Handwashing behavior and approaches to handwashing promotion in the ongoing humanitarian emergency in South Sudan

Research protocol submitted by the Dr. Pavani K. Ram, University at Buffalo, on behalf of the research team of collaborators

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Contents

Collaboration

This is a collaboration between the University at Buffalo, Oxfam Great Britain, and the US Centers for Disease Control and Prevention. The table below describes the roles and responsibilities of each collaborator.

Name	Institution	Role	Responsibility
Pavani K. Ram	University at Buffalo	Co-principal investigator	Conceive of study; write protocol; supervise instrument development, analysis, report writing; lead manuscript writing
Lauren S. Blum	University at Buffalo	Co-principal investigator	Conceive of study; revise protocol; supervise instrument development, analysis, report writing; lead manuscript writing
Jelena Vujcic	University at Buffalo	Co-investigator	Revise protocol; develop instruments; train field staff; supervise field staff in data collection; manage data; analyze data; contribute to report; write manuscript
Raina M. Phillips	CDC	Co-investigator	Review protocol; develop instruments; supervise field staff in data collection; manage data; analyze data; contribute to report; write manuscript
Andrew Boscoe	Oxfam GB	Co-investigator	Hire and manage field staff; manage field logistics; review instruments; train field staff; supervise field staff; manage data; review report; review manuscript
Aguet John Garang	Oxfam GB	Co-investigator	Review instruments; review report; review manuscript
Thomas Handzel	CDC	Co-investigator	Review protocol; review instruments; review report; review manuscript
Ann Thomas	UNICEF	Co-investigator	Review report; review manuscript

Rationale

UNHCR estimates that there are approximately 218,000 refugees in South Sudan, many of whom are in a number of camps in the Maban region (http://tinyurl.com/oomr7kc). Most refugees to South Sudan come from Sudan (99.7%). As common in many humanitarian emergencies, enteric diseases transmitted by the fecal-oral pathway have been common in Maban. Between April 15th and 21st, 2013, about 1250 cases of acute watery diarrhea were recorded in ongoing surveillance in Maban refugee camps. Hepatitis E has been confirmed in the South Sudan refugee camps, with 10,175 cases and 181 deaths (case-fatality rate 1.58%) documented by June 16, 2013 (http://www.emro.who.int/surveillance-forecasting-response/outbreaks/update-hepatitis-ss-june-2013.html).[1] Handwashing with soap has been recognized as an important measure to disrupt enteric diseases, including pathogens that cause acute watery diarrhea and Hepatitis E. [2, 3] Several organizations are promoting handwashing and other hygiene behaviors in the South Sudan refugee camps intensively with the goal of preventing Hepatitis E and other diseases transmitted by the fecal-oral route.

Few studies have assessed the effects of handwashing promotion on displaced persons' handwashing behavior. In observational studies of three long-standing refugee camps in Kenya, Ethiopia, and Thailand where hygiene promotion was ongoing, Biran et al. found that soap was available at 94% of handwashing sites in Thailand, 82% in Ethiopia, and only 26% in Kenya.[4] Handwashing with soap was practiced at a minority of times of possible pathogen transmission in all three sites. For example, 16% of latrine events in Thailand, 20% in Kenya, and 22% in Ethiopia were followed by handwashing with soap. In an evaluation of the effects of soap distribution on diarrhea risk in a Malawi refugee camp, Peterson and colleagues demonstrated that presence of soap in a refugee household was associated with reduced risk of diarrhea, compared to in households without soap present.[2]

Contzen and Mosler evaluated Oxfam's handwashing promotion strategy in Haiti, following the earthquake and cholera epidemic and found mixed results with respect to the effects of specific promotional activities on handwashing behavior.[5] Apart from the work of Contzen and Mosler, there has been little exploration of the relationship between exposure to specific components of handwashing promotion (e.g. specific technology / hardware, behavior change communication) and handwashing behavior of individuals living in displaced settings. The paucity of published studies demonstrate a substantial gap in the understanding of handwashing behavior and how best to promote it in the humanitarian emergency context need.

Earlier in 2013, with funding from the US Centers for Disease Control and Prevention, our research team conducted in-depth interviews with experts representing different organizations working in the field of hygiene promotion in humanitarian emergencies in order to appreciate, at the global and institutional levels, the challenges to handwashing among displaced populations and the data needs in order to improve handwashing promotion in humanitarian emergencies. In our preliminary analysis, key informant respondents have cited several key research gaps:

1) Limited information on the practice of handwashing, as opposed to the knowledge or attitudes, or proxy measures of behavior

2) A lack of information on motivators and barriers as an important challenge to designing appropriate and effective handwashing behavior change strategies.

   Importantly, respondents cite the evolving nature of displaced persons' knowledge and attitudes, as well as the context and enabling environment (e.g. occurrence of disease outbreak, social pressure in a densely populated environment or limitations to soap provision as funds decrease), as important drivers or barriers to handwashing behavior during the course of an emergency.

3) Little concerted effort to examine from various perspectives the operational challenges to implementing handwashing promotion programs in the context of a single large emergency, including for example, the identification and training of qualified hygiene promoters from among the displaced population

4) Limited understanding of how best to tailor handwashing promotion programs in order to accommodate ethnic diversity and pre-existing behaviors and perceptions related to handwashing, and whether such adaptation is feasible and acceptable.

As indicated by the key informants we have interviewed, Organizations that are implementing handwashing promotion programs are typically not able to undertake research to fill the knowledge gaps identified by our key informants. Barriers to conducting research include the multiple priorities facing implementing organizations, especially during acute phases of an emergency, as well as the availability of needed expertise in order to carry out such research.

Based on the critical gaps cited by our key informants in understanding motivators and barriers to good handwashing behavior in emergency settings, prevalence of handwashing with soap in emergency settings, and how to best promote handwashing in the refugee context, We propose conduct comprehensive field research in the ongoing humanitarian emergency in Maban County, Republic of South Sudan. Maban County is an appropriate location for such field research, since conditions preventable by handwashing, such as acute watery diarrhea and Hepatitis E, continue to be important causes of infectious disease in refugee camps located there hosting more than 100,000 Sudanese refugees.

Goal

The goal of this project is to provide practical recommendations for future efforts to promote handwashing behavior in Maban and, as appropriate, to other refugee settings.

Objectives

In the context of an ongoing humanitarian emergency in multiple refugee camps in Maban, South Sudan, we propose to achieve the following objectives by conducting a mixed methods study using both qualitative and quantitative approaches.

Implementing organizations

Org 1: To describe technology and communication strategies applied by various implementing organizations to increase handwashing with soap among refugees
Org 2: To explore in depth the challenges to implementing and maintaining handwashing promotion programs in a humanitarian emergency, from the perspective of implementing agencies

Refugee population
Ref 1: To describe handwashing-related knowledge, attitudes, and practices of refugees
Ref 2: To describe motivators and barriers to handwashing with soap among refugees
Ref 3: To examine the acceptability of and responsiveness among the refugee population to behavior change strategies promoted by hygiene promotion organizations
Ref 4: To examine the acceptability of and responsiveness among the refugee population handwashing hardware promoted by hygiene promotion organizations

Table 1 outlines the proposed data collection method, the specific measurement method and the target groups for each objective.

Table 1: Outline of objectives and methods of measurement

Objective	Proposed data collection method	Specific measurement method	Respondent(s)
Org 1	Qualitative	Key informant interviews	Members of implementing organizations at various levels
Org 2	Qualitative	Key informant interviews	Members of implementing organizations at various levels
Ref 1	Qualitative	In-depth interviews, focus group discussions	Mothers of children <5yrs Adult men Sheikhs
	Quantitative	Questionnaire, Direct (structured) observation	Female head of household
Ref 2	Qualitative	In-depth interviews, Focus group discussions	Mothers of children <5yrs Adult men Sheikhs
	Quantitative	Questionnaire	Female head of household
Ref 3	Qualitative	In-depth interviews, focus group discussions	Mothers of children <5yrs Adult men Sheikhs
Ref 4	Qualitative	In-depth interviews, focus group discussions	Mothers of children <5yrs Adult men Sheikhs

Research Methods

Descriptions of the camps and operating organizations:

Currently, four refugee camps are operating in Maban County, Upper Nile State, South Sudan: Doro, Yusuf Batil, Gendrassa, and Kaya. Two camps are organized by the Danish Refugee Council (DRC) and two by ACTED. The four organizations carrying out hygiene promotion in these camps are Oxfam (Gendrassa and Kaya), MEDAIR (Yusuf Batil), International Organization on Migration (IOM, Doro), and Solidarités International (Yusuf Batil).

We will collect information on handwashing promotion approaches, and challenges to implementing and maintaining handwashing promotion programs, among consenting staff at various levels at all four organizations. The research among refugees will be carried out among those in two of the camps. Selection of the two camps will be based on issues related to security, logistics, and the extent to which new refugees are entering the camps.

A brief description of the four camps is provided in Table 2. All data included here are obtained either from the UNHCR website describing the latest situation in Maban (http://preview.tinyurl.com/oomr7kc) or from the organizations carrying out hygiene promotion.

Table 2. Description of the refugee camps, Maban County, Upper Nile State, South Sudan, August 2013

Camp name	Camp organizer	Organization conducting hygiene promotion	# individuals	# households	Ethnicity (language) religion	Religion
Doro	DRC	IOM	45,705	12,118	Large Uduk and Ingassana	larger Christian population than in other camps
Yusuf Batil	DRC	Solidarités International and MEDAIR	38,083	9,414	Ingassana, Makaja	Mostly Muslim
Kaya	ACTED	Oxfam	17,960	4,445	Ingassana, Makaja, Jumjum, and Mufu	Mostly Muslim
Gendrassa	ACTED	Oxfam	16,577	4,171	Mostly Ingassana;	Mostly Muslim

Access to target populations:

We have described the proposed study to key colleagues within the Ministry of Health of the Republic of South Sudan, international organizations (UNHCR, UNICEF), and the leadership of each of the organizations implementing hygiene promotion in Maban County.

To gain access to households and individuals within the refugee camps themselves, the leaders of each community within the camp (referred to as "sheikh") will be made aware that a few households within some or all sheikh areas will be approached for possible recruitment into the study. The sheikhs will be informed that the research is aimed to understand disease prevention behaviors in the communities. We will collect information not only on handwashing but also on water, sanitation, and other hygiene (WASH) behaviors more broadly because of the substantial risk of bias that can result from maintaining a singular focus on handwashing.[1]

Data collection methods

Implementing organizations: data collection

In order to meet objectives **Org 1 and Org 2,** we propose to conduct key informant interviews with implementing organization staff within each of the camps to understand handwashing promotions strategies used and the challenges faced within the camps. Each of the following organizations has been active in handwashing promotion in Maban: Oxfam, Medair, Solidarités International, and IOM. Eligible organizations will include those directly promoting hygiene in the camps, as well as funding or coordinating organizations such as UNHCR. Potential categories of respondents are shown in Table 3. We will attempt to identify key informants who have extensive experience in designing, administering, implementing, or delivering hygiene promotion in the camp settings.

Participant selection, sampling and consent

Within the organizations carrying out handwashing promotion, we will start by asking the senior most staff person in charge of handwashing promotion to take part. If that person consents to take part, we will complete the interview, as described below. We will use the snowball sampling strategy to identify additional respondents working on hygiene promotion. Specifically, at the completion of interview with the senior most staff person, we will ask for names of staff persons at the next most junior level in the hygiene promotion staff, and so on, until we complete interviews with individuals at each of the levels in that organization's hierarchy of hygiene promotion staff. In addition, we will attempt to interview more senior staff at the country level within the organization overseeing decisions about funding and implementation of WASH activities.

Table 3. Targets by respondent category for key informant interviews with implementing organizations

Respondent category	# respondents
Hygiene promotion program managers	4
Paid hygiene promoters	3
Volunteer (incentivized or purely voluntary) hygiene promoters	3
Senior WASH staff within implementing organization	4

[1] An example of this comes from the principal investigator's experience in Madagascar where notification to the community leader regarding research on household water treatment resulted in 100% of households being found to have residual chlorine (marker of household water treatment) on the following day when the data collection was completed. Handwashing-related information is similarly subject to substantial bias because of widely appreciated social norms of washing hands.

Staff overseeing funding decisions within and above WASH	2

Consent:

We will obtain verbal informed consent as described in the "Human Subjects Research Concerns" section in this protocol. Briefly, verbal informed consent will be obtained from all respondents prior to data collection. During the consent process, all aspects of the study will be clarified including confidentiality, the rights of the respondent including the option to stop the interview at any time and/or to remove himself/herself from the study, possible risks, benefits for taking part in the study and issues related to privacy. We will also clarify that the respondent can refuse or choose to stop the audio recording at any time.

Procedures*:*

After obtaining verbal informed consent (Appendix 1: Information sheet for verbal consent: Key informant interviews with NGO staff working in Maban, South Sudan)), we will carry out an open-ended interview with the respondent for approximately 1 hour face-to-face. If the selected informant is no longer working in Maban, we will request to conduct the interview by Skype or telephone. Key informant interviews will be carried out in English or, with the help of an interpreter, in Arabic. The interviews will be tape recorded; the investigators will review the interview recordings on an ongoing basis. Interview questions for participants enrolled later will be modified according to the information gathered during the initial interviews. An iterative process involving the review of completed interviews and additional questioning will continue until data saturation is reached.

During key informant interviews, we will use an interview guide (Appendix 2: Key informant interview guide) to address the following topics. Typical of open-ended interviewing, additional questions beyond those specified in the interview guide will be asked in order to elaborate on the respondents' responses. A preliminary list of topics includes:

- Process of developing handwashing promotion strategies
- Description of handwashing practice in camps
    - Before the emergency
    - Major challenges/barriers of handwashing practice in camp settings
    - Motivators of good handwashing practice in camp settings
- Description of organization's handwashing promotion strategy
    - Goal and objectives of strategy, including specific behavior change goals and objectives
    - Materials, messages, and activities to address stated (or unstated) goal and objectives
    - Extent to which handwashing is part of a broader hygiene promotion strategy, and prioritization of handwashing alongside or above other hygiene behaviors
    - Performance of research before / during development or monitoring used to enhance handwashing promotion strategy
    - Who delivers the messages, their capability and training
    - Description of successful and less successful strategies
- Perceived acceptability of handwashing promotion strategy to refugee population
- Perceived comprehensibility and persuasiveness of messages

- Perceptions of approaches with greatest impact on behavioral change
    - Handwashing station locations
    - Type of soap
    - Communication strategy
- Challenges to implementing program activities, including but not limited to the following possible sources of difficulty
    - Population diversity: language, ethnic, religious barriers
    - Availability of qualified staff
    - Access to needed hardware
    - Quality of available hardware
    - Acceptability of hardware
    - Adequacy of funding
    - Prioritization of handwashing among WASH or other health/non-health priorities
- Suggestions regarding ways to improve handwashing promotion
- (For Senior WASH staff) Description of monitoring and evaluation efforts
    - Measurement of handwashing behavior, current approaches and challenges
- (For Senior WASH staff) Discussion of knowledge gaps
- (For Senior WASH staff) Coordination efforts for implementation

Refugee population: qualitative data collection

To meet objectives REF 1, 2 ,3, and 4, we propose to conduct in-depth interviews and group discussions among refugees with female caregivers of young children < 5 years old, as well, adult men, and sheikhs. In Table 4, we indicate the initial targets for number of group discussions and interviews for each group. However, we anticipate that we will modify the number of in-depth interviews or discussions in order to reach data saturation from each of the proposed respondent categories.

Table 4. Targets for group discussions and interviews among refugees, by respondent type

Respondent category	# in-depth interviews	# group discussions
Female caregivers of young children < 5 years old (age 18 or older)	20	4
Adult men including informal and formal leaders (age 18 or older)	0	4
Sheikhs	0	4

Participant selection and sampling:

We propose to request hygiene promotion implementation staff (e.g. supervisors, hygiene promoters) to provide names of communicative respondents in the different respondent categories described below.

In-depth interviews

We anticipate carrying out a total of 20 in-depth interviews with female caregiver respondents, including 10 interviews in each of the selected camps. Purposive sampling will be used to identify female

caregivers of young children representing the following potential sources of varied opinion and behavior:

- Ethnicity: Ingassana, Makaja, and Uduk at a minimum
- Religion: Muslim, Christian
- Responsiveness to hygiene promotion: either particularly compliant or particularly skeptical or non-compliant (in the view of the hygiene promotion staff)

Group Discussions

We aim to carry out group discussions with three types of respondents including female caregivers of small children, adult men, and sheikhs, with four group discussions of each type of respondent conducted. The goal of the group discussions is to validate information collected through the key informant and in-depth interviews and to identify potential ways to improve hygiene promotion in the camp settings. Groups of women will be comprised of separate groups of women who have either been receptive to handwashing promotion or have been resistant or non-compliant. Women who participated in the in-depth interviews will not be eligible. The male groups will include men who play either a formal or informal leadership role such as religious leaders, teachers, health providers or dynamic men who are well respected and natural leaders in their communities. Discussions with sheikhs, the dominant opinion leaders and decision makers in the camps, will be conducted separately. Once again, we will seek the assistance of the hygiene promoters to identify appropriate candidates to participate in the group discussions.

Consent*:*

We will obtain verbal informed for in-depth interviews (Appendix 3: Information Sheet for verbal consent: In-depth interviews with refugees in Maban, South Sudan) and group discussions (Appendix 5: Information sheet for verbal consent: Group discussions with refugees in Maban, South Sudan) as described in the "Human Subjects Research Concerns" section in this protocol. Briefly, verbal informed consent will be obtained from all respondents prior to data collection. During the consent process, all aspects of the study will be clarified including confidentiality, the rights of the respondent including the option to stop the interview at any time and/or to remove himself/herself from the study, possible risks, benefits for taking part in the study and issues related to privacy. We will also clarify that the respondent can refuse or choose to stop the audio recording at any time.

Procedures:

Directly prior to data collection, we will hold training for the data collectors. The training will include sessions on the qualitative data collection techniques employed during the study, with a focus on open-ended questioning, approaches used when interacting with respondents, and research ethics and ethical procedures. During the training, the researchers will be introduced to the study objectives, the methodology, and the instruments. Sessions will also be devoted to obtaining informed consent. Training methods will be designed to encourage participation and ensure practical experience. A pre-test of the study instruments will be conducted during the training; based on the field test and input provided by the study team, the study instruments will subsequently be modified and finalized.

In-depth Interviews

After obtaining consent (Appendix 3: Information Sheet for verbal consent: In-depth interviews with refugees in Maban, South Sudan), trained field staff will administer in-depth interviews that are semi-structured and last no longer than 1h 15 minutes; if necessary, data collectors may need to complete the interview during a second visit. While a guide (see Appendix 4: In-depth interview guide) will be used, the interviewers may ask related questions in order to increase clarity or to delve in-depth regarding a particular subject area. In addition, follow up interviews may be conducted to fill in any information gaps. Efforts will be made to conduct the in-depth interviews in a private setting, generally in the household. The data collectors will audio record the in-depth interviews; hand written notes of information that will give additional insights into the data will also be taken. The audio recordings will be transcribed and translated from Arabic into English after the interview is completed. While the data collectors will speak Arabic, local translators may be used if the researchers find it difficult to understand the Arabic or if Arabic is not spoken by the respondent.

Group Discussions

After obtaining consent (Appendix 5: Information sheet for verbal consent: Group discussions with refugees in Maban, South Sudan), trained field staff will guide a group discussion for 1-2 hours using a study guide (Appendix 6: Group Discussion Guide). While a guide will be used, the interviewers may ask related questions in order to increase clarity, delve in-depth regarding a particular subject area, and encourage participation of multiple group members. The data collectors will audio record and group discussions; hand written notes of information that will give additional insights into the data will also be taken. The audio recordings will be transcribed and translated from Arabic into English after the interview is completed. While the data collectors will speak Arabic, local translators may be used if the researchers find it difficult to understand the Arabic or if Arabic is not spoken by the respondent.

Content of in-depth interviews and discussions

During in-depth interviews and group discussions, we will address the following topics, among others (Appendix 4: In-depth interview guide, Appendix 6: Group discussion guide).

- (In-depth interviews only) Background information
- Health concerns
    - Major health concerns before coming to the camp and reasons for concerns
    - Current health concerns and reasons for concerns
    - Organizations working in area that are addressing these health concerns
    - How to decrease risk related to health issues raised
- Handwashing practices prior to emergency
    - At which times are hands washed? Why are hands washed at these times?
    - Which cleansing agents are used to wash hands, in general and at specific times (e.g. similar materials used to wash hands after defecation as before eating?)
    - Where does handwashing take place?
    - Did anyone remind the respondent or did the respondent remind anyone to wash hands?

    - What were the barriers to good handwashing practice?
- Current handwashing norms, habits, motivators and barriers
    - Is it the bait of people in this camp to wash hands? Why, why not? How did it develop?
    - What are your expectations of family and those around you regarding hand cleanliness?
    - How does washing your hands make you feel? (motivators)
    - Why is it importation for caregivers of young children to wash hands? When?
    - How is handwashing behavior different in the camp setting, compared to the respondent's home community, or other prior residential locations?
    - What are things that prevent you from washing your hands when you want to?
    - What happens with regard to hygiene when someone in the home is ill? Why?
- Handwashing knowledge
    - What do you think is the best way to wash hands?
    - Who taught you how to wash your hands?
    - Why is soap used to wash hands? What will happen if soap is not used? (What will happen if we wash only with water?) To what extent is using soap necessary when washing hands in order to prevent illness?
    - How does ash compare to soap? What do you think ash does? To what extent is ash helpful for washing hands?
    - Perceptions about cleanliness or disgust of following things/activities:
        - Dirt from house cleaning
        - Mud
        - Food during cooking
        - Animal feces
        - Your young child's feces
        - Your own feces
    - How can you remove the dirty or disgusting things from your hands?
    - What problems might you have if you do not wash your hands before eating? Why do you think you could get sick if you do not wash your hands before eating? Why/how?
    - What problems might you have if you do not wash your hands before cooking/preparing/serving food? Why do you think you could get sick if you do not wash your hands before cooking/preparing/serving food? Why/how?
    - What kind of problems could other members of your family have if you do not wash your hands before cooking/preparing/serving food?

- Promotion of handwashing in camp
    - Which materials have been made available by implementing organizations to facilitate handwashing?
    - Handwashing stations at communal and/or household latrines
    - Containers to dispense water for handwashing at the household level: types, taps, functionality, volume
    - Containers to hold soap, ash, mud, or other cleanser
    - Cleansing agents: beauty bar soap, multi-purpose bar soap, liquid soap, ash, mud, other cleansers

    - Perceptions about communal vs. household level handwashing stations
- Are handwashing materials in general, and at locations where hands need to be washed to prevent possible pathogen transmission? (Accessible, Affordable, Convenient, Acceptable/Appropriate
- How can we overcome the barriers to handwashing that we have identified? Please propose potential solutions to the barriers that have been identified.
- When and where did respondents learn about handwashing? What messages regarding handwashing were conveyed? How did respondents perceive the messages?
- Who conveyed the information? What did you think of the person(s) giving you those messages? To what extent was s/he successful at passing the messages? How could that person have been more successful at encouraging people to change their behaviors?
- What are some recommendations you could give to improve present approach for handwashing? What additional information would they be interested in receiving on handwashing?

Refugee population: quantitative data collection

To address objectives REF 1 and REF 2, we propose to conduct a cross-sectional study of refugee households. There will be two parts to the data collection: 1) household questionnaire (N=800 households), and 2) structured observations (N=200 households).

Participant selection and sampling strategy

Each household typically is comprised of the several individuals who are assigned to live in one tent. We will identify the female head of household as the main respondent for the quantitative data collection because, based on our observations in the refugee communities, women and girls are charged with managing household duties related to water, sanitation, and hygiene. We will select 200 households using a simple random sampling method in each camp, for a total of 800 households. Specifically, from UNHCR, we will obtain registration records listing the identification numbers for each household registered in the camp. We will sort the list according to numerical order of the household identification number. The Sampling Interval (SI) will be the total number of households in the camp divided by 200 (the # of households to be enrolled per camp). We will use a random number generator in Microsoft Excel to generate the Random Start (RS); the RS will be between a number between 1 and the Sampling Interval. The Random Start will be the first household in the numerically-sorted list of identification numbers. Thus, the list of households to be interviewed will be numerically generated as follows: RS, RS+ SI, RS+ (2*SI), RS+(3*SI)….RS+(249*SI).

We will generate a sampling list of 250 households, allowing for a 25% buffer in case some of the first 200 households on the list for the camp cannot be identified or refuse consent for participation.

Consent*:*

A data collector will visit the household and request to speak with the female head of household. The data collector will describe the study and request verbal informed consent (Appendix 7: Information sheet for verbal consent: Household survey and observation with female head of household in Maban,

south Sudan). Consent procedures are described below (see section "Human subjects research concerns").

Procedures*:*

Upon obtaining consent, the data collector will conduct a rapid observation of the respondent's dwelling and compound and interview the female head of household (Appendix 8: Household questionnaire). The rapid observations will describe the availability of materials anywhere in the dwelling, and specifically at handwashing locations for use after toileting, before food preparation or eating, and other critical times. The questionnaire, which will be translated into Arabic, will yield information on knowledge, self-described handwashing practices, awareness of handwashing messages promoted by the implementing organizations, exposure to various channels of communication used for hygiene promotion, and awareness and risk perception regarding Hepatitis E. We will employ objective measures of handwashing behavior because of the concern for bias with self-reported indicators.[6] Information collected using the household survey (Appendix 8) aims to obtain the following information:

Household survey

- Rapid observation
    - Presence of handwashing materials (soap, tippy tap or other water-dispensing device)
- Demographic/ socioeconomic information: current and previous household assets, Education of respondent, and head of household, Household composition
- Disease prevalence (Hepatitis E, diarrheal disease, respiratory illness) in the household
- Perception of disease risk and severity for Hepatitis E, diarrheal disease, respiratory illness
- Knowledge of critical times for handwashing
- Knowledge of steps for handwashing (Handwashing demonstration)
- Presence of handwashing materials (rapid observation)
    - Types of handwashing materials available (e.g. ration soap, beauty bar soap)
    - Placement of handwashing materials
    - Distance to water source
    - Distance to latrine
- Self-reported handwashing behavior (current and before the onset of the emergency) at critical times and frequency per day
- Psychosocial determinants of handwashing behavior (barriers, habit, planning)
- Water access and quality; soap purchase/trade
- Sanitation access and maintenance
- Recognition of messages and activities used by implementing organization to promote handwashing in the camp, such as
    - Recent visit by hygiene promoter
    - Recall of message content: e.g. song lyrics, recognition of visual aids

Structured observation:

Among a subset of 200 participating households, 100 each in Doro and Gendrassa Camps, we will conduct 4-hour direct (structured) observations (Appendix 9) in the household compound to obtain detailed information regarding handwashing behavior overall and at critical times. We are seeking to

observe the handwashing behavior of everyone in the household. Data collected by structured observation will reflect the following:

- Occurrence of critical events
    - Fecal contact: defecation, toileting, cleaning or child's bottom, cleaning / contact with animal feces
    - Food contact: preparing, serving, eating, feeding
    - Breastfeeding
    - Respiratory secretion contact: coughing or sneezing into hands, cleaning nose
- Handwashing behavior
    - Whether hands are washed: one or both hands
    - How hands are washed: water alone, soap, type of soap, ash, mud, other cleanser

Sample size estimation

Sample size estimations were calculated using Epi Info v6 and stplan, which is freely available from M. D. Anderson Cancer Center in Houston, TX (https://biostatistics.mdanderson.org/SoftwareDownload/SingleSoftware.aspx?Software_Id=41).

Qualitative data collection: We have specified the targets for data collection among implementing organization staff (Table 3) and refugees (Table 4). However, these are only targets. As is customary with qualitative research, we will need to increase or decrease the number within reason based on the point at which we reach data saturation for each respondent category; data saturation refers to the time at which the investigators determine that substantive new information is no longer being generated with additional interviews or discussions.[7, 8]

Quantitative data collection:

- Household questionnaires: To describe the proportion of households with soap and water at the handwashing place near the shared family latrine, the sample size calculation to estimate was based on the following assumptions:
    - Maximum number of households in the camp will be approximately 12,000.
    - 50% of households will be observed to have soap and water at the handwashing place near the latrine
    - Acceptable margin of error will be ± 7%
    - 95% confidence level

  Based on these assumptions, we estimate that we will need to conduct the household data collection among 193 households per camp. We propose to increase the sample size to 200 households per camp in order to allow for the possibility of missing data in a few households.

- Structured observations: The sample size calculation to estimate the number of structured 4-hour observations needed is based on the following assumptions:
    - Approximately 5 toilet use or other fecal contact events per 4 hour structured observation. In a study of residents of Kakuma refugee camp in Kenya, Biran and colleagues found approximately 10 events of interest per 4 hours of observation per

household, of which 64% were fecal contact events; however, they conducted two structured observations of 2 hours each, timed to maximize capture of toilet use events. We propose to conduct one 4-hour observation per household and estimate that during that time, we will capture 4 fecal contact events.

- Among households *without* soap and water at the handwashing place near the latrine, we will observe handwashing with soap after 20% of fecal contact events[4]
- Among households *with* soap and water at the handwashing place near the latrine, we will observe handwashing with soap after 25% of fecal contact events
- 95% confidence level
- 80% power

Based on these assumptions, we estimate that we will need to observe 1091 fecal contact events in total or, if assuming 5 fecal contact events per 4-hour household observation, 218 structured observations. Based on the available field staff and required logistics to conduct the quantitative data collection, we propose to conduct a total of 200 structured observations, 100 in each of two camps.

Analysis

Qualitative data: (Addressing objectives **ORG 1, ORG 2, REF 1-4**)

Once the full sets of interviews and group discussions are completed, transcribed, translated and entered in English into Microsoft Word, we will review the transcripts and develop a coding system for each of the 3 qualitative data collection instruments (Key informant interviews with NGO staff, In-depth interviews with refugees, group discussion with refugees). Translations into English will be done by writers fluent in both Arabic and English. Coding categories will be derived from the initial research themes and questions, as well as key concepts that emerge during data collection. Coding of the interview transcripts will be done on ATLAS.ti, a text-organizing software. Content analysis will be used to identify trends of concepts in and across individual codes. Data triangulation will be used to ensure that the findings are validated across different respondents, and between interviews and group discussions. Efforts will also be made to identify direct quotations that illuminate key data findings.

Quantitative analysis: (Addressing objectives **REF 1-4**)

We will first analyze data from the rapid observations and questionnaires from refugees in a descriptive fashion. We will construct tables indicating the frequencies of the variables of interest in the overall study sample, as well as stratified by refugee camp. We will describe handwashing-related knowledge, attitudes, and behaviors. Using structured observation data, we will describe the number of events observed overall, and for each type of critical event (e.g. fecal contact, before eating). Using structured observation data, we will calculate the proportion of events accompanied by handwashing w/ or w/o soap (or other materials such as ash/mud if appropriate).

Indicators of handwashing behavior will include the following:

- Questionnaire
  - Handwashing at critical times

    - Frequency of handwashing overall, and with soap
- Rapid observation
    - Presence of handwashing materials at the shared family latrine
    - Presence of water in a kettle ibrik for handwashing at food-related events
    - Use of soap when asked to demonstrate typical handwashing behavior
- Structured observation
    - Proportion of observed events accompanied by handwashing with and without soap
    - Proportion of observed fecal contact events accompanied by handwashing with and without soap
    - Proportion of observed food preparation events accompanied by handwashing with and without soap

A priori, we specify that our key indicators of interest are:

- Rapid observation: proportion of handwashing stations near the shared family latrine observed to have soap and water present
- Structured observation: the proportion of toileting events followed by handwashing

Among the 800 households, we will conduct exploratory analyses to assess whether various independent variables are associated with observed presence of soap and water at the handwashing place near the shared family latrine. The independent variables of interest include, but are not limited to:

- Wealth (i.e. reported household assets) in home of origin, and current status
- Ethnic background
- Educational achievement of respondent, and head of household
- Availability of soap and water at the shared family latrine handwashing location
- Type of water container available at the handwashing location
- Type of cleansing agent available at the handwashing location
- Reported purchase of soap for handwashing within the previous month
- Recognition of messages used by implementing organizations to promote handwashing
- Recall of activities used by implementing organization to promote handwashing in the camp

Among households included in the structured observations, we will also conduct exploratory analyses to assess whether various independent variables are associated with observed handwashing with soap (outcome). The independent variable of greatest interest is the observed presence of soap and water at the handwashing station near the shared family latrine, but also others described above this paragraph will be evaluated.

We will use log binomial regression to calculate risk ratios (and 95% confidence intervals) to describe the relationship between the independent variables of interest and each of the two pre-specified outcome variables of interest. We will account for clustering at the camp level and the sheikh level. As needed, we will attempt to adjust for potential confounders for the relationship between exposures of interest

and outcomes; such potential confounders are education of the respondent or the male head of household, wealth status before coming to camp, assets observed in the tent, # months since arrival in Maban, religion, and ethnic group. We will include potential confounders in the multivariate model if they are shown to be associated with the outcome of interest at $p < .20$ in bivariate analysis.

Recommendations

Based on the extensive information generated by the other objectives, we will provide practical recommendations for future efforts to promote handwashing behavior in Maban and other refugee settings. The domains covered by our recommendations will include:

- Enabling environment: funding, prioritization of handwashing, availability of formative research or monitoring data, expertise to analyze/make use of data for programmatic purposes, responsiveness to monitoring data
- Overall strategy for handwashing promotion, including both hardware and behavior change communication
- Materials: type, functionality, placement, repair, and consistent supply of necessary materials for handwashing, acceptability
- Messages: motivators used to improve handwashing behavior in the population
- Communication channels: availability of qualified hygiene promotion staff, the characteristics and selection criteria, use of other methods to promote behavior change
- Proposal for future research

We will provide recommendations at two time points. First, we will examine findings from the assessment of materials and communal handwashing stations, as well as our initial impressions based on the qualitative data collection. Based on this very preliminary analysis, we will conduct a field debriefing in which we will communicate our recommendations to hygiene promotion staff within the four camps in Maban. To inform the larger audience of stakeholders at the global and regional levels, we will develop a robust set of recommendations once we have done exhaustive analyses of the qualitative and quantitative data.

Human subjects research concerns

Consent

We will seek voluntary informed consent for participation in the qualitative and quantitative data collection. We will seek *verbal* informed consent for the participation, rather than written. The data collection represents no more than minimal risk to the participants. We will be interviewing refugees, either because they are working as hygiene promoters or because they are living in the Maban refugee camps. We are concerned about suspicion on the part of the refugee population regarding placing signatures on official forms, particularly in a largely illiterate population. The literacy rate, particularly among women in this region, is expected to be low; as an example, the literacy rate is just 16% among women in South Sudan https://www.cia.gov/library/publications/the-world-factbook/fields/2103.html).

Information sheets contain information regarding the following: study purpose, voluntary nature of participation, the nature of participation, explanation of benefits and risks, lack of compensation, confidentiality, and right to withdrawal or refusal to answer at any time.

Hygiene promotion staff: The information sheet for key informants among the hygiene promotion agencies will be available in both English and Arabic, given that some key informants are likely only to speak Arabic, and some likely to speak only English. The information sheet will be read aloud to the participant in the language of his/her choice.

Refugees: The information sheets for data collection among refugees will be translated into Arabic. The information sheet will be read aloud to the participant in Arabic, and then a copy will be handed to the participant. We will attempt to ensure that some field staff will be able to speak Arabic as well as Ingassana and Makaja, two of the largest tribal representations among the refugees. During training, we will ensure that the data collectors can explain the consent form using Arabic, Ingassana, and Makaja as needed.

In the consent form, we indicate that the purpose of the study is to understand how refugees prevent diseases in their homes. We do not specify that handwashing is the primary behavior of interest for this analysis for two reasons: 1) we will be collecting information about water and sanitation behaviors other than handwashing because they are relevant to describing the hygiene context; 2) by indicating too strongly that the focus of the study is on handwashing, we face a strong risk of reactivity and, thus, bias in the data collection. Particularly given the ongoing hygiene promotion, there may be a heightened sense of the social norm of handwashing among refugees. Given that, if the respondents are oriented too strongly towards handwashing as a focus of the study, they may seek to provide responses that would be consistent with the social norm rather than describing their own perceptions and behaviors, reducing the validity of the study substantially.

Justice

We are using purposive sampling of key informants because we seek to obtain a spectrum of viewpoints regarding the challenges to handwashing promotion from the perspective of individuals working at various levels of hygiene promotion. Similarly, in the qualitative data collection among refugees, we will purposively sample in order to obtain viewpoints from people in key roles (e.g. mothers of young children, adult men, sheikhs) who represent the most common ethnic and religious groups in the refugee population.

In the quantitative data collection among refugee households, we propose to use simple random sampling of households. Therefore, we will not be selecting for or against specific tribes, religions, or wealth classes.

Compensations, Risks, and Benefits

No respondent will receive any type of compensation or incentive to participate in this study. The risk to the respondents is no greater than minimal. Some respondents may experience some discomfort

from having a field worker observing them in their home. Every effort will be made for the field worker to be unobtrusive and will be trained to observe objectively without judgment about the respondent's behavior.
There is no direct benefit to the individual respondent from this study, but findings from the study will help to inform the Ministry of Health, UNHCR, and organizations promoting hygiene to improve their disease prevention efforts in refugee settings in Maban and elsewhere.
Given that this is solely an observational study, we do not anticipate that a respondent will experience any adverse event due to the proposed study methods.

Confidentiality and Privacy
The field workers will be trained to maintain privacy and confidentiality of respondents. The interviews with each respondent will be conducted in private to the fullest extent possible. The consent form will contain the full names of the respondent, and his/her unique identification number, as well as the household registration number. Questionnaires will contain the name of unique ID number of each respondent and one name for the main respondent. The structured observation data collected from households will contain the household registration number. This form will not contain any identifying information of individual household members but will contain the gender and age categories of these household members. Field staff supervisors will ensure confidentiality and privacy are maintained by observing the field staff on a monthly basis.

Access to data
For all data collected from participants, paper documents will be kept in a locked cabinet. The core team of investigators will have sole access to the locked cabinet. All electronic data files will be maintained in password protected files, with passwords available only to the core team.
Paper documents containing data will be retained until the datasets are clean, at which point they will be disposed. After the disposal of the paper documents, the electronic databases will be stripped of household and individual registration numbers and only study-assigned unique identifiers will be retained.

Data ownership and authorship

All data will reside with the principal investigator, Dr. Pavani K. Ram, at the University at Buffalo. Analyses will be done by the principal investigators and co-investigators, as outlined in the responsibilities of the collaborators. We will write up results in 1-2 reports and in 3-4 manuscripts; the latter will be submitted for publication in peer-reviewed journals. Authorship on all publications resulting from this work will be based on the guidelines published in Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals (www.icmje.org).

Dissemination

We propose to share findings in a long report format with the Ministry of Health of the Republic of South Sudan, UNHCR in South Sudan and Geneva, as well as other WASH partners. We will organize a virtual meeting to disseminate the findings to colleagues in South Sudan. In addition, in order to extend the reach of the wealth of information that should be generated by this study, we propose to present the findings at the Emergency Environmental Health Forum, which is held approximately every 18 months and is attended by most of the organizations providing WASH services in humanitarian emergencies.

In addition to these dissemination strategies, the core team of investigators will prepare and seek to publish a series of papers in peer-reviewed journals. These will be shared with the Ministry of Health of the Republic of South Sudan and UNHCR.

Funding

Funding for this study is provided by the US Centers for Disease Control and Prevention to the University at Buffalo. The University at Buffalo is arranging to subcontract with Oxfam Great Britain (South Sudan office). Oxfam is expected to hire and manage field staff and logistics for the data collection.

Timeline

Given the extensive nature of the qualitative data to be collected, we advise that the data analysis period will be a lengthy one. The timeline is below.

	2013										2014											
Activities / Month	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Draft study protocol / review / revise																						
Develop data collection tools																						
Human subjects research oversight																						
Preliminary visit and initial qualitative data collection (PK Ram)																						
Subcontracting																						
Hiring of local staff																						
Piloting of data collection tools																						
Training of local staff																						
Data collection (qualitative and quantitative data)																						
Debriefing in the field based on initial impressions and environmental assessment																						
Transcription of **qualitative** data																						
Coding of **qualitative** data																						
Analysis of **qualitative** data																						
Quantitative data entry																						
Quantitative data cleaning																						
Analysis of **quantitative** data																						
Interpretation and preparation of final recommendations																						
Draft report to CDC, UNHCR, and Maban WASH partners																						
Feedback from CDC, UNHCR, and Maban WASH partners																						
Final report to CDC, UNHCR, and Maban WASH partners																						
Dissemination workshop (or presentation at EEHF / Focus on Handwashing)																						

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Appendix 1: Information Sheet for verbal consent: Key Informant Interviews with NGO staff working in Maban, South Sudan

Principal Investigators: Pavani K. Ram and Lauren Blum
Name of organization: University at Buffalo
Title of Project: Handwashing behavior and approaches to handwashing promotion in the ongoing humanitarian emergency in South Sudan

Purpose
The purpose of this research activity is to examine hygiene promotion programs and handwashing behaviors among refugees. Through these interviews, our goal is to understand the process of developing handwashing promotion strategies, to describe on-going or previous strategies, your opinion about the acceptability and impact of current approaches on behavior change and hardware, challenges to implementation, coordination, monitoring and evaluation of programs, and your suggestions or ideas how to improve handwashing promotion approaches. Information from this research may be able to help organization improve hygiene promotion programs for refugees and other displaced populations.

Eligibility:
We are asking you to participate because you are involved in hygiene promotion activities carried out among displaced populations.

Procedure:
If you agree to take part in the study, I will ask to interview you within the next 2 weeks for about one hour. I will record the interview using a voice recorder. After the first interview, I may need to follow up to clarify points made during our interaction. I will likely want to talk to you later to share some of our preliminary findings and to ask some additional questions, and seek your feedback regarding the ongoing research.

Participant Rights:
Your participation in this study is completely voluntary. Refusal to take part will not result in any penalty or loss of benefits to which you are otherwise entitled. You have the right to refuse to participate in the study now or at any time during the interview. You can also refuse to respond to specific questions if you choose.

Risks:
We do not anticipate any risks to you from taking part in this study. We will be asking you questions about hygiene and how it is promoted among refugees. You may feel some discomfort to answer these questions. Please remember that you can choose to answer or not answer any question that we ask you.

Benefits:

You will not receive any compensation or direct benefit from taking part in the study. By talking to you, we will be able to understand current approaches, gaps, and challenges to handwashing promotion among displaced populations.

Confidentiality:
All the information obtained from you will be kept confidential and will be strictly used for the purpose of this study. We will never identify you by name when reporting the results of the study. Five years after the investigation, data collection forms and audio recordings will be destroyed.

Contact Information:
Feel free to ask me any questions you have about the study. If you have questions about this study that I cannot adequately address, or if you feel that you have been treated unfairly or have been hurt by joining the study, you may contact Pavani Ram, the principal investigator, at +1-716-829-5380 or by email at pkram@buffalo.edu.
If you have any questions, concerns, or complaints about your rights as a research subject or want to speak to someone who is not associated with the research, you can contact:

(In South Sudan)
Department of Research, Ministry of Health, South Sudan
Lea Moja Tel: 0926595329

(In the USA)
Social and Behavioral Science Institutional Review Board, University at Buffalo
516 Capen Hall, State University of New York at Buffalo, Buffalo, NY 14260
Phone +1 716-645-6474, Email: sbsirb@reserach.buffalo.edu

After the interviewer has fully explained the study, she will ask if the respondent has any questions. If the respondent does not have any questions and is willing, s/he should let the interviewer know whether or not s/he chooses to participate. This will serve as oral consent.

Do you have any questions? Yes No

Do you agree to participate in this project? Yes No

Name of Subject:_____ Date : _____

Organization represented by Subject: _____

Appendix 2: Key Informant Interview Guide (Organization staff)

Background Information

- Official title at (organization)
- Length of time in this position
- Functions in this position
- For respondent as an individual and for organization as a whole,
    - Time devoted to populations affected by humanitarian emergencies
    - Extent to which work in "development "or non-emergency settings
- Where organization currently working
- In which locations organization takes lead for WASH
- Role in regard to humanitarian emergencies

Hand Washing in Camps

There has recently been much attention regarding the importance of handwashing in preventing infection in resource poor settings in the "development" context. However, less is known about handwashing in the humanitarian emergency context.

- Based on your experience, describe typical hand hygiene practices of refugees and/or internally emergency-affected persons before hygiene promotion efforts are initiated in the different settings that you work.
- Please describe the major challenges/barriers regarding handwashing in emergency-affected populations.
    - How do these challenges differ from those faced by people who are not emergency-affected?
- Please describe motivators of good handwashing practices among emergency-affected populations.
    - To what extent do these differ from motivators for handwashing under normal circumstances?

Strategies for Promotion of Handwashing

We know that a lot of work has been done recently to promote good handwashing practices. We are interested to learn about the approaches used in emergency-affected populations

- Describe typical strategies used by your organization to promote handwashing in emergency settings
- Describe behavior change strategies used to increase / strengthen / foster handwashing behavior within the camps
    - How is this information about handwashing conveyed to populations?
    - Who generally conveys the information?
    - To whom is information conveyed?
- Describe the most successful strategies that you have seen implemented, either by your organization, or others you have worked with or observed
    - Why are they successful?

- Describe less successful strategies
    - Why are they unsuccessful?
- To what extent are demographic and sociocultural variations within camps considered when promoting hygiene interventions?
    - Sufficient
    - Ways to improve
- Have you observed or implemented novel or unconventional strategies to promote handwashing in emergency context? If yes, please describe the strategies and how well they worked or didn't work, and why.
- Tell me about any strategies you feel are not used or adequately explored to improve handwashing practices.
    - Why not used?
    - Why potentially useful?
    - Please describe potential barriers to implementation
- Describe handwashing hardware (physical materials) typically provided to emergency-affected populations. By hardware, I am referring to any physical materials that may be provided to encourage handwashing, including but not limited to soap and containers to dispense water for handwashing.
    - Please describe typical approaches to distributing soap to emergency-affected persons, in your experience:
        - To what extent is the distribution of soap adequate to meet the handwashing needs of the emergency-affected population?
            - Please reflect on the quantity of soap, the type of soap, as well as whether hardware items other than soap are needed.
            - By type of soap, I am referring to beauty bar soap (e.g. brand names Lux, Lifebuoy), multipurpose bar soap, liquid soap, soapy water?
- Describe the appropriateness of the hardware provided for handwashing in general, and more specifically
        - For use within individual households, as well as communal points.
        - For deployment in the acute phase of an emergency, as well as in the post-acute phase.
- Which challenges have you experienced in distributing such hardware?
- Please describe the barriers to use of this hardware.
- Which features of the hardware are particularly well-liked?
- How can the hardware be improved to better fit the needs of emergency-affected persons?
- Please describe other hardware that you would like to see introduced
- Are there efforts to assess which hardware is most effective in the camps? If yes, please describe them.
- Are there efforts to assess which hardware is most acceptable in camps? If yes, please describe them.

Measuring Handwashing (for Senior WASH Staff)

Now I would like to ask you a few questions about how handwashing is measured in emergency-affected populations with whom you have worked.

- To what extent is handwashing behavior measured in emergency-affected populations, such as in refugee camps?
    - If not commonly measured, why?
    - Please describe the extent to which handwashing behavior is measured in other programs among non-emergency-affected populations in informant's organization
- Please describe the problems with how handwashing behavior is measured in this setting
    - Examples of problems experienced in informant's organization
- What type of information is available within your organization on the prevalence of handwashing behavior in emergency-affected populations (e.g. reports to donors, internal documents, publications)?
    - How is this information used?
    - Can the information be shared with us?
- Extent to which handwashing promotion programs are monitored or evaluated to estimate outputs or outcomes of program
    - To what extent are programs sufficiently monitored and evaluated?
- Have evaluations of handwashing behavior promotion in emergency-affected populations been conducted or commissioned by your organization?
    - Can the information be shared with us?
- Emergency settings in which an evaluation of handwashing promotion would be useful (describe)
    - Why those contexts particularly relevant / useful for monitoring?
    - Any current or anticipated upcoming settings in which evaluation would be useful?

Knowledge Gaps (for Senior WASH staff)

I would now like to move to another topic. Specifically, I would like to know what you consider to be sector-wide gaps in knowledge related to handwashing behavior and promotional strategies associated with handwashing in emergency-affected populations. I'd also like to explore your opinions and ideas on how to overcome these knowledge gaps.

- Please describe gaps in knowledge related to handwashing behavior in emergency-affected populations prior to hygiene promotion activity initiation
- Do you feel we need to improve our knowledge about the receptiveness of emergency-affected populations to different hygiene behavior approaches and promotional techniques?
- Do you feel we need to improve our knowledge regarding the ability of people living in camps to respond to new hygiene behaviors?
- What is your opinion about a need to carry out in-depth research to examine and compare acceptability of different handwashing technologies? Which technologies merit such research, in your opinion?
- What do you think are the most urgent questions to be answered in order to improve handwashing interventions in emergency settings
- Other research needs

Coordination of handwashing activities in emergency settings (for Senior WASH Staff)

The final set of questions relates to the coordination of activities and information amongst organizations working with emergency-affected populations.

- Extent to which in touch with other organizations working in handwashing in emergency settings
    - How
    - How often
- Extent to which satisfied with the flow of information between organizations involved in handwashing
    - How can information be shared more efficiently and effectively between organizations?
- Suggestions for improvement

Appendix 3: Information Sheet for Verbal Consent: In-depth Interviews with refugees in Maban, South Sudan

Principal Investigators: Pavani K. Ram and Lauren Blum
Name of organization: University at Buffalo
Title of Project: Handwashing behavior and approaches to handwashing promotion in the ongoing humanitarian emergency in South Sudan

Purpose
The purpose of this research activity is to understand health concerns, knowledge, attitudes and practices of health-related behaviors among refugees, and to describe the health promotion programs in camps. Information from this research may be able to help improve hygiene promotion programs for refugees and other displaced populations.

Eligibility:
We are asking you to participate in this research activity because you are a member of the Maban community and you are the caretaker of a child that is less than 5 years old.

Procedure
If you agree to take part in the study, I will ask you to interview you for about one hour today or in the next 7 days when you are available. I will record the interview using an audio recorder.

Participant Rights
Your participation in this study is completely voluntary. Refusal to take part will not result in any penalty or loss of benefits to which you are otherwise entitled. You have the right to refuse to participate in the study now or at any time during the interview. You can also refuse to respond to specific questions if you choose.

Risks
We do not anticipate any risks to you from taking part in this study. We will be asking you questions about hygiene and how it is promoted among refugees. You may feel some discomfort to answer these questions. Please remember that you can choose to answer or not answer any question that we ask you.

Benefits
You will not receive any compensation or direct benefit from taking part in the study. By talking to you, we will be able to understand better gaps in current knowledge and possibly how to improve hygiene behaviors and hygiene promotion programs in displaced populations.

Confidentiality

All the information obtained from you will be kept confidential and will be strictly used for the purpose of this study. We will never identify you by name when reporting the results of the study. Five years after the investigation, data collection forms and audio recordings will be destroyed.

Contact Information

Feel free to ask me any questions you have about the study. If you have questions about this study that I cannot adequately address, or if you feel that you have been treated unfairly or have been hurt by joining the study, you may contact Pavani Ram, the principal investigator, at +1-716-829-5380 or by email at pkram@buffalo.edu.

If you have any questions, concerns, or complaints about your rights as a research subject or want to speak to someone who is not associated with the research, you can contact:

(In South Sudan)
Department of Research, Ministry of Health, South Sudan
Lea Moja, Tel: 0926595329

(In the USA)
Social and Behavioral Science Institutional Review Board, University at Buffalo
516 Capen Hall, State University of New York at Buffalo, Buffalo, NY 14260
Phone +1 716-645-6474, Email: sbsirb@reserach.buffalo.edu

After the interviewer has fully explained the study, she will ask if the respondent has any questions. If the respondent does not have any questions and is willing, s/he should let the interviewer know whether or not s/he chooses to participate. This will serve as oral consent.

Do you have any questions? Yes No

Do you agree to participate in this project? Yes No

Name of Subject:_____ Date : _____

Appendix 4: In-depth interview Guide

Background Information

- Name of the respondent
- Age of the respondent
- Name of head of household
- Camp
- Name of sheikh
- Religion
- Ethnicity
- Years of education
- (Do we want to ask about marital status or location of husband)
- Length of time in the camp
- Length of time at present location
- Number and age of children
- Location of previous residence (before entering the camp?)
    - Type of residence
- Duration of residence in previous location, Town of origin

Health concerns

- Before you came to this camp, what were the major health concerns for yourself and your family?
- Why did you feel that you or other members of your family were at risk for these problems?
- Please describe your current concerns regarding your or your family's health? Please explain why you are particularly concerned about these problems/illnesses?
    - Probe specifically for Hepatitis E, cholera, dysentery, and pneumonia, if not mentioned.
- Can you tell me about what the organizations working in this camp are doing to help keep you and your family healthy? How do they carry out these activities?
- To what extent do you feel that their work is effective, in that it is actually helping to keep your family healthy?
- Please describe what, if anything, you and your family can do to decrease your risk of diseases such as diarrhea and Hepatitis E. To what extent is preventing these diseases within your power?

Prior Handwashing Practices

- In the previous place where you were living, did you wash your hands? How did you wash (wash the hands or simply wash?)?
- When, how, and how many times did you wash your hands at your prior location after getting up from bed until you went to bed, please describe?
    - Why did you wash your hands at this time?

    - Where did you wash your hands when you did wash them?
    - What did you wash your hands with when you did wash them?
- During the typical day, who told/reminded you to wash your hands? If so, why?
- During the typical day, did you tell/remind anybody to wash hands? If so, who and why did you remind them to wash hands?
- Were there things that prevented you from washing your hands when you wanted to? *(If yes, for each barrier mentioned, ask the likelihood of this occurring)*
- Did you wash your hands the same, more, or less often than everyone in your household? In your community?
    - Did you expect your family members and neighbors to wash hands at certain times or junctures? Which times were important for handwashing? Why did you have these expectations? Did others expect you to wash hands at these times?
    - To what extent did you wash hands because it was habit, as opposed to having to think to wash hands? Were there certain times or events during the day that prompted you to wash hands? Which ones?

Handwashing norms, habits, motivators, and barriers

- Is it the habit of people in this camp to wash their hands? If so, what do people generally use to wash hands?
    - If there is a habit of washing hands, when did people in this area learn this habit?
    - If there is no habit, in your opinion, why did people in this area not develop this habit of handwashing?
- To what extent do you expect your family members and neighbors to wash their hands? Are there specific times at which you expect them to wash their hands?
- At which times do you wash your hands when you are at home? Please describe.

    (For each time described, ask)

    - Why do you wash your hands at this time?
    - Where do you wash your hands when you do wash them?
    - What do you wash your hands with when you do wash them?
        - Probe for use of water alone, soap, and ash, if not mentioned
- In general, why do you wash your hands?
- How does washing your hands make you feel?
    - Probe for concepts of cleanliness, beauty, affiliation
- Is it important for mothers and others who care for young children to wash their hands? Why is it important?
    - Probe for motivators such as nurture, peer pressure, health reasons, etc.
    - How should mothers wash hands? Using which materials?
    - When should mothers wash their hands?
- How does your handwashing differ now that you are here, compared to when you lived in the previous place (should we specify before entering the camp)? What makes or helps you to wash

your hands here? Are there any challenges that prevent you from washing your hands now that you are here?

- During the typical day, does anyone tell you or remind you to wash your hands? If so, who? Why does this person remind you?
- During the typical day, do you tell/remind anybody to wash their hands? Why do you remind them to wash hands?
- Are there things that prevent you from washing your hands when you want to? (*If yes, for each barrier mentioned, ask the likelihood of this occurring and what could be done to remove barrier).*
    - Probe specifically for convenience of location of handwashing materials (soap, water)
- When someone in your household is ill, do you wash your hands the same, more, or less often? Why?
- Do you wash your hands the same, more, or less often than everyone in your household? In your community? Why do you think this is the case?

Handwashing Knowledge

- What do you think is the best way to wash hands?
- Who taught you how to wash your hands?
    - What did they teach you about handwashing, please describe?
    - Do you wish to learn anything else about handwashing?
- Why is soap used to wash hands? What will happen if soap is not used? (What will happen if we wash only with water?)
- To what extent is using soap necessary when washing hands in order to prevent illness?
- How does ash compare to soap? What do you think ash does?
- To what extent is ash helpful for washing hands?
- I will describe some things that get onto hands at times during the day. Please tell me the extent to which each of these is clean, neutral, dirty or disgusting.
    - Dirt from house cleaning
    - Mud
    - Food during cooking
    - Animal feces
    - Your young child's feces
    - Your own feces
- How can you remove the dirty or disgusting things from your hands?
- What problems might you have if you do not wash your hands before eating? Why do you think you could get sick if you do not wash your hands before eating? Why/how?
- What problems might you have if you do not wash your hands before cooking/preparing/serving food? Why do you think you could get sick if you do not wash your hands before cooking/preparing/serving food? Why/how?
- What kind of problems could other members of your family have if you do not wash your hands before cooking/preparing/serving food?

Promotion of Handwashing in Camp

- Handwashing stations at the family shared latrines
    - How long have these handwashing stations been present?
    - How do you wash your hands at these latrines?
    - What do you use to wash your hands at these latrines?
    - Is water usually present at these communal handwashing stations when you need to wash hands?
        - *Also ask similarly about* soap and ash/mud
    - Who is responsible for refilling the soap, ash/mud, and water at these locations? To what extent is the refilling responsibility a barrier to keeping soap and water present?
    - How do you find these stations? Do they improve or decrease your opportunities to wash your hands? Please explain. Probe for advantages and disadvantages to the communal stations
    - I would specifically like to assess the social advantages and disadvantages to communal stations.
- Have you been given anything at your house to help wash your hands, please describe?
    - Who gave you these materials?
    - How often do you use these materials during handwashing?
    - What do you think of these materials?
    - How well do they work to help you to get your family to wash hands? Please describe what you like the most.
    - Are there things you don't like about these materials? Please describe what you don't like.
    - *Ask to see materials given and record details of the materials.*
    - What do you view as better, handwashing at a communal station or in the home setting? Please explain
- Have you learned anything new about handwashing after arriving in this camp? Please describe what you have learned.
    - Who has taught you this information about handwashing?
    - How was the information conveyed?
    - To what extent did this information motivate you to wash hands more or less than you were doing prior to arriving in the camp?
    - How could the way the information was conveyed be improved to better motivate you to wash your hands?
- How often do you have contact with the hygiene promoters? What information do they share with you regarding handwashing? To what extent have the messages conveyed by the hygiene workers motivated you to wash your hands?
- How do you perceive the work of the hygiene workers? How could their role as change agents to improve handwashing behavior be strengthened?
- What are some recommendations you could give to improve the present approaches used to promote handwashing?

Appendix 5: Information Sheet for Verbal Consent: Group Discussions with refugees in Maban, South Sudan

Principal Investigators: Pavani K. Ram and Lauren Blum
Name of organization: University at Buffalo
Title of Project: Handwashing behavior and approaches to handwashing promotion in the ongoing humanitarian emergency in South Sudan

Purpose

The purpose of this research activity is to understand health concerns, knowledge, attitudes and practices of health-related behaviors among refugees, and to describe the health promotion programs in camps. We would like to talk to a group of people like you so that we can understand the various viewpoints that exist about diseases and how to prevent them in the camps. Information from this research may be able to help improve hygiene promotion programs for refugees and other displaced populations.

Eligibility:
We are asking you to participate in this research activity because you are a member of the Maban community and you are the caretaker of a child that is less than 5 years old.

Procedure
We will gather together up to 10 people in one place for approximately 1 hour. During that time, we will ask questions about health concerns and about health-related practices. We will record the interview using an audio recorder.

Participant Rights
Your participation in this study is completely voluntary. Refusal to take part will not result in any penalty or loss of benefits to which you are otherwise entitled. You have the right to refuse to participate in the study now or at any time during the study. You can also refuse to respond to specific questions if you choose.

Risks
We do not anticipate any risks to you from taking part in this study. We will be asking you questions about how to prevent diseases in this area. You may feel some discomfort to answer these questions. Please remember that you can choose to answer or not answer any question that we ask you.

Benefits
You will not receive any compensation or direct benefit from taking part in the study. However, we hope that the information you provide will help to improve disease prevention programs for refugees in this area and elsewhere.

Confidentiality

Because this is a group discussion, you will hear others' views and opinions and they will hear yours. We ask that you keep this information confidential by not sharing the information discussed in the group with others outside the group.

All the information obtained from you will be kept confidential and will be strictly used for the purpose of this study. We will never identify you by name when reporting the results of the study. Five years after the investigation, forms and audio recordings will be destroyed.

Contact Information

Feel free to ask me any questions you have about the study. If you have questions about this study that I cannot adequately address, or if you feel that you have been treated unfairly or have been hurt by joining the study, you may contact Pavani Ram, the principal investigator, at +1-716-829-5380 or by email at pkram@buffalo.edu.

If you have any questions, concerns, or complaints about your rights as a research subject or want to speak to someone who is not associated with the research, you can contact:

(In South Sudan)
Department of Research, Ministry of Health, South Sudan
Lea Moja, Tel: 0926595329

(In the USA)
Social and Behavioral Science Institutional Review Board, University at Buffalo
516 Capen Hall, State University of New York at Buffalo, Buffalo, NY 14260
Phone +1 716-645-6474, Email: sbsirb@reserach.buffalo.edu

After the interviewer has fully explained the study, she will ask if the respondent has any questions. If the respondent does not have any questions and is willing, s/he should let the interviewer know whether or not s/he chooses to participate. This will serve as oral consent.

Do you have any questions?	Yes	No
Do you agree to participate in this project?	Yes	No

Name of Subjects:_____ Date : _____

Appendix 6: Group Discussion Guide

Health concerns

- Before you came to this camp, what were the major health concerns for yourself and your family?
- Please describe your current concerns regarding your or your family's health? Please explain why you are particularly concerned about these problems/illnesses?
    - Probe specifically for Hepatitis E, cholera, dysentery, and pneumonia, if not mentioned.
- Can you tell me about what the organizations working in this camp are doing to help keep you and your family healthy? How do they carry out these activities?
- To what extent do you feel that their work is effective, in that it is actually helping to keep your family healthy?
- Please describe what, if anything, you and your family can do to decrease your risk of diseases such as diarrhea and Hepatitis E. To what extent is preventing these diseases within your power?

Prior Handwashing Practices

- In the previous place where you were living, did you wash your hands? How did you wash your hands?
- When, how, and how many times did you wash your hands at your prior location after getting up from bed until you went to bed, please describe?
    - Why did you wash your hands at this time?
    - Where did you wash your hands when you did wash them?
    - What did you wash your hands with when you did wash them?
- Were there things that prevented you from washing your hands when you wanted to?
- Did you expect your family members and neighbors to wash hands at certain times or junctures? Which times were important for handwashing? Why did you have these expectations? Did others expect you to wash hands at these times?
    - Were there certain times or events during the day that prompted you to wash hands? Which ones?

Handwashing norms, habits, motivators, and barriers

- Is it the habit of people in this camp to wash their hands? If so, what do people generally use to wash hands?
    - If there is a habit of washing hands, when did people in this area learn this habit?
    - If there is no habit, in your opinion, why did people in this area not develop this habit of handwashing?
- To what extent do you expect your family members and neighbors to wash their hands? Are there specific times at which you expect them to wash their hands?
- At which times do you wash your hands when you are at home? Please describe.

    (For each time described, ask)

    - Why do you wash your hands at this time?

    - Where do you wash your hands when you do wash them?
    - What do you wash your hands with when you do wash them?
        - Probe for use of water alone, soap, and ash, if not mentioned
- In general, why do you wash your hands?
- How does washing your hands make you feel?
    - Probe for concepts of cleanliness, beauty, affiliation
- Is it important for mothers and others who care for young children to wash their hands? Why is it important?
    - Probe for motivators such as nurture, peer pressure, health reasons, etc.
    - How should mothers wash hands? Using which materials?
    - When should mothers wash their hands?
- How does your handwashing differ now that you are here, compared to where you lived before entering the camp? What makes or helps you to wash your hands here? Are there any challenges that prevent you from washing your hands now that you are here?
- During the typical day, does anyone tell you or remind you to wash your hands? If so, who? Why does this person remind you?
- During the typical day, do you tell/remind anybody to wash their hands? Why do you remind them to wash hands?
- Are there things that prevent you from washing your hands when you want to? (*If yes, for each barrier mentioned, ask the likelihood of this occurring and what could be done to remove barrier).*
    - Probe specifically for convenience of location of handwashing materials (soap, water)
- When someone in your household is ill, do you wash your hands the same, more, or less often? Why?
- Do you wash your hands the same, more, or less often than everyone in your household? In your community? Why do you think this is the case?

Handwashing Knowledge

- What do you think is the best way to wash hands?
- Who taught you how to wash your hands?
    - What did they teach you about handwashing, please describe?
    - Do you wish to learn anything else about handwashing?
- Why is soap used to wash hands? What will happen if soap is not used?
- To what extent is using soap necessary when washing hands in order to prevent illness?
- How does ash compare to soap? What do you think ash does?
- To what extent is ash helpful for washing hands?
- I will describe some things that get onto hands at times during the day. Please tell me the extent to which each of these is clean, neutral, dirty or disgusting.
    - Dirt from house cleaning
    - Mud
    - Food during cooking
    - Animal feces

    - Your young child's feces
    - Your own feces
- How can you remove the dirty or disgusting things from your hands?
- What problems might you have if you do not wash your hands before eating? What problems might you have if you do not wash your hands before cooking/preparing/serving food?
- What kind of problems could other members of your family have if you do not wash your hands before cooking/preparing/serving food?

Promotion of Handwashing in Camp

- Handwashing stations at the family shared latrines
    - How long have these handwashing stations been present?
    - How do you wash your hands at these latrines?
    - What do you use to wash your hands at these latrines?
    - Is water usually present at these communal handwashing stations when you need to wash hands?
        - *Also ask similarly about* soap and ash/mud
    - Who is responsible for refilling the soap, ash/mud, and water at these locations? To what extent is the refilling responsibility a barrier to keeping soap and water present?
    - How do you find these stations? Do they improve or decrease your opportunities to wash your hands? Please explain. Probe for advantages and disadvantages to the communal stations
- Have you been given anything at your house to help wash your hands, please describe?
    - Who gave you these materials?
    - How often do you use these materials during handwashing?
    - What do you think of these materials?
    - How well do they work to help you to get your family to wash hands? Please describe what you like the most.
    - Are there things you don't like about these materials? Please describe what you don't like.
    - What do you view as better, handwashing at a communal station or in the home setting? Please explain
- Have you learned anything new about handwashing after arriving in this camp? Please describe what you have learned.
    - Who has taught you this information about handwashing?
    - How was the information conveyed?
    - To what extent did this information motivate you to wash hands more or less than you were doing prior to arriving in the camp?
    - How could the way the information was conveyed be improved to better motivate you to wash your hands?
- How often do you have contact with the hygiene promoters? What information do they share with you regarding handwashing? To what extent have the messages conveyed by the hygiene workers motivated you to wash your hands?

- How do you perceive the work of the hygiene workers? How could their role as change agents to improve handwashing behavior be strengthened?
- What are some recommendations you could give to improve the present approaches used to promote handwashing?

Appendix 7: Information Sheet for Verbal Consent: Household survey and observation with female head of household in Maban, South Sudan

Principal Investigators: Pavani K. Ram and Lauren Blum
Name of organization: University at Buffalo
Title of Project: Handwashing behavior and approaches to handwashing promotion in the ongoing humanitarian emergency in South Sudan

Purpose
The purpose of this research activity is to understand health concerns, knowledge, attitudes and practices of health-related behaviors among refugees, and to describe the health promotion programs in camps. Information from this research may be able to help improve hygiene promotion programs for refugees and other displaced populations.

Eligibility:
We are asking you to participate in this research activity because you are a member of the Maban community and the female head of your household. .

Procedure
If you agree to take part in the study, I will ask you to interview you for about one hour today or in the next 7 days when you are available. During the interview I will ask you questions about your health, your children's health, your opinion on health-related practices in your home and in your community. We will also ask to observe some places around your home. We will randomly choose a smaller number of households, like a lottery, to take part in another part of the study. If you are selected, we will visit you one more time and ask stay for about 4 hours to observe normal daily activity in your household. A staff member will sit quietly, where they are not in the way, and simply watch and take notes. We ask you to continue with normal activities during this time.

Participant Rights
Your participation in this study is completely voluntary. Refusal to take part will not result in any penalty or loss of benefits to which you are otherwise entitled. You have the right to refuse to participate in the study now or at any time during the interview. You can also refuse to respond to specific questions if you choose.

Risks
We do not anticipate any risks to you from taking part in this study. We will be asking you questions about hygiene and how it is promoted among refugees. You may feel some discomfort to answer these questions. Please remember that you can choose to answer or not answer any question that we ask you. The process of having someone at your home for several hours may be uncomfortable to you. However, we do not expect any harm to come to you or your family because of the observation.

Benefits
You will not receive any compensation or direct benefit from taking part in the study. By talking to you, we will be able to understand better gaps in current knowledge and possibly how to improve hygiene behaviors and hygiene promotion programs in displaced populations.

Confidentiality
All the information obtained from you will be kept confidential and will be strictly used for the purpose of this study. We will never identify you by name when reporting the results of the study. Five years after the investigation, data collection forms and audio recordings will be destroyed.

Contact Information
Feel free to ask me any questions you have about the study. If you have questions about this study that I cannot adequately address, or if you feel that you have been treated unfairly or have been hurt by joining the study, you may contact Pavani Ram, the principal investigator, at +1-716-829-5380 or by email at pkram@buffalo.edu.

If you have any questions, concerns, or complaints about your rights as a research subject or want to speak to someone who is not associated with the research, you can contact:

(In South Sudan)
Department of Research, Ministry of Health, South Sudan
Lea Moja Tel: 0926595329

(In the USA)
Social and Behavioral Science Institutional Review Board, University at Buffalo
516 Capen Hall, State University of New York at Buffalo, Buffalo, NY 14260
Phone +1 716-645-6474, Email: sbsirb@reserach.buffalo.edu

After the interviewer has fully explained the study, she will ask if the respondent has any questions. If the respondent does not have any questions and is willing, s/he should let the interviewer know whether or not s/he chooses to participate. This will serve as oral consent.

Do you have any questions? Yes No

Do you agree to participate in this project? Yes No

Name of Subject:_____ Date : _____

Appendix 8: Household Questionnaire

Instructions for Enumerator:
Write in open-ended questions. When filling in numbers only write one number per line given in answer space. Circle number of corresponding answer choice where answers are pre-specified. Only circle one answer per question unless it is written in the question that "multiple answers allowed".

Screening Form

Identification information:

1. Respondent's Name (first name and family name):
2. Sheik name:
3. Camp name:
4. Household head name:
5. Landmarks:

Record/result of visit

6. Enumerator's name (first name and family name):	
7. Enumerator ID: ___ ___	
8. Visit date (dd/mm/yy) ___ ___ / ___ ___ / ___ ___	
9. Visit time in military time (hh:mm) ___ ___ : ___ ___	
Eligibility	
10. Is the female head of household available?	[1] Yes [0] No → Not eligible, **STOP**
11. Are you at least 18 years old?	[1] Yes → Read consent, record result in question 13 [0] No → Not eligible, **STOP**
Result of Visit	
12. Result of Visit:	[1] Consent given [2] Consent refused

Section 1: Demographics

13.	Unique ID number ___ ___ ___	
14.	Respondent's Name (first name and family name):	
15.	Respondent's age (years)	___ ___
16.	What language was the interview given in?	[1] Arabic [2] Ingassana [3] Makaja [4] Uduk [5] Jumjum [6] Mufu [9] Other (specify in 16A) 16A._____
17.	How many people, including you, usually live in your household? By household, I am referring the tent.	___ ___
18.	Among them how many are male (including respondent if respondent is male)?	___ ___
19.	How many households are in your compound NOT including your household?	___ ___
20.	When did you arrive to this camp?	**a. ___ ___ years** **b. ___ ___ months**

Section 2: Disease Prevalence

Collect the information in this column (questions A-P) for the respondent and each child 16 years and younger living in the household. Write the name of each respondent in the column headers. [1] Yes or [0] No	21. Your (name)	22. Child 1 (name)	23. Child 2(name)	24. Child 3(name)	25. Child 4(name)	26. Child 5(name)	27. Child 6(name)	28. Child 7(name)	29. Child 8(name)	30. Child 9(name)	31. Child 10(name)	32. Child 11(name)	33. Child 12(name)	34. Child 13(name)	35. Child 14(name)
A. Age [*years]if 2 or older* *99…Don't Know*															
B. [months] if <2 years old *99…Don't Know*															
C. Gender 1…Male 0…Female	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]
D. Attends school?		[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]
E. Current school grade? 88… Not applicable															
F. In last week, how many days did ___ have difficulty breathing?															
G. In the last week, how many days did ___ have a frequent cough?															
H. In the last week, how many days did ___ have diarrhea? By diarrhea I mean 3 or more watery or loose stools in a 24 hr period. (If [0], skip to NEXT PERSON)															

I. At any time in that period (week), did ___ have blood in his/her stool?	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]
J. I would like to know how much ___ was given to drink during the diarrhea including breast milk. Was he/she offered less than usual to drink, about the same amount or more than usual to drink? [1] less, [2] same, [3] more, [4] nothing to drink, [9] DK	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]
K. Did ____ take ORS (oral rehydration solution) during the diarrhea?	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]
L. When ___ had diarrhea, was he/she offered less than usual to eat, about the same amount, more than usual or nothing to eat? [1]less, [2] same, [3]more, [4] nothing to eat, [9] DK	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]	[1] [2] [3] [4] [9]
M. Did anyone give ____ zinc to treat the diarrhea?	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]	[1] [0]

Section 3: Perception of Disease Risk and Severity

Yellow Eyes Disease (Hep E)			
36.	How many people in your household, including you, had yellow eyes disease since arriving in this camp?	___ ___	
37.	Among them how many sought medical care at a hospital or clinic?	___ ___	
38.	In your opinion, if a person gets yellow eyes disease, what is the possibility that the child could die from yellow eyes disease?	[1] Very possible [2] Somewhat possible [3] Not possible [9] Don't know	
39.	Do you know anyone that has died of yellow eyes disease?	[1] YES [0] NO → skip to 47	
Who do you know that has died of yellow eyes disease?		YES	NO
40.	My child	[1]	[0]
41.	A child that is my family member	[1]	[0]
42.	Other child(ren), not part of my family	[1]	[0]
43.	My husband/ Brother/Father/Uncle/Male Cousin/ Male In-law	[1]	[0]
44.	My sister/ mother/ Aunt/ Female cousin/ Female in-law	[1]	[0]
45.	Other adult, that I personally know (ex. friend, neighbor)	[1]	[0]
46.	Other adult, that I don't personally know	[1]	[0]
How do you think people get yellow eyes disease?		YES	NO
47.	Through contaminated water	[1]	[0]
48.	Through contaminated/undercooked food	[1]	[0]
49.	From physical contact with a person infected with yellow eyes disease or someone who died from it	[1]	[0]
50.	From swimming/bathing in surface/harffir water	[1]	[0]
51.	From hunger/not having enough food	[1]	[0]
52.	Using cooking oil	[1]	[0]
53.	From a water point/chlorinated water	[1]	[0]
54.	Dirty/unwashed hands	[1]	[0]
55.	From mosquitos	[1]	[0]
56.	Other (specify below)	[1]	[0]
57.	Other specified 1		
58.	Other specified 2		
59.	Other specified 3		

60.	In your opinion, what is the possibility boiling or treating your drinking water will prevent yellow eyes disease?	[1] Very possible [2] Somewhat possible [3] Not possible [9] Don't know	
61.	In your opinion, what is the possibility storing drinking water safely will prevent yellow eyes disease?	[1] Very possible [2] Somewhat possible [3] Not possible [9] Don't know	
62.	In your opinion, what is the possibility that using a latrine for defecation or burying feces will prevent yellow eyes disease?	[1] Very possible [2] Somewhat possible [3] Not possible [9] Don't know	
63.	In your opinion, what is the possibility that washing hands will prevent yellow eyes disease?	[1] Very possible [2] Somewhat possible [3] Not possible [9] Don't know	
64.	What would you need to use to wash hands in order to prevent yellow eyes disease?	YES	NO
65.	Water only	[1]	[0]
66.	Soap	[1]	[0]
67.	Ash	[1]	[0]
68.	Other (specify)		
Diarrhea			
69.	In your opinion, if a young child has diarrhea, what is the possibility child could die from diarrhea?	[1] Very possible [2] Somewhat possible [3] Not possible [9] Don't know	
70.	Do you know anyone that has died of diarrhea?	[1] Yes [0] No	
71.	In your opinion, what is the possibility that washing hands will prevent diarrhea?	[1] Very possible [2] Somewhat possible [3] Not possible [9] Don't know	
Respiratory illness			
72.	In your opinion, if a young child has a respiratory illness, what is the possibility child could die from respiratory illness?	[1] Very possible [2] Somewhat possible [3] Not possible [9] Don't know	
73.	Do you know anyone that has died of respiratory illness?	[1] Yes [0] No	
74.	In your opinion, what is the possibility that washing hands will prevent respiratory illness?	[1] Very possible [2] Somewhat possible [3] Not possible	

	[9] Don't know

Section 4: Handwashing knowledge and behavior indicators

In what situations is it important to…[ask columns A first and mark all that are mentioned by the respondent then move on to B, then C. Mark "1" if the respondent mentioned the critical time and "0" if the respondent did not mention that critical time]

[open-ended question] Do not read the answer choices. After the respondent stops listing times, ask "Are there any other situations where it's important to [insert language from columns A, B and C]?" Keep asking this question until the respondent thinks there are no other times.

[1] Mentioned
[0] Not mentioned

	A. Before or after what activities is it important to wash your hands?		B. Before or after what activities is it important to wash your hands using soap?		C. Before or after what activities is it important to wash your hands using ash?	
	YES	NO	YES	NO	YES	NO
75. Before preparing food	[1]	[0]	[1]	[0]	[1]	[0]
76. Before cooking food	[1]	[0]	[1]	[0]	[1]	[0]
77. Before eating	[1]	[0]	[1]	[0]	[1]	[0]
78. Before feeding a child	[1]	[0]	[1]	[0]	[1]	[0]
79. Before breastfeeding	[1]	[0]	[1]	[0]	[1]	[0]
80. After cleaning a child's anus	[1]	[0]	[1]	[0]	[1]	[0]
81. After changing a baby's nappy	[1]	[0]	[1]	[0]	[1]	[0]
82. After disposing of children's feces	[1]	[0]	[1]	[0]	[1]	[0]
83. After you defecate	[1]	[0]	[1]	[0]	[1]	[0]
84. After using the latrine for any purpose	[1]	[0]	[1]	[0]	[1]	[0]
85. Other (specify below)	[1]	[0]	[1]	[0]	[1]	[0]
86. Other specified 1						
87. Other specified 2						
88. Other specified 3						

PRESENCE OF MATERIALS AT A HANDWASHING PLACE			
89. Ask participant "**Please show me where you typically wash your hands after toileting"** and follow the respondent to this place. Observe location.	[1] Shown [2] Has a place, Refused/cannot to show → skip to 102 [3] Does not have a place, does not wash hands → skip to 102		
90. Observe and record the location of the handwashing place	[1] Inside tent, fixed place [2] Inside tent, mobile place [3] Communal, fixed place [4] Communal, mobile place		
Observe cleansing material present at handwashing station.		Present	Not Present
91.	WATER	[1]	[0]
92.	RED BAR SOAP	[1]	[0]
93.	WHITE BAR SOAP	[1]	[0]
94.	DETERGENT/POWDERED SOAP	[1]	[0]
95.	LIQUID SOAP	[1]	[0]
96.	ASH	[1]	[0]
97.	MUD/SAND	[1]	[0]
98.	OTHER (SPECIFY)	[1]	[0]
98a. (SPECIFY)			
99. Observe water dispensing device for handwashing at the identified handwashing place. 99a: (SPECIFY) _____	[1] Bucket with tap [2] Bucket without tap [3] Handi-Tap [4] Kettle ibrik [5] Long ibrik [6] Tippy tap [7]No water device is present at that place [8] Other (SPECIFY) [99] Observation not possible		
100. Observe and describe the functionality of this device	[1] Functional, undamaged [2] Functional, but damaged [3] Not functional		
101. Ask the respondent to show you the latrine/place for defecation he/she uses most often. Walk from the handwashing place to this latrine, count and record the number of paces to latrine.	_____ paces		
102. Ask participant "**Please show me where you typically wash your hands before preparing or eating food in your compound"**	[1] Shown [2] Has a place, Refused/cannot to show → skip to 115 [3] Does not have a place, does not wash hands → skip to 115		
103. Observe location of handwashing station and record	[1] Inside tent, fixed place [2] Inside tent, mobile place [3] Communal, fixed place [4] Communal, mobile place		
Observe cleansing material present at handwashing station.		Present	Not Present

104.	WATER	[1]	[0]
105.	RED BAR SOAP	[1]	[0]
106.	WHITE BAR SOAP	[1]	[0]
107.	DETERGENT/POWDERED SOAP	[1]	[0]
108.	LIQUID SOAP	[1]	[0]
109.	ASH	[1]	[0]
110.	MUD/SAND	[1]	[0]
111.	OTHER (SPECIFY)	[1]	[0]
111a. (SPECIFY)			

112. Observe water source at the handwashing station. 112a: (SPECIFY) _____	[1] Bucket with tap [2] Bucket without tap [3] Handi-Tap [4] Kettle ibrik [5] Long ibrik [6] Tippy tap [7]No water device is present at that place [8] Other (SPECIFY) [99] Observation not possible
113. Observe and describe the functionality of this device	[1] Functional, undamaged [2] Functional, but damaged [3] Not functional
114. Ask the respondent to show you the latrine/place for defecation he/she uses most often. Walk from the handwashing place to this latrine, count and record the number of paces to latrine.	_____ paces
115. Return to household/tent. Ask the respondent "Can you please bring me soap?"	[1] Soap brought [2] Doesn't have soap → SKIP TO 117 [3] Refuses to bring soap→ SKIP TO 117
116. Record the type of soap retrieved. 116a: (SPECIFY) _____	[1] Red Bar Soap [2] White bar soap [3] Detergent/Powdered Soap [4] Liquid soap [5] Ash [6] Mud / sand [9] Other (Specify)

HANDWASHING DEMONSTRATION		
117. Can you please show me how you typically clean your hands after defecation? Please do this at the place you normally wash your hands after defecation. Also, please try to do this in the same manner as you would if I wasn't here.	[1] Demonstrated [0] Refused/Could not demonstrate→SKIP TO 129	
Observe and record which steps were demonstrated.	Demonstrated	Did not demonstrate
118. STEP 1: Rub palms of hands together	[1]	[0]
119. STEP 2: Rub backs of hands	[1]	[0]

120.	STEP 3: Clean between fingers	[1]	[0]
121.	STEP 4: Clean top half of fingers	[1]	[0]
122.	STEP 5: Rub thumbs	[1]	[0]
123.	STEP 6: Rub fingernails	[1]	[0]

124. Observe and record whether both hands are washed	[1] Both hands washed [2] Washed Right hand only [3] Washed left hand only
125. Observe and record what cleansing material was used 125a. (SPECIFY) _____	[0] No cleansing agent used [1] Red bar soap [2] White bar soap [3] Detergent/Powdered soap [4] Liquid soap [5] Ash [6] Mud [7] Other (SPECIFY)
126. Observe and record whether water was used.	[1] Yes [0] No
127. Observe water source at the handwashing station. 127a: (SPECIFY) _____	[1] Bucket with tap [2] Bucket without tap [3] Handi-Tap [4] Kettle ibrik [5] Long ibrik [6] Tippy tap [7]No water device is present at that place [8] Other (SPECIFY) [99] Observation not possible
128. Observe and record how hands were dried.	[1] Air Dried [2] On clothing (being worn) [3] On other cloth/towel [4] Not dried

INDICATOR 4: SELF-REPORTED HANDWASHING BEHAVIOR

I'd like to understand some things about your handwashing practice **before you had to leave your home**. Please reflect on your practice before you camp to this camp and I will ask you a few questions about that time. How often do you wash your hands [event]? [0] NEVER [1] RARELY [2] SOMETIMES [3] ALWAYS *SKIP RULE FOR QUESTIONS in this module: If respondent answers "0" skip to next event		How often do you use soap when you wash your hands [event]? (read choices) [0] NEVER [1] RARELY [2] SOMETIMES [3] ALWAYS
Before preparing food	129. [0]* [1] [2] [3]	130. [0] [1] [2] [3]
Before cooking food	131. [0]* [1] [2] [3]	132. [0] [1] [2] [3]

Before eating	133.	[0]*	[1]	[2]	[3]	134.	[0]	[1]	[2]	[3]
Before feeding a child	135.	[0]*	[1]	[2]	[3]	136.	[0]	[1]	[2]	[3]
Before breastfeeding	137.	[0]*	[1]	[2]	[3]	138.	[0]	[1]	[2]	[3]
After cleaning a child's anus	139.	[0]*	[1]	[2]	[3]	140.	[0]	[1]	[2]	[3]
After changing a baby's nappy	141.	[0]*	[1]	[2]	[3]	142.	[0]	[1]	[2]	[3]
After disposing of children's feces	143.	[0]*	[1]	[2]	[3]	144.	[0]	[1]	[2]	[3]
After you defecate	145.	[0]*	[1]	[2]	[3]	146.	[0]	[1]	[2]	[3]
After using the latrine for any purpose	147.	[0]*	[1]	[2]	[3]	148.	[0]	[1]	[2]	[3]
I'd like to understand some things about your **current** handwashing practice. Please reflect on your practice before you camp to this camp and I will ask you a few questions about that time. How often do you wash your hands [event]? [0] NEVER [1] RARELY [2] SOMETIMES [3] ALWAYS * SKIP RULE FOR QUESTIONS in this module: If respondent answers "0" skip to next event						How often do you use soap when you wash your hands [event]? (read choices) [0] NEVER [1] RARELY [2] SOMETIMES [3] ALWAYS				
Before preparing food	149.	[0]*	[1]	[2]	[3]	150.	[0]	[1]	[2]	[3]
Before cooking food	151.	[0]*	[1]	[2]	[3]	152.	[0]	[1]	[2]	[3]
Before eating	153.	[0]*	[1]	[2]	[3]	154.	[0]	[1]	[2]	[3]
Before feeding a child	155.	[0]*	[1]	[2]	[3]	156.	[0]	[1]	[2]	[3]
Before breastfeeding	157.	[0]*	[1]	[2]	[3]	158.	[0]	[1]	[2]	[3]
After cleaning a child's anus	159.	[0]*	[1]	[2]	[3]	160.	[0]	[1]	[2]	[3]
After changing a baby's nappy	161.	[0]*	[1]	[2]	[3]	162.	[0]	[1]	[2]	[3]
After disposing of children's feces	163.	[0]*	[1]	[2]	[3]	164.	[0]	[1]	[2]	[3]
After you defecate	165.	[0]*	[1]	[2]	[3]	166.	[0]	[1]	[2]	[3]
After using the latrine for any purpose	167.	[0]*	[1]	[2]	[3]	168.	[0]	[1]	[2]	[3]
169. Yesterday, from when you woke up to when you went to sleep, how many times did you wash your hands? _____										
170. Yesterday, from when you woke up to when you went to sleep, how many times did you use soap when you washed your hands? _____										

Section 5: Determinants of Handwashing Behavior

Knowledge and Handwashing Efficacy on Disease Prevention	
171. You can tell your hands are free of germs just by looking at them. Do you agree or disagree with this statement?	[1] Agree [2] Disagree [3] Neither agree nor disagree [4] Don't know
Barriers to handwashing	

172. How often is water available at the place you wash your hands?	[0] NEVER [1] RARELY [2] SOMETIMES [3] ALWAYS		
173. How often is soap available at the place you wash your hands?	[0] NEVER [1] RARELY [2] SOMETIMES [3] ALWAYS		
174. How often is the device or container you need to wash your hands functional?	[0] NEVER [1] RARELY [2] SOMETIMES [3] ALWAYS		
Habit and Habit formation	YES	NO	DON'T KNOW
175. Is it your habit to use soap when you wash your hands?	[1]	[0]	[9]
176. Is using soap to wash your hands something you do automatically?	[1]	[0]	[9]
177. Is it your habit to use soap to wash your hands after defecation?	[1]	[0]	[9]
178. Is it your habit to use soap to wash your hands before preparing food?	[1]	[0]	[9]
179. Is it your habit to use soap to wash your hands before feeding your child/children?	[1]	[0]	[9]
Planning			
180. In your opinion, how important is it for you to always have soap in your home for specifically handwashing?	VERY IMPORTANT [1]	SOMEWHAT IMPORTANT [2]	NOT IMPORTANT [3]
181. In your opinion, how important is it for you to always have water in your home for handwashing?	VERY IMPORTANT [1]	SOMEWHAT IMPORTANT [2]	NOT IMPORTANT [3]

SECTION 7: WATER ACCESS AND SOAP PURCHASE

182. What is the main source of drinking water for your family?

[1] PIPED INTO DWELLING
[2] PIPED TO yard/plot
[3] Piped to neighbor
[4] PUBLIC TAP, STANDPIPE
[5] TUBE WELL/hand pump/rower pump
[6] PROTECTED DUG WELL
[7] UNPROTECTED DUG WELL
[8] PROTECTED SPRING
[9] UNPROTECTED SPRING
[10] RAINWATER
[11] TANKER TRUCK
[12] CART WITH SMALL TANK/drum
[13] SURFACE WATER (RIVER, DAM, LAKE, POND, STREAM, CANAL, IRRIGATION, CHANNEL)
[14] BOTTLED WATER
[99] OTHER (SPECIFY)

182a. (SPECIFY)_____

183. Is this source of drinking water located in your own dwelling, in your compound/yard/plot but not inside your dwelling, or elsewhere?	[1] Inside dwelling [2] Inside compound, not inside dwelling [3] Elsewhere outside compound
184. How often is water available at your source for drinking water?	[1] RARELY [2] SOMETIMES [3] ALWAYS
185. How often do you or someone else in your household go to get drinking water?	[1] SEVERAL TIMES PER DAY [2] ONCE DAILY [3] ONCE EVERY FEW DAYS [4] ONCE PER WEEK [5] LESS THAN ONCE PER WEEK [9] DON'T KNOW
186. How many minutes does it take the person who normally gets the water to walk to the source for drinking water, get the water and return?	_____ MINUTES 999… DON'T KNOW 00… SOURCE IN DWELLING
187. Do you treat your water in any way to make it safe to drink?	[1] Yes [0] No → Skip to 197 [9] Don't know
188. How often do you treat your drinking water before you drink it?	[1] Rarely [2] Sometimes [3] Always [9] Don't know
How do you treat your drinking water? (multiple answers allowed, do not read the answer choices)	Below mark, [1] if MENTIONED, or [0] if NOT MENTIONED
189. BOIL	[1] [0]
190. ADD BLEACH/CHLORINE/water guard	[1] [0]
191. STRAIN THROUGH CLOTH	[1] [0]
192. WATER FILTER (CERAMIC, SAND, COMPOSITE, ETC)	[1] [0]
193. LET IT STAND AND SETTLE	[1] [0]
194. DON'T KNOW	[1] [0]
195. OTHER (SPECIFY)	[1] [0]
196. (SPECIFY)	
197. About how much money do you spend on soap every week?	_____/WEEK 999… DON'T KNOW
198. What type of soap do you buy?	[1] Red Bar Soap [2] White bar soap [3] Detergent/Powdered Soap [4] Liquid soap
199. Do you buy soap that is to be used only or mainly for handwashing?	[1] Yes [0] No

200. Have you ever traded/exchanged or sold soap you received for free?	[1] Yes, traded/exchanged [2] Yes. Sold → Skip to 202 [0] No → Skip to 202
201. What did you trade/exchange the soap for? 201a. (SPECIFY)_____	[1] Food items [2] Household, non-food items [3] Medicine [4] Other (specify)

SECTION 8: SANITATION FACILITY

202. Please show me the where your family members usually toilet. Observe and record the type of latrine. [1] Flushed to pit latrine [2] Flush to somewhere else (canal, ditch, river, etc.)/ don't know where [3] Ventilated, improved pit latrine [4] Pit latrine with slab [5] Pit latrine without slab/open pit [6] Composting toilet [7] Bucket toilet [8] No facility/bush/field [9] Other (SPECIFY) 202a: (SPECIFY) _____	
203. How many households use this toilet facility/place? Please include your household. Mark 999 for "don't know"	_____
204. Who is responsible for maintaining this toilet facility? 204a: (SPECIFY) _____	[1] Families that use it [2] Other community members in camp [3] NGO [4] Government [5] Other (specify)
205. Observe if there is a handwashing station present at this latrine	[1] Present [0] Not present
206. Who is responsible for maintaining this handwashing facility? 206a: (SPECIFY) _____	[1] Families that use this latrine [2] Other community members in camp [3] NGO [4] Government [5] Other (specify)
207. Has anyone talked to you or other women in your compound about menstrual hygiene management?	[1] Yes [0] No [9] Don't know
208. Have you or any of your household members received products for menstrual hygiene management?	[1] Yes [0] No [9] Don't know

SECTION 9: HOUSEHOLD ASSETS AND EDUCATION

HOUSEHOLD ASSETS

I am going to ask you about some things you may have **now** in your home. Please be sure that this interview is confidential and none of this information will impact your rations. Does any member of your household have: (read each item)		YES	NO	DON'T KNOW
209.	A radio	[1]	[0]	[9]
210.	A mobile telephone	[1]	[0]	[9]
211.	A refrigerator	[1]	[0]	[9]
212.	A motorcycle or motor scooter	[1]	[0]	[9]
213.	A car or truck	[1]	[0]	[9]
I am going to ask you about some things **had having to leave your home**. Please be sure that this interview is confidential and none of this information will impact your rations. Does any member of your household have: (read each item)				
214.	A radio	[1]	[0]	[9]
215.	A mobile telephone	[1]	[0]	[9]
216.	A refrigerator	[1]	[0]	[9]
217.	A motorcycle or motor scooter	[1]	[0]	[9]
218.	A car or truck	[1]	[0]	[9]
HOUSEHOLD STRUCTURE, LAND & ANMINAL OWNERSHIP				
How many of the following animals does this household own **now**? IF NONE, WRITE '00'. IF MORE THAN 95, WRITE '95'. IF UNKNOWN, WRITE '99'.				
219.	BUFFALO	_____		
220.	MILK COWS OR BULLS	_____		
221.	HORSES/DONKEYS/MULES	_____		
222.	GOATS	_____		
223.	SHEEP	_____		
224.	CHICKEN/Duck	_____		
225.	PIGS	_____		
How many of the following animals did this household own **before having to leave your home**? IF NONE, WRITE '00'. IF MORE THAN 95, WRITE '95'. IF UNKNOWN, WRITE '99'.				
226.	BUFFALO	_____		
227.	MILK COWS OR BULLS	_____		
228.	HORSES/DONKEYS/MULES	_____		
229.	GOATS	_____		
230.	SHEEP	_____		
231.	CHICKEN/Duck	_____		
232.	PIGS	_____		
EDUCATION				
233. How many years of education have you completed?		_____ 77… INFORMAL EDUCATION		

234. How many years of education has your spouse completed?	_____ 77..INFORMAL EDUCATION 99… DON'T KNOW

Section 10: Exposure to health and handwashing related messages

Please tell me about any source information about **handwashing** that you have encountered. It can be a person, place, program, or advertisement/promotion [open-ended question, for each source ask B, C then D, then ask "is there any other source, and continue until respondent says there are no other sources.]

Person/Place	A. Mentioned by respondent [1] Yes [0] No	B. How recently [1] Within last week [2] Within last month [3] Several months ago [4] About 1 yr ago [5] About 2 or more yrs ago [9] Don't know	C. Who sponsored this message? [1] Private company [2] Government [3] NGO [4] Other [5] Was not a public/sponsored campaign [9] Don't know	D. Did they talk about how to wash hands, when to wash hands, both or neither? [1] How to HW [2] When to HW [3] Both [4] Neither [5] Don't know/remember
235. Hygiene promoter	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5]
236. Doctor/Nurse/Medical professional	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5]
237. Teacher/school employee	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5]
238. Poster, banner or billboard	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5]
239. Radio	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5]
240. Community meeting	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5]
241. Community health worker	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5]
242. Religious leader / imam	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5]
243. Sheikh	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5]
244. Family member	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5]
245. Peer	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5]
246. Child	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5]
247. Other (describe)	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5]

Please tell me about any source information about **yellow eyes disease** that you have encountered. It can be a person, place, program, or advertisement/promotion [open-ended question, for each source ask B, C then D, then ask "is there any other source, and continue until respondent says there are no other sources.]

Person/Place	A. Mentioned by respondent [1] Yes [0] No	B. How recently [1] Within last week [2] Within last month [3] Several months ago [4] About 1 yr ago [5] About 2 or more yrs ago [9] Don't know	C. Who sponsored this message? [1] Private company [2] Government [3] NGO [4] Other [5] Was not a public/sponsored campaign [9] Don't know

248. Hygiene promoter	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]
249. Doctor/Nurse/Medical professional	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]
250. Teacher/school employee	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]
251. Poster, banner or billboard	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]
252. Radio	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]
253. Community meeting	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]
254. Community health worker	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]
255. Religious leader / imam	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]
256. Sheikh	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]
257. Family member	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]
258. Peer	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]
259. Child	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]
260. Other (describe)	[1] [0]	[1] [2] [3] [4] [5] [9]	[1] [2] [3] [4] [5] [9]

261. End time (hh: mm) _____ _____ : _____ _____

Appendix 9: Structured Observation

Code for: Event type (Column 3)

Fecal contact Events:	Food Handling/Feeding Events	Respiratory Events:	Other events
1… After toileting 2… After cleaning a child's anus or changing a nappy 3… After contact with animal feces	4… Before preparing food 5… Before cooking food 6… Before serving food 7… Before eating 8… Before feeding a child 9… Before breastfeeding	10… After coughing/sneezing 11… After blowing nose (self) 12… After touching other's respiratory secretions	13… After feeding animals 14…After returning from working in fields 15…After eating 16...Other (specify in comments)

Household Id : ____ ____ ____

Respondent name _____

Sheikh ID____ ____ ____ ____ ____ ____ ____ ____ ____ ____ (fill in only if applicable)

Enumerator's name: _____

Start Time: |__|__|:|__|__| End Time: |__|__|:|__|__|

1. Line No.	**2. Time (24 hr: HH:MM)**	**3. Event type:** SEE ABOVE	**4. Person:** 1… Adult, F 2… Adult, M 3…Child, F (<5yrs) 4…Child, M (<5 yrs) 5…Child, F (5-10 yrs) 6…Child, M (5-10yrs) 7…Child, F (11-15yrs) 8…Child, M (11-15yrs)	**5. Were hands washed?** 1…Yes, one hand 2.. Yes, both hands 0… No 9…Could not observe *If 0 or 9 move to next event*	**6. Hand cleansing materials:** 1…Water only 2…Soap and Water 3…Ash 4…Other, Specify 9…Could not observe	**9. Device type** 1…Fixed, on a stand 2…Ibrik 3….other mobile device	**10. Location** 1…In/near main house (≤2m to entrance) 2…In/near latrine (≤2m to entrance) 3…In/near cooking area (≤2m to entrance) 4… >2m away from main house, latrine and cooking area	**11. Comments:**
01	:							
02	:							
03	:							
04	:							
05	:							

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