



Assessing emotional motivators for handwashing with soap in emergencies: results from three Asian countries

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Abstract: *This paper examines how emotional motivators can be used to promote handwashing with soap (HWWS) among mothers affected by an emergency. The impact of using emotional motivators along with other behaviour determinants for behaviour change in development settings has been well documented; however there is limited evidence for the use of motives for HWWS in emergency contexts. Oxfam, in partnership with Unilever's Lifebuoy soap and Unilever's Chief Sustainability Office (CSO), collected data in three countries affected by crises – Nepal (2015), Pakistan (2014), and the Philippines (2015) – to determine motivating factors and barriers around HWWS among mothers. Methods used for the assessment included household survey, structured observation, key informant interview, focus group discussion, and behavioural trials. Post-emergency handwashing knowledge and practice was also measured along with the most effective communication channels to reach the target group. The findings reveal that all mothers were motivated by affiliation and nurture; additionally, in Nepal and Pakistan mothers were motivated by purity and mothers in the Philippines were motivated by handwashing drivers related to shame. Barriers to HWWS in emergencies relate to socio-cultural beliefs and the absence of handwashing hardware.*

Keywords: handwashing with soap promotion, emotional motivators, hygiene promotion, emergencies, humanitarian

HANDWASHING WITH SOAP (HWWS) is a universally important practice, primarily to protect health. It can reduce the incidence of diarrhoeal diseases by 48 per cent (Cairncross et al., 2010) and that of lower respiratory tract infections like pneumonia by 21 per cent (Aiello et al., 2008). HWWS is particularly important in the acute phase of emergencies where people are more vulnerable to disease due to overcrowding and lack of access to safe water and sanitation. One study found that in camp settings, during the acute phase of a crisis, diarrhoea accounts for 40 per cent of mortality, with over 80 per cent of fatalities occurring in children under the age of 2 years (Connolly et al., 2004). Although the evidence on the effectiveness of HWWS promotion programmes in emergencies is limited, another

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study found that the presence of soap in the household was associated with 27 per cent fewer episodes of diarrhoea in a refugee camp when compared with households without soap (Peterson et al., 1998). Despite these potential health gains, HWWS rates remain low.

For Oxfam GB and other implementation agencies, HWWS promotion in emergency settings usually focuses on health-related risks (Biran et al., 2009; Phillips et al., 2015; Vujcic et al., 2015). Such communication of health information is based on the assumption that once an individual has information about the consequences of certain behaviours, they will make a rational decision to avoid risk and practise healthy behaviours. However, this health-based approach has been shown to have limited success in changing HWWS behaviour in long-term refugee camps in Thailand, Kenya, and Ethiopia (Biran et al., 2012) as well as South Sudan (Phillips et al., 2015).

Instead of health-based promotional approaches, a number of interventions in development contexts have successfully used emotional motivators, along with other behavioural determinants, for handwashing promotion (Biran et al., 2014). The design of such HWWS strategies has been supported by theoretical frameworks including the Evo-Eco theory (Aunger and Curtis, 2014), Behaviour Centred Design (Aunger and Curtis, 2016), and IBM WASH (Dreibelbis et al., 2013). The motives typically used to change handwashing behaviour include disgust, nurture, and social affiliation. HWWS interventions typically target mothers as caregivers of young children; recent examples include Super Amma in India (Biran et al., 2014) and the Ideal Mother in Nepal (Gautam et al., 2017).

While emotional drivers may be more effective in changing practices (Biran et al., 2014), few interventions (and the formative research associated with them) to date have focused exclusively on motives targeted to mothers (Watson et al., 2018) and there is limited documented evidence about whether the same motives for HWWS hold in non-emergency as well as emergency settings. In partnership with Lifebuoy and Unilever's Chief Sustainability Office (CSO), Oxfam collected data on the motivators for HWWS to see which, if any, were the strongest among mothers affected by an emergency in three countries.

Methodology

Setting

The study was conducted with mothers affected by emergencies in different phases of crises in Pakistan, the Philippines, and Nepal. In Pakistan, data was collected between September and December 2014 in a protracted emergency context in a camp near the city of Peshawar which housed 23,000 people displaced by conflict. In the Philippines, data was collected in between 15 October and 15 December 2014 in an early recovery context in rural and urban Tacloban, one of the areas most severely affected by Typhoon Haiyan. In Nepal, the study was carried out between July and August 2015 during the acute phase of the emergency in Kirtipur, Kathmandu, an urban district affected by the 7.8 magnitude earthquake.

Mothers with children under the age of 18 were selected as the target group in all three locations. The rationale for including mothers is that they were perceived to be the most significant influencers of hygiene at the household level, particularly with regard to children under the age of five. In emergencies, children in this age group are known to have the highest rates of mortality. In these three contexts populations either purchased their own soap or the soap was included as part of non-food item (NFI) distributions.

Data collection framework

In each location, the data collection was done in two phases. The first aimed to understand the mothers in the specific context through understanding their living environment, motives, beliefs, and practices. The second phase aimed to understand the factors that can influence the behaviour of mothers in an emergency setting. The data collection was informed by HWWS theories, notably the Evo-Eco theory; however, the process was not designed based on a theoretical framework of behaviour.

Data collection methods and sample size

Self-reported data is often relied upon in emergencies to demonstrate the impact of interventions. Although useful in understanding knowledge levels, this type of data can sometimes be biased and in many situations, people tend to over-report (Contzen et al., 2015). Structured observation has been declared as the gold standard in understanding behaviour (Ram, 2013), particularly with regards to HWWS but this method also has limitations. Observing people's behaviour can lead to the Hawthorne effect where individuals change their behaviour if they sense they are being observed (Ram et al., 2010). Understanding the limitations of each method, we used multiple methods to gain a more accurate idea of HWWS practice and knowledge-practice gaps.

Qualitative and quantitative data collection tools were adapted from handwashing formative research tools used in Liberia and South Sudan (Sagan and Tolani, 2013) and Uganda (Steadman Group, 2007). The tools were field tested with the target audience and adapted to each local context as appropriate. These included the following:

Structured observation. Selected households were visited one day before the observation to obtain consent for participation. The observer did not disclose that handwashing was the behaviour of interest, but rather that the study would focus on family life. Observations took place between the hours of 07.00 and 13.00 in the Philippines and 08.00 and 13.00 in Pakistan, while in Nepal, it was done in nearby communal facilities due to the scattered nature of households in the target area.

Household survey. Household surveys were conducted in randomly selected households in both intervention and control groups. Stratified random sampling was used such that a random sample was selected from the population census filtered for the target group. A control group with similar characteristics to the intervention

group was selected in the same way. In the Philippines and Pakistan, sample size was calculated based on a 5 per cent margin of error and 95 per cent confidence interval. In Nepal, a behaviour change picture card exercise was conducted as part of the survey to capture respondent's activities over the previous day's 24-hour period. In Nepal, sample size was calculated based on an 8 per cent margin of error and 95 per cent confidence interval. Data in all settings was collected using Mobenzi mobile technology.

Focus group discussions (FGDs). FGDs were conducted in both intervention and control sites in all three countries. Focus groups consisted of 8–10 randomly selected participants and focused on HWWS at key times and barriers and motivators related to practice. Ten vignettes representing motivators of HWWS were created by a local artist and field-tested. Motives included disgust, comfort, attraction, status, nurture, and affiliation. Although not an emotional motive, purity was also considered given the well-documented linkages between spiritual beliefs and hygiene. These were used during discussions in an attempt to evoke positive, negative or neutral feelings around specific motives. A ranking exercise was also carried out to determine the most important motivators for the target community. Additional questions related to communication channels, and behaviour and habits pre-and post-disaster were included.

Behavioural trial. A behavioural trial was conducted in Pakistan and the Philippines (not in Nepal). People were asked to perform HWWS at key times during the day: after using the toilet, after cleaning up young children after defecation/changing babies' nappies, and before handling food (preparing food, eating, feeding young children/babies) over 5 days. They were visited mid-way through the trial as a reminder and then at the end to see how it went (Aunger and Curtis, 2014). Each family was provided with a bar of Lifebuoy soap to be used over a period of 5 days. Following the 5-day trial, participants were asked a series of questions to understand barriers and enablers around HWWS as they experienced them firsthand during the trial.

In-depth interviews. Key informants were identified based on their levels of influence and knowledge of the community. In Pakistan, key informants included the Imam, Shura (the consultative body of Jalozaï camp) members, and influential women in the community including a *Dumgari*, a religious wise woman who has the power to heal. In Nepal, key informants included a traditional healer, community health worker, doctor, psychologist, reporter, and social mobilizer. In the Philippines, key informants included Barangay Health Workers and women leaders in the community.

More detail on the methods is available in Sagan and Tolani (2013). Table 1 outlines data collection tools and sample sizes in the study areas.

Analysis

Quantitative data was collected using Mobenzi mobile technology and analysed in real time. Qualitative data was transcribed using recordings and notes,

Table 1 Data collection tools and sample size

<i>Data collection method</i>	<i>Specific measurement method</i>	<i>Sample size</i>			<i>Details</i>
		<i>Pakistan</i>	<i>Philippines (rural, urban)</i>	<i>Nepal</i>	
Quantitative	Household survey	341 respondents	455 respondents	166 respondents	Based on 5% margin of error; 95% confidence interval (Pakistan, Philippines); 8% margin of error, 95% confidence interval (Nepal)
Quantitative	Structured observation	28 people	43 people	87 people	Observed handwashing behaviour of women >18 at critical times
Qualitative	Focus group discussion	10 groups 104 participants	20 groups 200 participants	10 groups 100 participants	Approximately 10 participants/group
Qualitative	In-depth interview	6 respondents	6 respondents	6 respondents	Key informants included doctors, nurses, NGO staff, community health volunteers, psychologists
Qualitative	Behavioural trial	10 participants	10 participants	0 participants	Due to time constraints, behavioural trials were not conducted in Nepal

translated, compiled, coded, and analysed. In order to overcome the biases noted as well as the strengths and weaknesses of different ways of assessing handwashing behaviour (e.g. reported vs. observation), the various methods were triangulated. The findings presented are a result of the combined analysis and triangulation.

Ethics statement

The data collection was primarily aimed at establishing changes in HWWS pre- and post-intervention, rather than research. Ethical approval for this study was not deemed necessary since the project collected data for Oxfam's country programmes. However, written or verbal consent was obtained from all study participants.

Limitations

The research was conducted at different stages of the emergency, in different countries, and over varying timeframes to help feed into the development of the HWWS programme as part of post-emergency response. In some contexts, the research took longer to conduct for logistical reasons. The study assesses people's perceptions of the impact of a motive on behaviour, not whether it actually impacts behaviour. The data collection was not informed by a theoretical framework to gather, analyse, and interpret the data. Sampling was modified to some extent based on the context rather than justified methodologically.

Results

HWWS knowledge and practice

Knowledge levels were similar to reported practice (Figure 1); almost all mothers across study countries reported that HWWS was important after using the toilet (Nepal: 100 per cent; Philippines urban/rural: 94 per cent, Pakistan: 88 per cent). Mothers across study countries reported that HWWS was important at certain times as shown in Table 2. Other times for HWWS mentioned included after eating, after contact with sticky, oily or dirty substances, after touching animals, after coming from the field or garden (Nepal and the Philippines), and before prayer (Pakistan and Nepal).

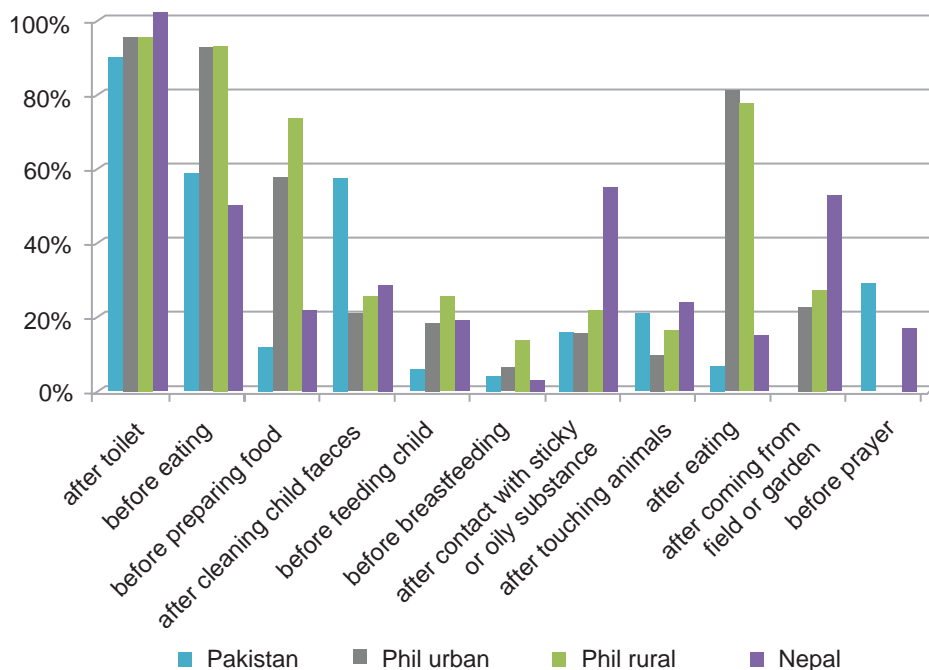


Figure 1 Key times for HWWS/HWWS knowledge

Table 2 Mothers' perception of the importance of HWWS at certain times

	Nepal (%)	Philippines		Pakistan (%)
		Urban (%)	Rural (%)	
After using the toilet	100	94	94	88
Before eating	48	91	91	57
Before food preparation	20	56	72	10
After cleaning child faeces	26	19	23	55
Before feeding children	17	17	24	4

Table 3 Participant recall of use of soap for handwashing

	Nepal (%)	Philippines		Pakistan (%)
		Urban (%)	Rural (%)	
After using the toilet	99	86	80	71
Before preparing food	11	69	86	37
Before eating	38	40	55	4

Table 4 Mothers with children under five recall of use of soap for handwashing

	Nepal (%)	Philippines		Pakistan (%)
		Urban (%)	Rural (%)	
After handling children's faeces	46	27	25	65
Before feeding young children	31	24	29	2

Soap usage. Household survey study participants were asked about their use of soap the previous day. In all three contexts, people claimed to use soap an average of 3–4 times on the day preceding the interview. Participant recall of use of soap for handwashing is shown in Table 3.

Data from mothers with children under five was analysed exclusively with regard to use of soap for handwashing as shown in Table 4.

Other times when soap was commonly used were reported as handwashing after cleaning, for laundry, and for bathing. In Nepal, 40 per cent of mothers used soap for handwashing after farming and in Pakistan specifically, 25 per cent of mothers recalled using soap for washing their hands before prayer.

Self-reported versus observed HWWS practice

Structured observation was conducted to determine whether what people said they did translated into practice. Consistent with other studies (Sagan and Tolani, 2013; Steadman et al., 2007) self-reported behaviour was significantly higher than observed. Figure 2 compares self-reported with observed HWWS practice before eating. There is a significant difference between the percentage of mothers that claim to wash hands with soap before eating and those observed to do so. In the

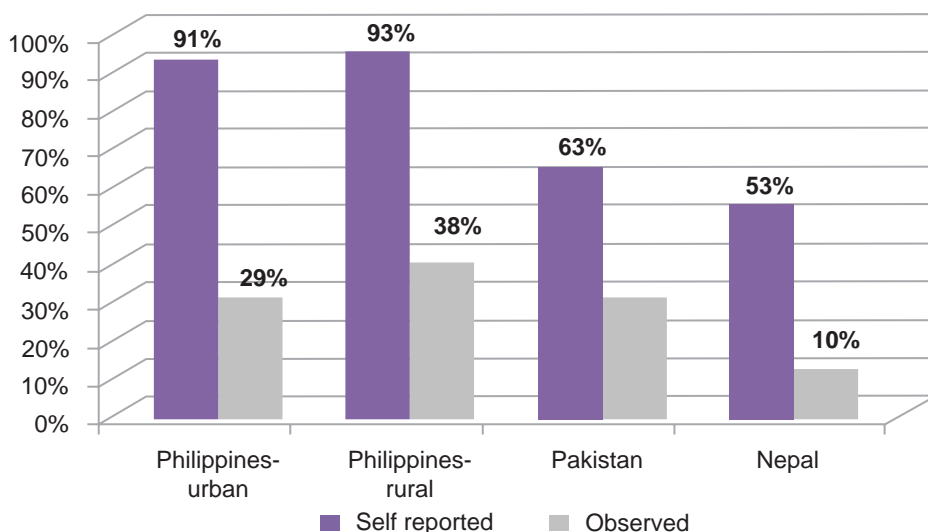


Figure 2 Self-reported vs. observed handwashing with soap before eating

Philippines, most respondents (rural, 93 per cent; urban, 91 per cent) said they washed their hands with soap before eating but only 38 per cent of rural and 29 per cent of urban mothers were observed to practise this. In Pakistan and Nepal, 63 per cent and 53 per cent of mothers, respectively, said they practised HWWS before eating but only 10 per cent of mothers in Nepal were observed to wash hands with soap at this critical time and none were observed to do so in Pakistan.

When self-reported practice was compared with observed practice, there was a significant knowledge–practice gap across all three countries and less than half of the mothers who claimed to wash hands with soap before eating actually did this in practice.

Communication channels

Communication channels were analysed in terms of the most trusted, most accessible, and most popular ways of receiving information on health, community issues, and new products. In all contexts, mothers had received handwashing information through community health volunteers or hygiene promoters as part of the emergency response programme. Many of them had also been exposed to health information, particularly in the Philippines and Nepal prior to the emergency. Through this exposure, mothers tended to have relatively good levels of knowledge about handwashing after defecation (all contexts) and before eating, particularly in the Philippines. Table 5 summarizes potential channels of communication that could be used to reach mothers in each context.

Women in Pakistan had limited access to technological devices such as mobile phones, television, and radios. In urban Philippines, television was the preferred method of receiving information. In rural Philippines, mothers felt that Barangay health workers (government health volunteers) were a more reliable source of information on

Table 5 Communication channels for reaching mothers in emergencies

	<i>Pakistan</i>	<i>Philippines</i>		<i>Nepal</i>
		<i>Urban</i>	<i>Rural</i>	
Context specific	Storytelling	Television	Television	Television
		Radio	Radio	Mobile phones
		Mobile phones	Mobile phones	Radio
		Film	Film	Drama/street theatre Film
Crosscutting	Interpersonal communication Group settings Print			

handwashing and health. In the urban context of Kirtipur, Kathmandu (Nepal), street theatre and drama were mentioned frequently as a potential communication method, particularly in the form of a comedy.

HWWS motivators in the post-emergency context

The key motivators for HWWS across all countries in a post-emergency situation were found to be affiliation and nurture. Disgust was an additional motivator in the Philippines and Nepal, with shame a motivator specific to the Philippines. Purity was a notable driver in Nepal and Pakistan. Table 6 shows both context-specific and crosscutting motivators in the three countries.

Nurture (supporting and encouraging children to develop into successful adults) was one of the strongest motivators across contexts. Mothers regarded caring for their children as a high priority in their lives; most of their hopes and dreams were around educating their children with the expectation that they would become successful adults. Despite the type of emergency and difficult conditions they had to endure, mothers felt that teaching children good habits was critical to their success and handwashing and cleanliness fit into this narrative: 'if a child is well taken care of by his mother and she teaches him to be clean, it will become part of his habit to be clean and then he will be successful' (mother, age 32, Philippines).

Affiliation was another common motivator across the three countries. The desire to fit in with others or be regarded as a contributing member of the community was important to mothers despite the emergency context and scarcity of resources. In Nepal and Pakistan, mothers felt compelled to behave in ways they felt were socially

Table 6 Emotional motivators around HWWS among mothers

<i>Motivator</i>	<i>Pakistan</i>	<i>Philippines</i>		<i>Nepal</i>
		<i>Urban</i>	<i>Rural</i>	
Context specific	Purity	Disgust Shame		Purity Disgust
Crosscutting	Affiliation Nurture			

acceptable in order to be a good mother. In Pakistan, HWWS was also important in order to feel affiliation with one's clan or tribe e.g. when sharing a meal with other women from the tribe, it was important for one's hands to be clean.

Shame. In the Philippines, affiliation was linked to shame or *hiya* and the idea of being shamed by the community. Avoiding shame was one of the strongest drivers of behaviour in this context where social and cultural norms dictated the way a 'good mother' should behave. The predominant belief was that a mother would bring shame onto her family if either she or her children appeared to be dirty: 'Shame is the most important motivator in this community. If you are the type of mother who is not particular about the hygiene of your family, you will be known in the Barangay as unhygienic and people will not respect you' (mother, age 26, Philippines).

Disgust was found to be a strong motivator in both the Philippines and Nepal. The thought of faeces on one's hands combined with the odour and stigma around human faeces compelled mothers to wash their hands with soap after defecation. In Nepal, many households had a bar of soap allocated specifically for use after the toilet. This soap was not used for any other purpose as it was thought to be contaminated by faeces. Interestingly, disgust did not compel mothers to wash their hands after contact with baby faeces in the same way, particularly in the Philippines where it was believed that excrement from babies was pure and germ-free. This belief was attributed to a baby's diet which a respondent said was 'pure, natural and free from toxins'. Mothers in both urban and rural contexts also thought the smell of baby faeces was less offensive and linked this to the idea that it was not as contaminated or disgusting as that of adults.

Purity is not a behavioural motive per se (according to Evo-Eco and associated theories) though it is linked to the ideas of disgust and affiliation, but it was found to be another important driver of HWWS in Pakistan and Nepal (although not the Philippines). Anthropological work such that by as Douglas (1966) has considered the taboos surrounding that which is considered dirty and polluting, and the dangers of impurity from contact with people or objects considered unclean. Respondents in Nepal and Pakistan highlighted the importance of cultural and religious beliefs and rituals, and the notion of purity within that.

In Pakistan, the *hadith* (saying of the prophet Muhammad) '*safai nisf emaan hai*' or 'cleanliness is half of faith' was mentioned in connection with HWWS by almost every respondent as well as by the Imam and other religious leaders in the community. Mothers strongly related the idea of HWWS to being pure in the eyes of Allah, and their interpretation was not only related to prayer time but translated to other times as well. In Pakistan, washing one's hands three times with water rendered you clean and pure before prayer and sometimes applied to handwashing at other times.

In Nepal, purity was closely linked to the Hindu religion and being clean in the eyes of the gods. Here it was customary to cleanse one's hands with water before prayer or entering the temple. Mothers also reserved special clothing for the temple which had to be freshly laundered and could not be worn during menstruation. Wearing these clothes and washing one's hands before entering the temple was

an important ritual for mothers in Kirtipur: 'I feel calm and peaceful if I enter the temple clean. We should be pure in the eyes of God. God has a lot of importance ...' (mother, age 27, Nepal).

If gold water (water that has been in contact with gold) known as *Sune Panni* was sprinkled on one's hands or body it would purify them. It was also perceived that if someone washes their hands with gold water, they will be clean and pure for prayer. 'Gold water' was believed to be pure enough to cleanse one's hands of all impurities and dirt.

While purity was an important handwashing motivator for mothers both in Nepal and Pakistan, the belief was that it could be achieved with water alone. In Nepal, using only water for washing hands before eating and before feeding babies has been practised for generations and although most mothers knew they should use soap, it was not part of their daily routine. Similarly, in Pakistan, mothers habitually washed hands with only water before cooking, eating, and after cleaning child faeces.

HWWS barriers in the post-emergency context

Although enablers and motivators can make the uptake of HWWS behaviour more likely, it is equally important to understand barriers which may prevent or make practising handwashing more difficult. In a post-emergency context, barriers which existed prior to the emergency can be exacerbated by the disruption of people's routines as well as a change in their living conditions. This often has a compounding effect on barriers and can render the uptake of HWWS practice more difficult. Table 7 outlines both crosscutting and context-specific barriers among mothers affected by an emergency in the three study countries.

The data in all three countries showed that if soap or water were not present near the public emergency latrines, people were less likely to wash their hands after using the toilet. If they had soap and water at the household level, either in their tent or shelter, by the time they arrived home, they would often forget to wash their hands.

Not having a designated handwashing place at the household level was another significant barrier to HWWS. In Pakistan, the jug or *lotta* and soap were moved around from place to place within the compound and mothers and other family members

Table 7 Barriers to HWWS among mothers

Barriers	Pakistan	Philippines		Nepal
		Urban	Rural	
Context specific	Increased workload collecting water Soap prioritized for men	Time	N/A	Time
Crosscutting	Lack of designated HW facilities or place in household/communal area Lack of access to soap and or water Prioritize immediate needs (food, water, shelter) Beliefs and practice			

often had to search for it which made them less likely to use it at critical handwashing times. In the Philippines, most families used buckets, jugs, and basins for handwashing which mothers did not see as being cumbersome or a barrier to HWWS. In both Nepal and the Philippines, people preferred to have separate handwashing facilities for handwashing after the toilet and for washing before handling food. This could be in the form of a bucket and cup or a bucket with a tap.

Access to water was also a barrier, particularly in the later stages of the emergency. In the hotter summer months in both rural and urban Philippines, public taps and wells often ran dry, forcing people to seek other sources of water. This meant that mothers and other family members had to walk longer distances to collect water. Similarly, in Pakistan, although water was provided within the camp itself, mothers had to walk a distance from their tents to collect it. They felt this was cumbersome and time consuming, leaving them with less time for other household chores. In both countries, this was seen as an inconvenience and, to cope, mothers conserved their use of water which sometimes had implications for their handwashing practice. In both contexts, mothers sometimes refrained from using soap for handwashing as it required more water for rinsing.

In Pakistan specifically, **access to soap** was often mentioned as a significant barrier. Given that families were displaced and women were not permitted to seek gainful employment, economic barriers had a significant impact on people's ability to purchase soap. As a result, the camp community was dependent on irregular distributions from non-governmental organizations (NGOs) and when these stocks were depleted they were forced to use alternatives to soap such as mud or ash. In Nepal and the Philippines, most people had access to soap once the markets had recovered and very few mentioned the inability to purchase soap. In the Philippines, lower income households purchased smaller sizes known as 'sachets' which were affordable to them. In Nepal, there were a few marginalized families who could not afford soap even in the later stages of the emergency and used ash in its place.

In the Philippines, **lack of time** was one of the most significant barriers to HWWS, particularly in the urban context. Mothers were busy with other activities either around the house or outside. They often jumped from one task to another and would forget to wash their hands before cooking or feeding the baby. For example, the needs of a crying child took precedence over mothers washing their hands before feeding young children or breastfeeding babies.

In Pakistan men had frequent social interactions outside of the home, which usually involved a great deal of shaking hands, making it important that their hands were clean. Thus, if soap was limited at the household level, it would be reserved for men.

Beliefs. A number of beliefs affected HWWS practice. The belief that illness is out of one's control was present to some extent in all three countries. In Pakistan, disease was perceived to be the will of Allah and its prevention more related to prayer and ablution than handwashing or other hygiene behaviours. In the Philippines, *Bahala na* was related to the perception that people lacked control over their fate and whether they became ill. In Nepal, illness, in particular

diarrhoea, was sometimes said to be caused by the evil eye. Although mothers did link some cases of diarrhoea to germs and pathogens, other incidents were thought to be the result of 'black magic' and could only be cured by the traditional healer. The misconception that the absence of physical dirt signified clean hands was also prevalent in Pakistan, the Philippines, and Nepal. Mothers were in the habit of washing their hands with soap when they were sticky, oily or physically dirty. The tendency, particularly in Nepal, was to wash hands after working in the fields, cleaning the house, eating or cooking.

Discussion

Recent innovations in handwashing in humanitarian settings are intended to improve the effectiveness of interventions, for instance with decision making tools to design HWWS programmes (<https://washem.info/>) as well as developing rapidly deployable handwashing kits, and handwashing stations (Humanitarian Innovation Fund, 2016). Yet, HWWS promotion interventions still tend to rely on health-based messaging. Further innovation is required in the approaches to handwashing promotion. The findings of this assessment suggest a number of ways to improve the way HWWS programmes are designed and implemented in an emergency context.

Previous research on the use of motivational drivers in handwashing promotion has come from interventions predominantly targeted at caregivers of young children in stable settings (Gautum et al, 2017; Greenland et al., 2016; Biran et al., 2014). This assessment also indicates that mothers affected by crises can be important drivers of HWWS in diverse emergency contexts (from a protracted emergency context in Pakistan, an early recovery context in the Philippines, and acute phase of the emergency in Nepal).

The data suggests that handwashing motives in an emergency – primarily nurture and affiliation – are the same as the motives that drive behaviour in a non-emergency setting. Attention to nurture (desire to see children become successful) and affiliation (the desire to fit in with those in a certain group) would be expected to be particularly important to survivors of a crisis, given that people may have lost family members or have been separated from their home communities. Desire to conform to religious notions of purity might also be heightened after surviving a trauma or crisis.

The different stages of the emergencies affected a mother's ability to prioritize HWWS practice: in the early days following the emergency in Nepal, there was limited access to soap and water and the water that was available was prioritized for drinking. In the post-emergency environment (first 2–3 weeks) in both the Philippines and Nepal, the limited availability of soap and other commodities in local markets led to price hikes, making these items even more difficult to access.

Respondents reportedly either bought (primarily Nepal and the Philippines) or were given soap (Pakistan). Anti-bacterial soap was perceived as superior to conventional soap: 'any other soap [non-antibacterial] is just not worth buying as it doesn't kill the germs. And personally, I do not want to take that risk' (urban

mother, age 30, Philippines). The scent of soap was another important enabler for mothers across contexts. Not only did they enjoy the way a good smelling soap made their hands feel, they also felt that it made them more attractive to others. If the soap smelled nice, they were more likely to wash their hands. Although, in Nepal, mothers believed soap residue on their hands changed the taste of the food for the child and as a result, would sometimes avoid using soap to wash their hands before feeding.

The data supports existing evidence that motivational drivers can support successful handwashing promotion interventions (Aunger and Curtis, 2016). It adds to the limited evidence base for HWWS interventions in emergencies (Blanchet et al., 2017). Importantly, in the Philippines and Nepal most people reported already washing their hands with soap after the toilet and they continued to do this after the emergency: 'if it's been part of someone's life to wash her hands it will be part of her daily activities regardless of the situation' (mother, age 36, Philippines). Programmes in emergency contexts should also consider how to sustain pre-existing motives to HWWS.

Conclusions and recommendations

This paper has explored the potential to use emotional motivators to change the behaviours of mothers while designing and implementing handwashing intervention in an emergency setting.

The unique circumstances of emergencies make it necessary to explore different approaches to HWWS interventions. There were several factors which either motivated (affiliation, nurture) or discouraged mothers from practising HWWS (absence of HWWS infrastructure or water and soap). A mother's aspirations for her children persisted despite the difficulties she faced. Mothers also indicated that affiliation was an important motive for HWWS, reporting social pressure to maintain a certain standard of hygiene even in emergency settings.

Limited access to handwashing facilities, soap, and water underlines the importance of ensuring these essentials are in place, especially in acute emergency contexts, and that markets are re-established as early as possible. If there are fewer barriers and the behaviour is made easy and accessible, it is more likely that people, particularly mothers and children, will practice HWWS.

Rigorous research on emotional motivators is recommended for HWWS in emergency contexts for all caregivers such as fathers and siblings.

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References

- Aiello, A., Coulborn, R., Perez, V. and Larson, E. (2008) 'Effect of hand hygiene on infectious disease risk in the community setting: a meta-analysis', *American Journal of Public Health* 98(8): 1372–81 <<http://dx.doi.org/10.2105/AJPH.2007.124610>>.
- Aunger, R. and Curtis, V. (2014) 'The evo–eco approach to behaviour change', in D. Lawson and M. Gibson (eds), *Applied Evolutionary Anthropology*, pp. 271–95, New York, NY, Springer.
- Aunger, R. and Curtis, V. (2016) 'Behaviour centred design: towards an applied science of behaviour change', *Health Psychology Review* 10(4) <<https://doi.org/10.1080/17437199.2016.1219673>>.
- Biran, A., Schmidt, W.P., Wright, R., Jones, T., Seshadri, M., Isaac, P., Nathan N.A., Hall, P., McKenna, J., Granger, S., Bidinger, P. and Curtis, V. (2009) 'The effect of a soap promotion and hygiene education campaign on handwashing behaviour in rural India: a cluster randomised trial', *Tropical Medicine and International Health* 14(10): 1303–14 <<http://dx.doi.org/10.1111/j.1365-3156.2009.02373.x>>.
- Biran, A., Schmidt, W.P., Zeleke, L., Emukule, H., Khay, H., Parker, J. and Peprah, D. (2012) 'Hygiene and sanitation practices amongst residents of three long-term refugee camps in Thailand, Ethiopia and Kenya', *Tropical Medicine and International Health* 17: 1133–41 <<http://dx.doi.org/10.1111/j.1365-3156.2012.03045.x>>.
- Biran, A., Schmidt, W., Rajaraman, D., Kumar, R., Greenland, K. and Gopalan, B. (2014) 'Effect of a behaviour change intervention on HWWS in India (SuperAmma): a cluster randomised trial', *Lancet Global Health* 145–54 <[https://doi.org/10.1016/S2214-109X\(13\)70160-8](https://doi.org/10.1016/S2214-109X(13)70160-8)>.
- Blanchet, K., Ramesh, A., Frison, S., Warren, E., Hossain, M., Smith, J., Knight, A., Post, N., Lewis, C., Woodward, A., Dahab, M., Ruby, A., Sistenich, V., Pantulian, S. and Roberts, B. (2017) 'Evidence on public health interventions in humanitarian crises', *Lancet* 390: 2287–96 <[http://dx.doi.org/10.1016/S0140-6736\(16\)30768-1](http://dx.doi.org/10.1016/S0140-6736(16)30768-1)>.
- Cairncross, S., Hunt, C., Boisson, S., Bostoen, K., Curtis, V., Fung, I.C.H. and Schmidt, W.P. (2010) 'Water, sanitation and hygiene for the prevention of diarrhoea', *International Journal of Epidemiology* 39(Suppl 1): i193–205 <<http://dx.doi.org/10.1093/ije/dyq035>>.
- Connolly, M.A., Gayer, M., Ryan, M.J., Spiegel, P., Salama, P. and Heymann, D.L. (2004) 'Communicable diseases in complex emergencies: impact and challenges', *Lancet* 364(9449): 1974–83 <[http://dx.doi.org/https://doi.org/10.1016/S0140-6736\(04\)17481-3](http://dx.doi.org/https://doi.org/10.1016/S0140-6736(04)17481-3)>.
- Contzen, N., De Pasquale, S. and Mosler, H.J. (2015) 'Over-reporting in handwashing self-reports: potential explanatory factors and alternative measurements', *PLoS One* 10(8): e0136445 <<http://dx.doi.org/https://doi.org/10.1371/journal.pone.0136445>>.
- Douglas, M. (1966) *Purity and Danger: An Analysis of the Concepts of Pollution and Taboo*, London: Ark-Routledge and Kegan Paul.
- Dreibelbis, R., Winch, P.J., Leontini, E., Hulland, K.R., Ram, P.K., Unicomb, L. and Luby, S.P. (2013) 'The integrated behavioural model for water, sanitation, and hygiene: a systematic review of behavioural models and a framework for designing and evaluating behaviour change interventions in infrastructure-restricted settings', *BMC Public Health* 13: 1015 <<http://dx.doi.org/10.1186/1471-2458-13-1015>>.
- Gautam, O.P., Schmidt, W.P., Cairncross, S., Cavill, S. and Curtis, V. (2017) 'Trial of a novel intervention to improve multiple food hygiene behaviors in Nepal', *American Journal of Tropical Medicine and Hygiene* 96(6): 1415–26 <<http://dx.doi.org/10.4269/ajtmh.16-0526>>.

Greenland, K., Chipungu, J., Curtis, V., Schmidt, W.P., Siwale, Z., Mudenda, M., Chilekwa, J., Lewis, J.J. and Chilengi, R. (2016) 'Multiple behaviour change intervention for diarrhea control in Lusaka, Zambia: a cluster randomised trial', *Lancet Global Health* 4: e966–77 <[http://dx.doi.org/10.1016/S2214-109X\(16\)30262-5](http://dx.doi.org/10.1016/S2214-109X(16)30262-5)>.

Humanitarian Innovation Fund, ELRHA (2016) *WASH in Emergencies Problem Exploration: Handwashing Report* [pdf], Cardiff: ELRHA <<http://www.elrha.org/wp-content/uploads/2016/01/Handwashing-WASH-Problem-Exploration-Report.pdf>> [accessed 7 January 2019].

Peterson, E.A., Roberts, L., Toole, M.J. and Peterson, D.E. (1998) 'The effect of soap distribution on diarrhoea: Nyamithuthu Refugee Camp', *International Journal of Epidemiology* 27(3): 520–4.

Phillips, R.M., Vujcic, J., Boscoe, A., Handzel, T., Aninyasi, M., Cookson, S.T., Blanton, C., Blum, L. and Ram, P.K. (2015) 'Soap is not enough: handwashing practices and knowledge in refugee camps, Maban County, South Sudan', *Conflict and Health* 9: 39 <<http://dx.doi.org/https://doi.org/10.1186/s13031-015-0065-2>>.

Ram, P.K. (2013) *Practical Guidance: Measuring Handwashing Behavior – 2013 Update*, Washington, DC: WSP.

Ram, P.K., Halder, A.K., Granger, S.P., Jones, T., Hall, P., Hitchcock, D., Wright, R., Nygren, B., Islam, M.S., Molyneaux, J.W. and Luby, S.P. (2010) 'Is structured observation a valid technique to measure handwashing behaviour? Use of acceleration sensors embedded in soap to assess reactivity to structured observation', *The American Journal of Tropical Medicine and Hygiene* 83(5): 1070–6 <<http://dx.doi.org/https://doi.org/10.4269/ajtmh.2010.09-0763>>.

Sagan, S. and Tolani, F. (2013) *Handy-Wash Hand Washing Study: Trials of a New Hand-Washing Device in Liberia and South Sudan*, Oxford: Oxfam Publication.

Steadman Group (2007) *Formative and baseline survey on HWWS*, Uganda: Water and Sanitation Program (WSP).

Vujcic, J., Ram, P. and Blum, L.S. (2015) 'Handwashing promotion in humanitarian emergencies: strategies and challenges according to experts', *Journal of Water, Sanitation and Hygiene for Development* 5(4): 574–85 <<http://dx.doi.org/10.2166/washdev.2015.009>>.

Watson, J., Dreibelbis, R., Auger, R., Deola, C., King, K., Long, S., Chase, R.P. and Cumming, O. (2018) 'Child's play: harnessing play and curiosity motives to improve child handwashing in a humanitarian setting', *International Journal of Hygiene and Environmental Health* in press <<https://doi.org/10.1016/j.ijheh.2018.09.002>>.