM, NHM, ICDS, etc. done? What were the core key msgs?)	
3. Who were the other NGOs involved in helping mothers make the change in disposal of child faeces? What was done? When was it done? And how was it done? What were the core key messages delivered?	
4. Which of these activities, according to you, helped the mother change the way they dispose child faeces more mothers to actually change the way they dispose child faeces?	
5. What were the activities carried out in your neighboring AWCs with regard to disposal of child faeces? Who conducted them? How was it done? What were the core key messages delivered?	
6. Do any of you remember seeing materials like these used in your AWC or any other AWC? (Show –Methods of safe disposal of child faeces) If yes – Where did you see it? Who used them? Can you show it to me? Why was it used? Do you think this helped more mothers safely dispose child faeces?	
7. Did you use these materials in your AWC as part of promoting safe disposal of child faeces?	
<b>Form D: Key Informant Interview Tool For SBM District level Officials</b>	
1. Can you tell us about the progress of toilet construction under SBM in Raichur? (Pointers: How many household toilets have been constructed so far? How many HH toilets have been constructed in the past one year? How many more are to be constructed?)	
2. What about latrine usage? How many, of these households, do you think are actually using toilets? Based on your experience, what is your sense of percent of people who have toilets who are using	

them? Despite owning toilets, why do you think people are not using toilets?	
3. Were there any surveys conducted in relation to latrine construction or usage in the district? What were they about? When was it carried out? What were the questions asked? Who took the surveys? Could you share with us the data or the report?	
4. What are the SBM-related activities that have happened in your district over the past one year in relation to promoting latrines? (Pointers: What was done? When was it done? Who did it? How was it done?)	
5. Which of these activities, according to you, helped more people to start using latrines?	
6. What about disposal of child faeces? What has been done to promote safe disposal of child faeces? (Pointers: What was done? When was it done? Who did it? How was it done? Can you show us the IEC materials used?)	



## **Appendix A2: Tool used for quantitative data collection**

## ENDLINE SURVEY QUESTIONNAIRE

□?□□□□?□□□□?□□□□□□?□□□

### Section 1: Household Identification

Section 1: □□□□□□

□?□?□□□?□?□□

D1.1 Interviewer's name

D1.1 □?□□□?□□□□□?□□□□

D1.2 Village name

D1.2 □□□□□□□□□□□□

D1.3 Segment name

D1.3 □□□□□□□□□□□□

- ☐ A
- ☐ B
- ☐ C
- ☐ D
- ☐ E

D1.4 Structure number

D1.4 □□□□□□□□□□□?□□□

D1.5 Household number

D1.5 □□□□□□□□□□□□□□□?□□□

D1.6 Unique Household ID

D1.6 □□□□□□□□□□□□□□□□

D1.7 Is this an accompanied visit?

D1.7 □□□ □□□□□□□□ □□□□□□□□ □□□□□□□□ □□□□□□□?

1. Yes □□□□

2. No □□□□

## D1.8 Do you have to use the puzzle?

D1.8 ಉತ್ತರಿಸಿ: ನೀವು ಪುಜಲ್ ಬಳಸಬೇಕು?

1. Yes ☐
2. No ☐

## Section 2: Informed Consent

Section 2: ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

### INTERVIEWER TO READ THE CONSENT

- Greetings! My name is <PLEASE STATE YOUR NAME>
- I am an interviewer working with Nielson India Private Limited, in partnership with EAWAG and WaterAid India.

- Your household has been randomly selected for an interview.
- I want to:
  1. Learn from you what you think about toilet use and where your family goes
  2. Play a game with you
  3. Look at the toilet in case you have one
- It takes 45 minutes.
- There are no benefits or rewards.
- Your answers will remain confidential and anonymous.
- Your participation in the study is voluntary.
- You may choose not to answer any questions and pause or stop at any time without any consequences.
- But your responses will help us a lot to understand and improve the situation in communities like yours.
- ನಮಸ್ಕಾರ! ನನನಹೆಸರು \_\_\_\_\_.

• ನಕನು ಇವ್ಯಾಂಗ್ ಮತ್ಯು ವಾಕಟರ್ ಏಡ್ ಜಿಂತ್ಗೆ ನೆಲ್ಸನ್ ಇಂಡಿಯಾ ಪ್ರೈವೇಟ್ ಲಿಮಿಟೆಡ್ ಮೊಲ್ಲ್ ಕೆಲ್ಲ್ ಮಕಡುತ್ತುರುವ ಒಬ್ಬ ಸಂದರ್ಶಕ.

• ನಿಮಮ ಪರಿವರವು ಒಂದು ಸಮೀಕ್ಷೆಗಾಗಿ ಆಯ್ಕೆ ಮಕಡಲಕಗಿದೆ.

• ನನಗೆ ನಿಮಮಂದ:

1. ☐
2. ☐
3. ☐

- ಇದು 45 ನಿಮಿಷಗಳನ್ನು ತೆಗೆದುಕೊಳ್ಳುವುದು.
- ಯಾವುದೇ ಬಹುಮಾನ ಅಥವಾ ಪುರಸ್ಕಾರಗಳ ಇರುವುದಿಲ್ಲ.
- ನಿಮಮ ಉತ್ತರಗಳ ಗೌಪ್ಯತೆ ಮತ್ತು ಅನಾಮಧೇಯತೆಗೆ ಇರುವುದು.
- ಅಧ್ಯಯನದ ಲಿಲ ನಿಮಮ ಭಾಗವಹಿಸುವಿಕೆ ಸವಯಂಪರೀಕ್ಷೆ ಆಗಿರುವುದು.
- ನೀವು ಯಾವುದೇ ಪರಶಿನಗಳಿಗೆ ಉತ್ತರಿಸದೇ ಇರಲು ಆಯ್ಕೆ ಮಕಡಬಹುದು ಮತ್ತು ಯಾವುದೇ ದಂಡವಿಲ್ಲದೇ ಯಾವುದೇ ಸಮಯದ ಲಿಲ ಪಾಕಸ್ ಮಕಡಬ್ಬುದು ಅಥವಾ ನಿಲಿಸಬಹುದು.
- ನಿಮಮ ಉತ್ತರಗಳ ನಿಮಮಂತ್ಯ ಸಮುದಾಯಗಳ ಲಿಲ ಪರಿಸ್ಥಿತಿಗಳನ್ನು ಅಭಿಮತಪ್ರಕಟಣೆಗಳ ಲಿಲ ಮತ್ತು ಸುಧಾರಣೆ ಮಕಡಲು ನಮಗೆ ತಿಳಿಸಬಹುದು.

## D2.2 Do I have your permission to proceed with the survey?

D2.2 □□□□□□□□□□ □□□□□□□□□□ □□□□ □□□□ □□□□□□ □□□□□?

2. No ☐ ☐ ☐ ☐



19. Other (please specify) \_\_\_\_\_ □□□□(□□□□□□ □□□□□□)

**D3.8**    □ □ □ □   □ □ □ **??** □ □ □ □   □ □ □ □

□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □

2. Transgender ☐☐☐☐☐☐ ☐☐☐

**D3.9** □□□□ □□□□ □□□ □□□□□□□□□□?

[illegible]

☒

**D4.2**

□ □ □ □ □ □ □ □ □ □ ? ?

## 2. Materials

**4.** Reimbursement pending □□ □□□□□□□□ □□□□□ □□□ SKIP TO D4.4

**5. Reimbursement pending and materials**

0. Nothing ☐ ☐ ☐ ☐ ☐ ☐ SKIP TO D4.4

*If D4.2 Have you received any money or materials from the government or an NGO to construct a latrine? is one of*

**D4.3 Did the government or NGO give you materials or did it construct the whole latrine for you?**

## 1. Materials

**3. Constructed part of the latrine**

**D4.9 Has the pit of your latrine ever filled up?**

1. Yes ☐ ☐ ☐ ☐

2. No ☐ ☐ ☐ ☐ SKIP TO D5.3

**D4.10** What did you do with the pit after it filled up? Did you get it emptied, did you dig a new pit or start using second pit, or did some people stop using?

**1. Emptied**

**2. Built a new pit**    □□□□ □□□ □□□□□□□□□□□□    SKIP TO D5.3

**3. Switched to using second pit** □□□□□□□□(□□□□)□□□□□□□□□□□□□□ SKIP TO D5.3

[illegible]

SKIP TO

D5.3

**5. Restricted use to a select few members**

*If D4.10 What did you do with the pit after it filled up? Did you get it emptied, did you dig a new pit or start using second pit, or did some people stop using? Is Emptied*

If D4.10 ( ) , ( ) ? , ( )

00000000000000 000000 0000000 (00000 ) 00000000 000000 000000000, 00000 0000000 00000 00000000 000000000000  
 00000000000000?

:

#### D4.11 How was it emptied?

[illegible][illegible]

2. Hired tanker to empty















**D6.5 For each day, please tell me what you had for breakfast - then tell me whether you defecated in the open or used the latrine.**

**B6.5 ಪಿತ್ತಿದಿನ್ಯಾಕಗಿ, ಬೆಳಗಿನ್ ಉಪಹಾರಕಾಕಗಿ ನೋವು ಏನ್ನ್ಯ ತಿಂದಿರ- ನೋವು ಬಯಲನ್ನಿ ಸಂಡಾಸು ಮಾಡಿದಿರಾ ಅಥವಾ**

**ಶೌಚಾಲಯ ಬಳಸಿದಿರಾ ಎಂಬುದನ್ನ್ ನನ್ನ ಹೆಸೋಳ್.**

*Hint: This applies to respondents when at home only.*

□□□□□□ □□□□□□ □□□□ □□ □□□□ □□□□□□□□□□ □□ □□□□□□□□□□□□.

<p><b>a. Today</b> □□□□</p>	<p><b>0. Defecated in the open</b> □□□□□□□□ □□□□□□ □□□□□□□□?</p>	<p><b>1. Used the latrine</b> □□□□□□□□ □□□□□□□□□□ □□</p>	<p><b>2. Did not defecate</b> □□□□ □□ □□□□□□□ □</p>	<p><b>3. Not residing in the household at that time</b> □ □□□□□□□□ □□□□□□□□ □□□□□□□□</p>
<p><b>b. Yesterday (One day ago)</b> □□□□□□□□ (□□□□□ □□□□ □□□□□)</p>	<p><b>0. Defecated in the open</b> □□□□□□□□ □□□□□□ □□□□□□□□?</p>	<p><b>1. Used the latrine</b> □□□□□□□□ □□□□□□□□□□ □□</p>	<p><b>2. Did not defecate</b> □□□□ □□ □□□□□□ □□□</p>	<p><b>3. Not residing in the household at that time</b> □ □□□□□□□□ □□□□□□□□ □□□□□□□□</p>
<p><b>c. Day before yesterday (Two days ago)</b> □□□□□□ □□ (□□□□□ □□□□□□ □□□□□□)</p>	<p><b>0. Defecated in the open</b> □□□□□□□□ □□□□□□ □□□□□□□□?</p>	<p><b>1. Used the latrine</b> □□□□□□□□ □□□□□□□□□□ □□</p>	<p><b>2. Did not defecate</b> □□□□ □□ □□□□□□ □□□</p>	<p><b>3. Not residing in the household at that time</b> □ □□□□□□□□ □□□□□□□□ □□□□□□□□</p>
<p><b>d. Three days ago</b> □□□□ □□□□□ □□□□□□</p>	<p><b>0. Defecated in the open</b> □□□□□□□□ □□□□□□ □□□□□□□□?</p>	<p><b>1. Used the latrine</b> □□□□□□□□ □□□□□□□□□□ □□</p>	<p><b>2. Did not defecate</b> □□□□ □□ □□□□□□ □□□</p>	<p><b>3. Not residing in the household at that time</b> □ □□□□□□□□ □□□□□□□□ □□□□□□□□</p>







Morning ಇಂದು – ಬೆಳಿಗರೆ	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	that time <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
b. Today – Evening ಇಂದು – ಸಂಜೆ	0. Defecated in the open <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1. Used the latrine <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	2. Did not defecate <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	3. Not residing in the household at that time <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
c. Yesterday – Morning ನಿನ್ನೆ – ಬೆಳಿಗರೆ	0. Defecated in the open <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	4. Used the latrine <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	5. Did not defecate <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	6. Not residing in the household at that time <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
d. Yesterday- Evening ಇಂದು – ಸಂಜೆ	0. Defecated in the open <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	4. Used the latrine <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	5. Did not defecate <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	6. Not residing in the household at that time <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
e. Day before yesterday - Morning ಮೊನ್ನೆ – ಬೆಳಿಗರೆ	0. Defecated in the open <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	4. Used the latrine <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	5. Did not defecate <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	6. Not residing in the household at that time <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
f. Day before yesterday – Evening ಮೊನ್ನೆ – ಸಂಜೆ	g. Defecated in the open <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	h. Used the latrine <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	i. Did not defecate <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	j. Not residing in the household at that time <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
g. Three days ago – Morning ಮೂರು ದಿನಗಳ ಹಿಂದೆ – ಬೆಳಿಗರೆ	0. Defecated in the open <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	k. Used the latrine <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	l. Did not defecate <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	m. Not residing in the household at that time <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
h. Three days ago – Evening ಮೂರು ದಿನಗಳ ಹಿಂದೆ – ಸಂಜೆ	0. Defecated in the open <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	7. Used the latrine <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	8. Did not defecate <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	9. Not residing in the household at that time <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
i. Four days ago – Morning ನಾಲ್ಕು ದಿನಗಳ ಹಿಂದೆ – ಬೆಳಿಗರೆ	0. Defecated in the open <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	7. Used the latrine <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	8. Did not defecate <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	9. Not residing in the household at that time <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>



4. Strong habit ☐☐☐☐☐☐☐☐
5. Verystronghabit ☐☐☐☐☐☐☐☐☐☐☐☐

**INTERVIEWER: Give the 4th piece of the Puzzle. Help if needed.**

□□□□□□□□□□: □□□□□□ 4□□□ □□□□□□□ □□□□. □□□□□□□□□□ □□□□ □□□□.

## Section 8:Habit – Latrine Use

### Section 8:ಅಭಾಸಿ-ಶೌಚಾಲಯದಲಿ ಸುಂಡಾಸಿ

**READ: Please remember that we are talking about use of latrine for defecation - Not urination and when you are at home only.**

ಶೌಚಾಲಯದ ಲಿ ಸುಂಡಾಸಿನ್ ಬಗ್ಗೆ ನಾವು ಮಾತನಾಡುತ್ತಿರುವುದೇ - ಮೂತಿ ವಿಸರ್ಜನೆ ಬಗ್ಗೆ ಅಲಿ ಮತುತ ನೋವು ಮನೆಯಲಿ ಇರುವಾಗ ಮಾತಿ ಂಂದು ದಯವಿಟ್ಟು ನನ್ನಿಡಿ.

#### D8.3 How automatically do you use the latrine for defecation?

D8.3 □□□□□□□□ □□□□ □□□□ □□□□□□□□□□□□ □□□□□□ □□□□□□□□?

1. Not automatically at all □□□□□□□□□□□□□□□□□□□□□□□□□□□□
2. Little automatically □□□□□□□□□□□□□□□□□□□□□□□□□□□□
3. Medium automatically □□□□□□□□□□□□□□□□□□□□□□□□□□□□
4. Very automatically □□□□□□□□□□□□□□□□□□□□□□□□□□□□
5. Extremely automatically □□□□□□□□□□□□□□□□□□□□□□□□□□□□

#### D8.4 How much effort do you have to make to remember using the latrine?

D8.4 □□□□□□□□ □□□□□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□ □□□□□□□□□□?

1. No effort at all □□ □□□□□□□□ □□□□
2. Little effort □□□□□ □□□□□
3. Medium effort □□□□□ □□□□□
4. Much effort □□□□□□ □□□□□
5. Extreme effort □□□□□□□ □□□□□

#### D8.5 How much is using the latrine a habit for you?

B8.5 □□□□□□ □□□□□□□□ □□□□□□□□□□□□□□□□□□□□ □□□□□□□□?

1. No habit at all □□□□□ □□□□□□□□□□□□□□□□□□□□□□□
2. Alighthabit □□□□□□ □□□□□□
3. Medium habit □□□□□□ □□□□□□ Strong habit □□□□□□□□□□□□□□□□
4. Verystronghabit □□□□□□□□□□□□□□□□□□□□□□□□□□□□

**INTERVIEWER: Give the 5th piece of the Puzzle. Help if needed.**

□□□□□□□□□□: □□□□□□ 5□□□ □□□□□□□□□□ □□□□. □□□□□□□□□□ □□□□ □□□□.

Section 9:   ?    ?  

**D9.3 In the coming month, how strongly will you try to use the latrine?**

1. Not strongly at all □□□□□□□□ □□□□□□□□ □□□□

2. Little strongly □□□□□□□□□□□□□□

3. Medium strongly □□□□□ □□□□□□□□□□

4. Very strongly □□□□□□□□□□□□□□□□

5. Extremely strongly □□□□□□□□ □□□□□□□□□□

1. (Almost) never □□□□ □□□□
2. Seldom □□□□□□□□
3. Sometimes □□□□□□□□
4. Often □□□□□□□□□□ (□□□□□□□□)
5. (Almost) always □□□□□□□□

[illegible][illegible][illegible]

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□ □ □ ? □ □    □ ? ? □ □ □ □ □    □ □ □ □ ? □ □ □

[illegible]

D10.4

1. Correct □□□
1. Notcorrect □□□□□□
888. Don't Know □□□□ □□□□□□□□□□

D10.5 □□□□□ □□ □□□□□□ □□□□□□□□□□□□

2. Correct □□□
1. Not correct □□□ □□□□
888. Don't Know □□□□ □□□□□□□□□□□□

D10.7 □□□□□ □□□□ □□□□□□ □□□□□ □□□□□□ □□□□□□□□□□□□□□□□ □□□□□□□ □□□□□□□□□□□□□□□□

- 2.** Correct □□□
- 1.** Notcorrect □□□□□□
- 888.** Don't Know □□□□ □□□□□□□□□□

D10.8 □□□□□□□□ □□□□□□□□ □□□□□□□□□□□□ □□□□□□□□□□□□ □□□□□□□□ □□□□ □□□□□□□□□□

- [illegible]

D10.11 □□□□□□□□ □□□□□□ (□□□□□□□□□□) □□□□□□□□□□ □□□□□□□□ □□□□ □□□□□□□□

- [illegible]

D10.12

- [illegible]



## Section 11: Risk Factors/ Vulnerability

□□□□ □□□□□□□□ / □□□□□□□□ (□□□□ □□□□□□□□)

### D11.2 If you defecate in the open, how high or low is the risk that you get diarrhoea?

D11.2 □□□□□ □□□□□□□□□□ □□□□□□ (□□□ □□□□□□□□□□) □□□□□□□□, □□□□□ □□□□□□□□□□ □□□□□ □□□□□□□□□□ □□□□ □□□□□□ □□□□ □□□□ □□□□?

- |                 |                                |
|-----------------|--------------------------------|
| 0. Low □□□□     | GO TO D11.2a AND THEN TO D11.4 |
| 3. Medium □□□□□ | SKIP TO D11.4                  |
| 6. High □□□□□□  | SKIP TO D11.2b                 |

*If D11.2 If you defecate in the open, how high or low is the risk that you get diarrhoea? is Low:*

#### D11.2a How low?

D11.2a □□□□□ □□□□□?

1. VeryLow □□□□□□□□□□
2. A bit low □□□□□□□□□□

*If D11.2 If you defecate in the open, how high or low is the risk that you get diarrhoea? is High:*

#### D11.2b How high?

D11.2b □□□□□ □□□□□□?

4. Bit High □□□□□□ □□□□□□
5. Extremely High □□□□□□□□ □□□□□□

### D11.4 If you defecate in the open, how high or low is the risk that others in your village get diarrhoea?

D11.4 □□□□□ □□□□□□□□□□ □□□□□□ (□□□ □□□□□□□□□□) □□□□□□□□, □□□□□ □□□□□□□□□□ □□□□□□□□ □□□□□ □□□□□□□□ □□□□□□ □□□□□□□□ □□□□ □□□□□□ □□□□ □□□□ □□□□ □□□□?

- |                 |                                |
|-----------------|--------------------------------|
| 0. Low □□□□     | GO TO D11.4a AND THEN TO D11.5 |
| 3. Medium □□□□□ | SKIP TO D11.5                  |
| 6. High □□□□□□  | SKIP TO D11.4b                 |

*If D11.4 If you defecate in the open, how high or low is the risk that others in your village get diarrhoea? is Low:*

#### D11.4a How much low?

D11.4a □□□□□□□□□□ □□□□□ □□□□□?

1. Very low □□□□□□□□□□
2. A bit low □□□□□□□□□□







6. Like it ☐☐☐☐☐☐☐☐

SKIP TO D13.3b

If D13.3 ... how much do you like or dislike defecating on the open? is Dislike it:

**D13.3a If you rather dislike it:**

**D13.3a** ☐☐☐☐☐☐☐☐ ☐☐:

Hint: Open Defecation ☐☐☐☐☐☐☐☐ ☐☐☐☐☐☐☐

1. Dislike it very much ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

2. Dislike it a bit ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

If D13.3 ... how much do you like or dislike defecating on the open? is Like it :

**D13.3b If you rather like it:**

**D13.3b** ☐☐☐☐☐☐☐☐ ☐☐:

Hint: OD ☐☐☐☐☐☐☐☐☐☐ ☐☐☐☐☐☐☐

4. Like it a bit ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

5. Like it very much ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

**D13.5 ... how high or low is the risk of an animal attack, for example from a pig, snake, scorpions, rat or dog?**

**D13.5** ...ಪಾಣಿಗಳು, ದಾಳಿಗಳಿಂದ ದಾಳಿಗಳಾಗುವ ಸಾಧ್ಯತೆ ಎಷ್ಟು ಹೆಚ್ಚು ಅಥವಾ ಕಡಿಮೆ ಇದೆ, ಉದಾಹರಣೆಗೆ ಹಂದಿ, ಹಾವು, ಚರ್ಮಿಗಳು, ಇಲಿ ಅಥವಾ ನಾಯ?

Hint: OD ☐☐☐☐☐☐☐☐ ☐☐☐☐☐☐☐

0. Low ☐☐☐

GO TO D13.5a AND THEN TO D13.6

3. Medium ☐☐☐☐

SKIP TO D13.6

6. High ☐☐☐☐☐

SKIP TO D13.5b

If D13.5 ... how high or low is the risk of an animal attack, for example from a pig, snake, scorpions, rat or dog? is Low:

**D13.5a If low:**

**D13.5a** ☐☐☐☐ ☐☐:

Hint: OD ☐☐☐☐☐☐☐☐ ☐☐☐☐☐☐☐

1. VeryLow ☐☐☐☐☐☐☐☐

2. A bit low ☐☐☐☐☐☐☐☐

If D13.5 ... how high or low is the risk of an animal attack, for example from a pig, snake, scorpions, rat or dog? is High:

**D13.5b If high:**

**D13.5b** ☐☐☐☐☐☐ ☐☐:



1. Not ashamed at all □□□□□□□□□□□□□□□□
2. Little ashamed □□□□□□□□□□□□
3. Medium ashamed □□□□□□□□□□□□
4. Very ashamed □□□□□□□□□□□□
5. Extremely ashamed □□□□□□□□□□□□

**D13.13 ... how time-consuming is it for you?**

**D13.13 ... ಅದು ನಮಗೆ ಎಷ್ಟು ಸಮಯ**

## ತೆಗೆದುಕೊಳ್ಳುವುದು?

*Hint:* OD □□□□□□□□□□□□□□? ?□□□□□□□

1. Not time-consuming at all □□□ □□□□□□□□□□□□□□□□
2. Little time-consuming □□□□ □□□ □□□□□□□□□□□□□□
3. Medium time-consuming □□□□□□□□□□□ □□□ □□□□□□□□□□□□□□
4. Very time-consuming □□□□□□ □□□ □□□□□□□□□□□□□□□

**D13.14** ... how convenient is it for you?

D13.14 ...ಅದು ನಮಗೆ ಎಷ್ಟು ಟ

## ಅನ್ಯಕೂಲಕರವಾದುದು?

Hint: OD

1. Not convenient at all ☐ ☐ ☒ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
2. Little convenient ☐ ☐ ☐ ☐ ☐ ☒ ☐ ☐ ☐ ☐ ☐ ☐
3. Medium convenient ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☒ ☐ ☐ ☐ ☐ ☐
4. Very convenient ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☒ ☐ ☐ ☐ ☐ ☐
5. Extremely convenient ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☒ ☐ ☐ ☐ ☐

### D13.15... how fresh do you feel?

**D13.15... ನಮಗೆ ಎಷ್ಟು ಘಂಟೆ (ತಾಜಾ) ಅನಿಸುವುದು?**

[illegible]

1. Not fresh at all ☐☐☐☐☐☐ ( ☐☐☐ ) ☐☐☐☐☐☐☐☐☐☐
2. Little fresh ☐☐☐☐☐☐☐☐ ( ☐☐☐ )
3. Medium fresh ☐☐☐☐☐☐☐☐☐☐☐☐
- ( ☐☐☐ ) 4. Very fresh ☐☐☐☐☐☐☐☐☐☐☐☐
- ( ☐☐☐ )
5. Extremely fresh ☐☐☐☐☐☐☐☐☐☐☐☐ ( ☐☐☐ )

**D13.16... how high or low is the risk of an attack by other people (e.g. harassment, robbery or rape)?**





5. Like it very much □□□□□□ □□□□□□ □□□□□□□□□□

**D14.5... how disgusting is it?**

### D14.5... ಅದು ಎಷ್ಟು

## ಅಸಹಕರವಾಗಿದೆಯೇ?

[illegible]

1. Not disgusting at all ☐ ☒ ☐ ☐ ☐ ☐
2. Little disgusting ☐ ☐ ☐ ☐ ☐ ☐
3. Medium disgusting ☐ ☐ ☐ ☐ ☐ ☐
4. Very disgusting ☐ ☐ ☐ ☐ ☐ ☐
5. Extremely disgusting ☐ ☐ ☐ ☐ ☐ ☐

**D14.6... how convenient is it for you?**

**D14.6... ಅದು ನಮಗೆ ಎಷ್ಟು**

## ಅನ್ಯಕೂಲಕರವಾಗಿದೆಯೇ?

*Hint:* LU

1. Not convenient at all □□□□□□□□ □□□□□□□□ □□□□
2. Little convenient □□□□ □□□□□□□□
3. Medium convenient □□□□□□□□□□ □□□□□□□□
4. Very convenient □□□□□ □□□□□□□□
5. Extremely convenient □□□□□□ □□□□□□□□

### D14.7... how time-consuming is it for you?

D14.7... ಅದು ನಿಮಗೆ ಎಷ್ಟು ಸಮಯ ತೆಗೆದುಕೊಳ್ಳುವಂತಾದ ಆಗಿದೆ?

*Hint:* LU

1. Not time-consuming at all ☐ ☐ ☒ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
2. Little time-consuming ☐ ☐ ☐ ☒ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
3. Medium time-consuming ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☒ ☐ ☐ ☐ ☐ ☐ ☐
4. Very time-consuming ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☒ ☐ ☐ ☐ ☐ ☐
5. Extremely time-consuming ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☒ ☐ ☐ ☐ ☐

#### D14.9... How polluting do you find it?

D14.9... ನಮಗೆ ಶೌಚಾಲಯ ಬಳಸುವುದು ಎಷ್ಟು ಕಲುಷಿತ ಎಂದೂ ಅನಿಸುತ್ತದೆ?

[illegible]

- Not polluting at all
- Little polluting
- Medium polluting



- [illegible]

### D14.10... How high or low is the risk to get mosquito bites?

D14.10... ಸಾಂಸ್ಕೃತಿಕಗಳ ಕಚ್ಚಾಚವ ಸಾಧನೆ ಎಷ್ಟು ಹೆಚ್ಚು ಅಥವಾ ಕಡಿಮೆ ಇದೆ?

*Hint:* LU

0. Low ☐☐☒ GO TO D14.10a AND THEN TO D14.11
3. Medium ☐☐☒☒ SKIP TO D14.11
6. High ☐☐☐☐☐ SKIP TO D14.10b

If D14.10... How high or low is the risk to get mosquito bites? is Low:

**D14.10a If low:**

**D14.10a**   ?    ? :

*Hint:* LU

- [illegible]

*If D14.10... How high or low is the risk to get mosquito bites? is High:*

**D14.10b If high:**

**D14.10b** □□□□□□ □□□?:

[illegible]

4. Abithigh □□□□□□□□
5. Very high □□□□□□□□□□

**D14.11... How cramped do you feel?**

D14.11...ನಮಗಿ ಎಷ್ಟು ಇಕಕಟುಟ ಎನಸುವುದು?

[illegible]

1. Not cramped at all
2. Little cramped
3. Medium cramped
4. Very cramped
5. Extremely cramped

**D14.12... How lonely do you feel?**

D14.12... ನಮಗೆ ಎಷ್ಟು ಒಂಟಿ  
ಅನಿಸುತ್ತದೆ?

*Hint:* LU

1. Not lonely at all □□□□ □□□□□□ □□□□
2. Little lonely □□□ □□□□
3. Medium lonely □□□□□□ □□□□□
4. Very lonely □□□□□ □□□□□
5. Extremely lonely □□□□□ □□□□□

**D14.13... How much does it smell in the latrine?**

**D14.13... ಶೌಚಾಲಯದಲಿ ಎಷ್ಟು ಟೆ ವಾಸನೆ ಬರುವುದು?**

*Hint:* LU

- [illegible]

**D14.14... .. how strongly do you feel that you set a good example for other people in your village?**

D14.14... ಶೌಚಕಲ್ಯಾಣ ಬೆಳೆಸುವುದರಲ್ಲಿ ನಿಮಮ ಹಳಿಯಲ್ಲಿನ ಇತರರೆ ಜ್ವರಿಗೆ ನೋವು ಒಳಗೆ ಉದಕಹರಣೆಯಕಗುವಿರಿ ಎಂದು ನಿಮಗೆ ಅನಿಸುತ್ತಕೆ

[illegible]

1. Not strongly at all □□□□□□□□ □□□□□□ □□□□
2. Little strongly □□□□□□□□□□
3. Medium strongly □□□□ □□□□□□□□
4. Very strongly □□□□□ □□□□□□□□
5. Extremely strongly □□□□□□ □□□□□□□□

**D14.16...How proud do you feel?**

D14.16..... ನಮಗೆ ಎಷ್ಟು ಹೆಚ್ಚು

## ಆಗುತ್ತದೆ?

[illegible]

1. Not proud at all □□□□□□□□□□
2. Little proud □□□□□□□
3. Medium proud □□□□□□□□□□
4. Very proud □□□□□□□□
5. Extremely proud □□□□□□□□□□

**INTERVIEWER:** Give the 10th piece of the Puzzle. Help if needed.

[illegible]

**Section 15:** ಸ್ವಾಮಕನಾ ಅಂಗಗಳ-ಇತ್ರರ ನಡವಳಿಕೆ

[illegible]

**D15.3** □□□□ □□□□□ 18 □□□ □□□□□□□ □□□□□□□□□□□□□□□□□□□ □□□□ □□□□□□□ □□□□□□□□□□ □□□□ □□□□□□□□□□□. □ 10

\_\_\_\_\_

\_\_\_\_\_

[illegible]

**Section 16:** ಸ್ವಾಮಕನಾ ಅಂಗಗಳಲ - ವಾಕ್ಯಿಯಕ್ಕುಕ ಪುರಮುಖಿತೆ

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**READ: Now, I would like to know from you what other people in your village think.**

□□, □□□ □□□□□□□□ □□□□□ □□□□ □□□□□□□□ □□□□ □□□□ □□□□□□□□□□.

**D17.3 How strongly do other people in your village think that you should use the latrine for defecation?**

**D17.3** □□□□□□□□ □□□ □□□□□ □□□□□□ □□□□ □□ □□□□ □□□□□ □□□□ □□□□ □□□□□□□□?

1. Not strongly at all □□□□□□□□ □□□□□□□□ □□□□
2. Little strongly □□□□□□□□□□□□
3. Medium strongly □□□□□ □□□□□□□□□
4. Very strongly □□□□□□ □□□□□□□□□
5. Extremely strongly □□□□□□ □□□□□□□□□

**D17.4 How much do other people in your village approve you using the latrine for defecation?**

**D17.4** □□□ □□□□□□ □□ □□□□ □□□ □□□□□□□□ □□□□□□□□□ □□□□□□□□□ □□□□□□□□□ □□□□□□□□?

1. Not approve at all □□□□□□□□□□□□□ □□□□
2. Approve a bit □□□□□□□□□□ □□□□□□□
3. Medium approve □□□□□□□□ □□□□□□□
4. Approve much □□□□□□□□□□□ □□□□□□□
5. Approve very much □□□□□□ □□□□□□□□□□□ □□□□□□□

**D17.5 Do people who are important to you approve you defecating in the open?**

**C.17.5** □□□□ □□□□□□□ □□□□□□□ □□□□ □□□□□□□□ □□□□□□□□□□ □□□□□□□□□ □□□□□□□□ □□□□□□□□

1. Not approve at all □□□□□□□□□□□□□ □□□□
2. Approve a bit □□□□□□□□□□ □□□□□□□
3. Medium approve □□□□□□□□ □□□□□□□
4. Approve much □□□□□□□□□□□ □□□□□□□
5. Approve very much □□□□□□ □□□□□□□□□□□ □□□□□□□

**INTERVIEWER: Give the 13th piece of the Puzzle. Help if needed.**

□□□□□□□□: □□□□□□ 13□□ □□□□□□□ □□□□, □□□□□□□□ □□□ □□□□.

## Section 18: Ability factors - How-to-do knowledge

Section 18: □□□□□□ □□□□□□□ - □□□□□ □□□□□□□ □□□□□□□ □□□□□ (□□□□□□□□□□)

**READ: Now, I would like to learn from you about the correct steps of latrine use.**

□□, □□□□□ □□□□□ □□□□□ □□□□□ □□□□ □□□□□□ □□□□□□□ □□□□□□□□□□□.

[illegible][illegible]

- D18.7

- D18.8

- [illegible]

- D18.13    □□□□ □□□□□ □□□□□□□□ □□□□□□ □□□□□□ □□□□□□ □□□□□□□□□□ □□□□□□□□□□.

- D18.14

- ○○○○○○○○○ (○○○○○○○○○○ ○○○) ○○○○○○ ○○○○○○ ○○○○○○○○ ○○○○○○○○○ ○○○ ○○○○○○○○○  
 ○○○○○○○○○ ○○○○ ○○○○○○○○○?

Page | 36



**Time needed for one latrine pit to fill up**

□□□□□□□□□□□□ □□□□ □□□□□□ □□□□□□□□□□ □□□

1. Number of years □□□□□□□□	
2. Number of months □□□□□□□□ □□□□	
888. Don't Know □□□□□□□□	

**INTERVIEWER: Give the 14th piece of the Puzzle. Help if needed.**

□□□□□□□□□□: □□□□□ 14□□□ □□□□□□□□ □□□□□, □□□□□□□□□□ □□□□ □□□□□.

### Section 19: Confidence in performance, confidence in continuation and confidence in recovering

**Section 19: ಸಮಥಶತೆ ಅಂಗ್ಗಳು - ಕಾಯಶಕ್ಷಮತೆಯಲಿ ವಶಾವಸ, ಮುಂದುವರೆಯುವಿಕೆಯಲಿ ವಶಾವಸ ಮತ್ತು ಚೇತರಿಕೆಯಲಿ ವಶಾವಸ**

**READ: Now, I would like to learn from you about your ability. Please remember that we are talking about use of latrine for defecation - Not urination and when you are at home only.**

ಈಗ ನಕನು ನಿಮಮ ಸ್ವಮಥಬಶದ ಬ್ಲೆ ತ್ತಳಿಯಲ್ ಇಷಪಡುತುೇನೆ. ಸುಂಡಾಸಿಗೆ ಶೌಚಾಲಯ ಬಳಕೆ ಬಗೆ ನಾವು ಮಾತನಾಡುತಿದದೋವೆ - ಮೂತಿ

ವಿಸಜಶನೆ ಬಗೆ ಅಲಿ ಮತ್ತು ಸದಸೆರು ಮನೆಯಲಿ ಇರುವಾಗ ಮಾತೆ ಮಂದ ದಯವೆಟುಟ ನೆನ್ನಿಡೆ.

**D19.4 In general, how able do you feel to use the latrine for defecation?**

**D19.4** □□□□□□□□□□, □□□□□□□□□□ □□□□□ □□□□□ □□□□ □□□□□□□□□□□□ □□□□ □□□□ □□□□□□□□?

1. Not able at all □□□□ □□□□□□□□ □□□□
2. Little able □□□□□□□□
3. Medium able □□□□□□□□ □□□□
4. Very able □□□□□□ □□□□
5. Extremely able □□□□□□ □□□□

**D19.5 In general, how difficult or easy is it to use the latrine for defecation?**

**D19.5** □□□□□□□□□□, □□□□□□□□□□ □□□□□ □□□□□□□ □□□□ □□□□ □□□□ □□□□□□□□□□?

- |                  |                                |
|------------------|--------------------------------|
| 0. Easy □□□□□    | GO TO D19.5a AND THEN TO D19.6 |
| 3. Difficult □□□ | SKIP TO D19.5b                 |



6. Neither of the two ☐☐☐☐ ☐☐☐☐ SKIP TO D19.6



5. Extremely able □□□□□□ □□□□





## Section 20: Self-regulation factors / Action planning

Section 20: ಕುಳಿತು-ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ / ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ

**READ:** Please remember that we are talking about use of latrine for defecation - Not urination and when you are at home only. ಸುಂಡಾಸಿಗೆ ಶೌಚಾಲಯ ಬಗೆನಾವು ಮಾತನಾಡುತ್ತಿದ್ದೇವೆ - ಮೂತಿ ವಿಸರ್ಜನೆ ಬಗೆ ಅಲಿ ಮತ್ತುತ ನೋವು ಮನೆಯಲಿ ಇರುವಾಗ ಮಾತೆ

ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ.

### D20.3 How do you get ready to use the latrine for defecation? (MULTIPLE RESPONSES POSSIBLE)

D20.3 ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ?

*Hint: Interviewer: Multiple response item; Don't read the answers; listen and tick answers accordingly.*

ಕುಳಿತುಕೊಳ್ಳುವ: ಕುಳಿತುಕೊಳ್ಳುವ; ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ; ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ.

1. Place for water collection mentioned ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ (ಕುಳಿತುಕೊಳ್ಳುವ) ಕುಳಿತುಕೊಳ್ಳುವ
2. Place for water storage mentioned ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ (ಕುಳಿತುಕೊಳ್ಳುವ) ಕುಳಿತುಕೊಳ್ಳುವ
3. Household member to provide water mentioned ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ
4. Time or preceding activity mentioned ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ
5. Keep the toilet cleaning materials in the toilet ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ
6. None of these points mentioned ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ
0. Other (please specify) ಕುಳಿತುಕೊಳ್ಳುವ(ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ)

**INTERVIEWER:** Give the 16th piece of the Puzzle. Help if needed.

ಕುಳಿತುಕೊಳ್ಳುವ: ಕುಳಿತುಕೊಳ್ಳುವ 16ನೇ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ. ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ.

## Section 21: Self-regulation factors / Action control

Section 21: ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ / ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ

**Read:** Now I want to learn about your awareness for latrine use during your day-to-day life.

ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ.

**During the last week...**

ಕುಳಿತುಕೊಳ್ಳುವ ಕುಳಿತುಕೊಳ್ಳುವ...

**D21.4... how much did you watch yourself to use the latrine for defecation?**

D21.4... ಸುಂಡಾಸಿಗೆ ಶೌಚಾಲಯ ಬಳಸಲು ಸವತೆ ನಮಮನ್ಯ ನೋವು ಎಷ್ಟರಮಟ್ಟಿಗೆ ಗಮನಸಿಕೊಂಡಿರಿ?

- [illegible]

**D21.5... how aware were you of your goal to use the latrine for defecation?**

D21.5...ಸುಂಡಾಸಿಗೆ ಶೌಚಾಲಯ ಬಳಸಬೇಕು ಎಂಬ ಗುರಿಯ ಬಗ್ಗೆ ನಮಗೆ ಗಮನ ಎಷ್ಟು ಇತ್ತು?

1. Not aware at all □□□□□□□□□□
2. Little aware □□□□□□□
3. Medium aware □□□□□□□□□
4. Much aware □□□□□□□□
5. Very much aware □□□□□□□□□□□□

**D21.6** ... how strongly did you pay attention to use the latrine for defecation?

D21.6 ... ಸುಂಡಾಸಿಗೆ ಶೌಚಾಲಯ ಬಳಸಲು ನೋವು ಎಷ್ಟು ಬಲವಾಗಿ ಗಮನ ನೋಡುವಿರಿ?

1. Not strongly at all □□□□□□□□ □□□□□□ □□□
2. Little strongly □□□□□□□□□□
3. Medium strongly □□□□ □□□□□□□□
4. Very strongly □□□□□□ □□□□□□□□
5. Extremely strongly □□□□□□ □□□□□□□□

**INTERVIEWER:** Give the 17th piece of the Puzzle. Help if needed.

:  17 .

## Section 22: Self-regulation factors / Coping planning

Section 22: -/

**READ:** Now I want you to think about the barriers - in terms of time, space available inside the toilet, situations, water available and then tell me how you manage to use the toilet.

ಈಗ ತಿಂಗಳೊಳಗೆ ಬಗೆ ನೋವು ಯೋಚಿಸಬೇಕೆಂದು ನಾನು ಬಯಸುತ್ತೇನೆ - ಸಮಯ, ಸಂವೋದಗಳು, ನೋವು ಲಭಿತ ವಿಷಯಗಳ ಮತುತ

**ಅನಂತರ ಶೌಚಾಲಯ ಬಳಸಲು ನೀವು ಹೋಗಿ ನಭಾಯಸುವಿರಿ ಎಂಬುದನ್ನು ನೆನಪಿಟ್ಟು**

**D22.4** Imagine that all family members use the latrine for defecation, how can you manage to get time to use the latrine for defecation nevertheless? **(MULTIPLE RESPONSE POSSIBLE)**

□ □ □ □ □ □ □ ? □ □ □ □ □ ? □ ? ? ? ? □ ? □ □ □ □ □ □ □ □ □ □ □ □ □ ?

□□□□□□□□: □□□□ □□□□; □□□□□□□□ □□□□□□□□; □□□□ □□□□ □□□□ □□□□□□□□ □□□□ □□□□ □□□□.

1	Get up early in the morning and try to go first /I wake up before others and go first ○○○○○○○○○○ ○○○○○○ ○○○○○○ ○○○○○○ ○○○○ ○○○○○○○○○○○○○○○○○○○○ / ○○○○○○○○ ○○○○○○ ○○○○ ○○○○○○○○○○ ○○○○ ○○○○○○
10	Store sufficient water ○○○○○○○○○○ ○○○○ ○○○○○○○○○○○○○○○
11	Considering number of persons I spend less time ○○○ ○○○○○○○○○○○○ ○○○○○○○○○○○○ ○○○○ ○○○○○○ ○○○ ○○○○○○○○○○○○
2	I make adjustments/daily maintain routine schedule ○○○○○ ○○○○○○○○○○○○○○○○ ○○○○○○○○○○○○/○○○○○○○○○○○ ○ ○○○○ ○○○○○○○○○○○○○ ○○○○○○○○○○○○
3	Since we have two latrines, I can use the latrine based on my convenience ○○○○○ ○○○○ ○○○○○○○○○○○○○○ ○ ○○○○○○○○○○○○○○○○○○○○○, ○○○○ ○○○○○ ○○○○ ○○○○○○ ○○○○○○ ○○○○○○○○○○○○○○ ○○○○○○ ○○○○○○○○○○○○○
4	Go one by one ○○○ ○○○○○○○○○○ ○○○○○○○○○○○
5	I go once others finish ○○○○○○○○○○○ ○○○○○○○○○○ ○○○○○○ ○○○○ ○ ○○○○○○○○○○○
6	Whenever I feel I will go ○○○○○ ○ ○○○○○○○○○○○○○○○○○○○○○ ○○○○ ○ ○○○○○○○○○○○
7	Go to public toilet ○○○○○○○○○ ○○○○○○○○○○○○ ○○○○○○○○○○○○
888	No response ○○○○○ ○○○○
9	I maintain timing. Discuss with each member and fix timing ○○○○○ ○○○○ ○○○○○○○○○○○○○○○○○○○. ○○○○○○○○ ○○○○○○○○ ○○○○○○○○ ○○○○○○○○○
777	Other (Please specify) ○○○○○ (○○○○○○○○○○○○○○○○○○○○○○)
888	Dont know ○○○ ○○○○○○

**Don't Know**





ಉತ್ತರಿಸುವವರು: ಉತ್ತರಿಸುವವರು; ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು; ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು.

D22_6	1	Getting water from other sources ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು
	2	Storing sufficient water from other sources when there is scarcity ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು
	3	Use less water ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು
	4	Manage properly ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು
	5	Use other latrines/sulabh shouchalaya ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು/ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು
	888	No response ಉತ್ತರಿಸುವವರು
D22_6A	777	Other (Please specify) ಉತ್ತರಿಸುವವರು (ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು)
	888	Don't know ಉತ್ತರಿಸುವವರು

777. Other (please specify) ಉತ್ತರಿಸುವವರು(ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು)

888. Don't Know ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು

**INTERVIEWER: Give the 18th piece of the Puzzle. Help if needed.**

ಉತ್ತರಿಸುವವರು: ಉತ್ತರಿಸುವವರು 18ನೇ ಪುಟ್ಟೆಣ್ಣೆ ಪುಟ್ಟೆಣ್ಣೆ. ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು.

## Section 23: Self-regulation factors / Hindrance and Remembering

**Section 23:** ಉತ್ತರಿಸುವವರು-ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು/ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು

**READ: Please remember that we are talking about use of latrine for defecation - Not urination and when you are at home only.**

ಓದಿ: ಸಂಘಟನೆಯ ಶೌಚಾಲಯ ಬಳಕೆ ಬಗ್ಗೆ ನಾವು ಮಾತನಾಡುತ್ತಿದ್ದೇವೆ - ಮನೆ ತರ ವಿಸರ್ಜನೆ ಬಗ್ಗೆ ಅಲ್ಲಾ ಮತದತೆ ನೆವು ಮನೆಯಲ್ಲಾ ಇರದವಾಗ ಮತರ ಎಂದೆದ ದೃವಿಟು ನೆನಪಡಿ.

**D23.3 Does it happen that you want to use the latrine, but then something hinders you?**

D23.3 ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು

1. Yes ಉತ್ತರಿಸುವವರು

2. No ಉತ್ತರಿಸುವವರು

SKIP TO D23.5

*If D23.3 Does it happen that you want to use the latrine, but then something hinders you? is Yes:*

D23.3 ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು

ಉತ್ತರಿಸುವವರು:

**D23.4 What hinders you? (MULTIPLE RESPONSE POSSIBLE)**

D23.4 ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು (ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು ಉತ್ತರಿಸುವವರು)

Hint: Interviewer: Multiple response item; Don't read the answers; listen and tick answers accordingly.

Interviewer: Please specify; Interviewer: Please specify; Interviewer: Please specify; Interviewer: Please specify; Interviewer: Please specify.

1. There is no light in the toilet. Interviewer: Please specify (Interviewer)

Interviewer: 2. It's too hot in the toilet. Interviewer: Please specify (Interviewer)

(Interviewer) Interviewer.

777. Other (please specify) Interviewer (Interviewer: Please specify)

D23_4OTH	1	No power supply Interviewer: Please specify
	10	Latrine is away from home ( distance ) Interviewer: Please specify (Interviewer)
	11	Money is not given to us Interviewer: Please specify
	12	Family members have got bad opinion about using latrine Interviewer: Please specify (Interviewer: Please specify)
	13	Not willing to use Interviewer: Please specify
	14	Locked Interviewer: Please specify
	15	Feeling good to go for Open defecation Interviewer: Please specify (Interviewer: Please specify)
	16	Air pipe is not installed so bad odour is coming Interviewer: Please specify (Interviewer: Please specify)
	2	Very hot Interviewer: Please specify (Interviewer)
	3	No specific issues Interviewer: Please specify
	4	Water shortage/no water Interviewer: Please specify / Interviewer: Please specify
	5	Bad smell inside latrine Interviewer: Please specify (Interviewer: Please specify)
	6	Door/pipe broken Interviewer: Please specify / Interviewer: Please specify
	7	Tank got filled Interviewer: Please specify (Interviewer: Please specify)
	8	Latrine is small, congested Interviewer: Please specify (Interviewer: Please specify)
	9	Pit damaged, not functioning Interviewer: Please specify (Interviewer: Please specify)

D23.5 During the last five days, did you plan to use the latrine but then forgot it?

D23.5 Interviewer: Please specify; Interviewer: Please specify; Interviewer: Please specify; Interviewer: Please specify; Interviewer: Please specify?

1. Yes Interviewer

2. No ☐ ☐ ☐ ☐

*If D23.5 During the last five days, did you plan to use the latrine but then forgot it? is Yes:*

**D23.6 How often did you forget to use the latrine for defecation?**

**D23.6** □□?□ □□□ □?□□□□ □□□□□□, □□□□ □??□□□□□□ □□□□□□ □□□□□?□□□□? □□□□□ □□□□

□ □ □ □ □ □ □ ? ?

1. (Almost) never □□□□ □□□□
2. Seldom □□□□□□□□
3. Sometimes □□□□□□□□
4. Often □□□□□□□□□□ (□□□□□□□□)
5. (Almost) always □□□□□□□□□□

## Section 24: Self-regulation factors / Commitment

Section 24: □□□□-□□□□?□□□ □□□□□□ / □□□□□□

**READ: Please remember that we are talking about use of latrine for defecation - Not urination and when you are at home only.** ಸಂಘಾಸಿಗಾಗಿ ಶೌಚಾಲಯ ಬಳಕೆ ಬಗೆ ನಾವು ಮಾತನಾಡುತ್ತಿದ್ದೇವೆ-ಮೂತಿ ವಿಸರ್ಜನೆ ಬಗೆ ಅಲಿ ಮತ್ತುತನೋವು ಮನೆಯಲಿ

□ □ □ □ □ □   □ □ □ □   □ □ □ □   □ □ □ □ □ □ □ □   □ □ □ □ □ □ □ □ □ .

**D24.2 How important is it for you to use the latrine for defecation?**

**D24.2**

1. Not important at all ☐☐☐☐ ☒☐☐☐☐☐☐
2. A little important ☐☐☐☒☐☐
3. Medium important ☐☐☐☐☐☒☐☐
4. Very important ☐☐☐☐☒☐
5. Extremely important ☐☐☐☐☐☒☐

**D24.5 How committed do you feel to use the latrine for defecation?**

D24.5

□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □

- Not committed at all
- A little committed
- Medium committed
- Very committed

5. Extreme committed ☐☐☐☐☐☐☐ ☐☐☐☐☐☐

**D24.6 How strongly do you feel obliged by yourself to use the latrine for defecation?**

**D24.6**

1. Not obliged at all □□□□□□□□□□□□□□□□
2. A little obliged □□□□ □□□□  
□□□□
3. Medium obliged □□□□□□□□□□□□□□
4. Very obliged □□□□□□□□□□□□
5. Extremely obliged □□□□□□ □□□□□□□□

**INTERVIEWER:** Give the 19th piece of the Puzzle to complete the image. Help if needed.

□□□□□□□□: □□□□□□ 19 □□ □□□□□□ □□□□□□. □□□□□□□□□□ □□□□ □□□□.

## Section 25: Context / Availability of water

Section 25: □□?□□□□?□□ / □□?□□□□□□□?□□

**READ:** We would finally like to learn more about availability of water.

[illegible]

**D25.3 From which water source do you collect water for domestic use? (e.g. laundry, dishwashing, latrine)**  
**(MULTIPLE RESPONSES POSSIBLE)**

[illegible]

*Hint: Interviewer: Multiple response item; Don't read the answers; listen and tick answers accordingly.*

[illegible]

1. Borewell hand pump
2. Borewell power pump
3. Dug well with hand pump
4. Dug well with power pump
5. Private tap
6. Public water tap
7. Rainwater
8. Other (please specify)

□ □ □ □ □ ( □ □ □ □ □ □ □ )

□□□□□□□□) 888. Don't Know



- [illegible]

If D25.6 Last week, how difficult or easy was it to collect enough water for flushing the latrine? is Difficult:

**D25.6b If difficult:**

**D25.6b** □□□□ □□□?:

- [illegible]

**D25.7 During the last hot season, how difficult or easy was it to collect enough water for flushing the latrine?**

**D25.7**   □□? □□□□? □□□□?, □□□□□□□□□□□□□□□□ □□□□□□□□□□□□ □□□□□□□?

0. Easy ☐☐☐☐☐ GO TO D25.7a AND THEN TO D26.3
3. Difficult ☐☐☐ SKIP TO D25.7b
6. Neither of the two ☐☐☐☐☐☐ SKIP TO D26.3

*If D25.7 During the last hot season, how difficult or easy was it to collect enough water for flushing the latrine? is Easy:*

**D25.7a If easy:**

**D25.7a** □□□□ □□□?:

- [illegible]

*If D25.7 During the last hot season, how difficult or easy was it to collect enough water for flushing the latrine? is Difficult:*

**D25.7b If difficult:**

**D25.7b** □ □ ? □ □ □ ? :

4. Somewhat difficult □□□□□□□□ □□
5. Very difficult □□□□□□□□

**INTERVIEWER:** Give the 20th (Last) piece of the Puzzle. Help the respondent finish the puzzle if needed.

**QUESTION:** 20. The following information was obtained from the records of the Department of Health and Human Services regarding the number of deaths due to heart disease in the United States from 1980 to 1990.

## Section 40: Intervention check

**D40\_01** We have learned that there were some interventions in your area (implemented by Swami Vivekananda Youth Movement). We would like to learn more about it.

[illegible]

□ □ □ □ □ □ □ □ □

1 Yes ☐☐☐☐

2 No ☐☐☐☐ Skip to D40.21

1 Yes ☐☐☐☐

2 No ☐☐☐☐ Skip to D40.14

000000 0 00000000 0000 0000000000000000 00000000000000000000? (0000000000: 000000 000000;  
 000000000000 00000000;0000000000000000 000000 0000000000000 000000000000 000000 000000)

- 1 Audio play □□□□□ □□□□□
- 2 Videoshow □□□□□□□ □□ □
- 3 Discussion □□□□□
- 4 Information about pit emptying □□□ (□□□□) □□□□□ □□□□□□□□□□□ □□□□□  
□□□□□□□
- 5 Hand out □□□□□□ □□□ (□□□□□□)
- 777 Others (specify) □□□□□ (□□□□□□□□)
- 888 No activity remembered (□□□□□□□□ □□□□□□□□□□□ □□□□□□□□□□□)

1 Yes ☐☐☐☐

2 No ☐☐☐☐ Skip to D40.21, if both D40.12 = 2 and D40.14=2

Page | 54



D40\_16 Did you or anybody in your family receive this paper during the meeting?

[illegible]

1 Yes ☐ ☐ ☐ ☐

No ☐ ☐ ☐ ☐

Skip to D40.21

888 I dont know

Skip to D40.21

D40\_17 Do you still have it?

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☒ ☒ ☐ ☒ ☐ ☐ ☐ ☐ ☐ ☐

1 Yes ☐ ☐ ☐ ☐

2 No ☐ ☐ ☐ ☐

Skip to D40.21

D40\_18 Can you show it to me?

□ □ □ □ □   □ □ □ ?   □ □ □ □ □   □ ? ? ? □ □ □ □ □ □ □ □ □ ?

1 Respondent showed paper

☒ ☒

2 Respondent did not show paper (refused or could not show)

[illegible]

## Household visit

100 101 102 103 104

D40\_21 During the last 6 months, did anybody come to your house to talk to YOU about latrine use?

1 Yes ☐ ☐ ☐ ☐

2 No ☐ ☐ ☐ ☐

888 I dont know □□□□□□□□

D40\_22 Did anybody come to your house to talk to any other household member about latrine use?

[illegible]

1 Yes ☐☐☐☐

2 No ☐☐☐☐ Skip to D40.31 if both D40.21=2 and D40.22=2

888 I dont know [?] Skip to D40.31 if both D40.21=2 and

D40\_23 From this visit, which activities do you remember? (Interviewer: Multiple response item; Don't read the answers;

listen and tick answers accordingly.)

□ □□□□□□□□□, □□□□ □□ □□□□□□□□□□□□ □□□□□□□□□□□□□□□□? (□□□□□□□□□: □□□□□ □□□□□; □□□□□□□□□ □□□□□□; □□□□□□□□□□□□□ □□□□ □□□□□□□□□□ □□□□□□□□ □□□□ □□□□)

- 1 Foto shooting  
□□□□□ □□ □□□□□ (□□□□□□□□□)
- 2 Reminder sticker on lotha  
□□ □□ □□□ □□□□□□ □□□□□□
- 3 Reminder sticker on other object in the household  
□□□□□□ □□□□ □□□□□□ □□□□ □□□□□□□ □□□□□□
- 4 HH discussion on barriers and how to overcome them  
□□□□□□□ □□□□□ □□□□□ □□□□ □□□□□□□□ □□□□□  
□□□□□□□□

□□□□□□□□□ □□□□□

- 5 One-by-one daily routine planning / activity sticker exercise  
□□□□□□□□ □□□□□□ □□□□□□□□□□□□ / □□□□□□□□□□  
□□□□□□□ □□□□□
- 6 Receiving the photo  
□□□□□ □□□□□□□□
- 777 Other (Specify)  
□□□□□ (□□□□□□□□□)
- 888 No activity remembered  
□□□□□□ □□□□□□□□□ □□□□□□□□□□□

## Photo commitment template

□□□ □□□□□ □□□□□□□

D40\_31 Interviewer, show the commitment template to the respondent.

□□□□□□□□□, □□□□ □□□□□□□□□ □□□□□ □□□□□ □□□□□□□□□.

D40\_32 Did you or anybody in your family receive such a template during the household visit?

□□□ □□□□□□ □□□□□□□ □□□□□ □□□□□□□□□□□□ □□□□□ □□□□ □□□□□□□□□□ □□□□□□□?

- 1 Yes □□□□
- 2 No □□□□ Skip to D40.41
- 888 I dont know □□□□ □□□□□□□□□□ Skip to D40.41

D40\_33 Do you still have it?

□□□□□ □□□□□ □□□□□ □□□□□□□□□□□?

- 1 Yes □□□□
- 2 No □□□□ Skip to D40.41

D40\_34 Can you show it to me?

□□□□□ □□□□ □□□□□ □□□□□□□□□□□?

- 1 Respondent showed template

□□□□ □□□□□□□□ □□□□□□ □□□□□□□□□□

2 Respondent did not show template (refused or could not show) Skip to D40.41

□□□□ □□□□□□□□ □□□□□□□□□□□□ □□□□□□□□□□ (□□□□□□□□□□□□ □□□□□□□□□□□□ □□□□□□□□)

D40\_35 Interviewer: Where was the template?

□□□□□□□□□□: □□□□□□ □□□□□□□□□□?

1 Respondent kept it somewhere (not put up)

□□□□ □□□□□□□□ □□□□□ □□□□□□ □□□□□□□□□□ (□□□□□□□□□□□□)

2 Template was put up anywhere inside the house

□□□□ □□□□□ □□□□□ □□□□□□□□□□□□ □□□□□□□□□□□□

3 Template was put up anywhere on the veranda

□□□□□□□□□□□ □□□□□ □□□□□□□□□□□□ □□□□□□□□□□□□

4 Template was put up anywhere outside the house and veranda

□□□ □□□□□ □□□□□□ □□□□□□ □□□□□□ □□□□□□□□□□□□ □□□□□□□□□□□□

D40\_36 Interviewer: Is there a photo on the template?

□□□□□□□□□□: □□□□□□ □□□□ □□□□□□ □□□□□?

1 Yes □□□□

2 No □□□□ Skip to D40.41

D40\_37 Interviewer: Does the photo show the respondent?

□□□□□□□□□□: □□□□□□ □□□□ □□□□□□□□□□□ □□□□□□□□□□□□□?

1 Yes □□□□

2 No □□□□

## Daily routine planning form

□□□□□□□□ □□□□□□ □□□□□□□□

D40\_41 Interviewer: Show daily routine planning form?

□□□□□□□□□□: □□□□□□□ □□□□□□ □□□□□□ □□□□□□□□□□?

D40\_42 Did you or anybody in your family receive such a paper during the meeting?

□□□□□ □□□□□ □□□□ □□□□□□□□□□□□ □□□□□□ □□□□ □□□□□□□□ □□□□□ □□□□□□□ □□□□□□□?

1 Yes □□□□

2 No □□□□ Skip to D40.51

888 Idontknow □□□□ □□□□□□□□□□□ Skip to D40.51

D40\_43 Do you still have it?

□□□□□ □□□□□ □□□□□ □□□□□□□□□□□□?

2 No

D40\_44 Can you show it to me?  
□□□□ □□□ □□□□ □□□□□□□□□□?

2 Respondent did not show form (refused or could not show) Skip to D40.51

1 Respondent kept it somewhere (not put up)  
□□□□ □□□□□□□□ □□□□ □□□□□□□□ (□□□□□□□□□□)

[illegible]

D40\_46 Interviewer: Are there activity stickers on the form  
 □□□□□□□□□□: □□□□□□ □□□□□□ □□□□□□□□□□ □□□□□□□□□□ □□□□□□□□

2 No

□ □ □ □ □ □ □ □ □ □ ? □ □ □ □ ? □ □ □ □ ? □ □ □ □

D40\_52 Did you or anybody in your family receive such stickers during the meeting?  
 □□□□□ □□□□□ □□□□ □□□□□□□□□□□□ □□□□□□ □□□□ □□□□□□□□□□ □□□□□□□□□□ □□□□□□□□□□?

2 No ☐ ☐ ☐ ☐ Skip to D40.61

D40\_53    Do you still have them?  
□ □ □ □ □   □ □ □ □ □ □ □ □   □ □ □ □ □   □ □ □ □ □ □ □ □ □ □ □ □ ?

2 No

D40\_54 Can you show them to me?

1 Respondent showed stickers

2 Respondent did not show stickers (refused or could not show)

D40\_55 Interviewer: Where were the SMALL stickers?

1 Kept somewhere (not put up)

2 Put on the lotha

3 Put on a larger water container or near tap

4 Put somewhere else

888 Respondent did not show small stickers

D40\_56 Interviewer: Where were the LARGE stickers?

□□□□□□□□: □□□□□ □□□□□□□□□ □□□□□□?

1 Kept somewhere (not put up)

☐ ☐ ☒ ☐ ☐ ☐    ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐    (☐ ☐ ☐ ☐ ☐ ☐ ☐ ☒ ☐ ☐ ☐)

2 Put on the lotha

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐    ☐ ☐ ☐ ☐    ☐ ☐ ☐ ☐ ☐ ☐ ☒ ☐ ☐ ☐ ☐

3 Put on a larger water container or near tap

[illegible]

4 Put somewhere else

☐ ☐ ☐ ☒ ☐

888 Respondent did not show large stickers

[illegible][illegible]

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□□□□ 6 □□□□□□ □□□□□□□□, □□□□ □□□□ □□□□ □□□□□□□□ □□□□□□□□ □□ □□□□□□□□?

- 1 Yes □□□□
- 2 No □□□□ Skip to D40.71
- 888 I dont know □□□□ □□□□□□□□ Skip to D40.71

D40\_62 Did you participate?  
□□□□ □□□□□□□□□□□□?

- 1 Yes □□□□
- 2 No □□□□ Skip to D40.64

D40\_63 Which activities from that anganwadi centre meeting do you remember? (Interviewer: Multiple response item; Don't read the answers; listen and tick answers accordingly.)

□ □□□□□□□□ □□□□□ □□□□□□ □□ □□□□□□□□□□□□□□ □□□□ □□□□□□□□□□□□□□□□? (□□□□□□□□□□; □□□□□ □□□□□□; □□□□□□□□□ □□□□□ □□□□□□□□ □□□□□□□□ □□□□□□□□ □□□□ □□□□)

- 1 Poster / Discussion about child feces  
□□□□ □□□□ □□□□ □□□□□□ / □□□□□
- 2 Mapping of the household  
□□□□ □□□□□□□□
- 3 Practice  
□□□□□
- 4 Putting up the commitment in the household  
□□□□□□□□□□ □□□ □□□□□□□□ □□□□□□□□□□
- 777 Others (Specify)  
□□□□□ (□□□□□□□□□)

D40\_64 Did someone else of your household participate?  
□□□□ □□□□□□ □□□□ □□□□□□ □□□□□□□□□□□□?

- 1 Yes □□□□
- 2 No □□□□ Skip to D40.71
- 888 I dont know □□□□ □□□□□□□□□□ Skip to D40.71

## Phone call

□□□□ □□□□ (□□□□□□□□ □□□□)

D40\_71 During the last 6 months, did anybody call you on phone to talk to YOU about latrine use?

□□□□ 6 □□□□□□ □□□□□□□□, □□□□□□□ □□□□ □□□□ □□□□ □□□□□□□□□□ □□□□ □□□□□□□□ □□□□□□□□□□?

- 1 Yes □□□□





0.

No □□□□



**\*\*SUBMIT\*\***

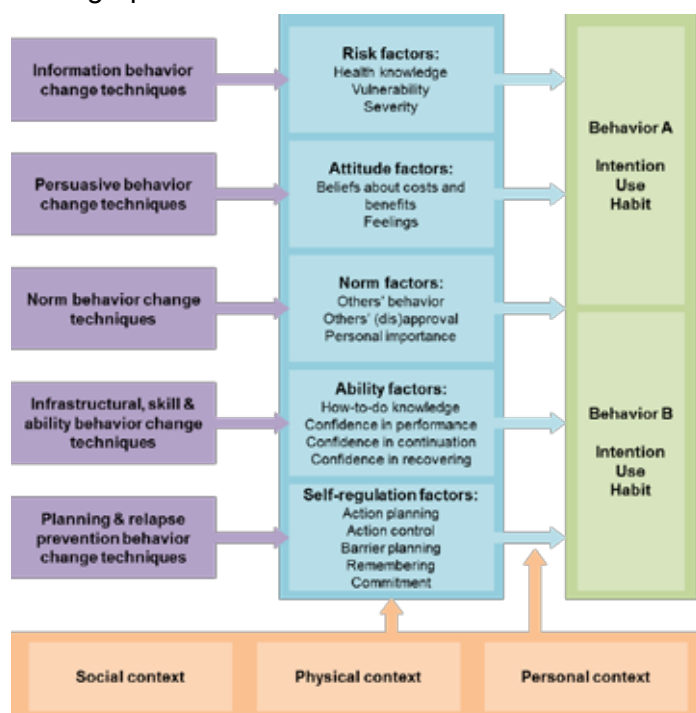
## **Appendix B: Pre-analysis plan**

## TW14 Pre-analysis plan: TW 14.10.10 Promoting latrine use in rural India using the risks, attitudes, norms, abilities and self-regulation approach to behaviour change

### 1. Intervention

#### 1.1. Theoretical framework

The purpose of this project is to develop and test acceptable, feasible and low-cost interventions to promote latrine use in rural India. The interventions to be tested were selected using the risks, attitudes, norms, abilities and self-regulation (RANAS) approach to systematic behaviour change<sup>1</sup>. The core of the RANAS approach is to systematically identify the most relevant drivers and barriers of the target behaviour (behavioural factors) and, based on evidence from health and environmental psychology, match specific behaviour change techniques (BCTs) to each of the behavioural factors identified. The RANAS model is presented in the graph below.



<sup>1</sup> Mosler, H.-J. (2012). "A systematic approach to behavior change interventions for the water and sanitation sector in developing countries: a conceptual model, a review, and a guideline." *International Journal of Environmental Health Research* **22**(5): 431-449.

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## 1.2. Intervention summary

In this project, behavioural factors steering latrine use were identified during a formative pre-study (Phase 1 of the project). To change the identified behavioural factors, specific behaviour change techniques (BCTs) were selected from the BCT catalogue of the RANAS approach. Suitable communication channels for these BCTs were identified based on the preferences of the community from the field-data collected. This led to the following four intervention strategies to be tested in this impact assessment. The numbering of BCTs refers to the RANAS catalogue of BCTs:

1. Interactive community meeting to assess the benefits of latrine use and costs of open defecation with participants (BCT 5) and to create a personal norm for latrine use in linking latrine use to pride and leadership (BCT 13).
2. Household visit including a public commitment through a family photo (BCT 10), instruction poster for correct latrine use and cleaning (BCT 15), morning routine planning (BCT 26), and reminder stickers on tumblers used for anal cleansing (BCT 34).
3. Follow-up communication through mobile phones including a pictorial SMS reminder to be sent early in the morning (BCT 34).
4. Parents meeting in Anganwadi Centres promoting safe handling of child faeces by creating awareness for risks and disgust associated with unsafe disposal of child faeces (BCTs 1, 3, 8), linking safe disposal to happy children and mothers (BCT 8), giving instructions and practicing on how to assist children in using the latrine (BCTs 15, 18) and prompting mothers to agree on a behavioural contract (BCT 36).

The baseline survey will be used to corroborate the findings from Phase 1, which underlie the proposed intervention strategies. In case the baseline indicates relevant behavioural factors beyond the ones underlying the above-described intervention strategies, changes to the above strategies will be made. This allows tailoring the interventions as much as possible to the mindset of the target population. Consequently, the above-described activities are preliminary.

## 2. Evaluation Questions and Hypotheses

### 2.1. What are the main evaluation question(s) the study seeks to answer?

“What works and why?” best summarizes the research questions of this impact assessment.

**WHAT WORKS:** The principal aim of this impact assessment is to quantify to which extent the intervention increased latrine use of beneficiaries.

**WHY:** The second aim of this impact assessment is to quantify the mechanisms of action of the tested interventions. The risks, attitudes, norms, abilities and self-regulation (RANAS) model postulates that interventions have to change the behavioural factor which steer the behaviour and that changes in behavioural factors lead to behaviour change. Using mediation models, we will be able to determine which of the factors were mainly changed by the intervention, and how those changes resulted in behaviour change.

### 2.2. What are the hypotheses to be tested throughout the causal chain?

Hypothesis 1: In intervention households, increases in latrine use are statistically significantly higher than in control households.

Hypothesis 2: Changes in behavioural factors postulated in the RANAS model mediate changes in latrine use.

Hypothesis 3: In intervention households, improvement in safe disposal of child faeces is statistically significantly higher than in control households.

### **3. Sampling**

#### **3.1. Sampling frame**

The eligible population for the study is households that have functional latrines (defined by having a pit, pan, and pipe connecting the two).

##### **3.1.1. Inclusion criteria**

Inclusion criteria for villages are as follows:

- Latrine coverage is greater than 30%. This will guarantee that latrine access is not limited to early adopters but that a representative number of households have latrines.
- Latrine coverage is less than 80%. The formative study yielded strong social pressure for latrine use in villages with high latrine coverage. Pressure was particularly high in villages awaiting certification as ODF. In such villages, establishing a trustful relationship between promoters and participants was very difficult, as participating households were scared of negative consequences such as fines and public blaming in case they admitted to practice OD. Thus, campaign implementation and valid measurement of latrine use does not seem to be possible in villages with more than 80% latrine coverage.
- Village has one Anganwadi Centre. Strategy 4 of the proposed intervention will be implemented through a parents meeting at Anganwadi Centres.
- Groundwater level is deeper than 30 ft. below ground. This makes groundwater contamination through leach pits very unlikely.
- In case a selected village is closer than 5 km from an already enrolled village, it will be replaced by another randomly selected village to avoid spill over between control and intervention villages. Only one village per GP will be selected.

##### **3.1.2. What are the main characteristics of your population?**

Household latrine coverage in the Raichur district of Karnataka is 29.98%, and water coverage is 64% (DDWS, 2014) with >90% being leach pits. However, implementation of SBM is a top priority for the state and district administration. There is a huge momentum in Raichur due to the active role being played by the CEO Zila Panchayat. The latrine coverage in the district has increased from a mere 9% to 26% in the last three years and currently stands at nearly 30%. The population in Raichur is predominantly rural with a high proportion of scheduled caste and tribe population of 40%. Majority of the rural dwellers are illiterate and most of them into unskilled labour with agriculture being the chief occupation. Ground water is the main source of drinking water for most of the villages with scarcity, biological contamination and fluoride contamination of many water sources being prevalent in the district. Although the district boasts of 1347 schools, 2189 Anganwadi Centres (AWCs) and 55 Health-care centres, the WASH infrastructure in the institutional setup is far from satisfactory and suffers from inadequacy, poor maintenance, poor access, contamination of drinking water and poor hygiene practices.

##### **3.1.3. What is the expected sample size?**

The sample size calculation is based on the primary outcome: Change over time in the relative number of adult household members who use the latrine for defecation. It is based on the assumptions outlined below and under Section 3.5.

- Expected baseline levels for primary outcome: 50%; Justification: The formative study yielded 50% latrine use across all adult household members.
- Expected take-up rates: 95%; Justification: During the pilot, nearly all households agreed to participate in the intervention. The interventions will be implemented under intensive monitoring and relatively controlled conditions. Resources for revisiting households that had not been reached during the first household visit are available.
- Expected attrition: We expect a maximum dropout of 25% in the initial baseline sample. Although a smaller dropout is likely, 25% are assumed as worst-case scenario, as there is no way to rectify larger attrition that assume once the trial has started.
- The sample size was calculated for one-tailed test, since the hypothesis is that the intervention will increase latrine use. Until present, no intervention designed using the RANAS approach has led to negative changes in the target behaviour.

This yielded a sample size of 2400 households across 120 villages.

**3.1.4. Is there any reason to believe that the sample differs from the population? If so, how does it differ?**

The sample of this study is randomly selected. All eligible villages from the entire district are considered and within villages all households having a functional latrine are considered. The sample is thus not expected to differ from population of Raichur district. If rural households in Karnataka are considered the population of this study, then it is unlikely that one district would be representative of the entire state given the heterogeneity of rural India. Raichur district is one of the least developed districts in Karnataka, and differs from other districts in terms of socio-demographic and socio-economic factors. Our choice reflects our decision to implement a theory based behaviour change intervention in a particularly difficult setting (in this case a socio-economically less developed district) to demonstrate what works and how in constrained settings. We believe that this will have important lessons for other regions in Karnataka and other parts of the country that have poor development indicators. So while generalizability may continue to be an issue, insights regarding the process of developing, implementing, and rigorously assessing a behaviour change intervention will be of great value.

**3.1.5. Please describe the anticipated subgroups, which will be studied, if relevant.**

No subgroup analyses are planned.

**3.2. Statistical power**

**3.2.1. What is the effect size that you will be able to detect?**

Minimal detectable effect size: 10% Justification: Values no greater than 10% have been suggested by Research Institute of Compassionate Economics (RICE).

**3.2.1.1. What are your assumptions about your alpha level?**

Level of alpha: 0.05; Justification: This is the standard value. Increasing the value would make sense if missing an intervention effect would have adverse consequences (e.g. not detecting a potentially harmful side effect). However, the aim of the impact assessment is to demonstrate that the proposed intervention works. Increasing alpha is thus not appropriate.

**3.2.1.2. What are your assumptions about your statistical power?**



Level of beta: 0.8; Justification: Statistical power greater than .8 is generally recommended in social science experiments.

**3.2.1.3.** What are your assumptions about variability in your effect size?

Intra-cluster correlation coefficient: .25; Justification: Computed by RICE from squat survey Data.

Standard deviation: 0.4; Justification: Computed by RICE from squat survey Data.

**3.2.1.4.** How many clusters will you have?

Number of clusters: 120

**3.2.1.5.** How many people will you have in each cluster?

Number of households per cluster: 20

**3.2.1.6.** How sensitive is your effect size to changes in your parameters?

The effect size is sensitive to changes in the parameters. We used conservative estimates for each parameters. We expect the actual minimum detectable effect size to be smaller than 10%. This will be verified using the census results.

**3.2.2.** If you plan to include covariates in your analysis, what share of variance do you expect to predict with your co-variates?

Inclusion of co-variates not planned.

**3.3. Assignment to treatment**

**3.3.1.** How will individuals be assigned to treatment and control conditions?

In order to minimize spill over to the control group, randomization is done on Gram Panchayat (GP) level. The sample size has been adjusted for the clustering of the sample. In case of several villages within one GP, one village within the GP is randomly selected. Although the number of clusters is relatively high, simple randomisation may result in an unbalanced allocation regarding latrine coverage and use. We thus propose randomized matching to achieve a balanced allocation to intervention and control: In a first step, matched pairs will be generated based on baseline characteristics. In a second step, one village per pair will be randomly assigned to the intervention condition and the other village to control. Random allocation will be done using a random number generator in Microsoft Excel. Sixty villages each will be assigned to intervention and control condition

**3.3.2.** How will you check that individuals in the treatment condition received treatment as anticipated?

We plan to closely monitor the implementation of the intervention using mWater, a mobile based system. We are working with the WaterAid program monitoring team to develop a simple comprehensive tool that will enable the implementing team (comprised of 12 field communicators and 2 supervisors) to track each household in the study, and record each activity implemented in the intervention villages. Given the use of a mobile platform, this will enable real time entry of data and facilitate real time monitoring by the two supervisors, SVYM coordinator, and the Project Coordinator from WaterAid India (Tejaswi Balasundaram). Data Collection

**4. Primary data collection instruments**

**4.1.1.** What data collection instruments will you employ for quantitative and qualitative analysis?

Four steps of data collection will be performed during this project. First, a census survey covering all households in all study villages will be performed. Data will be collected through standardized face-to-face interviews and spot-check observations. The census survey will measure socio-demographic characteristics and observe key characteristics of the latrine. Results will inform the selection of study households.

Second, a quantitative baseline survey will be performed measuring all outcome variables (see below) and behavioural factors of latrine use. Again, data will be collected through standardized face-to-face interviews and spot-check observations. Data on latrine use of all household members will be collected through the standardized tools of this thematic window. In addition, we will measure latrine use in more detail from one focal person in each household. The person will be randomly selected out of all adult household members. The same person will be interviewed regarding the behavioural factors of latrine use. These will be measured through dichotomous items and 5-point Likert scales. In order to measure the behavioural factors reliably, several questions per factor are necessary. Thus questions have to overlap.

Third, qualitative data on the perception of the interventions and effects on behavioural factors will be collected during and after the interventions in selected villages. Focus group discussions (FGD) using participatory action and learning tools will be used to collect qualitative information from four villages (2 intervention and 2 control) during the implementation phase. The qualitative study will delve deeper into some of the issues emerging from the baseline study and intervention, and will be in line with the components of the RANAS model. We aim to have FGDs with adult men and women in the communities (from households that have a functional latrine). We will also conduct in-depth interviews with influencers from the community (e.g., Panchayat leaders, ASHA workers) to understand latrine coverage and latrine use, and reflections on the intervention received in terms of what worked/appealed to the community (in intervention villages).

Fourth, a quantitative endline survey will be performed. The endline questionnaire will contain exactly the same items as the baseline questionnaire. In addition, general items on activities regarding to sanitation in the villages and specific items on participation in and the perception of this study's interventions will be added.

Census will be performed in all 124 villages. Baseline and endline will be performed in the 120 villages, which are part of the trial. Qualitative data will be collected in four additional villages. In order to control for seasonal influences the endline survey will be implemented exactly 12 months after the baseline. Data will be collected by data collectors who do not have any connection with the intervention. As the standardized measure of latrine use relies on self-reports, masking is not possible.

**4.1.2.** What is the hypothesised list of interviewees (i.e. key actors who will be interviewed, anticipated interview formats and expected number of respondents)? You may wish to present this information in a table.

For baseline and endline, randomly selected households members of each study household will be interviewed. The same household member will be interviewed at both time points. In case this is not possible despite several revisits at endline, but another household member is present, the standardized latrine use questions will be administered to this household member. In this case, however, the psychological questions will not be administered.

For the qualitative data collection, we aim to conduct three FGDs in the two intervention villages (two FGDs with men, one with women) and two FGDs in the control villages (one with men and

one with women), and a maximum of four in-depth interviews with key influencers in each village. Each FGD will have no less than six and no more than 12 participants.

#### **4.1.3. What (groups of) indicators will each instrument cover?**

##### **Census**

- Household identification and socio-demographic characteristics
- Presence of functional household latrine
- Latrine use

##### **Baseline and endline**

(Numbers in brackets refer to corresponding item numbers in the questionnaire.)

- Latrine use (standard items) (B5)
- Latrine characteristics (B4, B29, B30)
- Latrine use of main respondent (B6)
- Habit (B7&8) and Intention (B9) of main respondent
- Behavioural factors of latrine use of main respondent:
  - o Risk factors: health knowledge (B10), vulnerability (B11), severity (B12)
  - o Attitude factors: Feelings and beliefs about costs and benefits – Open defecation (B13) and Latrine Use (B14)
  - o Norm factors: Others' behaviour (B15), Personal Importance (B16), Others' Approval or disapproval (B17)
  - o Ability factors: How-to-do knowledge (B18), Confidence in performance, confidence in continuation and confidence in recovering (B19)
  - o Self-regulation factors / Action planning (B20), action control (B21), coping planning (B22), remembering (B23), commitment (B24)
- Availability of water (B25)

Respondent feedback (B26ff)

##### **Qualitative data**

The qualitative component will also seek to understand the community's perceptions of the four intervention activities in terms of:

- Exposure to the four intervention activities
- Appeal and relevance of the intervention activities
- Suggestions for how the intervention activities can be strengthened

#### **4.1.4. How will each instrument be developed?**

The census questionnaire will be based on 3IE/RICE requirements

The baseline survey will be developed based on the RANAS approach and will contain several items to measure each of the RANAS factors. In addition, it will contain the full set of standardized items for measuring latrine use comparably across projects.

For the qualitative study, we will develop a FGD and in-depth interview guide for each respondent category, drawing from the RANAS approach, baseline results, intervention implementation (in intervention villages), and interactions with district administration and community. For the FGD, participatory learning and action tools will be used to facilitate reflection and sharing by group members.

**4.1.5.** Please comment on the validity and reliability of each instrument, including any anticipated validation checks.

All quantitative tools will undergo several pre-tests:

- Qualitative pre-test of the theory derived questionnaire to obtain valid items measuring the intended constructs and tailor questions and response categories to the respondents.
- Quantitative pre-test using paper pencil format to streamline interview flow and obtain psychometric characteristics of measured constructs.
- Mobile assisted pre-test to test programming and finalized questionnaire.

Inter-Item correlation and Cronbach's Alpha will be used as indicators for reliability of scales. A threshold value of 0,7 will be used.

The qualitative study is meant to probe further into latrine use behaviours based on issues emerging from the baseline survey, and how the intervention addressed challenges and barriers to latrine use. The qualitative study is not intended to be an in-depth comprehensive qualitative assessment. In that regard, the questions and probes used in the FGD and in-depth interview guidelines will draw upon the RANAS model, baseline survey findings, and the intervention, but will not have a separate theory of change.

## **4.2. Secondary data sources**

Please describe the anticipated secondary sources of data, if any, which will be used for this study.

We used the Census 2011 data to identify the populations and households in the five talukas of Raichur, and the SBM-G data on latrine coverage.

## **5. Analysis**

### **5.1. Outcome Variables**

**5.1.1.** Your primary outcome is latrine use. Please describe the primary and secondary outcome variables of interest using the following table:

<b>Outcome</b>	<b>Description</b>	<b>Hypothesis</b>	<b>Level</b>
Latrine use (behavioral outcome)	Change over time in the relative number of adult household members who use the latrine for defecation	Related to Hypothesis 1	Household
Behavioral factors	Change over time in behavioral factors (described in the RANAS model) related to latrine use	Related to Hypothesis 2	Individual
Safe disposal of child feces (behavioral)	Change over time in the relative number	Related to	Household

outcome)	of households with children whose feces are safely disposed'	Hypothesis 3	
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**5.1.2.** If you plan to include covariates in your analysis, please provide a list of covariates that may be included.

No covariates planned.

**5.1.3.** If you plan to aggregate multiple variables into an index, which variables will you aggregate and how?

No aggregation planned.

## 5.2. Qualitative Analysis

What questions will be analysed using qualitative methods? Please also describe the qualitative methods that will be used (e.g. content analysis with criteria for codification).

The FGDs and interviews will be audio recorded and transcribed (in English). The transcripts and field notes will form the basis for analysis. A provision or “start list” of codes (see Myles and Huberman 1994) will be developed based on the RANAS model and findings from the baseline survey focused on structural and descriptive codes, many of which will be organized into sub-codes. As coding becomes more nuanced, this start list of codes will be modified, deleting codes that are redundant, reconceptualising codes based on the team’s interpretation of the issues emerging from the data, merging codes to form more meaningful categories, and expanding codes (i.e., developed sub-codes) to reflect the depth of the constructs being studied.

The focus of descriptive and structural coding was to capture descriptions and perceptions of the intervention and latrine use. Descriptive codes will be used to identify and explain normative events related to latrine use. Structural codes will facilitate further exploration based on the RANAS factors (risks, attitudes, norms, ability and self-regulation). Pattern coding will be used to facilitate deeper analysis of the constructs being studied. Pattern codes enabled exploration of the relationship between key constructs (or RANAS factors), and understand the nature of the influence exerted by forces external to the individual – such as the intervention or other events.

## 5.3. Quantitative Analysis

### 5.3.1. Balance Checks

**5.3.1.1.** How will you check balance between treatment and control groups?

Baseline values of the following variables will be compared on household and cluster level as specified in CONSORT Statements extension for cluster-randomized controlled trials:

- Latrine use of adult men, latrine use of adult women, and latrine use of children (diff ages)
- Latrine coverage
- Highest level of education of households
- Age
- Household size

The variables will be compared using independent t-tests. If major differences occur, the concerned variables will be included as covariates in an ANCOVA.

**5.3.1.2.** What is the specification that you will run and what variables will you include?

An ANCOVA can be described as follows:

$$\text{Var (DV)} = \text{Var (IV)} + \text{Var (CV)} + \text{Var (Res)}$$

Var: Variance

DV: Dependent Variable = Changes in Latrine use

IV: Independent Variable = Intervention condition

CV: Covariate = e.g. latrine coverage

Res: Residual

**5.3.1.3.** If there is an imbalance (between treatment and control groups) in one or more baseline covariates, how do you plan to address this?

See above.

**5.3.2. Contamination**

How will you detect and manage any potential differential contamination between treatment and control groups?

At endline, items to measure participation in any activity with regard to sanitation will be included in the questionnaire. Items will be open and aim at capturing not only activities from this project but also any other activities which the participants were exposed to.

If contamination occurs, this will be a clear limitation to the study as controlling for this contamination (e.g. as additional covariate) or excluding them from the study compromises the randomized design. Comparing households who reportedly participated in activities outside this trial and households who did not could reveal whether external activities had any effect on this study's outcomes. However, such analyses will only be descriptive since sufficient individuals for a powered sub-group analyses will not be available.

The general section described above will be followed by a specific section on participation in this intervention, exposure to intervention material, and interaction with other villagers about latrine use. It will be included in both intervention and control villages. This will capture any cross-contamination of intervention groups.

Again sub-group analyses will reveal whether this self-reported intervention participants from control villages affected behavior change. However, they should remain in the sample to obtain conservative estimates of intervention effects.

**5.3.3. Attrition**

**5.3.3.1.** What is your anticipated attrition rate and what evidence is this prediction based on?

The attrition rate is expected to be less than 10%. This is based on experiences from the data collection agency, Nielson, which has long lasting experience in longitudinal studies in Karnataka. As a worst case scenario will assume 25% attrition.

**5.3.3.2.** What can you do to prevent or remedy sample attrition?

Household characteristics, including telephone numbers and GPS coordinates will surveyed at census. This will enable us to track households for the subsequent panel waves. Appointment will be sought via phone in advance to make sure respondents are available. In case of unavailability of the household, several revisits will be performed.

In case a household cannot be recovered at follow-up despite these efforts, it will not be replaced. As long as attrition rate is bellow 25% this will not effect the power of the study, as 25% drop-out were over-sampled at baseline. We expect attrition rate to be less than 10%. See section 5.3.3.4 for checks whether attrition affected the integrity of the ransom sample.

#### **5.3.3.3. Howdoes expected attrition change your power calculations?**

It is already included in the sample size stated above.

#### **5.3.3.4. How will you check balance between attritors and non-attritors? What is the specification that you will run and what variables will you include in these balancing checks?**

Remaining study participants and drop-outs will be compared regarding baseline values of socio-demographics and behaviour. In particular, the following variables will be considered:

- Latrine use
- Latrine coverage
- Highest level of education of households
- Age
- Household size

This will allow to determine, whether attrition was systematic, which would spoil the integrity of the ransom sample and constitute a limitation of the study.

### **5.3.4. Missing Data**

Data quality will be rigorously monitored through a hierarchical structure to ensure a minimum of missing values. In case of missings in behavioral items or behavioral factors detected after the completion of data collection, households will be called through the phone to complete the data. If data cannot be completed, households will be excluded from the respective analyses.

### **5.3.5. Treatment Effects**

*Note: Many studies may have awareness campaigns where one may not be able to know whether a household participated or heard the message or not. In these cases, it may not be possible to estimate a Treatment on the Treated (TOT) effect. We therefore do not expect that all studies will provide estimates of TOT.<sup>3</sup>*

#### **5.3.5.1. Intent to Treat**

##### **5.3.5.1.1. How will you estimate the (causal) effect of the offer of the treatment?**

Interventions will be implemented on village level and all participants will be invited to participate in the activities. The offer to treatment effect will be estimated by comparing the change in outcome variables in treatment villages with change in control villages.

##### **5.3.5.1.2. What is the specification that you will run and what controls will you include in your specification?**

Comparison will be done using a one-tailed, independent t-test. We are not planning to include covariates in this analyse.



### 5.3.5.2. Treatment on the Treated

The endline survey will include items to measure intervention participation, exposure to intervention material, and interaction with other villagers about latrine use. This will allow us to estimate intervention participation for each of the four activities and will be compared to data from the campaign monitoring. We are not planning to run addition analyses, e.g. comparing participants with non-participants within the intervention villages because this would compromise the randomized design of the study.

#### 5.3.5.2.1. How will you estimate the (causal) effect of the receipt of the treatment?

Not applicable

#### 5.3.5.2.2. What is the specification that you will run and what controls will you include in your specification?

Not applicable

### 5.4. Heterogeneous Effects

*Note: Since behaviour change interventions require village-level clustering to prevent spillovers, studies will likely not be adequately powered to conduct subgroup analysis, and subgroup analysis is not expected. Proposals to do subgroup analysis should be accompanied by an explanation of how studies will be able to detect differences between subgroups.*

No sub-group analyses are planned.

#### 5.4.1. Which groups do you anticipate will display heterogeneous effects?

#### 5.4.2. What is the broad theory of action that leads you to anticipate these effects?

### 5.5. Standard Error Adjustments

#### 5.5.1. How will you address clustering in your data?

The sample size mentioned above has been adjusted for clustering of the data, as proposed for example by:

Eldridge, S.M., Ashby, D., & Kerry, S. (2006). Sample size for cluster randomized trials: effect of coefficient of variation of cluster size and analysis method. *International Journal of Epidemiology*, 35, 1292-1300.

Multilevel analyses of data, considering villages as units of clustering, will be performed.

#### 5.5.2. How will you address false positives from multiple hypothesis testing?

To control for testing two outcomes (Hypothesis 1: Latrine use of adults households members; Hypothesis 3: Safe disposal of child faeces) we are planning to use corrections as proposed by:

Benjamini, Y. and Y. Hochberg (1995). "Controlling the false discovery rate: a practical and powerful approach to multiple testing." *Journal of the Royal Statistical Society. Series B (Methodological)* 57(1): 289-300.

This procedure is specifically designed to control for testing multiple outcomes within the same experiment and does not entail substantial losses in statistical power as, for example, Bonferroni corrections do.



**5.5.2.1.** If you plan to adjust your standard errors, what adjustment procedure will you use? (e.g., Family Wise Error Rate, False Discovery Rates, etc.)

See above.

**5.5.2.2.** How will you deal with outcomes with limited variation? For instance, one option could be to decide in advance that outcomes that vary below a certain threshold will be omitted from the analysis.

We expect high variation in both outcomes. Standard deviation in latrine use computed from the SQUAT survey amounted to 0,4 and was used when computing the sample size for this trial.

### **List of optional attachments**

#### **Script (Optional)**

You may wish to upload an analysis script with clear comments. This optional step is helpful in order to create a process that is completely transparent and increase the likelihood that your analysis can be replicated. We recommend that you run the code on a simulated dataset in order to check that it will run without errors.

#### **Data Collection Tools (Optional)**

You may wish to attach any qualitative or quantitative data collection tools, if available.