

Handwashing Campaign in rural Zimbabwe

Campaign Proposal and Baseline Report

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Goals and Contents of this report

This document proposes intervention strategies to establish habits of handwashing with soap of primary school children and their caregivers in rural Zimbabwe. The report describes the results of the baseline survey conducted as a first step of the rural handwashing campaign project in two districts of Masvingo Province in Zimbabwe. It further presents the campaign proposal for the design of interventions in the next step of the project.

A short description on the methodology used will be followed by the main results from the different survey instruments used. Detailed results and tables will be provided concerning the findings from the interviews with primary caregivers and observations in households as well as the handwashing situation in schools and interviews with school children. Differences and commonalities to the findings from the urban study project in Harare will also be discussed where of interest.

To begin with, the adapted campaign proposal based on the urban campaign project in Harare will be presented. The campaign will follow the five principles previously established in the urban handwashing project in Harare as follows:

- 1. Data-driven and population tailored design:** The presented campaign strategies are based on the psychological understanding of the actual participants' behavioural determinants. This was achieved through an extensive baseline data collection in both countries and rigorous data analysis.
- 2. Use of complementing communication channels:** To activate behaviour change mechanisms, multiple communication channels will be used. Community meetings and interactive household visits for the caregivers and handwashing classes in schools constitute the core of the campaign and are complemented by mass media.
- 3. Interactive and participatory methods:** All activities follow a participatory and interactive approach and are designed to maximise involvement of all participants.
- 4. Consistent messaging:** In order to achieve synergies, all campaign components follow a coordinated communication strategy. This includes a central campaign slogan that is catchy and easily recognizable and a handwashing song.
- 5. Active involvement of stakeholders:** To achieve sustainable change, local stakeholders, such as school teachers, health centre staff, and the local administration were comprehensively involved during the campaign design through three design workshops in each country.

The campaign consists of **four consecutive intervention blocks**. Each block pursues a defined goal:

- Block 1: Trigger personal awareness
- Block 2: Facilitate behaviour adoption
- Block 3: Establish confidence in maintenance
- Block 4: Highlight commonness of handwashing

Within each intervention block, population-tailored interventions will be implemented with **school children and caregivers**. The interventions targeting school children will be implemented by trained school teachers. The interventions targeting caregivers will be implemented by trained personal on the community level. This will enable these actors to proceed activities beyond the present project.

Intervention Strategies

General Intervention Structure

Campaign Slogan

“Handwashing with soap? Of course!”

Making the components of the campaign easily recognisable is essential for its publicity within the two countries and for the global impact of the campaign. To achieve this, an overarching campaign slogan is to be used across all interventions. The slogan is meant to be open and flexible. The introducing question evokes the feeling of free choice regarding handwashing. The “Of course!” stresses the normality of washing hands and can also be considered as a sort of pledge which is then followed by a rationale.

By changing the subheads, different themes can be addressed. E.g.:

- Handwashing with soap? Of course! Because I am a role model for my children!
- Handwashing with soap? Of course! I can do it!
- Handwashing with soap? Of course! We all do it!

The slogan should be adapted to the respective local context and the respective language particularities. The different subheads of the slogan should be pretested regarding their appropriateness in the different contexts.

Campaign Song

The handwashing song constitutes another common element which links the campaigns in urban and rural Zimbabwe and the activities for caregivers and children. The existing song version from the urban project is planned to be used consecutively.

In the song, all critical events for handwashing are mentioned, namely:

- Before all contact with food, especially, before eating, cooking and feeding a child
- Before all contact with drinking water, especially before collecting and handling drinking water and before drinking
- After all contact with stool, particularly after using the toilet (both urination and defecation), after cleaning up a child’s bottom and after removing a child’s faeces.

In addition, the song emphasizes how to correctly wash hands. In the further proposal, these steps will be referred to as the *healthy steps*:

- **Wet** your hands with clean, running water, turn off the tap, and apply soap.
- **Lather** and **scrub** your hands for at least **20 seconds** (duration of the chorus of the handwashing song). Make sure to scrub
 - the **palms** of your hands,
 - the **backs** of your hands,
 - **between** your **fingers**,

- your **finger tips** and
- **under your nails**.
- **Rinse** your hands well under clean, running water.
- **Dry** your hands using a clean towel or air dry them.

This will not only convey the essential steps and key situations for handwashing in a joyful way, but also serve as a memory aid to remember how to correctly wash hands with soap and water and how to scrub your hands in five steps while lathering them with soap. The chorus of the song should last 20 seconds, so that the caregivers and children know the time they have to wash their hands and can sing while washing hands. In addition, the song should feature the key slogans of the campaign blocks, such as “Handwashing? Of course! Because ...”.

Two different versions of the handwashing song exist: One for children and one for adults. While the chorus is the same for adults and children, there are specific strophes for each group. The local agencies will have to decide whether the song has to be specifically adapted to the local setting or translated into the respective local dialects.

Implementation Procedure

Impact evaluation is a crucial element to determine whether it is meaningful to invest substantial public resources in programs whose effectiveness is unknown. In this way, the information on program effectiveness that impact evaluations generate can lead to more effective and ethical investment of public resources. The rigorous impact evaluation of the present campaign will provide the basis to lobby in favour of handwashing with soap in the target areas and to the global dissemination of the results. In order to estimate the causal impact of a campaign, a specific evaluation design has to be put in place. Effective impact evaluation requires keeping certain wards as control sites for impact comparison purposes. Control sites will then receive the intervention later. According to the “Impact Evaluation in Practice” handbook from The World Bank, randomized assignment is fairly intuitive, because it generates an average treatment effect for the population of interest and makes communicating results to policy makers straightforward¹. Randomized assignment is the preferred method to implement a program over time. The rollout can then consist of randomly selecting the order in which equally deserving beneficiaries will receive the program. In these cases, beneficiaries who enter the program later can be used as a comparison group for earlier beneficiaries, generating a solid evaluation design.

The present project aims at two target groups: caregivers and school children. According to the project guidelines, interventions targeting the primary caregivers were selected so as to be implemented at the targeted health centres or by health centre staff. Interventions targeting the primary school children will be implemented at the schools. Other than in the urban campaign the evaluation goal here will be reduced to estimate the effectiveness of the combined school and household intervention only.

¹ Gertler, P. J., Martinez, S., Premand, P., Rawlings, L. B., & Vermeersch, C. M. (2011). *Impact evaluation in practice*. World Bank Publications.

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In a first phase, a number of randomly chosen wards and school linked to these wards will receive the interventions while the rest will stay as a waiting control group as described above. Thus, there will only be two intervention arms as follows:

1. Interventions targeting school children and caregivers
2. No intervention (control condition)

Follow-up data will be collected directly after this phase in order to properly evaluate the effectiveness of the combined interventions. In a later phase, after follow-up data collection, the control group will receive the same interventions that have not yet been implemented so that in the end, every ward has received the complete intervention.

Potential adaptation measures to be taken after the follow-up can include:

- Vary and fine-tune messages (and materials)
- Use new and promising communication channels
- Promote and enhance use of champions/change-maker
- Change incentives and rewards
- Remove blockages & constraints

Campaign Proposal

The proposed campaign elements are based on the campaign that was realized in the urban setting of Harare during the previous part of the handwashing project in Zimbabwe. It was modified according to the outcomes of the rural baseline and will further have to be refined based on the shared experiences from its first implementation. Differences of the rural setting combined to the urban sites are reflected within this proposal.

Intervention Blocks

The four intervention blocks have the overall goal to support and guide all participants towards establishing handwashing habits:

- Block 1: Trigger personal awareness
- Block 2: Facilitate behaviour adoption
- Block 3: Establish confidence in maintenance
- Block 4: Highlight commonness of handwashing

The aim of the first block is to create personal awareness for handwashing with soap and water at the key moments among caregivers and school children. The second block focuses on raising the actual ability to always wash hands with soap and water at the key moments and thus raising the participants' confidence in their own ability to perform the behaviour at the critical times. The third block will increase confidence in continuing the behaviour in spite of difficulties empower participants through encouraging detailed planning and preparing behaviour performance. The last block focuses on highlighting others' handwashing behaviour and on reinforcing the personal importance of an obligation to performing the behaviour.

Implementing the interventions as community meetings through trained health centre staff was predefined by the SDC in the project description. The meetings are complemented by household visits in order to allow for personalized planning.

All caregivers that took part in the baseline survey will be personally invited to attend the sessions. In order to properly assess the effectiveness of the different interventions, it is very important to specifically motivate these caregivers to attend the sessions. If other community members are interested in attending the meetings, they should be allowed to do so, as long as it is practically feasible.

Specific Adaption of the Intervention Blocks

Table 1 summarizes the proposed interventions separately for the two countries and for the two target groups. The four overarching intervention blocks show the general structure of the campaign and serve as a framework for the respective interventions. In each case, the content of the four interventions has been adapted to the specific results from the baseline data collections (see Appendix C: Findings from the Baseline Survey in rural Zimbabwe. The communication channels were chosen depending on the change mechanism to set off. The channels distinguish between the use of mass media, one-on-one interpersonal communication, direct communication stating and directing action, and public relations. The listed RANAS blocks name the underlying blocks of behavioural determinants corresponding to the addressed change mechanism (see Appendix A for the theoretical background).

Table 1: Intervention Matrix for the campaign in rural Zimbabwe

	Intervention blocks	Change mechanisms	Communication channels				RANAS blocks
			Mass Media	Interpersonal	Direct	Public relations	
Caregivers	1 Trigger personal awareness	Attach positive emotions to HWWS and negative emotions to HW without soap			Group meeting		Attitude
		Increase practical knowledge and automaticity of HWWS					Risk
	2 Facilitate behaviour	Increase confidence in behaviour performance			Group meeting		Ability
		Increase likelihood to always remember HWWS					Self-regulation
	3 Establish confidence in maintenance	Empower through planning of food and stool related HWWS		Household visit			Ability
		Create awareness for maintaining HWWS					Self-regulation
	4 Highlight commonness of handwashing	Increase perception of others' behaviour			Group meeting		Norms
		Increase personal importance of and obligation to HWWS					Self-regulation
School children	1 Trigger personal awareness	Increase perception of the importance of handwashing and of personal risk of contracting diarrhoea			Classroom activities		Risk
	2 Facilitate behaviour	Create enabling environment			School event		Ability
		Increase confidence in behaviour performance and attach positive emotions					
	3 Establish confidence in maintenance	Organize soap and water supply in classes			Classroom activities		Ability
		Create awareness for maintaining HWWS					Self-regulation
	4 Highlight commonness of handwashing	Facilitate social support			Classroom activities		Self-regulation
		Increase perception of others' behaviour					Norms

Description of Interventions

Caregivers

Block 1: Trigger Personal Awareness

Intervention block	Change mechanisms	Communication channels				RANAS blocks
		Mass Media	Interpersonal	Direct	Public relations	
1	Trigger personal awareness			Group meeting		Attitude
						Risk

Aim: Trigger personal awareness

- Outcomes:
1. Participants know why, when and how to wash hands
 2. Participants consider HW without soap disgusting
 3. Participants feel as role models for children
 4. Participants are committed to complete the training
 5. Participants practice thorough handwashing at home

Communication channel: Direct communication through group meeting

Key slogan: Handwashing? Of course! Because I like to be clean.

Location: Community Hall

Duration: One hour

Participants: Study participants and their family members, all other community members that would like to participate.

Implemented by: Health promoter from implementing organisation (I.O.), Environmental health technician (EHT) from local health centre, support by Health Promoters (HP) from local community

Communication materials: Handwashing song

- Components:
1. **Introduction:** The 4 blocks and reward ceremony
 2. **Experiment:** Handwashing with water only is disgusting
 3. **Experiment & song:** Thorough handwashing with soap feels good
 4. **Public pledge:** “I will complete the training.” Reward announcement
 5. **Homework:** Practice thorough handwashing

Detailed outline:

1. Introduction: After being welcomed, the framework of the campaign is introduced. Participants are informed about the three remaining sessions and the final reward ceremony.

2. Experiment: The participants are requested to wash their hands with water only and the wet hands are dried with a white cloth. The participants examine the cloth, will find it dirty and realize that their hands were not clean although washed with water. The promoter will then emphasize that they are normally eating this dirt when not washing hands with soap and water. Participants will be invited to imagine what the dirt may be composed of after toilet use.

The promoter emphasizes that the dirt on hands causes diarrhoea and that handwashing is essential to prevent diarrhoea.

The promoter demonstrates and explains the *healthy steps* of handwashing:

- **Wet** your hands with clean, running water, turn off the tap, and apply soap.
- **Lather** and **scrub** your hands for at least **20 seconds** (duration of the chorus of the handwashing song). Make sure to scrub
 - the **palms** of your hands,
 - the **backs** of your hands,
 - **between** your **fingers**,
 - your **finger tips** and
 - **under** your **nails**.
- **Rinse** your hands well under clean, running water.
- **Dry** your hands using a clean towel or air dry them.

First, the promoter performs the steps slowly while he/she is describing what he/she is doing. This may take up to two minutes. Then the promoter performs the steps during 20 seconds. After this demonstration the participants are invited to wash hands themselves under the supervision of the promoter. The promoter gives feedback to the participants and corrects if necessary. This exercise will not only consolidate the participants' action knowledge but also bolster his/her self-efficacy.

After having washed hands thoroughly with soap, the hands will again be dried with a fresh white towel. In contrast, the participants don't find the cloth stained and realize that washing hands in the recommended is the way to get truly clean hands. The promoter emphasizes that participants get clean hands only through this way of handwashing.

3. Song: At this point of the session, a handwashing song for adults is introduced. Participants are requested, to exercise handwashing with the *healthy steps* a couple of times while singing the song.

4. Role models: Participants should be made aware of their function as role models for children. Guiding questions can be who they think children learn to behave from other than in schools (parents, older siblings, family and persons surrounding them, etc.) Thus adults have a responsibility to go ahead as a positive example to their children.

5. Public pledge: At the end of the session, participants are asked for their feedback. How did they like the session? They are invited to the remaining three sessions and asked to make a pledge to attend them.

6. Homework: Participants are requested to thoroughly wash hands with soap and water at home.

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Does (+) & Don'ts (-) for promoters:

- + Encourage discussions
- + Treat participants not as students but as adults
- + Convey this session in a playful way, like a game
- Don't be strict and like a teacher
- Don't focus this session on health messages

Block 2: Facilitate Behaviour

Intervention blocks	Change mechanisms	Communication channels				RANAS blocks
		Mass Media	Interpersonal	Direct	Public relations	
2 Facilitate behaviour	Increase confidence in behaviour performance			Group meeting		Ability
	Increase likelihood to always remember the behaviour					Self-regulation

Aim: Raise confidence in performance

- Outcomes:
1. Participants have understood the principle and advantages of having a handwashing station (e.g. “tippy-tap”)
 2. Participants know what type of handwashing station they want to build at their household and have the necessary know-how
 3. Participants will build a handwashing station at their household with a soap dispenser
 4. Participants will encourage all household members to use the station at the critical moments

Communication channel: Direct communication through group meeting

Key slogan: Handwashing? Of course! I can do it!

Location: Local health centre

Duration: One hour

Participants: Study participants and their family members, all other community members that would like to participate.

Communication materials: Soap dispenser and tippy tap instruction sheet; building material to set up exemplary handwashing stations

Implemented by: Health promoter from implementing organisation (I.O.), health promotion technicians from local health centre, support by community health agents

- Components:
- 1. Repetition:** What were the key points from the last meeting and how was the experience with the new handwashing technique?
 - 2. Hardware introduction:** Discussion on the construction and use of a “Tippy tap” as a handwashing station with a soap dispenser
 - 3. Handwashing station as cue for action:** A fixed handwashing station will serve as a visual reminder for handwashing at the critical moments
 - 4. Homework:** Construct a handwashing station and group in pairs to visit and help each other with the construction and maintenance of the handwashing station

Detailed outline:

1. Repetition: Before starting the second session, difficulties while performing the homework assignments from the previous session are discussed. At the same time, the content of the first session will be repeated.

2. Hardware introduction: The second session focuses on infrastructural solutions. To make behaviour change easier, primary caregivers will be encouraged to create a new water distributing facility. A tippy tap is a hands-free solution to washing hands and is especially appropriate for rural areas where there is no running water (see Figures 1 and 2). It consists of a water-filled jerry can hanging on a pole or branch. A rope or line is attached to a stick which allows for tipping the can using a foot on the piece of wood, like a foot pedal, so that only a small amount of water will disperse for handwashing. The container has a small hole to allow for a thin but steady flow of water. A bar of soap can be threaded and tied next to the jerry can. The use of the feet to move and activate the container also allows washing both hands in the same time, without having to touch the dispenser. Tippy taps can be made from a variety of local materials (see <http://www.tippytap.org>). Participants should discuss how they want to construct their handwashing stations, whether their tippy tap should sit, hang, hand and tip, and where they want to place it. Caregivers will be motivated to construct the tippy taps themselves with the help of their children, other family members and/or neighbours so as to foster intrinsic motivation to create a tippy tap handwashing station. During the session, different variations of the tippy tap design can be built and used for demonstration and practice. Soap dispensers with soapy solutions as an alternative to soap bars will be introduced and discussed. To make a soap dispenser, a small hole is pierced in the cap of a PET bottle. Small flakes pieces of soap are put in the bottle and dissolved in water. Liquid soap or soap powder are an even better option for making soapy solution. If possible, the water and soap containers should be painted. This will make the devices more attractive and create a sense of ownership.

3. Handwashing station as cue for action: The best locations to build the tippy taps will be discussed (e.g.: close to the places where families cook; close to the household latrine). Simple technologies cannot only facilitate practice, fixed handwashing stations also make it easier to wash hands and serve as a visual reminder. The location of the tippy tap should remind all household members to wash hands with soap and water at the critical moments. Tippy taps help reduce the amount of water needed for handwashing. One of the observed barriers for handwashing was the lack of running water. Another one consists of the common use of jars or mugs to pour water, thus allowing washing one hand at a time. Using a tippy tap allows to remove or at least reduce these common barriers for effective handwashing. Caregivers are motivated to encourage all household members to use the handwashing station at the critical moments.



Figure 1: "Tippy tap" handwashing stations.



Figure 2: Alternative handwashing station built from locally available materials.

4. Homework: Homework assignment after the second session will be the construction of a tippy tap with a soap dispenser. Instruction sheets on how to make soap dispensers out of PET bottles and on what you need for a soapy solution will be given to all participants. The instruction sheet will also contain information on constructing a tippy tap at home. Participants will be encouraged to group in pairs and to visit each other during the following week to share experiences with the tippy tap construction and to give each other tips and advice on how to maintain and use the new device.

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Does (+) & Don'ts (-) for promoters:

- + Motivate the participants to build an own handwashing station
- + Help participants in selecting the right handwashing station
- + Make this session as interactive as possible
- + Invite household members to join the session
- Don't enforce a certain type of handwashing station
- Don't force participants to build a fancy tippy-tap

Block 3: Facilitate Behaviour

Intervention block	Change mechanisms	Communication channels				RANAS blocks
		Mass Media	Interpersonal	Direct	Public relations	
3 Facilitate behaviour	Empower through planning of food and stool related HWWS		Household visits			Ability
	Create awareness for maintaining HWWS					Self-regulation

Aim: Rise confidence in performance

- Outcomes:
1. Participants have a personalized plan when to wash hands before contact with food and after contact with stool
 2. Participants have visualized the plan and use it as environmental cue for handwashing
 3. Participants become aware of their own handwashing behaviour
 4. Participants gain confidence in their ability to always wash hands with soap and water
 5. Household members support each other to wash hands

Communication channel: Interpersonal communication through household visits

Key slogan: Handwashing? Of course! We can do it!

Location: At every study household in front of the house

Duration: 30 minutes

Participants: Primary caregiver of children of the household

Implemented by: Health Promoters (HP) from local community

- Components:
- 1. Repetition:** Check and discuss the solution the household has found for a handwashing station
 - 2. Planning:** Participants make their handwashing plans (food and stool related).
 - 3. Visualize:** Visualize plans on a planning form and stick them to the wall.
 - 4. Self-monitoring:** Self-monitoring calendar.
 - 5. Social support:** Household members support each other.

Communication materials: Planning form, self-monitoring calendar.

Detailed outline:

1. Repetition: The household members are asked to present the solution they have found for building or providing a handwashing station with a soap dispenser within the household. Together with the promoter, the participants should show discuss advantages and possible disadvantages still existing (e.g. location, practicability, etc.). The promoter can give additional advice on how to improve the handwashing infrastructure.

2. Planning: Now, the participant specifies, together with the health promoter, how, when and where to wash hands during the day. It is important that the participant makes the plans him or herself. The role of the promoter is limited to introduce the activity and to ask leading questions. The planning only refers to handwashing with soap and water, when the participants are at home. The crucial aspects of planning include:

- The specific food related situations when hands should be washed
- The specific stool related situations when hands should be washed
- The time when these situation occur
- The device which is going to be used and the place where it is set up
- The handwashing agent which is going to be used and the place where it is stored
- The *healthy steps* of good handwashing that were practiced

3. Visualize: The plans should be recorded in form of pictograms and it is essential that the plans are made as specific as possible. It is, for instance, not enough that the participant specifies to wash hands before eating. In contrast, the participant should reflect and document when during the day he/she eats. This can be done in either specifying an approximate time, or a daily activity that precedes eating. This has to be explicitly mentioned. Having completed the plans, the respondents will be asked by the promoter, to orally commit to washing hands according to the plan and make this handwashing plan a goal.

The planning form should act as a reminder of handwashing in the planned situations and should be put in the place where most of the critical situations occur. Planning forms for food related handwashing should, for example, be put in the kitchen; planning forms for stool related handwashing in close proximity to the place where the household members pass when they come from using a toilet. It is essential that the participant and, if possible all family members, see the planning forms, so the form can prompt them to wash hands in these situations. The planning form should be designed in an appealing way and should feature the central campaign message: "Handwashing? Of course!"

4. Self-monitoring: The self-monitoring calendar is introduced and the whole family is invited to participate. The blank calendar should, for each day, provide space for the participant and family members to note the critical handwashing situations. In addition the *healthy steps* of handwashing should be depicted on the calendar. During the following weeks, the participants can count the incidences when they wash hands **in the planned way**. A simple method is making one check mark for each occasion in which hands were washed as planned. Alternatively to the checkmark, the participants could put a sticker on the calendar to record successful handwashing events. It is important that the participants only records times when **all steps of handwashing were performed**. Other household members should be explicitly encouraged to fill the self-monitoring calendar, too.

The calendar is stuck on a wall as close as possible to the handwashing facility. This will allow the participants to record successful handwashing right after handwashing. It will also serve as a prompt and reminder to wash hands with the *healthy steps*, will give positive feedback to the respondents and, if household members fill it too, increase the norm for handwashing. Like all other interventions, the self-monitoring calendar has to be subject to a pre-test to assess its acceptability in the target population.

5. Social support: In this part of the session, household members discuss how they can support each other to wash hands. Possible ways of support can be reminding each other or identifying one household member who is responsible for water or soap supply. Household members should sing the campaign song or make a modification that they can sing during the week.

Does (+) & Don'ts (-) for promoters:

- + Support the participants with planning by asking the right questions
- + Help participants to visualize the plans
- + Make this session as interactive as possible
- + Invite household members to join the session on the self-monitoring calendar
- + Find a time for the visit that is convenient for the participant
- Don't plan for the participant
- Don't make the visualization for the participant

Block 4: Highlight Commonness of Handwashing

Intervention blocks	Change mechanisms	Communication channels				RANAS blocks
		Mass Media	Interpersonal	Direct	Public relations	
4 Highlight commonness of handwashing	Increase perception of others' behaviour			Group meeting		Norms
	Increase personal importance of and obligation to HWWS					Self-regulation

Aim: Highlight commonness of handwashing

- Outcomes:
1. Participants know the social support strategies from other households
 2. Participants feel successful to have completed the training and started HWWS
 3. Participants see others to wash hands, too

Communication channel: Direct communication through group meeting

Key slogan: Handwashing? Of course! We all do it!

Location: Community Hall

Duration: One hour

Participants: Primary caregiver of children, all family members

Implemented by: Health promoter from implementing organisation (I.O.), Environmental health technician (EHT) from local health centre, support by Health Promoters (HP) from local community

- Components:
1. **Social Support:** Participants act successful ways of social support
 2. **Public pledge:** Participants make a public commitment to HWWS
 3. **Reward:** Participants are rewarded for participating in the campaign

Communication materials: Professional actors, certificates

Detailed outline:

1. Social Support: In this session, examples of successful social support are shared. Participants will form small groups and discuss how the household members supported each other to wash hands with the *healthy steps* at all critical times. Each group selects one way of support and prepares a small drama or role play to be presented to the whole audience. Alternatively, if the intervention pre-test shows that participants feel uneasy and hampered to perform in front of the whole audience, professional actors could be engaged to perform the drama according to the social support plans chosen by the participants.

Each participant is requested to bring the self-monitoring calendar to this session. While the participants prepare the role plays, the health promoters collect the calendars and issue a certificate that the participant has successfully participate in the campaign. The certificate may include how many times the participant had thoroughly washed hands with soap and water since the last campaign session or during the whole self-monitoring period. The certificate should, on the one hand, show the performance of the participants. On the other hand, it should highlight the success and be encouraging for all participants.

During the workshops, stakeholders raised concern that participants might not fill out the self-monitoring calendar faithfully. For the effectiveness of the intervention, over reporting would not pose a challenge. However, the possibility of over reporting should be considered and participants should be primarily awarded for taking part in the campaign.

2. Public pledge: After the role plays, each participant comes to the stage and is requested to make a public pledge that he/she “Will always wash hands with the *healthy steps* and soap after contact with stool and before handling food”. On the one hand, this will boost the descriptive norm, since all participants witness the public commitment. On the other hand, it will increase the commitment of the participant that makes the pledge.

3. Reward: After making the pledge, each participant is awarded with the certificate and is given back the self-monitoring calendar. In addition participants could be rewarded with a T-shirt which is common practice in Harare. . Soap operas seem to be very popular in Zimbabwe. Actors from a soap opera could act as stars for the campaign and award the participants with the certificates. It should be noted that, since most soap operas origin from South Africa, it might be difficult to mobilize the celebrities.

Does (+) & Don'ts (-) for promoters:

- + Create an excited and positive atmosphere
- + Encourage participants to act
- + Make this session as interactive as possible
- Don't convey any health messages
- Don't be strict and like a teacher

Supporting Activities

Intervention blocks	Change mechanisms	Communication channels				RANAS blocks
		Mass Media	Interpersonal	Direct	Public relations	
Supporting activities		SMS, Posters			Kick-off event	

SMS

Before the first community meeting, there should be an SMS countdown saying, after how many days the campaign would start. This will serve at drawing attention to the campaign and make participants remember the starting date. SMS can also be sent during the campaign, asking for feedback from the participants. Reminder SMS could also be sent after the final community meeting, to make participants sustain their newly developed handwashing habits. Mobile numbers of participants were surveyed during the baseline. Participants will be contacted by Eawag and the telephone numbers provided to the implementing organisation if the participants agree.

Posters

Posters which feature the central campaign slogan “Handwashing? Of course!” should be put in front of the houses of local opinion leaders, like chairmen, that are willing to support the campaign. During the present campaign pilot, poster should not be distributed to health centres in order to not influence participants from the control group.

Kick-off event

Prior to the first community meeting there should be an official kick-off event. To this event, politicians, the representative or spokesperson of the campaign and media are invited. Aim of the kick-off event it to increase acceptance and publicity of the campaign and to increase politicians’ commitment as part of the policy dialogue.

Children

Block 1: Trigger Personal Awareness

Intervention blocks	Change mechanisms	Communication channels				RANAS blocks
		Mass Media	Interpersonal	Direct	Public relations	
1 Trigger personal awareness	Increase perception of the importance of handwashing and of personal risk of contracting diarrhoea			Classroom activities		Risk

Aim: Trigger personal awareness

Outcomes:

1. Students know that handwashing is important to prevent diarrhoea
2. Students are motivated to discuss handwashing at home

Communication channel: Direct communication through classroom activities

Key slogan: Handwashing? Of course! It helps me stay healthy!

Location: Classroom

Duration: 30 minutes

Participants: Students of the whole class

Implemented by: Class teacher

Components:

1. **Quiz / Game:** Why, when and how to wash hands?
2. **Homework:** Communicate discussed content at home

Communication materials: Poster

Detailed outline:

1. Quiz / Game: In the beginning of this session, the teacher sensitizes the children for the issue of diarrhoea. For elder students, this can be done through a knowledge quiz on what diarrhoea is and what its consequences are. Teachers can use a poster that shows the faecal-oral route. The quiz can be extended on how to prevent diarrhoea. Together with the teacher, the students work out how a) always using the toilet for defecation, b) drinking only safe water and c) washing hands at all critical times, prevents diarrhoea. During the stakeholder workshop, teachers raised the concern that the quiz would discourage slow learners. Therefore, teachers should aim at including all students in this quiz and prompt reluctant children to participate. For younger students the teacher could explain causes and protection of diarrhoea. Students may then draw the specific situations in which diarrhoea is contracted and actions how to protect themselves both at school and at home.

2. Homework: At the end of block 1, children are encouraged to communicate the discussed content to their families. Students can utilize their drawings to speak about protective actions against diarrhoea.

Does and Don'ts for teachers:

- Don't force students to talk about handwashing and diarrhoea at home, only encourage them to do so.

Block 2: Facilitate Behaviour

Intervention blocks	Change mechanisms	Communication channels				RANAS blocks
		Mass Media	Interpersonal	Direct	Public relations	
2 Facilitate behaviour	Create enabling environment					Ability
	Increase confidence in behaviour performance and attach positive emotions			School event		

Aim: Facilitate behaviour

- Outcomes:
1. Schools have functional handwashing facilities with soap
 2. Facilities are visible and attractive
 3. Handwashing is introduced in a joyful way
 4. Students know how to thoroughly wash hands
 5. Students are aware of the risks of not washing hands
 6. Students are motivated to build soap dispensers at home

Communication channel: School event

Key slogan: Handwashing? Of course! We have all we need!

Location: Classroom, school yard

Duration: half day

Participants: Students of the whole school

Implemented by: Health promoter from implementing organisation (I.O.), Environmental health technician (EHT) from local health centre, support by Health Promoters (HP) from local community, teachers (class room activities)

- Components:
- 1. Installation of infrastructure:** Handwashing stations in classrooms and toilets
 - 2. Build and beautify soap dispensers and containers:** Soapy solutions
 - 3. Handwashing song:** Memory aid and make handwashing fun
 - 4. Experiment:** Handwashing without soap or no handwashing is risky
 - 5. Inauguration ceremony and competition:** Formal kick-off
 - 6. Homework:** Build soap dispensers at home

Communication materials: Song, Certificate, soap dispenser instruction sheet

Detailed outline:

1. Installation of infrastructure: In the morning of the school event, each class should be equipped with a water container with a valve and a bucket to receive the dirty water. This will make handwashing more convenient for the children and, if every class has its own handwashing facility, it increases the sense of ownership and prevents vandalism. The buckets should be sized so that children can carry them, when they are full. The handwashing facilities at the classrooms will be used

particularly for handwashing before eating during the lunch break. They may also be used for handwashing after toilet use during classes. For handwashing after toilet use during the breaks, it will be inconvenient for children to return to the classroom for handwashing. It is therefore recommended that handwashing facilities at the toilets are repaired or installed. At the toilets, where piped water supply is present in most cases, water taps should be used. Schools which neither have a piped water connection nor a borehole or where there is not enough water for handwashing, a water source has to be installed prior to the behaviour change campaign. Also, classroom handwashing facilities should be provided to all schools in an appealing and visible way to make them serve as environmental cues for handwashing.

2. Build and beautify soap dispensers and paint containers: In a classroom activity, students paint the new water containers. In addition, the student should build the soap dispenser to be used in their classroom: PET bottles could be used and a small hole is pierced in the cap. Then small flakes of soap are put in the bottle and dissolved in water. Also the soap bottles should be painted. This will make the soap more attractive and create a sense of ownership for the soap.

Highlighting the importance of handwashing to prevent diarrhoea can be initiated by practicing the handwashing song for children.

3. Handwashing song: The song shall be practiced regularly during the following week, until children know it by hearth. In addition, a classroom poster should be put in each classroom that shows the *healthy steps* and critical moments for handwashing. The poster should be designed in a way that is appealing to the children and could feature comic characters. It should be more visual than written, to be understood by all the children, and anything written should be in English. The poster should not be made by the students or teachers but be provided. Teachers raised the concern that a poster might be vandalized by students or might be damaged by rain. The poster should be provided in form of a self-sticking foil or plastic covered poster that is more durable than a paper poster.

4. Experiment: In a classroom experiment, similar to the experiment done with caregivers in block 1, the students' awareness of being at risk to contract diseases if they do not wash hands as explained has to be increased. Children who washed their hands with water only and children who did not wash hands at all wipe their hands with a clean white towel. The towel is examined and the *healthy steps* for handwashing are explained. These include:

- **Wet** your hands with clean, running water, turn off the tap, and apply soap.
- **Lather** and **scrub** your hands for at least **20 seconds** (duration of the chorus of the handwashing song). Make sure to scrub
 - the **palms** of your hands,
 - the **backs** of your hands,
 - **between** your **fingers**,
 - your **finger tips** and
 - **under** your **nails**.
- **Rinse** your hands well under clean, running water.
- **Dry** your hands using a clean towel or air dry them.

The exercise continues as explained in the caregivers section.

5. Inauguration ceremony and competition: After the classroom activities all students and teachers assemble for the official kick-off event of the handwashing campaign at their school. A representative

of the Ministry of Health or Ministry of Primary and Secondary Education should attend this event and issue a certificate that the school is now a “Handwashing school” or “Healthy school”. This aims at giving the event also a formal component and increasing the schools' commitment. There could be music or dance performances, and the handwashing song can be presented by professional singers and rehearsed with the children. To make the event interesting for students there could be a competition, between the classes on which class has most creatively painted the handwashing container and soap dispenser. The winning classes could be mandated to also paint the handwashing facilities and soap dispensers in the toilets. To this event, also the students' parents should be invited.

6. Homework: Children are encouraged to build soap dispensers made out of PET bottles for soapy solutions at home and to paint them as well to make them look more attractive. They will be handed out instruction sheets on how to make soap dispensers out of PET bottles and on what you need for a soapy solution.

Does (+) & Don'ts (-) for promoters:

- Don't disrupt the school activities
- Don't make this any extra work for the teachers and school staff
- + Make the event fit to the schools needs
- + Communicate with school staff
- + Get feedback from all school staff including head master, teachers and caregivers

Block 3: Establish Confidence in Maintenance

Intervention blocks	Change mechanisms	Communication channels				RANAS blocks
		Mass Media	Interpersonal	Direct	Public relations	
3	Establish confidence in maintenance	Organize soap and water supply in classes			Classroom activities	Ability
		Create awareness for maintaining HWWS				Self-regulation

Aim: Establish confidence in maintenance

- Outcomes:
1. Each class has designated students who are responsible for soap and water
 2. Students are aware of their own handwashing behaviour
 3. Students get feedback on their handwashing behaviour

Communication channel: Classroom activities

Key slogan: Handwashing? Of course! We can do it!

Location: Class room

Duration: Two sessions, 30 minutes each

Participants: Students of the whole class

Implemented by: Class teacher

Components: **Session 1, responsibility for soap and water:** Designate students responsible for soap and water

Session 2, self-monitoring: Introduction of self-monitoring calendar and feedback from teachers

Session 3, feedback: Discussion of the previous homework assignments

Communication materials: Self-monitoring calendar, stickers

Detailed outline:

Session 1, responsibility for soap and water: In each class, two students will be designated to be responsible that soap and water are always present at the class's handwashing station. It is important that two students are designated so they can substitute each other in case one student is sick. Every week these two students, preferably one boy and one girl should be replaced by their colleagues. Soap and water availability in the class should be monitored by the teacher. The teacher should distribute the soap to the designated student in the morning and collect it after school.

Session 2, self-monitoring: In this session the self-monitoring calendar is introduced and one copy is distributed to every student. The blank calendar should take up the central campaign slogan and, for each day, provide space for the student to note the critical handwashing situations when he/she has washed hands. A simple method is making one pencil check mark for each handwashing event. Alternatively, students could put a sticker. The *healthy steps* of handwashing should be repeated on the calendar. It is important that the students only note the times when all *healthy steps* of handwashing were performed. The calendar will be put in a well visible place in the classroom. This will

serve as a prompt and reminder to wash hands in the critical situation, will give positive feedback to the students and increase the descriptive norm.

The students are requested to fill the calendar during the next week. The teacher can periodically check it and give feedback to the children. If the events of successful handwashing are documented with stickers, the teacher can also distribute the stickers to the children who washed hands as planned after every break. This will serve as a reward and incentive to wash hands in the planned way.

Session 3, feedback: In this session, the teacher invites the students to discuss their experiences with building soap dispensers at home. Teachers should explore whether students were eager to practice handwashing at home and whether they had attempted to build soap dispensers at home and whether they had a desire to encourage their families to use it. Problems such as not feeling and/or being able to build soap dispensers and to influence home behaviours should be addressed. A big barrier might be that they did not receive help from their parents, or from an older sibling, especially from a male adult family member.

Does & Don'ts for teachers

- + Make the sessions as participatory as possible
- + Ask students for their opinion
- + Periodically check the calendar and give feedback
- + Remember to distribute soap in the morning and collect it in the evening
- Do not punish students who do not wash their hands

Block 4: Highlight Commonness of Handwashing

Intervention blocks	Change mechanisms	Communication channels				RANAS blocks
		Mass Media	Interpersonal	Direct	Public relations	
4 Highlight commonness of handwashing	Facilitate social support			Classroom activities		Self-regulation
	Increase perception of others' behaviour					Norms

Aim: Highlight commonness of handwashing

- Outcomes:
1. Students support each other to wash hands
 2. Students become aware that other classes wash hands, too
 3. Students have a high commitment to always wash hands

Communication channel: Classroom activities

Key slogan: Handwashing? Of course! Everybody!

Location: Class room

Duration: Two sessions, 30 minutes each

Participants: Students of the whole class

Implemented by: Class teacher

Components: **Session 1, mutual support:** How can students support each other to wash hands?

Session 2, public commitment: Commitment posters on classroom door

Communication materials: Template for commitment poster

Detailed outline:

Session 1, mutual support: In this session, teachers and students think about ways how students can support each other to wash hands. For example student could form "handwashing buddies". Pairs of two students would have the task to remind and support each other to always wash hands with the *healthy steps* in critical situations and fill out the self-monitoring calendar together.

Session 2, public commitment: By now, the students should be confident that they are able to always wash hands with the *healthy steps* after toilet use and before eating at school. Based on a template, they make two handwashing posters that show that their class is now a handwashing class. In a kind of ceremony, one poster is put on the outside of the classroom door and one poster inside the classroom. This will serve as a reminder, and as many classes put the poster on their door, increase the descriptive norm for handwashing.

Does & Don'ts for teachers

- + Make the sessions as participatory as possible
- + Ask students for their opinion
- + Periodically check the calendar and give feedback

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- + Remember to distribute soap in the morning and collect it in the evening
- + Make students proud of their achievements
- Do not punish students who do not wash their hands

Soap in schools

Making Soap Available for Schools

At the time of the baseline survey, only few schools had soap readily available at handwashing facilities. Providing soap to the schools was a precondition to the success of the project. For the sustainability of the project, soap has to be available for the project schools beyond the active campaign phase. Suitable strategies should be developed.

Water in Schools

At the time of the baseline survey, one school did not have access to water; others fetched their water from quite some distance away. Strategies to ensure the provision of sufficient water for handwashing should be developed and are regarded as a prerequisite for changing handwashing behaviour in schools.

Implications from the urban Campaign

Several findings from the evaluation of the urban campaign bear some important implications for the design of the rural handwashing campaign which have been discussed among the project partners beforehand. In short, these recommendations included the following:

1. Pursue the campaign approach

As the urban campaign showed some important improvement in handwashing behaviour, the same campaign concept shall be followed for the rural campaign. Most of the former components will be applied with some minor adaptations where the results pointed out differences of importance. The single most important difference will be the inclusion of a campaign element promoting the building of handwashing stations at the household level (Block 2 caregivers).

2. Cut down the campaign to the essential activities

Wherever possible, the implementation protocols should be kept as simple as possible. However, we do not recommend cutting down the total amount of components for two reasons. One is to still be able to cover all important behavioural factors that were identified in the baseline survey; and secondly we think that the repetitive nature of having four contacts to participants bears great advantages both for learning purposes and being able to recap the contents from the previous sessions.

3. Develop a universal approach for the urban and rural campaigns

As the results from the urban and rural campaign show quite some commonality, the campaign approach can be understood universally with some minor adaptations to the context as discussed above.

4. Improve hardware supply

This is a major point for the success of the campaign. During the monitoring and evaluation of the urban campaign it was stated that there were cases of lacking or insufficient infrastructure for handwashing in terms of water and material available. Two measures are recommended addressing this issue. On the one hand, schools should be supplied with the necessary infrastructure to allow handwashing with soap at key times to all students in order to allow for behavioural adoption. Secondly, on the household level, the construction of handwashing stations by the household members will be promoted during the campaign.

Also, delayed delivery of campaign material led to a decrease in quality of interventions.

5. Increase quality of campaign preparation and training

As was discussed between the project partners, significant improvements in terms of preparation of the promoters and involved staff in the intervention delivery is needed. Therefore, sufficient time should be allocated in the training and monitoring of promoters.

6. Stronger focus on stool-related handwashing

While the urban campaign put a lot of emphasis on food related handwashing situations, it was found that the impact of the campaign was less strong on stool related handwashing. Therefore, both, food and stool related handwashing key events should be emphasized and treated equally.

Appendix A: Theoretical Background

As an underlying methodology, the RANAS approach for systematic behavior change in the Water, Sanitation, and Hygiene sectors has been applied to design the survey instruments. The RANAS approach combines a broad research basis of several health psychological theories and has been especially adapted to the application in the context of developing countries. The RANAS model is based on health psychological theory and research findings and has been especially designed for its application in the context of hygiene behavior promotion in the WASH sector. It comprises a range of socio-psychological factors – or behavioral determinants – which are important to understand human health behavior. These include risk factors, attitude factors, norm factors, ability factors, and self-regulation factors. Taken together, with the help of this list of factors, campaigns for behavior change can be based on evidence from ground by systematically surveying of the target population on their mindsets concerning a target behavior.

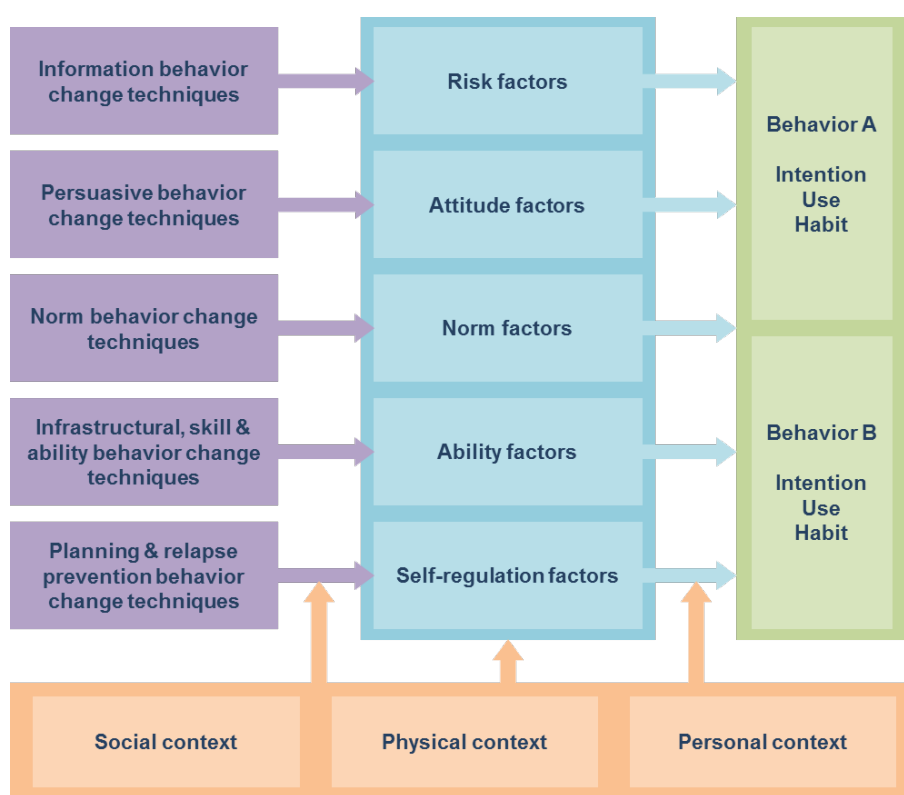


Figure A1: The RANAS model of Behavior Change.

The RANAS approach to systematic behavior change involves four phases (see Figure 4): First, identify potential behavioral factors; second, measure the behavioral factors identified and determine those steering the behavior; third, select corresponding behavior change techniques (BCTs) and develop appropriate behavior change strategies; and fourth, implement and evaluate the behavior change strategies.

For detailed information please refer to the section on “Using the RANAS approach” which can be found online here:

<http://www.eawag.ch/en/departement/ess/empirical-focus/environmental-and-health-psychology-ehpsy/>

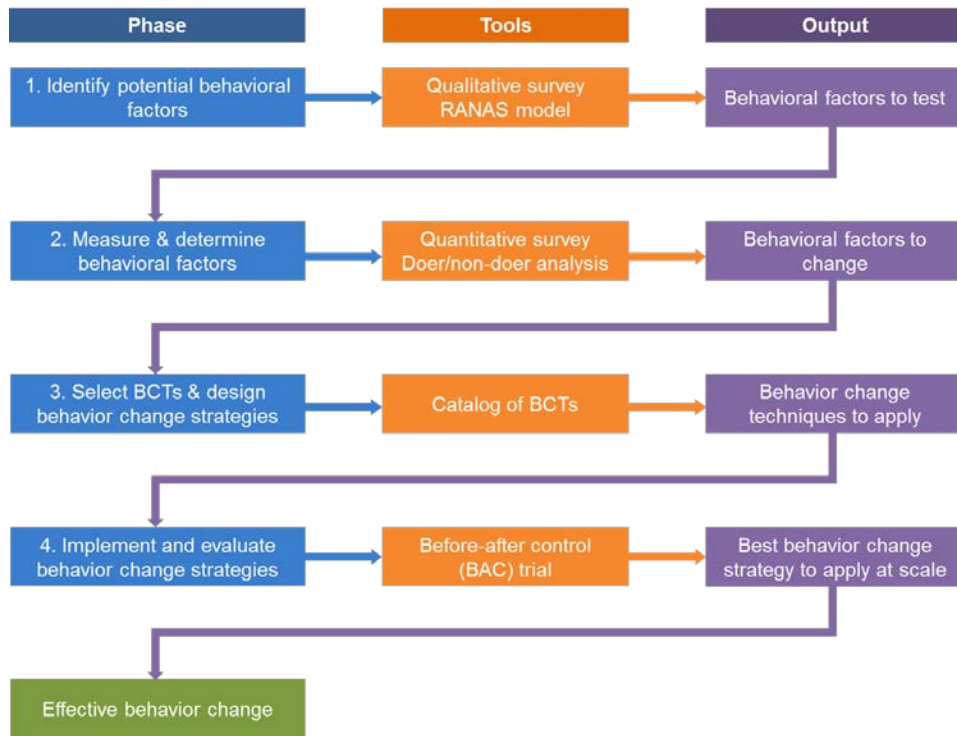


Figure A2: Flow chart of the RANAS approach to systematic behavior change.

Appendix B: Methods of the Baseline Survey

Through a comprehensive baseline survey, prevalence of handwashing with soap and water among primary school children and their caregivers was quantified and the most decisive factors and change mechanisms for handwashing identified. As shown in Table B1 the survey was implemented in schools and households. Observations of handwashing were performed, the hygiene situation was assessed through spot-checks and structured interviews performed.

Table B1: Tools applied during the baseline survey.

Unit	Research tools	Number of units surveyed Zimbabwe
Schools	Observations	16
	Hygiene spot-checks	16
	Structured interviews with children	440
Households	Observations	224
	Spot-checks	448
	Structured interviews with caregivers	448

The following instruments have been used to gather data in this baseline survey:

Primary Caregivers

- Assisted personal interview with primary caregivers of young children on their household hygiene situation, handwashing behavior, and psychological concepts.
- Spot-check observations on the household's hygiene situation.
- Three hour household observations on handwashing in related key situations.

School Children

- Assisted personal interviews with school children in primary schools on their handwashing behavior and psychological concepts.
- Spot-check observations in school classrooms and compounds on the available handwashing infrastructure.
- Observations of handwashing behavior after the use of toilets on the school compound.

Structured Interviews

Primary caregivers: In addition to socio-demographic variables, structured interviews to caregivers contained questions about behaviour, about behavioural determinants regarding safe handwashing, and about environmental aspects. Items to assess behaviour included self-reported handwashing frequencies, the use of agents and devices, education of children in handwashing practices, diarrhoea frequencies, latrine use, and drinking water treatment. Handwashing frequencies at critical times were measured using a 10-point rating scale (from "(almost) never/0-1 times out of 10" to "(almost) always/9-10 times out of 10"). Critical times were handwashing before eating, before preparing food, after defecation, and after cleaning a child's bottom. The operationalization of the behavioural

constructs was based on the RANAS model and derived from previous research on handwashing with soap: perceived health risks, instrumental and affective attitudes, social norms, perceived personal abilities, and behavioural maintenance factors. Factors were scored on a 1 to 5 scale, representing the minimum and maximum possible values. Environmental characteristics were assessed with items on water supply for handwashing, the availability and costs of handwashing agents, and on drinking water supply. All items were translated into the local dialect to assure the meaning of the questions was accurate. Items were adjusted as necessary during the interviewer training.

School children: The structured questionnaire used to interview the school children was a short and slightly altered version of the caregivers' questionnaire. The questionnaire contained questions about behaviour and about behavioural determinants regarding safe handwashing. Items to assess behaviour included self-reported handwashing frequencies at school and at home. Handwashing frequencies at critical times were measured using a 4-point rating scale (from "not at all" to "extremely"). Critical times were handwashing before eating and after using the toilet. Items on behavioural determinants were scored on a 1 to 4 scale, representing the minimum and maximum possible values.

Observations

Households: Eligible households were visited a day before the actual observation to seek consent and to arrange a time for the observation. Specific survey objectives were kept discrete to avoid biasing behaviour. Handwashing practices of caregivers and index children were observed at critical times: after using the toilet, after cleaning a child's bottom, before cooking, before eating, and before feeding a child. It was assessed whether hands were washed and if so, if soap and water were used and what devices were used. Observations on handwashing behaviour lasted for three hours.

Schools: Observations were conducted in all 20 selected schools. Handwashing behaviour of all children was assessed after using the toilet and, in schools providing lunch, before eating. Index children were individually observed. Every child who had participated in the survey at home was handed out a scarf so as to be identified by the interviewers throughout the observation span. Two interviewers observed children's handwashing behaviour for two consecutive days. Interviewers tried not to disturb daily routine at school and children were not explicitly told about the purpose of the observation.

Spot checks

Households: The spot-check observational method at households was used as an additional method to assess hygiene practices, because spot checks are less intrusive, less time-consuming, and less reactive. They were also more economical to use in half of the households where no observations on handwashing practices could be carried out. A list of predetermined conditions was observed at one point in time during home visits. The list included household hygiene, handwashing facility, water and water containers, food hygiene, personal hygiene, sanitation, house structure and a handwashing demonstration.

Schools: The spot check observational method was used to assess the presence and condition of handwashing stations, toilet facilities and drinking water supply.

Appendix C: Findings from the baseline survey in rural Zimbabwe

Primary Caregivers

This section contains a description of the results of the survey instruments applied on the household level, especially on the interviews on personal understanding of handwashing behavior and its underlying psychological concepts with primary caregivers.

Participant Characteristics

In total, 448 primary caregivers of children younger than 5 years of age were interviewed. On average, these were 42 years old (Standard Deviation (SD) = 14.03, range from 16 to 89) and have experienced eight years (SD = 3.43) of formal education. While 430 or 96% were female, 18 respondents (4%) were male caregivers.

Table C1: Socio-demographic characteristics of primary caregivers.

Characteristics	N	M	SD
Age	448	42	14.03
Years of formal education	448	8	3.43
Gender	N		%
Female	430		96.0
Male	18		4.0

Note. N = number of respondents; M = Mean value; SD = standard deviation, % = Percentage.

Household Characteristics

The average household size was six persons (SD = 2.26) living together; families had an average of one child (SD = 0.94) below the age of five years and two children (SD = 0.97) older than five years. The average monthly income was 60 USD (SD = 77.67) and the weekly expenditure ten USD (SD = 10.85).

Table C2: Characteristics of households, household size and wealth.

Characteristics	N	M	SD
Number of members	448	6	2.26
Children below 5 years of age	448	1	0.94
Children 5 years or older	448	2	0.097
Weekly expenditure (USD)	448	10	10.85
Monthly income (USD)	448	60	77.67

Note. N = Number of responses; M = Mean value; SD = Standard deviation.

Household Water Supply and Soap Availability

About half of the observed households (51.3%) had a designated place for handwashing within the compound. In one quarter (27.2%) of cases, a separate handwashing facility for food and stool related handwashing was observed. Water for handwashing was present at the facility in a total of 145 of the observed households (32.4%) or at 63.0% of all available handwashing stations. Soap was present at a total of 75 handwashing stations (16.7% of households) or at 32.6% of all handwashing facilities.

Other than in the urban study, availability of soap and water at the household level are lower in the rural setting and seem to be major barriers for handwashing as only about half of all households have

designated places for handwashing and only two thirds and one third of those had water respectively soap present at the time of visit. This means that only 16.7% of all households of the sample had a handwashing place where also water and soap were available.

Table C3: Handwashing facilities, presence of soap and water within households.

Observation whether available/present at time of visit	N	%
Designated place for handwashing	230	51.3%
Separate facilities for food and stool related handwashing	122	27.2%
Water at least at one handwashing facility	145	32.4%
Soap at least at one handwashing facility	75	16.7%

Note. N = Number of observations; % = Percentage of facility/material present.

As for the type of handwashing facilities, mainly two systems are of use; one is having a bowl where hands are dipped into or a small vessel is used to pour water over hands to be washed. Other than in the urban setting, households generally do not have taps with running water from a piped system or tank containing water (Table C4).

Table C4: Type of handwashing facility observed in households.

Type of handwashing facility	food related		stool related	
	N	%	N	%
Tap	0	0.0	1	0.2
Bowl to dip hands	94	52.8	54	44.2
Small vessel to pour water on hands	77	43.3	30	24.6
Other	7	0.4	37	30.3

Note. N = Number of observations; % = Percentage.

Frequencies of Handwashing with Soap by Primary Caregivers

The frequency of handwashing (Table C5) was asked for during the interview for a number of food and stool related critical situations. The answer scale ranged from zero to ten times out of ten. The mean self-reported handwashing frequency was about “three times out of ten” (M = 3.11; SD = 2.71) for all food related situations and about “six times out of ten” (M = 6.24; SD = 2.98) for all stool related situations.

Compared to the self-reported behavior, results from the three hour household observations show that handwashing was less frequently observed than it was reported. Mean observed handwashing frequency for all food-related situations occurred in less than one time out of ten (M = 0.27; SD = 1.38) for a total of 173 observed events and around two out of ten times (M = 1.95; SD = 3.66) for 68 stool-related observed events. However, the large standard deviations reveal that there exist differences between individuals which wash more frequently and others who wash less frequently than the average. The average numbers are nonetheless very low as the general tendency to wash hands in critical situations is less than in one out of ten times, more about one in twenty times with higher values for some of the stool related events and lower values for most food related events (see Table 5 for details).

Table C5: Frequencies of self-reported and observed handwashing of primary caregivers in different food and stool related situations.

Critical event	self-reported			observed		
	N	M	SD	N	M	SD
Before eating	448	3.12	3.07	57	0.35	1.86
Before feeding a child	132	3.24	3.22	21	0	0
Before breastfeeding a child	73	2.84	3.04			
Before preparing food	433	3.16	3.08	157	0.27	1.37
Total food related	448	3.11	2.71	173	0.27	1.38
After defecation (including possible OD)	448	6.89	3.48	47	0.74	2.55
After cleaning up a child's bottom	203	6.72	3.46	9	2.22	4.41
After other contact with stool	412	5.49	3.49	23	4.78	4.88
Total stool related	448	6.24	2.98	68	1.95	3.66

Note. N = Number of responses/observations; M = Mean value; SD = Standard deviation. Scale ranges from "0" to "10" out of ten.

Thoroughness of handwashing

Thoroughness of handwashing (Table C6) was measured by counting the number of observed washing steps shown during the handwashing demonstration when respondents were asked to show how they usually wash their hands. The six steps that were eligible for counting were rubbing the palms, rubbing between fingers, rubbing the finger tips, rubbing under finger nails, rubbing the backs of the hand, and rubbing in total of at least 20 seconds duration. The mean number of steps shown was around three out of the six with some variation between individuals of around one step more or less (SD = 1.24).

Table C6: Thoroughness of handwashing measured according to the number of step shown in demonstrated handwashing.

Thoroughness of handwashing	Demonstrated handwashing behavior		
	N	M	SD
Number of steps shown	448	2.79	1.24

Note. Crucial steps for handwashing counted were rubbing the palms, rubbing between fingers, rubbing the finger tips, rubbing under finger nails, rubbing the backs of the hand, and rubbing in total of at least 20 seconds duration resulting in a scale range from "0" – none, to "6" – all steps shown.

Behavioral Determinants associated with Handwashing Behavior

Table C7 shows the results of questions concerning the behavioral factors, drivers or motivators for handwashing and whether they play a role in handwashing behavior in the given sample. The number of caregivers who gave answer to the respective items is given in the column titled "N". The mean value of responses is given in the column "M" with its Standard Deviation in column "SD". All psychological factors have been harmonized to a common five point scale ranging from "1" as the minimal and least favorable value to a maximum of "5" as the most favorable value for handwashing behavior. A correlation measure between the results of the psychological values with the self-reported handwashing frequency is displayed in the column titled "r". This value shows how strong the association and hence the explanatory value of each factor is for the self-reported handwashing behavior in the sample. The higher the value the more important this factor is for handwashing in the given sample. An R-value of 0.3 is considered a moderate association and the most important results have been highlighted in bold which about reach or surpass this threshold. The last column finally depicts whether these results are significant from a statistical point of view which is true for all values

equal or below 0.05. Food and stool related behavior has been combined here because of a high similarity of results.

Table C7: Behavioral Determinants for Handwashing of Caregivers.

Factor	Correlations with self-reported food and stool related handwashing				
	N	M	SD	r	sig.
Risk factors					
Perceived Vulnerability	448	4.48	0.51	0.182	0.000
Perceived Severity	448	3.95	1.11	0.075	0.114
Health Knowledge	448	2.23	0.55	0.120	0.011
Attitude factors					
Investment	448	4.47	0.82	0.182	0.000
Return	448	4.32	0.64	0.079	0.096
Example to children	448	4.28	0.78	0.281	0.000
Attractiveness	371	4.30	1.10	0.144	0.005
Liking	448	4.22	0.76	0.157	0.001
Disgust	448	4.32	0.86	0.276	0.000
Norm factors					
Descriptive Norm	448	2.87	0.88	0.461	0.000
Injunctive Norm	448	3.73	1.13	0.348	0.000
Ability factors					
Action Knowledge	448	1.80	0.40	0.146	0.002
Action Self-Efficacy	448	4.01	0.83	0.382	0.000
Action Self-Efficacy water	448	4.16	0.83	0.128	0.006
Action Self-Efficacy soap	448	3.23	1.18	0.027	0.563
Maintenance Self-Efficacy	448	3.44	0.89	0.356	0.000
Recovery Self-Efficacy	448	4.05	1.01	0.254	0.000
Self-regulation factors					
Action Planning	448	3.52	1.35	0.105	0.026
Action Control	448	4.02	0.85	0.370	0.000
Coping Planning	448	1.70	0.94	0.127	0.007
Hindrance agents	448	4.08	0.80	-0.049	0.296
Hindrance situation	448	4.02	0.89	0.240	0.000
Remembering	448	4.25	0.89	0.178	0.000
Commitment	448	3.59	0.59	0.400	0.000
Habit	448	4.29	0.66	0.218	0.000
Structural factors					
Designated place for handwashing	448	0.51	0.50	0.046	0.334
Water at handwashing station	230	0.63	0.48	-0.074	0.264
Soap at handwashing station	230	0.33	0.47	0.111	0.093
Time for water collection	372	69.88	66.05	0.078	0.135

Note. Correlations of behavioral determinants with self-reported food and stool related handwashing. N = Numbers of responses; M = Mean value of response; SD = Standard deviation. All scale ranges for psychological factors were harmonized from "1" – minimum value to "5" – maximum value; the scale range for structural factors goes from "0" to "1"; Time for water collection is in minutes. r = Correlation coefficient shows the level of association between a single factor and self-reported handwashing frequency; 0.3 and above is regarded as a moderate to strong association. p = level of statistical significance.

A strong association between a given factor and the target behavior means that caregivers who wash their hands with water and soap more frequently have a different psychological mindset regarding this factor compared to caregivers who wash their hands less frequently with water and soap. Based on the

results displayed in Table C8, the most important behavioral determinants for handwashing in the sample under study shall be summarized and discussed.

Table C8: Matrix of behavioral determinants showing important associations with the target behavior; explanation, and implications for the campaign design.

Factor of importance	Interpretation	Implication for campaign
Example to children	Caregivers who wash hands more frequently also like to present a positive example to children	Being a positive example to children can be used as an argument for handwashing.
Disgust	Frequent washers find it more disgusting not to wash hands with soap than less frequent washers.	Feeling of disgust for not properly washed hands should be elicited; positive feelings of handwashing with soap enforced.
Descriptive Norm	The more respondents perceive other people to use soap for handwashing the more they do so themselves.	Commonness of handwashing should be highlighted; existing norms emphasized and shared commitment to handwashing fostered.
Injunctive Norm	The more respondents feel that handwashing with soap is something others approve of, the more likely they wash their hands with soap and water.	Others' expectations to wash with soap should be emphasized; public pledge to increase social norm for handwashing used to strengthen commonness.
Action, Maintenance, and Recovery Self-efficacy	<p>The personal sense of being able to always perform handwashing when it is demanded despite difficulties and possible drawbacks is a clear distinguisher between frequent and less frequent washers.</p> <p>More frequent washers have a higher confidence in their own abilities to always wash hands with soap when necessary, to maintain this behavior, and to deal with barriers and drawbacks.</p>	Strategies for making sure people are able to wash hands in all critical situations should be provided. This concerns both, having the necessary infrastructure and materials at hand but also feeling confident in executing the behavior when the situation demands it. This includes having strategies for reminding oneself and dealing with arising difficulties.
Action Control	Respondents who show higher self-monitoring activity and remind themselves to wash hands more frequently.	People should be provided with strategies and materials for self-monitoring their behavior and guided in the use of those.
Hindrance situation	Frequent washers have better ways to cope with difficulties in specific situations that hinder them from washing hands with soap e.g. being in a hurry, or not feeling like it in the moment.	Helping to find strategies on how to remind oneself of handwashing even in situations where possible barriers exist. Also, increasing commitment to always wash hands with soap when necessary should help to increase behavior.
Commitment	The more caregivers feel committed to handwashing with soap at key events the more likely it is they actually wash and use soap in those.	Intention for handwashing with soap and personal commitment should be strengthened.

Overall there were only very few differences in the findings compared to the urban baseline survey concerning the determinants of handwashing with soap and water. Most factors that revealed significant and substantial correlations to the target behavior in the urban baseline remain of importance in the rural settings with normative factors, several dimensions of self-efficacy, action control and commitment being the most important ones. Structural factors do not explain why people wash or do not wash their hands with soap.

Intervention experience and preferences

Prior to this study, 14 % of respondents had participated in some kind of handwashing program during the last year. These campaigns were mainly received through health workers (mentioned by 32 respondents). Other agencies mentioned were UNICEF (2), Ministry of Health (3); Health Watch (6), health facility (4), Care International (3), Caltus (1), Plan (1), Sanitation Action Group (1), or people didn't remember who conducted the campaign (10). All of those said to have enjoyed participating in the campaigns. 97% of all respondents would like to learn more about health and hygiene issues.

The majority of interviewed subjects get information regarding health and hygiene issues through a local health worker or the health center. Other ways of communication were a lot less frequently mentioned (see Table C9 for details). Preferred channels of communication mentioned when asked about possible future interventions are listed in Table C10 according to the frequency selected by the respondents.

Table C9: Sources of Information where subjects usually receive messaging on health and hygiene topics from.

Sources of information	N	%
Health worker	266	59.4
Health center	228	50.9
Self-thought	30	6.7
School	16	3.6
Radio	11	2.5
Mouth to mouth/family/friends	17	3.8
Church	21	4.7
Others	20	4.5

Note. N = Number of mentions, % = percentage of respondents mentioning the specific answer.

Table C10: Preferred communication channels for future campaigns.

Preferred communication channels	N	%
Household visits	424	94.6
Information posters	393	87.7
Church meetings	390	87.1
Community meetings	382	85.3
Information booklets	377	84.2
Health clubs	371	82.8
Cell phone messages	366	81.7
Radio broadcasts	257	57.4
TV broadcasts	126	28.1

Note. N = Number of mentions; % = percentage of respondents mentioning the specific answer.

School Children

Participants Characteristics

In total, 440 school children from the respective surveyed households (98%) could be interviewed at a total of 16 primary schools (between 26 and 28 children per school). 222 children were interviewed in eight schools in the district of Bikita and 218 children were interviewed in eight school in the district of Zaka. 217 children (49%) were female and 223 (51%) were male. The interviewed children were on average around ten years old (range 7 to 12, SD = 1.55) and attended grades one through six according to Table C11.

Table C11: Distribution and Socio-demographic characteristics of school children.

Characteristics		N	%
District	Zaka	218	49.5
	Bikita	222	50.5
Gender	Male	223	50.7
	Female	217	49.3
Grade	1.0	13	3.0
	2.0	62	14.1
	3.0	88	20.0
	4.0	99	22.5
	5.0	97	22.0
	6.0	81	18.4
	Total	440	100
		M	SD
Age	Years	9.8	1.55

Note. N = Number of children, % = Percentage; M 0 Mean value; SD = Standard deviation.

School Sizes, pupils, and personnel

The sizes of the schools including number of students, teachers, classes, and classrooms are given in Table C12. The school sizes range between numbers of students of 144 in eight classes to 495 students in 23 classes. The number of teachers per school ranges from nine to 39 teachers. The number of classrooms ranged from nine to 20 per school. This will be important information for the planning and budgeting of school interventions – especially for hardware interventions.

Table C12: School sizes of schools surveyed.

School #	Absolute numbers					
	Boys	Girls	Students	Teachers	Classes	Classrooms
Zaka						
1	197	245	442	16	12	9
2	338	346	684	27	18	16
3	456	480	936	39	21	18
4	193	153	346	16	10	9
5	298	310	608	30	16	16
6	206	116	322	16	11	9
7	144	122	266	9	8	8
8	237	199	436	13	11	9
Total	2069	1971	4040	166	107	94
Bikita						
11	386	361	747	21	17	14
12	495	444	939	24	23	20
13	466	488	954	30	24	15
14	330	316	646	19	15	15
15	397	394	791	17	15	15
16	275	281	556	18	18	18
17	220	193	413	13	13	11
18	234	214	448	12	12	11
Total	2803	2691	5494	154	137	119
Grand total	4872	4662	9534	320	244	213

Note. Total numbers of boys, girls, and students total, teachers, classes, and classrooms per school as well as per district. Note that the number of students gives the total number school children in these schools – only a proportion of those were interviewed during the survey.

School Water Supply and Soap Availability

While the majority of schools had some infrastructure for handwashing available on the compound in terms of water sources, boreholes, or tanks, there are two schools which did not have any handwashing infrastructure and a total of four schools did not provide water for handwashing on the compound at the time of visits. Only three schools out of the 16 had soap present for handwashing at the time of visits at least at one handwashing station (for details see Table C13). No facilities for handwashing within the classroom (e.g. before eating in the break) were observed in any of the schools.

These findings present a very similar picture to the findings from the urban survey and the provision of a functional handwashing station with both soap and water readily available for washing at key times (before eating during breaks and after using the toilets) should be considered a prerequisite for any behavior change campaign targeting students individual washing behavior.

Table C13: School water supply and soap availability.

School #	Stool related facilities		Handwashing facilities on compound					
	# of facilities	type of facility	availability of		Other facilities		availability of	
			Water	Soap	# of facilities	type of facility	Water	Soap
1	1	Running water from a tap	Yes, in some cases	No	1	borehole	Yes	No
2	2	Tank with a tap and a collection basin	No	No	None	-	-	-
3	None	-	-	No	None	-	-	-
4	1	Concrete made water tank	Yes, in some cases	No	1	borehole	Yes	No
5	1	Concrete tank with a tape and a collecting runaway basin	Yes, in most cases	No	None	-	-	-
6	10	2 liter containers with a straw at the bottom	Yes, in most cases	No	1	A build tank with a tap	Yes, in some cases	No
7	1	Concrete made water tank	No	No	None	-	-	-
8	1	A built tank with a tap	Yes, in most cases	No	None	-	-	-
11	2	concrete tank with a tape and a collection basin	Yes, in all cases	Yes, in some cases	None	-	-	-
12	1	Built tank with a tap	Yes, in some cases	Yes	1	borehole	Yes	No
13	2	concrete tank with a tape and a collection bucket	Yes, in some cases	No	2	Running water from a tap	5	No
14	1	A built tank with a tap	Yes, in most cases	No	None	-	-	-
15	2	Built tanks with taps	Yes, in some cases	Yes, in some cases	1	borehole	Yes	No
16	1	concrete made tank with a tape	Yes, in all cases	No	1	borehole	Yes, in some cases	No
17	3	concrete tank and two five liter containers	No	No	1	unused water tap	No	No
18	None	-	-	-	None	-	-	-

Note. Number of stool-related (i.e. next to toilets) and other handwashing facilities present on the day of visits and availability of soap and water at these facilities for each school surveyed.

Frequencies of Handwashing with Soap by School Children

The reported frequency of children washing their hands with soap and water in school was 2.29 (out of ten cases, SD = 3.44) for all food related situations and about the same (2.43 out of ten cases, SD = 3.66) for all stool related situations (Table C14).

Table C14: Self-reported handwashing frequency of school children at school.

Critical Event	Self-reported handwashing frequency at school		
	N	M	SD
Before eating	440	2.29	3.44
After using the toilet	440	2.43	3.66

Note. N = Number of answers; M = Mean value; SD = Standard Deviation. Scale range from 0 to 10.

Compared to the self-report, data from observations in the schools show that rinsing hands with water only varied between in none (0%) and about almost all (95%) of the observed possible stool-related handwashing events in the schools with a general average of rinsing with water only in 67% of observations in all schools.

Table C15: Observed handwashing frequency of schoolchildren at school.

		Hand washing behavior						Total
		did not wash hands		rinsed with water only		washed with soap and water		
		N	%	N	%	N	%	
School	1	1	5.6%	17	94.4%	0	0.0%	18
	2	no observations of handwashing possible						0
	3	no observations of handwashing possible						0
	4	15	41.7%	21	58.3%	0	0.0%	36
	5	150	60.0%	100	40.0%	0	0.0%	250
	6	33	17.6%	155	82.4%	0	0.0%	188
	7	no observations of handwashing possible						0
	8	17	8.2%	191	91.8%	0	0.0%	208
	11	50	21.1%	128	54.0%	59	24.9%	237
	12	3	4.2%	1	1.4%	67	94.4%	71
	13	139	41.0%	200	59.0%	0	0.0%	339
	14	68	26.3%	191	73.7%	0	0.0%	259
	15	51	18.3%	227	81.7%	0	0.0%	278
	16	42	18.8%	182	81.3%	0	0.0%	224
	17	no observations of handwashing possible						0
	18	no observations of handwashing possible						0
	Total	569	27.0%	1413	67.0%	126	6.0%	2108

Note. N = Number of observations; % = Percentage of observed key handwashing situations where no washing, rinsing hands with water, or washing with soap and water were observed. No observations of handwashing were possible in schools that did not have any infrastructure or water for washing available (see Table 13).

Handwashing with soap was only observed in two schools at all, where children washed in 25% and 95% of observed key events. The overall average of washing hands with water and soap is only in 6.0% of possible handwashing situations in all schools. This also reflects the finding that soap was only available at all in three schools total. No observations could be realized in schools that did not provide handwashing infrastructure or water to children (see also Table C13). This again highlights the

importance of the provision of infrastructure as a prerequisite for handwashing of school children. On the other hand, washing hands (rinsing with water only or washing with water and soap) varies strongly between those schools that did provide the necessary infrastructure and material (for details see Table C15). These variations are of interest to determine the critical socio-psychological factors for handwashing (see next section).

Behavioral Determinants associated with Handwashing Behavior

Table C16 summarizes the results for the psychological factors in school children and their association with handwashing behavior.

The most important drivers for handwashing among school children are the behavior of others (descriptive norm), the perceived ability to wash hands with soap and water and to continue to do so (action and maintenance self-efficacy), monitoring one’s own behavior (action control) and remembering to wash hands with soap and water.

These are the same factors that were identified for handwashing among school children in the urban study. Thus no changes are recommended concerning the contents of the intervention campaign in schools regarding the behavior change techniques. However, as mentioned above, infrastructural interventions will be of great importance to allow for change in behavior –seeing that perceived ability to wash hands with soap and water is also a key psychological determinant for handwashing among school children.

Table C16: Behavioral Determinants for Handwashing of school children.

Factor	Correlation with self-reported food and stool related handwashing at school				
	N	M	SD	r	sig.
Risk factors					
Vulnerability	440	2.34	0.72	0.081	0.089
Severity	440	3.15	1.13	0.109	0.023
Health Knowledge	440	3.29	1.27	0.257	0.000
Attitude factors					
Investment	440	3.12	0.78	-0.204	0.000
Liking	440	3.46	0.84	0.108	0.023
Disgust	440	2.79	1.05	0.152	0.001
Norm factors					
Descriptive Norm	420	1.65	0.94	0.673	0.000
Injunctive Norm	440	3.16	0.96	0.190	0.000
Ability factors					
Action Knowledge	440	3.80	0.52	0.050	0.292
Action Self-efficacy	440	2.33	0.91	0.635	0.000
Maintenance Self-Efficacy	440	1.81	0.90	0.537	0.000
Self-regulation factors					
Action Control	440	2.58	0.86	0.465	0.000
Remembering	440	2.60	0.90	0.417	0.000
Commitment	440	2.95	0.65	0.294	0.000

Note. Correlations of behavioral determinants with self-reported food and stool related handwashing at school. N = Numbers of responses; M = Mean value of response; SD = Standard deviation. All scale ranges for psychological factors were harmonized from “1” – minimum value to “4” – maximum value. r = Correlation coefficient shows the level of association between a single factor and self-reported handwashing frequency; 0.3 and above is regarded as a moderate to strong association. p = level of statistical significance.