

Infant Faeces Management in East Sepik: Formative Research Report



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CITATION

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1. INTRODUCTION

Focusing on Infant Faeces Management

There are strong arguments for strategically designing behavior change interventions which focus on reducing the disease burden on children under the age of five. Diarrheal disease is the second leading cause of death and the leading cause of malnutrition in children under five (WHO 2013). Most transmission occurs in the domestic domain and can be prevented through the adoption of improved hygiene behaviours.

The logic of faecal-oral transmission routes suggests that if primary barriers to the transmission of faecal pathogens are in place, such as safe faeces disposal and handwashing after contact with faeces, then secondary barriers, such as handwashing before eating, feeding a child and cooking, will become less necessary. The significant distinction made here is between primary barriers (i.e. handwashing after contact with faeces) and secondary barrier (i.e. handwashing before eating, feeding, etc.). Curtis et al. (2000) therefore suggest that safe disposal of faecal matter, and handwashing with soap after contact with faeces, are likely the most important hygiene behaviours to address.

Despite common perceptions to the contrary, infant faeces pose as great a health risk as adult faeces, and are potentially more harmful due to the prevalence of diarrhea, and pathogens, such as hepatitis A, rotavirus and E.coli, that are more common in young children (WSP 2015). Unsafe disposal of infant faeces can be a major source of environmental contamination around the home, and poses a significant health risk to children under five, who are generally more susceptible to disease and spend large amounts of time on the ground, increasing their exposure to faecal matter and pathogens (O’Connell 2015).

WaterAid PNG (WATERAID) and local partners, Integrated Rural Development Initiative (IRDI) and South Seas Evangelical Church (SSEC), have identified unsafe infant faeces management, and inconsistent handwashing with soap at critical times by carers of children under the age of five, as commonplace and high-risk behaviours in the East Sepik communities where they are working. These behaviours have therefore been identified as the initial focus of a hygiene promotion campaign as part of the WATERAID Civil Society WaSH Fund Program (CSWFP).

Formative Research

This report summarises the key findings from formative research into infant faeces management (IFM) in communities around Wewak in the East Sepik region of Papua New Guinea (PNG), conducted by the International WaterCentre (IWC), WATERAID, IRDI and Divine Word University (DWU).

In WaterAid’s Hygiene Framework (WaterAid 2012), formative research is defined as “[r]esearch carried out prior to programme implementation to obtain information with which a hygiene promotion programme can be designed.” The purpose of formative research within a behaviour change intervention is to inform the development of specific strategies, activities, and promotional materials to bring about behaviour change in a target audience. When done well, formative research achieves a deep understanding about the psychological and situational factors influencing the behaviour of interest (both the ideal and less-ideal behaviours), and informs the identification of actions and a communication strategy designed to influence behavioural determinants. Ultimately, the purpose of formative research is the creation of evidence-based behaviour change strategies (i.e. activities and messages informed by research).

This report draws recommendations for a behavioural campaign targeting IFM, including the related behavior of handwashing with soap by carers of children under five. Through the design and implementation of this campaign, WATERAID and local partners will address a high-risk hygiene behaviour, while also developing skills and processes to undertake formative research, evidence-based campaign design, piloting, implementation and monitoring for an effective hygiene behavior change campaign.

Research Team

Organisation	Researchers
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2. METHODOLOGY

Situation Analysis and Selection of Target Behaviours and Audience

A Situation Analysis was carried out by former IWC Project Officer, Diane Cousineau, to understand the broader context and possible contributing factors for hygiene behaviour change in East Sepik. Data was collected through a review of existing reports and other literature, meetings with WaterAid and partners, workshops with IRDI and SSEC, and field visits to communities around Wewak.

IFM and the associated practice of handwashing with soap by carers of children under five years of age were identified as common and high-risk behaviours in communities. Potential contributing factors identified through the situation analysis included the perception that child faeces are innocuous, a lack of handwashing with soap by mothers, and in generally throughout the community, and other unhygienic practices associated with the disposal of infant and adult faeces, including high rates of open defecation.

A workshop was conducted in May 2015 with WaterAid, IRDI and SSEC to discuss and validate the results of the Situation Analysis, to determine the objectives for a hygiene promotion campaign focusing on IFM, to identify target communities, and to identify research and data collection needs to inform the design of this campaign.

The following campaign objectives were identified:

- Infant faeces from open defecation or nappies is disposed of safely as soon as possible after defecation.
- Used nappies are stored safely, cleaned safely, and washing water is disposed of safely.
- Carers wash infants bottom and hands with soap and water as soon after defecation as possible.
- Carers wash own hands with water and soap after handing infant faeces.

Research sites were selected based on the following factors:

- Villages that have existing reasonable access to water and sanitation services
- Where IRDI has existing relationships through working in the communities
- No behavior change programs have been carried out before

Table 1: Research Sites (Source IRDI, 2015)

Community	Features
Putanda	<p>1hour drive from Wewak</p> <p>Community lives in two armlets separated by river</p> <p>Popn:336, HH: approx. 35</p> <p>Source of drinking water: rain water tanks. Other uses source – river, creeks and dugout wells</p> <p>Sanitation – simple pit latrines and open defecation</p> <p>Housing material – Sego Palm and timber</p> <p>Has WASH Committee and WDC</p> <p>Livelihood – working at the Oil palm plantations and factory</p> <p>Aid post at the oil palm camp 10minutes away (currently closed) and public health center 15minutes drive by PMV</p>
Musangun	<p>30minutes drive from Wewak</p> <p>Popn:412, HH: approx. 30</p> <p>Water sources (all uses) communal taps from a gravity fed system. If system breakdown (rarely) go to the river/creeks</p> <p>Sanitation – VIP and simple pit latrines. There is a female hygiene unit (showers). Rubbish pits</p> <p>Housing material – timber and Sego palm</p> <p>WASH Committee and VDC</p> <p>Livelihood – small scale farmers of cocoa and betelnut. Some employed in Wewak town</p> <p>Health – from Wewak Boram’s hospital or church health centres</p>
Munjun	<p>2hour drive from Wewak</p> <p>Partly coastal and rest live on the hill</p> <p>Popn: 239 HH: 35</p> <p>Sanitation: Simple pit latrines and open defecation</p> <p>Housing – timber and sego palm</p> <p>Livelihood small traders, fishing, betelnut trading</p> <p>Has an elementary school</p> <p>VDC and WASH committee</p> <p>MCH health program(at time of research) with health department</p>
Serenge	<p>1.5hours from Wewak, 30minutes from Putanda</p> <p>Water sources (all uses) gravity fed system with communal taps and private tanks</p> <p>Sanitation – VIP and simple pit latrines. A female hygiene unit with two showers</p> <p>Access health services same as Putanda – aid post and public health centres</p> <p>Livelihood: Working in Oil Palm plantations and Factory</p> <p>WASH committee and VDC</p>

Ethics

IWC entered into a partnership with Divine Word University (DWU) to collaborate on research activities where DWU would join IWC, WaterAid and IRDI in the field research conducted in November 2015 in Wewak. Research tools and methodology was developed in consultation with Divine Word University, IRDI, SSEC,

WaterAid. These tools were presented as part of the Ethics application to DWU's Research and Extension department. Ethics was granted by DWU in August 2015

Formative Research

The Situation Analysis and subsequent workshop identified the need for Formative Research to provide a more comprehensive and nuanced understanding of the key determinants influencing IFM-related behaviours of carers in the target communities, to inform the design of appropriate campaign tools and approaches.

The research aims and key questions were:

1. To identify and prioritise high risk hygiene practices (related to IFM) in the target communities:
 - a) What risky practices related to IFM are the most widespread?
 - b) Who practices these risky behaviours, and who influences them?
 - c) What are the alternative (positive) practices that should be promoted?
 - d) Who are the primary, secondary (influencers) and tertiary (opinion leaders) target groups?
2. To identify the most promising drivers or motivators for behaviour change:
 - a) What drives or motivates adopters to practice the desired behaviours? What makes it easy? What benefits do they experience?
 - b) What prevents non-adopters from practising the desired behaviours? What makes these practices difficult? What benefits do they experience from the undesirable practices?
3. To identify the most appropriate channels and agents for communication of hygiene messages:
 - a) What channels are currently used for communication?
 - b) Which channels are most trusted or credible in disseminating hygiene messages?
 - c) Do these channels differ among different target groups? Which ones work best for which groups?

Data collection and preliminary analysis took place between November 2015 and March 2016. These processes are outlined in further detail below.

Data Collection

A mixed methods approach was applied to the collection of qualitative and quantitative data, including household surveys and facility observations, focus groups discussions, structured behavioral observations, in-depth interviews with carers of children under five.

The tools were designed to enable the researchers compare finishing between observed and reported practices. Previous studies have concluded that to be able to adequately understand behaviours, self-reported practices are biased and tend to be influenced by knowledge of practices rather than actual behaviours. By combining household data collection and structured observations, the research has been able to demonstrate the differences, where they exist, in knowledge, attitudes and actual practices around disposal of faeces and hand washing with soap.

In addition to interviews and observations of mothers, the research also conducted observation of facilities (faeces and hand washing locations). Focus group discussions were held with the Mothers and Fathers separately to gain a deeper understanding on shared norms, attitudes and aspirations.

Rapid household data was collected using a mobile based survey tool, SurveyCTO, used by IWC that has proven easy to use, has high levels of accuracy and has offline capabilities useful when working in remote communities where there is no electricity or telecommunications connectivity.

Table 2: Summary of data collection tools

Data collection tool	Total no. completed	Purpose of tool
In-depth Interviews with carers of children under five	49	To have a deeper conversation on the attitudes, practices To add to the data collected in the observations
Structured Behaviour Observations	49	To collect unbiased data on practices in the natural setting of the respondents
Household Surveys (including facility observations)	74	To rapidly collect data on different practices in the households and identify households with children under five As a tool to make unbiased selection of respondents for observations and in depth interviews
Focus Group Discussions – Women	4	To gain deeper understanding of the common attitudes, knowledge and social norms around infant faeces management To assess level of influence on IFM among the respondents
Focus Group Discussions - Men	4	To understand the role of Men in IFM, their attitudes and opinions. To understand the drivers and motivators for men in getting involved in IFM

Data Analysis

SaniFOAM Framework

The SaniFOAM Framework was used to guide the data analysis process. This framework identifies the elements that are required to achieve sustained behaviour change in sanitation and hygiene interventions, and can be used to design, monitor, and evaluate sanitation and hygiene behaviour change interventions.

Figure 2: SaniFOAM Framework (Devine 2009)



The determinants on this framework are described below:

Focus – on a target audience and a behavior that the intervention seeks to promote.

Opportunity – access to resources needed to perform the behavior.

The ‘Opportunity’ element is about assessing the feasibility of practicing the behaviour in a given physical and social environment – essentially, the most significant external factors affecting a person’s behaviour, over which they may have less control. These determinants influence the probability of the new behaviour being adopted, and may or may not be within the sphere of influence of a handwashing intervention.

- Access/availability: to the opportunity to wash your hands with soap e.g. access to soap and water
- Product attributes: of those used in the hand washing. What are the attributes and how do they either enable or deter handwashing, depending on their characteristics and time for handwashing (soap: lather, smell, shape; water: clarity, colour, odour)
- Social norms: the rules that govern how people behave in a group. They can be implicit or explicit, and may not be homogeneous within a target population.
- Sanctions/enforcements formal, explicit rules about acceptable behaviours, possibly including penalties (e.g., a fine for not owning a household toilet, or being caught defecating in the open).

Ability – capacity to perform the behaviour.

This determinant category relates to someone’s perceived or actual capacity to practice the desired behaviour (depending on opportunity and motivation).

- Knowledge - Do they have the practical knowledge and skills to perform the behaviour? And more importantly, do they believe they can
- Skills and self-efficacy: technical knowledge relating to building and maintaining a handwashing facility (skills), and confidence in one’s ability to practice safe IFM (self-efficacy).
- Social support’ - either the physical or emotional comfort given by anyone in someone’s surroundings. It differs from social norms because it is about the way the people are interacting
- Roles and decisions: influences of different household members on IFM decision-making (e.g., what type of toilet? How much to spend on soap, diapers?)

- **Affordability:** relates to one's ability to pay for a product/service, Affordability is different from willingness to pay, which is considered in the category of 'motivation'. Can they afford the time, money, and effort required to practice the behaviour?

Motivation – desire to perform the behaviour.

Motivation is about self-interest and the positive or negative attitudes people have about the desired behaviour or about making a change. It may relate to an individual's beliefs about the behaviour's importance (perceived risks associated with current behaviour), perceived benefits of the new behaviour, previous experiences, competing priorities (time, money, etc.), or their general readiness to change. In the FOAM framework, motivation has a direct influence on behaviour, but is seen to be moderated by 'ability' and 'opportunity'.

- **Belief and attitudes:** the perceptions and understandings one has of infant faeces management
- **Outcomes: expectations:** perceptions of consequences of the behaviour
- **Threat:** perceptions of negative outcomes linked to IFM
- **Intention:** an individual's plan to practice the behaviour
- **Values:** generally, attitudes and beliefs operate at the individual level, while values operate at the collective level
- **Emotional, physical, social drivers:** the positive or negative thoughts and feelings that drive behaviour (i.e., disgust with faeces, comfort in having one's own toilet, pride in owning a toilet, etc.)
- **Competing priorities:** purchasing/upgrading a toilet is often placed at a lower financial household priority to other expenditures, such as day-to-day necessities (food, transport), periodic expenses (school fees, religious celebrations), or discretionary expenditures (home improvements).
- **Willingness to pay:** relates to several sanitation behaviours, such as a buying, upgrading, and maintaining a toilet. Can be complex (e.g., willing to pay for materials, but not labour), and can be influenced by an expectation of a subsidy and perceived value (cost not seen as worth the end result).

Analysis Process

Quantitative and qualitative data analysis techniques were used to categories and summarize data from the various data collection tools. Microsoft Excel was used to analyse the quantitative data gathered through the household surveys and facility observations, with descriptive graphs and tables produced. A four step process was followed to analyse the qualitative data gathered through focus group discussions, in-depth interviews, and structured behavioral observations:

Step 1 – Transcription and translation: data from focus group discussions and in-depth interviews was transcribed and translated into English by the research team.

Step 2 – Thematic coding: focus group discussion and interview transcripts, along with structured observation reports, were coded (or summarized) into themes using the determinants outlined in the SaniFOAM framework. Data from the focus group discussions, in-depth interviews and structured observations were displayed in a separate data matrix for each tool, using a common list of codes, to enable analysis of data from individual households, and comparison of data across the different qualitative tools.

Step 3 – Synthesize: data matrices from the qualitative tools were compared, along with summary figures from the rapid household survey and facility observations, and a preliminary report produced, identifying key

themes, patterns and variations in the data, unexpected findings and key learnings under each of the determinants in the SaniFOAM framework.

Step 4 – Validation: emerging findings from the preliminary data analysis were discussed in a participatory workshop with research partners WaterAid, IRDI, SSEC and DWU in Wewak. The research team and partners, including representatives from the Wewak District Health Promotion Team participated in a two-day workshop to reflect on the data, discuss emerging findings in relation to key research questions, and identify recommendations for an IFM behaviour change campaign, including key messages and channels.

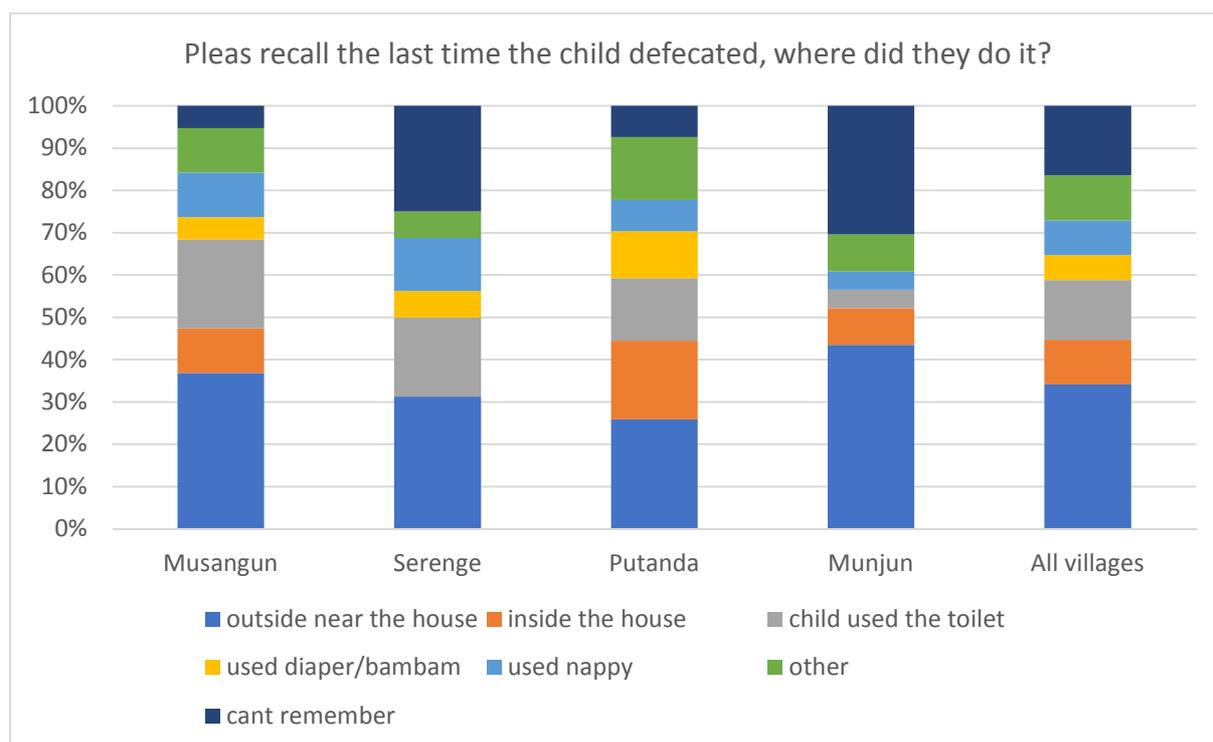
3. RESULTS

Focus

Reported & Observed Practices

Open defecation by infants

Rapid Household Surveys (RHHS), Focus Group Discussions (FGD), In-depth Interviews (IDI), and Structured Observations (SO) confirm that the practice of open defecation by children under the age of five is a common and accepted practice in the four villages.



Infants under the age of five commonly defecate in the open, or wear cloth nappies and diapers. Children over the age of five are more likely to be assisted by their parents to use the toilet, however, in some cases, they too are allowed, or actively encourage, to defecate in the open.

“because of the bad smell of the toilet, I discourage him to use the toilet and I tell him to shit outside”
(Female FGD respondent, Munjun village).

Disposal of infant faeces and used diapers

In both IDIs and FGDs, the most commonly reported practice for disposal of infant faeces was disposal into the household toilet, or by burying. In IDIs, however, a small number of women also acknowledged that they

sometimes throw infant faeces and used diapers in nearby bushes, rivers, creeks and the sea. Other interviewees, and both male and female focus group participants, commented that they have observed women practicing these unsafe methods of disposal, and attribute this to laziness, lack of awareness, the absence of sanctions or social norms, and simply 'because no one is watching'.

"most people will say 'no one is around to see me, let me just remove my waste here'" (Female FGD respondent, Munjun village)

"most mothers are educated, it's their laziness that makes them not do the right thing" (Female FGD respondent, Munjun village)

Women that reported using the dig and bury method of disposal vary in practice when it comes to the depth of hole dug for this purpose, from 5cm to 30cm. In FGDs, both men and women reported that in some cases infant faeces may be covered only lightly with dirt or sand, and that this is considered enough to disguise the smell of the faeces, and to prevent dogs from digging up and spreading the faecal waste.

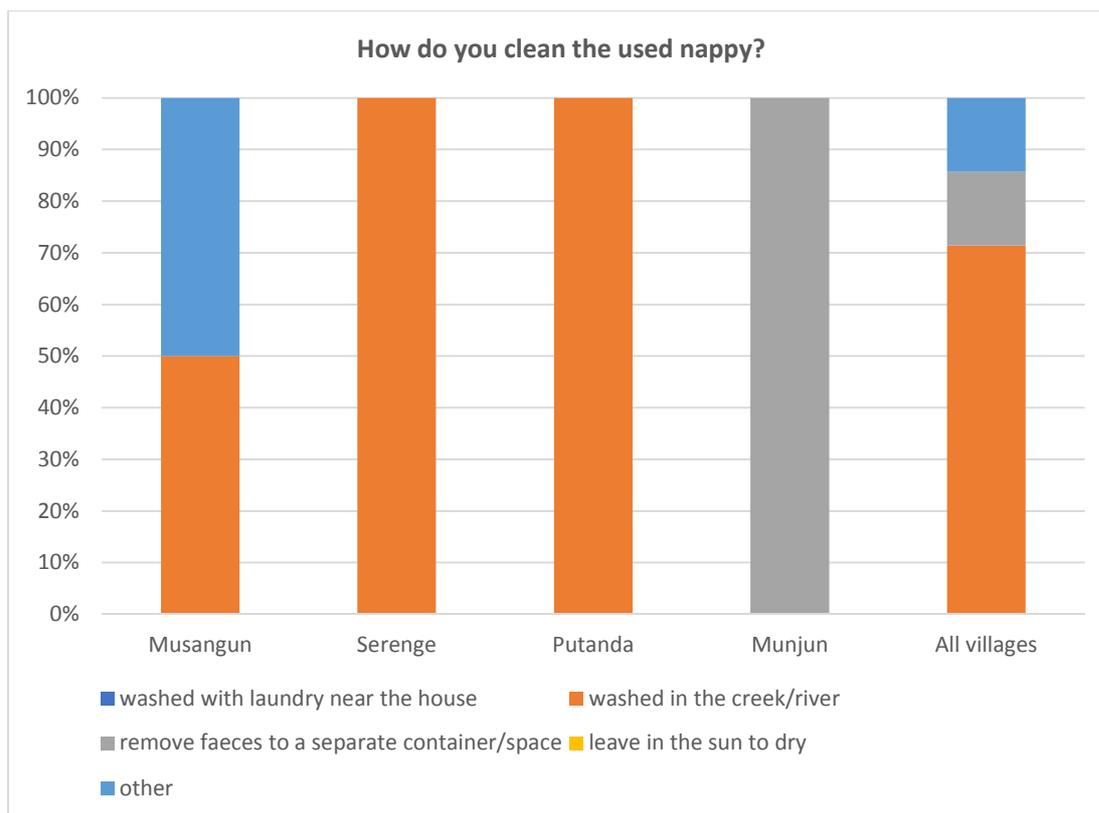
Some women reported using a spade to remove faeces from the ground, others said they use local materials, such as leaves, coconut shells and husks, which are then disposed of in the toilet, or in open rubbish pits and nearby bushes.

During SOs, some women were observed disposing infant faeces and used diapers in the toilet, however, instances of infant faeces being left in the open, or thrown into nearby bushes were also observed. In one case in Munjun village, a woman was observed disposing of infant faeces into the toilet after the child defecated on the ground, but shortly after, when another child defecated, the carer made no effort to remove the faeces.

These observations and anecdotal reports from both IDIs and FGDs suggest that safe disposal of infant faeces in a toilet or by burying, while widely reported, is inconsistently practiced both within the community, and by individuals. Observations and reports also indicate that those who practice the dig and bury method of disposal may do so unsafely, in shallow holes, and that many do not use a spade to remove faeces from the ground, and as such, are more likely to come into direct contact with faeces during disposal.

Cleaning of cloth nappies and disposal of wastewater

Nappies are usually collected in bags or buckets in the home, and are either washed in rainwater collected in buckets, or taken to the river or the sea for washing.

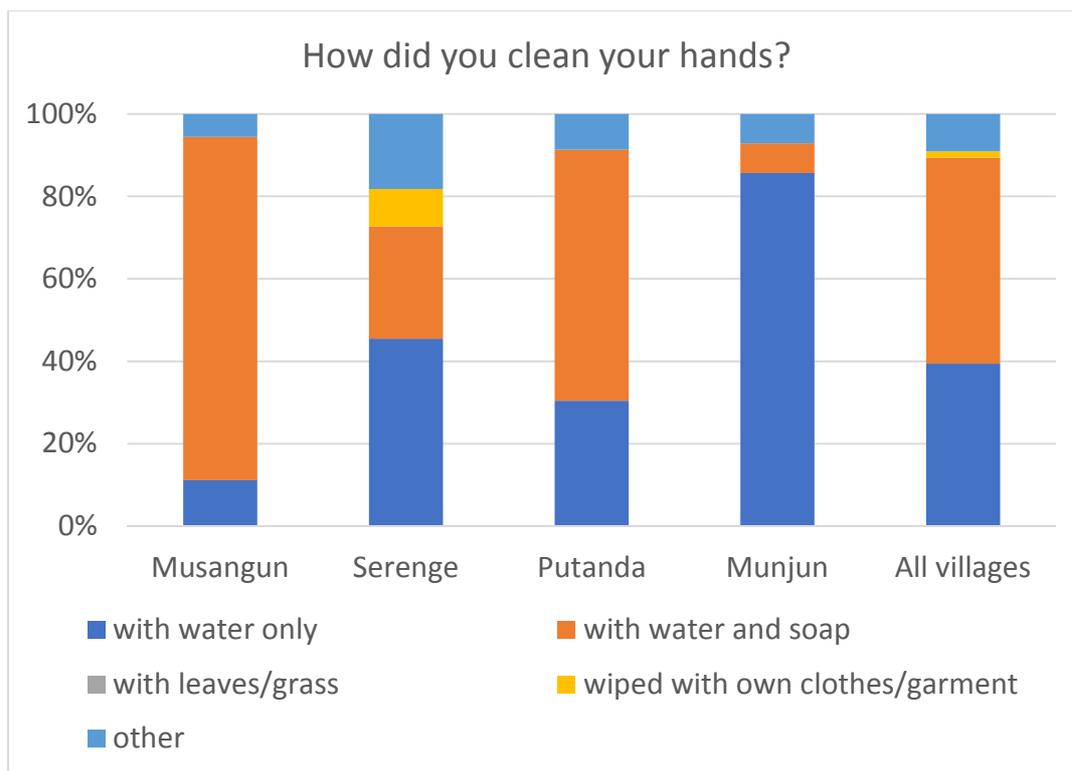


IDI participants reported that nappies are washed downstream, away from where people bathe and collect water for cooking and other domestic purposes. The wastewater is most commonly disposed either directly into the river or ocean, or in nearby bushes. One interview participant in Musangun village reported digging a hole near her house to dispose of wastewater, due to concerns about contamination of the river where people bathe. Another woman in Putanda noted that she disposes of the wastewater in the toilet, due to similar concerns.

A majority of IDI participants reported using soap, and in some cases bleach, to clean nappies. In Musangun village, one respondent said she always washes nappies with soap, and if at any time soap is unavailable, she will store the soiled nappies in a bag at home and wait until she had soap to do the washing. Interestingly, this same respondent reported that she does not always use soap to wash her hands.

Handwashing with soap after contact with infant faeces

Prioritisation and the availability of soap for handwashing was a commonly identified barrier in IDIs. In the Rapid Household Survey, 76% of respondents (66/87) reported that they washed their hands the last time they handled infant faeces, and 52% of those who reported washing their hands also said they used soap (34/66), while 42% reported using water only (28/66). Comparing the Rapid Household Survey and Facility Observations, only three (3) respondents were identified who reported washing their hands with water and soap, and were also observed to have a dedicated handwashing facility with soap present.



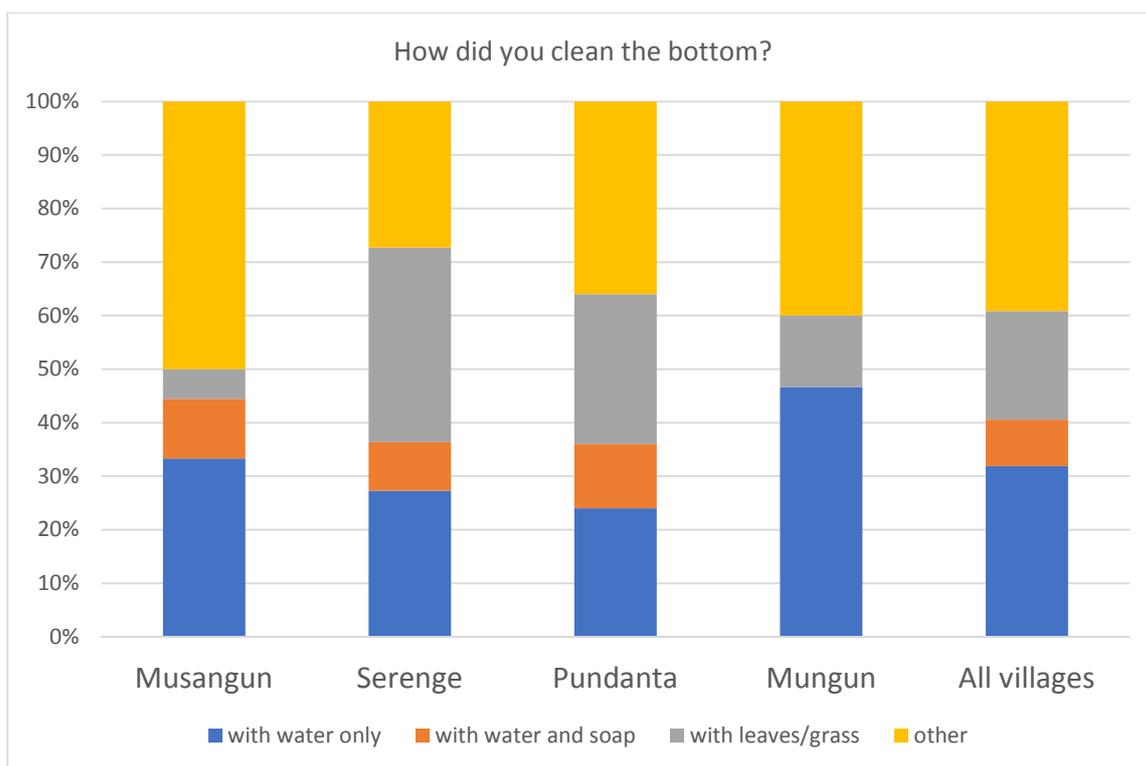
A majority of the IDI participants reported that they wash their hands with *water only* after handling infant faeces, and that they use soap only sometime, when available. Several women acknowledged that they sometimes forget or neglect to wash their hands in any way, due to distractions and other priorities. Ash and laundry powder were identified as alternatives to soap, while lemongrass was also mentioned as a local alternative.

Handwashing with water was widely reported in IDIs, however, in SOs carers were more commonly observed neglecting to wash their hands in any way after coming into contact with infant faeces. This observational data, along reported practice, and RHHS findings, suggests that handwashing with soap is not regularly practiced, and that even handwashing with water is practiced inconsistently by carers after handling infant faeces.

Cleaning the infants bottom with soap and water

In all four villages, women reported using *water only* to wash the infant's bottom, or soft leaves, coconut husks, paper and cloths if water was not available. Diluted laundry powder and shampoo were identified as alternative products for cleaning the infant's bottom, however, these products were considered to be harsher on the baby's skin than soap.

SOs confirmed that use of water, or dry materials, is common practice, with only a small number of carers observed using soap and water to clean the infant's bottom. In FGDs, both men and women noted that children are not always cleaned immediately after they defecate, and as a result, that these children attract flies.



Opportunity

Access

Water

Households in the four villages are accessing water from communal rainwater tanks, improvised rainwater collection systems, communal tap stands, rivers, creeks, and in coastal areas, from the sea.

In the FGDs, men and women reported that water is not always available in the home, and that hygiene practices are affected by the distance it takes to travel to the water source, and the availability of water, particularly in the dry season. In Putanda village, women to walk long distances, up and down the hill, to access the river. In Munjun, women use the sea for washing nappies and bathing their children. During the dry season, and other periods of water scarcity, women will conserve household water for drinking, and are more likely to use surface water at the source (river, creeks and sea) for bathing and laundry.

In IDIs, several women commented that when water is not available at home, or they have to walk long distances to fetch water, they conserve the resource and choose not to wash their hands, or their children, with water. Instead, mothers will clean the infant's bottom with paper or soft leaves. Rainwater is commonly collected in buckets for washing nappies and other clothing, and one woman in Musangun reported that she has a drum beside her house to collect rainwater specifically for the purposes of washing her child.

Handwashing facilities and soap

In Facility Observations (FOs), 49% of households were observed to have a dedicated handwashing facility. Of these households, 50% were observed to be using a tippy tap, and 29% were using buckets, drums or other containers to store water specifically for handwashing.

In IDIs, women consistently reported that soap was easy to access, and could be purchased from canteens in the village or from town. Observations revealed, however, that soap was present in only 33% of households with a dedicated handwashing facility. IDI participants confirmed that while soap is easy to access, it is not

always available in the home. Ash, sand and lemongrass were identified as locally available alternatives for handwashing.

Product attributes and preferences

Soap

Bar soap is the most commonly preferred product for both handwashing, and for cleaning the infant's bottom, as reported in IDIs. While women occasionally use laundry powder or shampoo, these alternative cleansing agents are considered harsher on the skin than bar soap.

Women commented that bar soap makes their hands, and their children smell nice, and removes the odour of dirt and faeces. Some women commented that they like the smell of lemongrass, and that they use this as a local alternative to soap for handwashing, both because of the appealing smell, and because it is believed to keep flies away.

While different types of soap are preferred for handwashing, bathing, laundry, and dishwashing, IDI participants did not express a strong preference for one brand of bar soap over another.

Diapers

A general preference for nappies was reported in IDIs, however, disposable diapers are commonly used at night time, and when carers are visiting town or travelling with an infant. Women reported that nappies are preferred, because they are reusable, can be kept on the infant for longer, and are more economical than disposable diapers. Diapers, however, are considered more convenient, and some mothers prefer to use diapers for their infants at night time, and when travelling into town.

Health and hygiene information

Health clinics are the most common source of health and hygiene information, as reported by IDI and FGD participants, however, this information is rarely shared beyond the household.

"General message brought to the community is shared. Health messages that individuals receive during clinic check is not shared to other mothers." (Female interview participant, Musangun village)

"the information have help me a lot but when I return [from the clinic] I do not tell other people. Whatever I heard stays with me only. I used to say that it's through my own hard work that I pay for transport to go to the clinic, so why should I tell others." (Female interview participant, Musangun village)

One IDI participant in Putanda suggested that information is more likely to be discussed and shared between mothers if it is disseminated in a public place where people gather.

Community meetings and visits by NGOs and health workers were identified in FGDs and IDIs as the preferred method of communication for health and hygiene related information. In addition to health workers, community leaders, WaSH Committee members, and the Church were identified as trusted sources of information.

Some IDI participants mentioned hearing health messages over the radio, and researchers also heard messages broadcast while in Musangun village, however, as noted in FGDs, not all households in the four villages have access to radio.

Social norms, sanctions and enforcements

In FGDs, open defecation was reported to be widespread in the coastal village of Munjun, while in Putanda, most adults are said to be using household toilets. While social norms surrounding adult defecation may vary across the four villages, open defecation by children is common place, and few if any formal sanctions or enforcements relating to IFM were identified in interviews or focus group discussions.

IDI participants in Musangun all reported being unaware of the IFM practices of other women in their village, and that each household had its own practices. Some women asserted more strongly that the IFM practices of other mothers was not their business.

"Individuals, if they want to they will. How will I know? I don't know it is up to them to decide, they were taught already." (Female interview participant, Musangun village)

"Sister I do not know about each individual, each individual mother on how they use to stay and look after themselves and their families" (Female interview participant, Musangun village)

"they are the mothers and who are we to tell them what to do? They will tell us to go and do the same with our babies." (Female interview participant, Putanda village)

In IDIs and FGDs in Putanda and Serenge, women commented that the disposal of infant faeces and used diapers in a toilet, or by burying, is becoming a common practice. A number of the interviewees attributed this change in behavior to IRDI health and hygiene awareness campaigns, and growing agreement within the community that this is the right way to dispose of infant faeces, to avoid the spread of disease and to keep the local environment clean.

"[Previously] when the children defecate anywhere, mothers don't dispose the faeces and put it in the proper place; they just leave it and go away. Now the place looks clean and there are no children's faeces, when the children defecate, they collect it with spade and put it in in the toilet so the place looks nice" (Female FGD participant, Serenge village)

In Putanda, female FGD participants commented that there are separate areas along the river where bathing, washing dishes and doing laundry are allowed, and that soiled nappies are washed downstream from where people bathe. Similarly, in Serenge and Munjun village, some IDI participants reported that disposal of infant faeces near water sources or in the river was prohibited. It is unclear, however, if this these are official local ordinances, or enforced in any way.

While few formal sanctions or enforcements relating to IFM were identified, both male and female FGD participants agreed that IFM is a mother's duty, and commented that if the mother does not perform her designated role, her husband and other family members may become angry, or even violent.

Generally speaking, across all four villages, IFM is considered a private household practice, and the sole responsibility of women. Aside from these beliefs about gender roles, there do not appear to be any strong social norms, sanctions or enforcements promoting safe IFM practices in any of the four villages.

Ability

Knowledge and skills

Knowledge of good hygiene practices is strong in the four villages. In IDIs, women demonstrated good knowledge of the health risks associated with poor hygiene; the critical times for handwashing (after defecating or handling faeces, and before eating or preparing food); the importance of using soap to remove germs and prevent the spread of disease; and the need to safely dispose of infant faeces in a toilet or by burying, as a barrier to faecal-oral transmission via flies.

“Burying is not good, throwing at the toilet is best. When buried the dogs and chickens access it and flies sit on it and then sit on our food and we eat the food and get diarrhoea” (Female FGD respondent, Munjun village)

In focus group discussion, men also identified these behaviours as good hygiene practices to avoid germs and prevent the spread of disease.

Knowledge of good practice for safe IFM does not appear to be a barrier to behaviour change in the four villages, however, as reported in FGDs and directly observed by the research team, individual knowledge does not always translate into practice.

“Most women, maybe few times they do the right thing, but most times they just leave the children shit anywhere and some kids will walk around with shit, in this village you can find shit along the road side and anywhere in the bushes. Some of us in this discussion are not telling the truth, they don’t wash the children’s hands and also the diapers are not disposed in the right places.” (Female FGD respondent, Munjun village)

IFM is considered a private matter, and as such, despite individual knowledge and beliefs about good practice, there do not appear to be strong social norms surrounding IFM to validate, reinforce or support individual knowledge and practice.

Social supports, roles and decisions

In FGDs there was general agreement by women and men that while both parents have a responsibility to care for children, in practice IFM is the sole responsibility of women, and men are not expected to assist. Only one interviewee reported that her husband has a specific role in IFM, burying used diapers, but for the majority of the other women interviewed, their husbands do not assist directly with IFM.

In focus group discussions, men insisted that IFM is a women’s role.

“It does not happen here at Munjun because we think it’s the mother’s job to remove the faeces” (Male FGD respondent, Munjun village)

“some of us feel sorry for them [women] because they do a lot of hard work, but it is their task God gave, and it is the same for us fathers, God has given us tasks, that is why, but we feel for them” (Male FGD respondent, Putanda village)

“A father who thinks to help the mother will do it, otherwise he will just look to the mother or he will call the mother.” (Male FGD respondent, Musangun village)

It was also acknowledged, however, that women are busy, and should receive more help from their husbands.

“From how I see it, the father must help the mother, both must play equal roles, if the mother is busy then the father must help.” (Male FGD respondent, Putanda village)

As reported in focus group discussions, men occasionally care for children when the mother is busy, unwell, or away. Older men spoke more freely about assisting their wives and daughters to care for children, while younger men indicated that they were embarrassed to talk about caring for infants or assisting with IFM.

“Some of us, we look after the infants, but we are just shy to say so...I cook and feed my children because its hard work. I look after my children, but I am shy to say so.” (Male FGD respondent, Putanda village)

“it happens like this, young fathers are embarrassed to deal with the child’s feces, as he gets older and matures then he will help his wife” (Male FGD respondent, Putanda village)

One respondent in Musanguan village reported that her family and neighbours assist with IFM, and that they do so because they live together and are all concerned about keeping the community clean and healthy. However, a majority of IDI participants reinforced the message that IFM is ultimately the responsibility of the child's mother, and that limited support is received from extended family members or neighbours.

In FGDs, women discussed their many daily tasks and responsibilities, and commented that men can become angry or violent when mothers are not seen to be performing all of their duties.

"she has to be responsible for that [IFM]. If the father doesn't do it, then she must do it. If she asks the father to do it, he might not be happy about it and might start an argument for disturbing him so she has to play all her role" (Female interview participant, Musanguan village)

Men also acknowledged this behavior.

"Yes, sometimes when they [men] are hungry they get angry, we must admit it, plates and pots get broken." (Male FGD respondent, Putanda village)

Affordability

Many IDI participants explained that soap for handwashing is only purchased when money is available, however, this may be more an issue of prioritization than affordability. Soap is sold at canteens in the community, and most women reported using some form of soap for washing clothes and nappies, indicating that it is a common household purchase. One mother reported that it is easy for women in the village to make small sums of money by selling goods in the community, and that soap is easily purchased this way.

While soap is sold at canteens in the community, diapers are purchased in town, so not all mothers may be able to afford the transaction costs. Re-usable nappies are considered a more economical option, and widely used

Motivation

Attitudes, beliefs and values

FGDs and IDIs highlighted a widespread belief that good hygiene, including handwashing with soap, using toilets, and disposing of infant faeces safely, is important for health and to avoid the spread of germs and disease. Maintaining a clean and healthy community was also a strong value highlighted by both men and women in FGDs, and in all four villages, there are particularly concerns about the safety of drinking water supplies and other local water sources.

The dominant attitude towards IFM in the four village is that this practice is the responsibility of mothers, and a private matter, not something that mothers or community members commonly discuss with one another. Individual beliefs about the best method of infant faeces disposal vary. While some women believe that infant faeces and used diapers should be disposed of in toilets, so dogs cannot dig them up and spread faecal matter and germs around the community, others believe that infant faeces and used diapers should be buried to prevent toilet pits from filling too quickly. There was general agreement, however, that throwing infant faeces and used diapers into the toilet is easier and more convenient for mothers than burying, and that when faeces are not buried correctly, that this attracts dogs and flies, posing a health risk to the wider community.

Cultural beliefs about the danger that infant faeces poses to men, and grandparents, were also discussed in FGDs and IDIs.

“According to our culture, men are not supposed to touch infant’s feces. If he does, then his body will become weak and he will lose the strength to go hunting or look for food for his family.” (Male FGD respondent, Putanda village)

“I clean it properly, I have a custom that I am not allowed to touch and wash my grandchildren’s faeces, because I will be blind, so I collect it with the leaves and throw it in the toilet. So it doesn’t give me a lot of work.” (Female FGD respondent, Serenge village)

“I do help my daughter, but then she tells me that I will go blind for doing that however I tell her not to believe in those superstitious beliefs of the ancestors. Today, the spiritual word of God has come and there is law.” (Male FGD respondent, Putanda village)

Some IDI participants also believe that adult and infant faeces should not be left in the open where it could be picked up and used for witchcraft to “poison” family members.

Drivers

Concerns relating to **health** and **avoiding the spread of disease** were commonly mentioned in IDIs with carers, and in FGD discussion with both men and women. In FGDs, **pride** was also identified as a reason to maintain personal and environmental cleanliness, in the home and the wider community.

“We often change when we see other villages improve, like some villages are practicing Healthy Islands, it’s so beautiful, and we want to be like that.” (Male FGD respondent, Munjun village)

“Before we are not like this, you will not see us clean like this. WaterAid came in and we received water services here, and they gave us training too. Now we have become beautiful people and we are here. We look after our homes and our environment.” (Female FGD respondent, Musangun village)

For carers of young children, the desire to **nurture** and the responsibilities of being a ‘good mother’ were expressed as strong drivers for hygiene practices:

“I don’t want my children to be dirty; I want them to be clean, because, when they are with dirty or toilet, they might get sick, like diarrhea. As a mother I must do this work, even though I am tired, I must still work because am a mother, I love them and I born them.” (Female FGD respondent, Serenge village)

“I am a mother, so I have to do things well so to stop sicknesses happening within my family” (Female interview participant, Musangun village)

“He is under my care as his mother, so I look after him.” (Female interview participant, Musangun village)

Looking, feeling, and in particular, smelling **clean**, was also commonly mentioned as the rational and motivator for handwashing and cleaning infants with soap and water.

“For myself I used to think that when I wash her bottom after she defecates is a good thing. If I just clean it [with nappy/bambam] her body may still smell of faeces or some faeces may still be on her without me noticing. Therefore, when I wash her bottom, she will smell nice and flies won’t follow her around.” (Female interview participant, Musangun village)

“I think I have to wash her with soap to keep her clean and also to make her skin smell nice.” (Female interview participant, Musangun village)

“I am a mother so I have to do things well so to stop sicknesses happening within my family” (Female interview participant, Musangun village)

"It is good [to clean the infants bottom] because its germs so I have to keep his health clean like that so he can feel good and walk around. To avoid him from getting sick." (Female interview participant, Musangun village)

While women appeared to value cleanliness (looking and smelling clean), status was not expressed as a driver of hygiene behaviours in IDIs. One women commented that men may gossip or complain about women who don't do the right thing, and that this social pressure informs her beliefs about the best way to dispose of diapers:

"For those mothers that throw [diapers] in the river – I did once – we mothers, we must use our heads. Don't remove the bambam [diaper] and throw in the river. When the men go and wash in the river they see the waste and comment on us women. The better way is to dig and bury. To just throw in the river is not good, because the men do all sorts of comments, so we must use our heads and not do these things." (Female FGD participant, Putanda village)

Environmental cues (specifically, having soap and water available in the home) were identified by many IDI participants as the most effective way to remind women to wash their hands with soap after handling infant faeces, and to use soap cleaning their child's bottom. Several IDI participants commented that visible dirt is also a strong reminder to wash hands with soap.

"When we see soap, or the soap is in front of us, it makes us think about using soap. When we see that our hands are visibly dirty we wash our hands with soap if see don't see dirt then we don't use soap." (Female FGD respondent, Munjun village)

The response of one young mother in Musangun highlights the power of visual or environmental cues to trigger behaviours, even in the absence of strong knowledge or beliefs about the behavior itself. When asked whether she thought it was good to use soap when cleaning her infant's bottom, she responded:

"I don't think anything of it, I just use it if it's available." (Female interview participant, Musangun village)

Competing priorities

Several IDI participants reported being lazy, busy, distracted by other tasks, or simply forgetting to practice what they consider to be good IFM behaviours, including handwashing with soap, cleaning the infant's bottom with soap and water, and promptly disposing of infant faeces after a child defecates in the open.

"When we are busy, sometimes we forget to wash our hands" (Female FGD respondent, Munjun village)

"When I am washing his bottom, and if the soap is available near, then I use soap, and if the soap is inside the house and elsewhere, or if I am busy, I wash with water only and continue to do my other work." (Female interview participant, Serenge village)

Other duties, such as cooking, may distract mothers, or be prioritised over IFM.

"She [the mother] should finish her cooking first, but then again for health reasons she has to do it [IFM] so she might be a little in between. They [relatives and friends] will be angry at her, they will tell her to leave her child and his faeces and finish her cooking first. But [the] mother will think about health reasons, she will still have to do that." (Female interview participant, Musangun village)

4. KEY FINDINGS AND RECOMMENDATIONS

Prioritising High risk hygiene practises

Individuals who bury used diapers do so with varying degrees of effort and caution. Disposal of diapers in open rubbish pits, in shallowly dug holds, or in some cases, by lightly covered with dirt, are practices that were reported and observed in the villages. If not buried in a deep hole and adequately covered, used diapers and infant faeces attract flies, dogs and other animals that can then spread the fecal matter around the community. Women also acknowledged that disposal of infant faeces in the toilet was a more convenient practice. As such, **disposal of infant faeces and used diapers in household toilets should be promoted as the most ideal practice.** This practice is also considered the safest method of IFM by the World Bank Water and Sanitation Program (WSP).

Reported practice and direct observations confirm that handwashing with soap after handling infant faeces is inconsistently practiced by carers of children under the age of five. Knowledge about the importance of handwashing and using soap to remove germs and prevent the spread of disease is strong in all four villages, however, this does not appear to be translating into practice. **The availability of water and soap in the home as a visual or environmental cue, and the prioritisation of soap and water for handwashing, are barriers that must be addressed if handwashing is to become a habitual practice amongst carers.**

Across the four villages, it appears to be well known and generally agreed that disposal of infant faeces and used diapers in toilets, or by burying, is the most appropriate method of IFM. This behavior is practiced inconsistently, however, and **indiscriminate disposal of diapers and infant faeces remains a common and high risk practice in the four villages,** as observed by both the researcher team, and reported by community members themselves.

Accessing safe and reliable water sources for consumptive purposes is a challenge reported in all four villages, particularly in the dry season when households depend largely on surface water from rivers and creeks. While in some villages there are rules regarding the locations at which women are allowed to wash nappies and dispose of wastewater along rivers and creeks, conflicting reports suggest that these rules are not always adhered to or enforced, despite general concerns about water quality. Washing nappies and disposing of wastewater directly in or beside rivers and creeks poses a health risk to those using the river for other consumptive purposes, including drinking. Ideally, **nappies should be rinsed in buckets, faeces disposed of in toilets, and wastewater disposed of away from rivers, creeks and the ocean.**

Key motivators and drivers for change

Individually, carers of children under the age of five appear to be aware of safe methods of disposal for infant faeces, and the need to use soap for handwashing and cleaning the infant's bottom. IFM is considered a private issue, and a women's role within the home, and as such, it is not spoken about or discussed, even between women. As such, there are no social norms, or socially agree upon "good practice" for IFM. **A hygiene promotion campaign should aim to build social norms around IFM in the community, to validate, reinforce and support safe behaviours.**

Access to water and soap around the home appears to be a barrier to safe IFM in all four villages. If water and soap are not readily available in the home, or prioritized for handwashing and cleaning infants, it is unlikely that safe IFM behaviours are being practiced at critical times, despite reports. When it comes to purchasing soap for handwashing, affordability does not appear to be as significant a barrier as prioritisation.

Prioritisation of soap and water for handwashing should be emphasized in a hygiene promotion campaign.

The drivers of nurture (being a “good mother” and ensuring that your children are happy, clean and healthy), and cleanliness (smelling, looking and feeling clean), appear to be the strongest motivators of IFM behaviors amongst carers of children under the age of five. These individual drivers may be reinforced by strong communal values including health, cleanliness, and aesthetic beauty, which were linked to feelings of village pride. **A hygiene promotion campaign should therefore focus on nurture and cleanliness in tools and strategies targeting mothers, and reinforce messages and social support for safe IFM at the community level by emphasizing community health, environmental hygiene, and village pride.**

Communicating channels appropriate for the target audiences

Mothers are the primary care givers for children under the age of five in the four villages, and are therefore the primary audience for a hygiene promotion campaign targeting IFM. The prevailing attitude amongst both men and women is that mothers are solely responsible for IFM. Men acknowledge the need to help mothers care for children, however, there is a strong and widespread belief that IFM is a woman’s duty, and this belief is reinforced by cultural taboos. In practice, mothers receive limited direct assistance from their husbands and other family members when it comes to IFM. **Fathers, extended family members, and the wider community should be considered important secondary and tertiary audiences, capable of supporting and influencing the behaviour of mothers.**

Knowledge of the health-related reasons for practicing safe IFM – including the disposal of infant faeces in a toilet, or by burying, and handwashing with soap after handling infant faeces – is strong amongst both men and women in the four villages. **While this knowledge can be reinforced in a hygiene promotion campaign, it is not a barrier, and health-related messages alone are unlikely to lead to sustained behavior change.**

As women reported in IDIs and FGDs, hygiene messages delivered to individual mothers are unlikely to be shared beyond the household. As such, **a mix of household and community-level communication channels should be used for hygiene promotion, to ensure that messages are received, shared, and reinforced to build social norms around IFM.** With limited access to media in the villages, broadcasting hygiene messages is likely to be ineffective, however, **trusted local leaders, church leaders and health workers can be used to communicate messages at the community level.**

These research findings and recommendations have informed the initial design of a hygiene promotion campaign, summarized in **Annex 1**, which will be further developed and pre-tested with WaterAid and partners in mid-2016, before piloting.

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Annex 1: The “5 Steps” Infant Faeces Management Campaign for East Sepik – Preliminary Campaign Design

The “5 Steps” IFM Campaign

1. Clean baby with soap and water
2. Dispose of pekpek, diapers and other soiled materials into toilet
3. Place soiled nappies and clothing into a bucket with soap and water
4. Wash your hands with soap and water
5. Wash soiled nappies and clothes with soap and water

Primary Audience	Messages	Drivers	Tools
Mothers and female carers for infants and toddlers who do not use the toilet.	<ul style="list-style-type: none"> - Follow the “5 Steps” - Remember to purchase soap 	<ul style="list-style-type: none"> - Nurture - Cleanliness - Environmental cues 	<ul style="list-style-type: none"> - Posters (one for each of the “5 Steps”, and one showing all “5 Steps”) - Set of flashcards (for use in groups discussions) - Drama (“5 Steps”) - Poster (reminder to purchase soap)
Secondary Audience	Messages	Drivers	Tools
Fathers/husbands and extended family	<ul style="list-style-type: none"> - Support/reinforce the “5 Steps” - Remember to purchase soap / promote soap 	<ul style="list-style-type: none"> - Health - Environmental hygiene - Village pride 	<ul style="list-style-type: none"> - Drama (motivating support for primary audience) - Poster (supporting roles)
Community Leaders			<ul style="list-style-type: none"> - Orientation fact sheets (on campaign, and IFM) - Call to action
Canteen owners			<ul style="list-style-type: none"> - Poster (reminder to purchase soap)
Health workers			<ul style="list-style-type: none"> - Orientation fact sheets (on campaign, and IFM) - Posters (all five steps) - Campaign toolkit (with user guidelines, tools and instructions on sequencing)