

WHAT DO WE KNOW ABOUT HAND WASHING PRACTICES?

A review of the results of the formative research studies from the
Global Public-Private Partnership for Hand washing with Soap and
other sources

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LSHTM/Hygiene Centre
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Summary

HWWS and health

Handwashing with soap is one of the most effective and cost-effective means of preventing the infections that kill millions of children in the developing world each year. However, good handwashing practice is rare and handwashing practices are private and difficult to change. The most effective behaviour change programmes are those that are based on detailed knowledge of the practices, their context and the factors that hinder and facilitate them.

Formative research for HWWS

The Global PPPHW and a number of other hygiene promotion programmes have been carrying out formative research into handwashing over the past decade including the ten countries reviewed here (Ghana, Senegal, Peru, Kyrgyzstan, Madagascar, China (Sichan and Shaanxi), India (Kerala), Vietnam, Tanzania, Uganda). This report brings together the results of this work, asks what is common and what is different about handwashing in these diverse settings and suggests some directions for the future. Our review employs a meta-model of behaviour change which treats behaviour as an outcome of psychological factors (cognitions, motivations and habits) and environmental factors (physical, biological and social).

HWWS at key junctures

Findings suggest that HWWS at key junctures, such as after the toilet, or after cleaning up a child, is not a common practice, occurring on average at only 17% and 13% of occasions. However, the use of plain water for handwashing is about three times more frequent. The fact that some people do have the handwashing habit, however, suggests that it is possible to change HWWS habits globally.

The results suggest that soap is available in over 95% of households; however the soap is used mainly for laundry, dish and body washing, and much more rarely for handwashing. The soap that was most present in most settings was laundry bar soap. Perfumed toilet soaps tended to be seen as a luxury, to be used on special occasions and kept carefully, often by the mother for her own bathing, so it would not be wasted. On the whole, access to water was not a major constraint for handwashing, except for a small number of people in some parts of some countries.

The studies look at the beliefs, motivations and habits that relate to HW:

Handwash belief

Local beliefs related to handwashing varied (such as not using soaps when pregnant, or whether or not soap should be used in religious ablutions). Knowledge about the importance of handwashing for disease prevention was high in most countries despite practice being poor. We conclude that it may be hard to change traditional and biomedical beliefs in a short term

communication programme. We further conclude that enhancing biomedical knowledge may not be sufficient to cause behaviour change since mothers do not fear child diarrhoea, and are more concerned with threats to themselves such as cholera.

Handwash motivation

Behaviour will only change when there is a strong and sufficient motivation. In handwashing these motivations can include disgust, fear, comfort, nurture, status, affiliation and attraction. The motivations that are most likely to get people practicing HWWS are disgust, affiliation to local norms. Comfort and nurture may play secondary roles. For reasons that we explain, fear, status, and attraction are less likely to be effective.

Promising strategies

Strategies worthy of further exploration include:

- Enhancing the idea that there is foul, smelly contamination on hands after the toilet which engages disgust and comfort as motivations
- Employing people's strong desires to do what others are doing (affiliation) by for example, using the power of injunctive norms, and by trying to make it appear that HWWS is what everyone else does

This review shows that though beliefs differ, there is a high degree of similarity in motivations and a surprising degree of similarity concerning actual handwash practices.

Future research

The FR approaches performed well in generating excellent, rich data for country programmes, and for political reasons it may not be advisable to try to substantially cut back on FR, since it serves as a unifying process for country partnerships, and politicians want country specific data.

Areas for improvement of the FR include experimenting with more projective techniques and possibly introducing quantitative measures of motivation, though there are major methodological issues with so doing. Better guidance can be provided and technical assistance will usually still be needed. Thought needs to be given to enhancing capacity in countries to manage such demanding work.

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List of acronyms

AED	Academy for Education Development
ARI	Acute Respiratory Infection
CDC	Centers for Disease Control
CWSA	Community Water and Sanitation Agency, Ghana
DANIDA	Danish International Development Agency
DFID	UK Department for International Development
DHS	Demographic and Health Surveys
FR	Formative Research
HH	Households
HIP	Hygiene Improvement Project
HW	Handwashing
HWWS	Handwashing with Soap
IMRB	Indian Market Research Bureau
JHUCCP	John Hopkins University Center for Communication Programs
LSHTM	London School of Hygiene and Tropical Medicine
NFHS	National Family Health Survey
NGO	Non Governmental Organisation
PPP	Public-Private Partnership
PPPHW	Public-Private Partnership for Handwashing with Soap
TOR	Terms of reference
TB	Tuberculosis
Unicef	United Nations Children's Fund
USAID	United States Agency for International Development
WB	World Bank
WHWS	Washed hands with soap
WSP	Water and Sanitation Programme (World Bank)
WSSCC	Water Supply and Sanitation Collaborative Council

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1. Introduction

1.1 *Why handwashing with soap?*

Infectious diseases affect the world unequally. Sixty-two percent of all deaths in Africa and 31% of all deaths in SE Asia are caused by infections (Global Health Council, 2005). At the same time only 5% of all deaths in Europe are from infectious causes. Reducing this disparity in rates of infection and mortality is a priority for the global community. However, the two biggest killers of children, the diarrhoeal diseases and the Acute Respiratory Infections remain relatively neglected by a public health fraternity engaged in combating HIV/AIDS, malaria and TB. A half of all child deaths each year are due to diarrhoea and ARIs, both of which are transmitted from person to person during everyday interaction, through the air, through skin contact and through contamination of the environment¹. One of the most important ways of preventing these infections is handwashing with soap (HWWS). This is because handwashing can remove the agents of infection both at the time that they are emitted from the primary host and prevent them reaching secondary hosts. Regular handwashing with soap is thus an excellent way of preventing the transmission of microbes from one person to another.

Indeed, current epidemiological evidence has handwashing with soap one of the best of all infection prevention methods. This simple act is thought to be capable of preventing about 47% of child diarrhoeas² and 23% of respiratory infections^{3,4}, which, between them, account for over 4-6m deaths of children under five around the world¹. A recent review of the cost effectiveness of interventions for the prevention of disease put hygiene promotion, including handwashing, at the very top⁵, costing only about \$5 for each disability-adjusted-life-year saved. If HWWS was consistently practiced around the world it would act like a do-it-yourself vaccine, reducing the unnecessary death and suffering caused by these common but life-threatening diseases.

HWWS is likely also to be an effective means of preventing other diseases which are transmitted via the faecal-oral route, including worm infections and epidemics of cholera and typhoid.

However, HWWS is not a common practice. Studies put rates of HWWS at key times, such as after the toilet or after cleaning up a child, at only about 5-15% of occasions⁶. Even in the UK one study found only 43% of mothers HWWS after changing a dirty nappy⁷. Introducing what is, for most, a brand new habit to the private, domestic realm across the world remains a major challenge. We now know that the solution is not as simple as providing health education about handwashing^{8,9}-- often a majority know about handwashing's health importance, but still do not practice it.

This challenge has been taken up by a number of organisations: soap companies, NGOs, donor and implementation agencies, Universities and Governments have begun to work separately and together to tackle the problem. In particular, the Global Public-Private

Partnership for Handwashing is seeking to combine the skills and resources of all actors towards concerted large scale national efforts to promote HWS. Partners include the World Bank, the Water and Sanitation Programme, USAID, Unicef, WSSCC, LSHTM, AED-HIP, JHUCCP, Unilever, Colgate-Palmolive and Procter and Gamble, country Governments and small scale soap manufacturers. Now active in 15 countries, the programmes combine the up-to-date best practice of public health and consumer marketers in high impact strategic communications programmes which aim at measurably improving handwashing practices across whole countries¹⁰. To date over \$30m has been raised internationally for these programmes.

1.2 Improving handwash practices-important, but how?

Changing deep-seated, private and culturally-embedded practices such as handwashing is a difficult and uncertain process. The best hope of doing so lies in understanding the behaviour, its determinants and its context, so as to better locate the pressure points where public health and/or marketing efforts might make a difference¹¹⁻¹⁴. Formative research is a systematic process of gathering information about risk behaviours so as to develop strategies for changing them^{15 16}. It has been used in hygiene promotion since the early 1990s when tools were developed in Burkina Faso¹⁷. These approaches have been used widely by many actors in many locations, and they have been revised and improved over the years to incorporate lessons learnt from practice, and from commercial consumer research as well as from public health¹⁸. In addition a number of other approaches have been developed and used which have not been reviewed here (for example by EHP, AED-HIP and JHUCCP).

FR in HW research has typically sought to answer four key questions:

1. What are the current hand washing practices?
2. Who are the target audience segments for hand washing?
3. Why do they/not practice hand washing with soap? i.e. what are the beliefs, motivations and barriers relevant to handwash practice?
4. How do we best reach the target audiences?

We have complete reports available from FR work in 10 countries, most from the PPPHW countries, (Ghana, Peru, Madagascar, Tanzania, India (Kerala), Uganda, Vietnam and Senegal). We also have the results of two studies from Kyrgyzstan and from two provinces in China. In some cases separate baseline studies of handwashing rates were commissioned (eg Senegal, Ghana), and these results are also included here.

A substantial body of work on handwashing has thus now been accumulated and it is possible to draw together the lessons that have been learnt. This is the object of the current report.

1.3 Objectives: learn about handwashing practice

The specific objectives of this report are to summarise and interpret the available results of FR about handwashing:

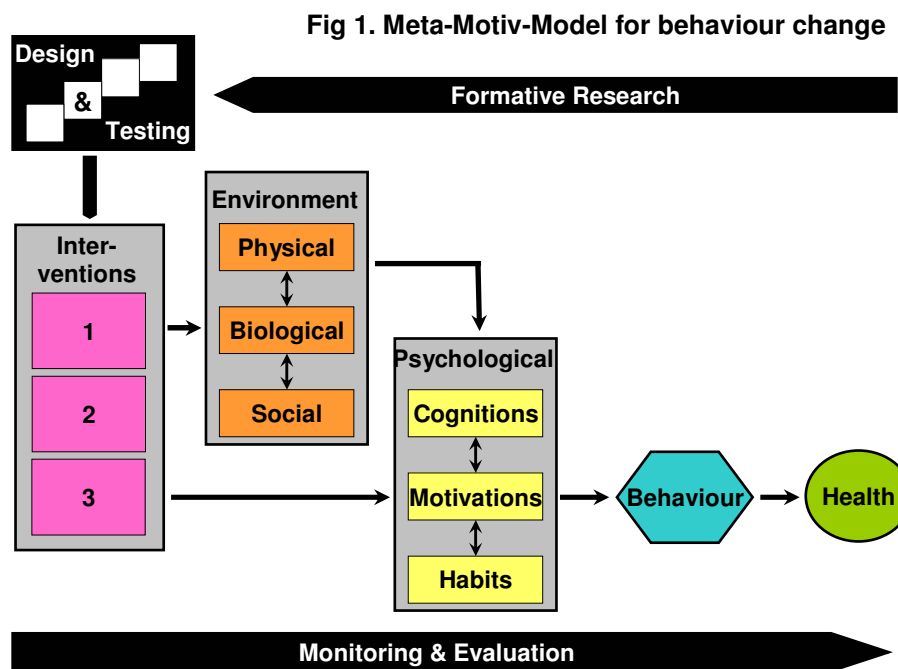
- collate what we know about handwashing practice and its context
- extract key drivers and approaches to HW promotion
- explore how much these factors vary globally
- propose how best to conduct research for new projects that builds on existing understanding

This report has been commissioned by Lifebuoy out of the Hygiene Centre's (LSHTM) current programme of work aiming to better understand hygiene practice. This report is in the public domain.

We have focused in particular on the handwashing behaviours of mothers of children under five, who are often the main target of HWWS campaigns. There is another body of work on school children in schools that will require a separate review.

1.4 Conceptual approach

The overall approach to programme design and the role of the formative research within that is set out in Fig 1. (This is an elaboration of the behaviour change model that appeared in the Handwashing Handbook¹⁸). The key elements of the model are *behaviour*, which is determined by *psychological* factors, which we divide into *cognitions*, *motivations* and *habits*. These are influenced by the *environment*, which can be *physical*, *biological* or *social*. The main role of FR is to understand and document those factors and how they interrelate. The results are then fed into a process of program design and testing, closely following a marketing model, which is then turned into a full scale intervention. The diagram also shows how M&E mirrors FR in documenting changes in behaviour and factors determining it that can be assigned to the intervention.



The FR approach used in most of these studies was designed to use academic research and marketing approaches, drawing on both anthropological and consumer research techniques to understand the psychological and environmental factors that are related to HW behaviour.

Once the motivations and cognitive rationales underlying the practice of (or lack of) handwashing have been identified qualitatively, the results are fed into a process whereby the most promising motivations and rationales are tested quantitatively. The best are selected, turned into concepts, tested again, and eventually the best scoring combinations of ideas is given to a creative agency to turn into a single unifying concept for the campaign. Proposed executions are then tested against a benchmark of previous work that has had known success. (This process has so far been completed fully only for Kerala and Ghana). In theory a programme should only be launched once good scores have been obtained for all materials.

The FR studies were also used to characterise and segment target audiences and their actual practices. Further, the FR aimed to fill lacunae in commercially available audience research in mapping and understanding the potential value of existing channels of communication, both modern and traditional, used by target audiences.

For countries going through the process of designing a national HW programme, the FR process serves an important role in consensus building, and advocacy. Commissioning, designing, executing, working on, reporting and interpreting the results provide a key means by which country partnership to come to agreement about the shape of the HW problem and what needs to be done about it.

2. Methods

This review collates the results of 11 FR reports and two baseline study reports from 10 countries. The reports and their characteristics are set out in Table 1. In this review we have used final reports or reanalysis of final reports, where available. Where data is not provided in our review it is because this was not available in the reports we have collated. Fuller details of the studies are provided in Annex 1.

In most countries overall terms of reference for the FR were provided and contractors (mostly commercial market research companies) were asked to come up with their own approaches, in the hope of having original contributions. In the end, however, proposals were often unsatisfactory and contractors had to be given detailed instructions and instruments. Standard approaches included direct structured observation of HW behaviours, household interviews, behaviour trials (where volunteer mothers are given soap and asked to carry out handwashing with soap (HWWS) for a week or two weeks, followed by a de-brief), in-depth interviews, key informant interviews and focus group discussions (some of which included exercise such as soap attribute ranking or discussion about pictures representing different motivations). The Peru study was more innovative; however, coming up with new approaches such as free association (elicitation of words associated with cleanliness and dirtiness) and image projection (discussion around pictures of clean and dirty children).

All countries carried out structured observations of behaviour (direct observation of handwashing practices normally for a 3 hour period in the morning), either on a small sample so as to provide a picture of current practices for the sake of advocacy, or on a larger sample (usually 500) so as to provide a baseline on handwashing behaviour. It was not possible to

persuade all countries that the baseline study should be nationally representative, which will provide some problems for follow-up.

All countries developed and pre-tested their own versions of the final instruments; hence there is variability in the way data was collected, and results between countries are not strictly comparable. Training of fieldworkers took place prior to the survey in each country, sometimes with external technical assistance. Data consisted of verbatim transcriptions of discussions and interviews and quantitative results entered into databases. The qualitative data was analysed manually, save for the Ghana results which were later re-analysed with the aid of a software package called NUD*IST.

It was hoped that countries would not require detailed technical assistance to carry out the surveys; however, the results suggest that the best results were obtained when external assistance (from WSP, AED, LSHTM, CDC, Unilever, Colgate-Palmolive) was made available. We reflect on lessons learnt about study methodology and execution in the discussion section of this report.

Table 2.1 Formative research studies reviewed for this report

Country/ Location	Date	Research by	Target audience	Methods*	Locations	Notes	Ref
Ghana	2002	Research International	Mother/child pairs Male neighbours Groups of mothers Women volunteers Schools	500 SO CS IDI FGD BT SV	Ashanti Eastern Greater Accra Northern Western	Nationally representative Re-analysis of results by LSHTM/PPPHW	What Motivates Hand Washing in Ghana? A Re-Analysis of the Results of the Formative Research Data. Scott, B., Curtis.V., Rabie.T., Gabrah-Aidoo., N. 2002 ^{19 20}
India-Kerala	2002	IMRB	Mothers with children less than six	350 SO FGD IDI BT	Kerala State	Re-analysis by LSHTM	What Motivates Hand Washing in Kerala? A Re-Analysis of the Formative Research Data Scott, B, Curtis, V, Rabie T, Indian Market Research Bureau, 2003
Madagascar	2003-2004	TARATRA PEA	Mothers with children Households Key informants	40 SO EW, HS IDI BT KII, FGD	Bekily Ampanihy	Not nationally representative	Etude sur le Partenariat Public Privé – lavage des mains avec du savon dans les Fivondronana de Bekily et Ampanihy/2003-2004 Taratra Pea – Banque Mondiale, 2004
Kyrgyzstan	2000	BDS	Households with children < 3 Teachers Male elders School age children	65 SO HS FGD BT	6 villages, 2 from each of the 3 oblasts Naryn, YsykKul Talas	Carried out for DFID/Bank water supply project	Formative Research for Hygiene Promotion in Kyrgyzstan. Biran et al, 2005 ²¹
Senegal	2004	IRIS	Mothers with children <5	HS IDI FGD KII BT	Dakar Thiès Diourbel Velingara	Not nationally representative	Etude sur le Lavage des Mains avec du Savon au Sénégal, Rapport Final, IRIS, 2004 PPP for Handwashing: Senegal: Report on Behavioural Trials, Hygiene Centre, LSHTM, London, Aunger, B. 2004
Senegal	2005	MGP-Afrique	Mothers with children <5	450 SO	Dakar Diourbel Thiès Velingara	Baseline study, representative of 4 regions	Rapport Provisoire: Initiative de partenariat public/privé de lavage des mains “ Situation de référence en matière de lavage des mains au Sénégal, Dakar. Senegal MGP-Afrique, 2005

Peru	2004	AB PRISMA	Mothers/caregivers of children <5 School aged children Other family members	500 SO HS IDI BT FA IP FGD	Lima, Arequipa, Iquitos, Cusco, Junin and San Martin	Sample skewed towards the poor	Behavioral Study of Handwashing with Soap in Peri-urban and Rural Areas of Peru A.B. PRISMA, for EHP Lima 2004
China- Shaanxi	2005	Xian PDU/CDC	Female custodians of children Households with children <13 Households with children <5 Two primary schools	78 SOs, HS	Binxian County Zhidan County Yintai District Yaozhou District	Carried out for Bank/DFID/Unicef 3 in 1 project	Hygiene Promotion Survey Report (Shaanxi) Re-edited (2 nd draft), , Xian PDU/CDC, 2005
China- Sichuan	2006	Chengdu CDC	Female custodians of children Households with children <13 Households with children <5 Two primary schools	64 SO HS	Lezhi County Renshou County Jialing District	Carried out for Bank/DFID/Unicef 3 in 1 project	Hygiene Promotion Survey Report, Sichuan, Chengdu CDC, 2006
Tanzania	2006	LMS international, Steadman International	Mothers/Caregivers of children <5 Children <5 Community members Key informants School children	30 SO CO HS FGD IDI BT	Dar es Salaam Rufiji Mpwapwa	Sample skewed towards poor areas	Understanding the Tanzania Consumer in respect to hand washing with soap, Dar-es-Salaam, LMS/Steadman International Jan. 2006
Vietnam	2007	Indochina Research	-Mothers with children <5 (SEC<US\$150) per HH /per month	720 SO HS FGD BT	Son La, huTho, Hung Yen, Nghe An, Binh Dinh, Ving Long, Dong Thap, Ninh Thuan	Not nationally representative, poor households only	Vietnam National Hand washing Initiative-Consumer Results Presentation, IRL Hanoi, Jan. 2007
Uganda	2007	The Steadman Group	-Caregivers of children <5 -Community leaders	500 SO HS BT FGD IDI	Kampala, Iganga, Mayuge, Mpigi, Lira, Bughenyi, Masindi, Kiboga, Mbale and Kbale	Nationally representative (excepting conflict zone in the north)	Formative research and baseline survey on hand washing with soap, Steadman International, Kampala, Jan. 2007

***Note to Table 2.1** SO - Structured observation

HS - Household survey

FGD- Focus Group discussions

BT- Behaviour trials

KII - Key Informant interviews

IDIs -In depth interviews

CO -Checklist observation

FA - Free association

IP - Image projection

HH- household

3 Results

3.1 Country Background

The countries in the review form a wide selection geographically and socio-economically. The countries fall into three groups: the African countries with low GDPs and high child mortality, the middle income countries, Vietnam, Peru and Senegal who have all improved their GDP and child mortality dramatically in the past ten years, and India and Kyrgyzstan, which fall in-between (see Table 3.1).

Table 3.1 Country population and GDP (source)

Country/location	Total Population in 2000/06 (million)	Total Urban Population in 2000/06	GDP per capita, 2003	Under five mortality/1000 in 2005
Ghana	20m	8m	\$2,200	112
India	32m (Kerala)	8m (Kerala)	\$2,900	85
Madagascar	16m	5m	\$800	123
Kyrgyzstan	5m	2m	\$1,600	68
Senegal	10m	4m	\$1600	137
Peru	26m	19m	\$5,200	29
China (Shaanxi)*	36m	12m	\$5,000	31
China (Sichuan)*	83m	27m		
Tanzania	34m	11m	\$600	126
Vietnam	80m	16m	\$1,400	23
Uganda	22m	3m	\$2,500	138

Sources: UNESCAP 2007, CIA 2007, CBW 2007, Prokerala 2007, Wikipedia 2007, WHO 2007
<http://www.unescap.org/esid/psis/population/database/chinadata/sichuan.htm>
http://www.unescap.org/ESID/PSIS/population/database/data_sheet/2006/list.aspx

3.2 Prevalence of diarrhoea in children <5

Diarrhoea is responsible for over 2m deaths a year globally, and each child can expect to suffer from several episodes a year¹. Some of the FR studies asked mothers about their experience with child diarrhoea over the past 2 weeks and found high rates not dissimilar to the results of other surveys. The best source of such data is normally the Demographic and Health Surveys (DHS) studies, the results of which are shown in the third column of the table. Diarrhoea is the second or third cause of child death (after ARI, and in Uganda and Tanzania, also after malaria) in most of the countries we are concerned with here (see Table 3.2).

Table 3.2 Prevalence of diarrhoea over the previous two weeks

Country/ location	2 week prevalence in survey	2 week prevalence from other sources
Ghana	Not stated	15% Ghana 2003 DHS
India-Kerala	Not stated	19% India 1998/99 NFHS2
Madagascar	12%	10% Madagascar 2003/04 DHS
Kyrgyzstan	Not stated	18% Kyrgyz Rep. 1997 DHS
Senegal	9%	15% Senegal 1997 DHS
Peru	11%	15% Peru 2000 DHS
China-Shaanxi	19%	Unavailable
China-Sichuan	15%	Unavailable
Tanzania	Not stated	13% Tanzania 2004 DHS
Vietnam	Not stated	11% Vietnam 2002 NDHS
Uganda	Not stated	20% Uganda 2000/01 DHS

*Source: ORC Macro, 2007. MEASURE DHS STATcompiler. <http://www.measuredhs.com>, February 22 2007.

3.3 Environmental conditions

Table 3.3 shows the official figures for water supply and sanitation for each of the study countries according to the 2000 Global Water Supply and Sanitation assessment (WHO/Unicef). The water coverage figures refer to safe or improved water sources. Madagascar has the worst figures for water, India the best. However, India has the worst figures for excreta disposal facilities, and Kyrgyzstan the best. There are major disparities in urban and rural coverage.

The table also includes soap availability as reported from the FR studies. These are all over 95% - surprisingly high, even for countries which are very poor. In general soap availability is high because the soap is needed for laundry, dish and body washing. It is much more rarely used for handwashing. The soap that was most present in most settings was unwrapped laundry bar soap. Perfumed toilet soaps tended to be seen as a luxury, to be used on special occasions and kept carefully, often by the mother for her own bathing, so it would not be wasted. Perfumed soap was often also used to bathe babies. On the whole, access to water was not found to be a major constraint for handwashing, except for a minority of people in water scarce areas, or at drought times, in some parts of some countries.

Table 3.3 Water, sanitation and soap coverage

Country/location	% Total water supply coverage*	% Total sanitation coverage*	FR results for soap availability
Ghana	64	63	95%
India	88	31	Not stated
Madagascar	47	42	100%
Kyrgyzstan	77	100	Not stated
Senegal	78	70	95%
Peru	77	76	100%
China	75	38	98%/100%
Tanzania	54	90	Not stated
Vietnam	56	73	100%
Uganda	50	75	95%

*Source: Global Water Supply and Sanitation Assessment Report 2000

Some reports looked at drivers of soap purchase and reported that key attributes were: cost, effect on the skin, lathering/foaming ability, the ability to serve multiple uses, its long lasting properties and ability to remove stains (Peru, Senegal). It was not generally thought of as a health product, though some mothers cited antibacterial effects as important attributes (Kerala, Uganda). The most commonly used soap in African countries was unwrapped laundry soap, bought either in 800g bars, or more often, but at relatively greater expense, bought piecemeal in 100 or 200g chunks for immediate needs. In most countries the purchase of soap and the use of soap is a female affair. (However Senegalese women claimed that soap purchase and use was the responsibility of their husbands, and in Tanzania slightly more men than women purchased the soap). Soap had a low priority for expenditure of scarce resources; mobile telephones, vanity and beauty, food, and clothes ranked higher in importance (Senegal). In Uganda a 100g chunk of soap cost less than one cigarette.

Though mothers said that they sometimes used ash, mud, lemon or local leaves to wash hands, in practice this was almost never seen. Ghanaian mothers have a special relationship with soap. They often concoct their own blends using a mix of locally available traditional and commercial soaps to get the particular properties they require for bathing themselves

3.4 Handwashing rates

The data on current hand washing practices was collected by structured observation in households prior to any intervention. The studies aimed to establish the proportion of times that mothers washed their hands with soap after critical events. These were usually:

- after using the toilet
- after cleaning up index child
- before feeding a child
- before handling foods

The overall results from Table 3.4 illustrate that hand washing with soap tended to be higher after defecation and after handling stools and lower before feeding the index child and before handling food/drinks.

Table 3.4 Handwashing with soap and water by mother or caregiver on key occasions

Country	N	HWWS after toilet (%)	HWWS after cleaning child (%)	HWWS after cleaning up child stools (%)	HWWS before feeding index child (%)	HWWS before handling food (%)	HW with water only after toilet (%)
Ghana	500	3	2	-	1	-	39
India-Kerala	350	42	-	25	-	-	-
Madagascar	40	4	-	-	12	-	10
Kyrgyzstan	65	18	0				49
Senegal	450	23	18	-	-	18	-
Peru	500	14	-	-	6	-	-
China- Sichuan	78	13	-	16	6	-	87
China- Shaanxi	64	12	-	-	16	-	14
Tanzania	30	13	13	13	4	-	33
Uganda	500	14	19	11	6	8	44
Vietnam	720	-	14	23	5	-	51
Weighted average		17%	13%	19%	5%	13%	45%

Notes: Tanzania- The figures quoted are the same as the observation was based on whether the person assisting the index child washed their hands after wiping a child's bottom or cleaning child's faeces.
Peru-Figures have been added together for any type of soap product

3.4.1 Hand washing with soap after defecation

Structured observations recorded what mothers or child caretakers did after leaving the toilet or going out for defaecation. According to the findings the rate of HWWS was highest in Kerala at 42% (this figure may not be reliable). The overall weighted average rate was 17% and the mode 13%. In most countries the HWWS rate was between 12% and 18% but in Ghana and Madagascar it was very low at 3-4%.

Handwashing with plain water after the toilet was much more frequent, ranging from 10% to 87% and averaging 45%.

3.4.2 Hand washing with soap after cleaning/contact with stools

Hand washing with soap after cleaning a child was found to be highest in Uganda (19%) and Senegal (18%) and lowest in Kerala (25%) followed by Uganda (19%) and the lowest rates if hand washing were identified in Ghana (2%). The average rate was 13%.

After contact with stools the highest HWWS rate was 25% in Kerala and the lowest 11% in Uganda. The average was 17%.

3.4.3 Hand washing with soap and feeding

Handwashing with soap was much less common before feeding children-on average only 5% of mothers across the survey samples did so.

3.4.4 Overall pattern of HW

Overall hands tended to be washed with soap more often after contact with faecal material than before preparing or feeding food. Handwashing with plain water was in the order of three times

more common than HWWS. However, when asked when hands should be washed people tended to mention before or after feeding. The need to WHHS after eating was said to be to remove stickiness, oiliness and food residues.

The behavioural trials showed that, on the whole, women washed hands adequately with soap without detailed instruction how to do it-making it unnecessary to explain correct handwashing technique in communications. According to the Peru report, for example: “*Promoting proper handwashing techniques is not a priority since most participants washed their hands by rubbing them together and dried them...*”.

3.4.5 Handwashing elsewhere

The figures in the FR studies are broadly in agreement with other studies from elsewhere as is shown in Table 3.6.

Table 3.6 Data about handwashing practices from other observational studies²⁰

Setting	Practice	Point Prevalence	Method/ Study
Calcutta slums	Handwashing with soap after defecation	16%	Sircar et al (1987) ²²
Shanty town in Lima, Peru	Handwashing after defecation	12% (soap use 'rare')	Gilman et al (1993) ²³
Rural Nigeria	Hands washed with soap after cleaning child	10%	Omotade et al (1995) ²⁴
Urban slums in Lucknow, India	Hands washed with soap after cleaning child Hands washed with soap after using a toilet	13% 20%	Curtis et al (1997) ²⁵
Childcare centres Brazil	Handwashing after changing nappy	16%	Barros et al (1999) ²⁶
Urban Burkina Faso	Hands washed with soap after cleaning child Hands washed with soap after using a toilet	13% 1%	Curtis et al (2001) ²⁷
North of England	Handwashing with soap after changing dirty nappy	43%	Curtis et al (2003) ⁷

3.5 Why do people wash/not wash hands with soap?

In this section we collate the results concerning the psychological and environmental factors associated with handwashing. It is hard to capture here all of the richness and the depth of knowledge that is provided in the reports, and in this section we are only able to provide a flavour of the findings. This richness comes despite the fact that research teams often did not have substantial experience in qualitative research.

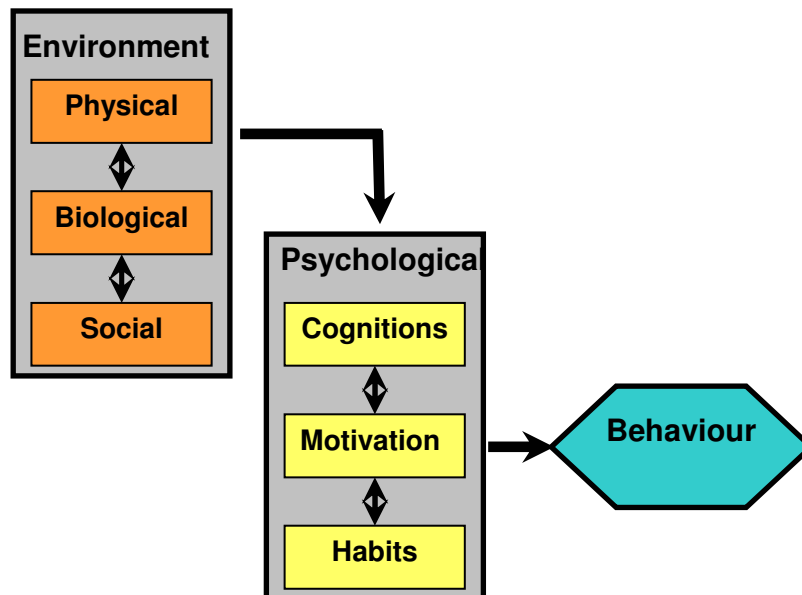
Neither China nor Vietnam are included here because in China the qualitative research has yet to be carried out; in Vietnam the full report is not yet available.

In this section we collate factors related to handwashing in each country following the inner part of the conceptual model in Figure 1 (see Figure 2). We first look at psychological factors, which we divide into *cognitions*, *motivations* and *habits*. These correspond to the three ways in which the brain controls behaviour. The most ancient system is the automatic reflex system; hands may be wiped when wet reflexively, for example. *Habit* is special case of reflexive behaviour where a learnt behaviour becomes automated ²⁸

A more recent addition to vertebrate brains is the motivational system, which biases behaviour towards getting what an animal needs – ultimately for survival and reproduction. Motivations

are divided into drives, which concern physical needs and emotions which concern social needs ²⁹(Aunger, Curtis, submitted). There is only a limited list of human needs and hence of human motivations ^{30 31}. Finally, humans have a *cognitive* system on top of the older systems. This allows the future to be imagined and simulated in the brain³² and for cultural learning and beliefs to accumulate³³.

Fig 2. Meta-Motivation Model: factors affecting behaviour



To give a simple unrelated example of how the model helps conceive of the factors involved in behaviour change: a person may believe (*cognition*) from observation that binge drinking is common in their group, they may value (*motivation-social*) being seen as a member of the group, but may actually have misperceived the *environment-social*. Binge drinking is not actually as common as it seems. Hence an intervention aimed at changing a *cognition* about binge drinking might be successful in reducing drinking when linked to the value (*motivation-social*) of fitting in to their group³⁴.

Cognitions that we cover here include beliefs about facts; local, religious and scientific, and about the environment and the self.

Motivations were collected under the categories: disgust, comfort, fear, attraction, status, justice, nurture, and conformity.

Once a new behaviour has become entrenched it can be relegated to a *habit*; just seeing a cue, such as a tippy-tap outside a toilet, can be enough to trigger a handwash event, without the involvement of cognition or motivation systems, for example. The problem remains, however, of how to create communications which can motivate the establishment of a new habit – and remove the old one which it replaces.

For a communication to be successful it has to link a motivation (benefit, value) to a cognition (a reason to believe). Hence the task of a handwashing communication, in a nutshell, is to identify cognitions and motivations that can work together to help create, establish and

maintain the new HWWS habit. Other types of intervention may target the environment, whether social, biological or physical, which may then facilitate behaviour change.

The meta-model we use here incorporates lessons from many and diverse theoretical and practical approaches to behaviour change. In particular it draws on new thinking from neuroscience and evolutionary psychology about the structure of the brain and the way in which it controls behaviour.

3.5.1 Cognitions relating to handwashing

Table 3.7 gives quotes or findings about local belief systems which have a bearing on handwashing. These are diverse and specific to local cultures, as one would expect. Mothers, however, often explicitly devalued such beliefs to the interviewers, labelling them local superstitions, and claiming that they did not affect their own behaviour.

Table 3.7 Cognitions related to local beliefs, religious beliefs

Setting	Illustrative quotes
Senegal	<p><i>“soap makes luck run away”</i></p> <p><i>“you don’t wash a baby with soap”</i></p> <p><i>“you don’t do laundry Wednesdays or Saturdays”</i></p> <p><i>“you can’t use soap with the holy water for ablutions”</i></p> <p><i>“soap reduces life expectancy”</i></p> <p><i>“a pregnant woman should use less soap”</i></p>
Ghana	<i>“Washing hands with just water is enough”</i>
Kerala	<p><i>“Before prayers. Because when we pray, there should be no stains on our hands and it has to be washed with soap.” (Kerala28(DI)</i></p> <p><i>“Maybe Muslim – because their religion says they have to be clean always before prayer.” (Kerala(DI)SU</i></p>
Madagascar	Building tombs for the ancestors and accumulating cattle are the first priority for any available funds (<i>report</i>)
Kyrgyzstan	<i>“Many children visit the traditional healer with the evil eye and diarrhoea.” (Woman, Talas)</i>
Tanzania	<i>“Like I for instance, have to wash my hands and feet about 5 times before I go to pray in the mosque...when we visit the toilet, we have to wash using soap” (Local govt. leader)</i>
Uganda	<p><i>“According to the Ganda culture one is not supposed to wash their hands before touching a child” (FGD Women Kampala District)</i></p> <p><i>“You don’t have to [WH before child] like you’re from burial” (Women FGD Kiboga District)</i></p> <p><i>“Washing has to be practiced after a burial to wash away the connection with the departed person. This is very important in Baganda culture” (Additional field findings Mpigi District District).</i></p> <p><i>“In the Busoga tradition, they say you should not wash hands before holding the child. In that even a dirty person asks to carry a new born they cannot be denied since it is a belief that they are a blessing to the child” (Additional field findings Mpigi District).</i></p>

Table 3.7 covers beliefs relating to health. These are close to biomedical concepts of disease; however, in the country reports that probed this issue further, the picture was not so straightforward. Almost all of the reports highlight the fact that populations have heard about germs and know that they play a role in disease. Many also know that handwashing is important for disease prevention. However, when it came to specifics, people were often less clear. For example, in several countries (Ghana, Kerala) the fact of simply smelling or seeing faeces was thought to cause illness. Furthermore, in many countries respondents stated that child diarrhoea was an inevitable part of growing up, and that it could not be prevented. Neither was diarrhoea thought to be a serious condition, nor one that threatened their own child, so preventing it was not a priority.

Handwash behaviour remains poor, as we have seen, despite people being able to answer questions correctly about its link to disease. Because germs cannot be seen or smelt, it is hard for people to conceive of them being present on hands. Knowledge about germ theory may remain in the category of 'school learning' and live alongside many other concepts of disease causation³⁵ rather than replace them. Hence, enhancing knowledge about germs, without linking it to something that is plausibly of immediate value for mothers, is not likely to lead to higher levels of handwashing.

Table 3.7 Cognitions related to belief-health

Setting	Illustrative quote
Senegal	<i>"Cleanliness is health"</i> <i>"Where there is dirt there are always microbes"</i>
Ghana	<i>"It can make you sick if your hands are dirty."</i> <i>'Soap now serves as a medicine which prevents us from dirt which normally leads to sickness"</i> <i>"Flies normally settle on the human excreta and later on deposit it on your body so you have to wash your hands to remove all the germs the flies deposit on your body"</i> <i>"To get rid of germs caused by the big flies in the toilet"</i> <i>"When I visit the toilet I need to wash my hands, if not the scent and dirt will cause sickness"</i> <i>"There is gas from the toilet which can make us get germs"</i>
Kerala	<i>"I will definitely wash my hands because if I feed my child without washing they can fall sick. By doing that kids will learn good habits as they follow what we do." (Ker32(DI)BT)</i> <i>"If you give children food without washing your hands then they can get diseases, could lead to stomach problems." (Kerala27(DI)BT)</i>
Madagascar	<i>"Dirt causes diseases"</i>
Peru	<i>"You're not going to eat with dirty hands...you need to eat clean foodyou was your hands when you go to the kitchen. You wash your hands before eating: otherwise you get a stomach ache." (Mother from Lima)</i> <i>- "If they don't was their hands, they get sick." (Mother from Lima)</i>
Kyrgyzstan	<i>"Diarrhoea is caused by rain making the water dirty" (Man Talas)</i> <i>"When they next ate, they would be eating the microbes from their bottom" this would be "like eating faeces and would be disgusting."</i>
Tanzania	<i>"I wash to guard against diseases because hands are the things used to do everything in the house. You may touch some dirty places and then pick a fruit and go ahead and feed it to the baby without washing hands. There, the baby will start to diarrhoea." (Woman with child under 5yrs-Dar es Salaam)</i> <i>"...Because of one's health... Many diseases come about as a result of being unclean, so for someone who understands these things, it is a must to fight such diseases by maintaining cleanliness in all areas and that way s/he shall have chased the flies." (Religious leader)</i> <i>"Soap also helps in the issue of preventing one from having lice on him/her. Soap and insects are repel each other"</i> <i>"When you are clean flies will not follow you, you will not be sick every time" (student)</i> <i>Soap is said to cause colds and flu probably due to allergic reactions to it. (report)</i>
Uganda	<i>"If I did not wash my hands I would get cholera and diarrhoea for the children, many people do it because of Cholera" (FGD)</i> <i>"HWWS can prevent diseases, for example cholera" (many mentions)</i> <i>"Faeces bring cholera and dysentery" (FGD)</i>

3.5.2 Motivations related to handwashing

This section concerns the motivations which drive handwashing. As we have said, motivations relate to meeting needs -- i.e., the benefits that can be obtained, and the value they have for the person. Motivations were designed by evolution to make animals strive to meet their needs, both physical (drives) and social (emotions), for highly social species such as humans. Clearly, the greater the motivation, the more likely the behaviour is to take place.

Drives include disgust (helps meet the need to avoid disease-note that this is not the rational/cognitive route we saw above, but much more ancient)³⁶, comfort (to give the body the physical conditions for optimal functioning) and fear (to avoid physical threats).

Emotions provide indirect social benefits and include nurture or mother-love (to give offspring optimal conditions for growth and success), status (to have priority of access to resources), affiliation (to fit in so as to have access to group resources), and attraction (to acquire and keep a mate).

Note that, though feelings are often associated with motivations, there is no *a priori* reason that people will be able to report motivations accurately. People may not be used to introspection; they may not even have access to their motivations as feelings, and even if they do, they may have good reason to want to disguise what they feel to an interlocutor. Indirect techniques were used tried to get around some of these problems, such as talking about important life events, telling stories with pictures, etc. However, they can never hope to elicit motivations that are completely unconscious.

Table 3.8 gives quotes about disgust. As the table shows this is a visceral and powerful repulsion from objects and events that are foul, smelly and unpleasant. Faeces are particularly repulsive, whether by sight or smell. People feel contaminated just by the fact of having been in their proximity. People feel the need to wash their hands when they have been contaminated by bad smelling matter, for example fish and faeces. Disgust also relates to status and affiliation, one cannot be disgusting and still be acceptable or respected in society.

The fact that HWWS is much more common after fecal contact than before eating suggests that *“...the reaction to the odor or appearance of feces motivates handwashing more than does the knowledge of the importance of handwashing before eating”*. (Peru report)

We have not provided a table on fear as a motive. As we have seen above, many people believed that hygiene is related to disease, and many feared disease as it could spoil their beauty (Senegal) or occasion expenditure, or loss of business time (Tanzania, Uganda). However, there was little fear expressed about children's diarrhoea which was generally seen as benign, inevitable and not life-threatening. People expressed more fear about dysentery and typhoid, and the threat to themselves, rather than for the possible effect of diarrhoea on their children. There was some suggestion in the reports that handwashing did increase during epidemics of cholera (Uganda, Senegal). This shows that fear can serve as a HW motivation, but only for diseases which are seen as life-threatening or epidemic in nature. People said they returned to their usual HW habits once this danger had passed. Having cholera in a household is also seen as shameful – with severe repercussions for the status of the family.

Table 3.8 Motivations- disgust

Setting	Illustrative quote
Senegal	- <i>"A dirty person smells bad"</i> - <i>"When you are dirty you shouldn't go out or meet people-you risk contaminating them or upsetting them with nauseous smells"</i>
Ghana	- <i>"Anything that comes out of the human being is so bad."</i> - <i>"Looking at the filth in a public toilet and using the place is disturbing."</i> - <i>"I don't want the scent of that thing [faeces] to remain on my hands lest I forget to use my hands to eat"</i> <i>Hand washing with soap is primarily being driven by smell and the disgust bad smells elicit, women wishing to remove faeces and other bad smells from their hands in particular after defaecation, handling children's excreta and after eating.(report conclusions)</i>
Kerala	<i>"To get rid of the bad smell. We will have a feeling of disgust if we don't wash our hands with soap." (Ker36(DI)SU</i> <i>"We wash our hands with soap after we eat fish. Then we will feel very uncomfortable, our hands are stinking and all" (Keff131)</i> <i>"When your surroundings is not neat. Sometimes when you don't sweep your surroundings, then you feel disgusted and the vessels are dirty...or if you don't bathe the children and see them dirty then you feel disgusted." Kerala27(DI)SU</i> <i>"The dirty things are cough, what women have-periods, rotten items or dead items." (Kebd8e1)</i> <i>'I feel aversion when I happen to see someone going for defaecation, if someone spits and urinates' Ker1(DT)</i> <i>'When the child was very small we do not feel dirty [cleaning up faeces]. Now it has a bad odour.' Ker15(1)</i>
Madagascar	- <i>"My hands stink after the toilet so my friends will boo at me."</i>
Peru	<i>"My mother used to always say that even though we were poor, we held up heads up high, we were lean and honorable. It didn't matter if our clothes were old, we were clean, even if we just washed with water. I got that from my mother." (Woman, Junin, CNPE01)</i>
Kyrgyzstan	<i>"Children's faeces should be cleared away from the house because the area around the house should be clean and faeces smell very bad." (Woman, Talas)</i> <i>"When they next ate, they would be eating the microbes from their bottom" this would be "like eating faeces and would be disgusting."</i>
Tanzania	<i>"Any time I change the napkins, my hands will smell of urine and so will have to wash them, they be clean and then continue with my other duties (Woman with child under 5 years." Dar es Salaam)</i>
Uganda	<i>" I do not feel clean if I have not washed my hands with soap after leaving the latrine."</i> <i>"I think toilets are the dirtiest places. Whatever you find in a toilet is disgusting"</i> <i>"I used to just eat before washing my hands thinking that it is only what comes out of my body that is dirty and not what goes in, not until I suffered from Typhoid."</i> <i>"I do not feel pure in my heart when I have not washed my hands"</i>

Comfort is an important motivation for handwashing in all of the countries that were studied (Table 3.9). People value feeling free of dirty matter that clings and spoils the skin, whether it be sweat, earth, stains, charcoal, oil or food residues. Comfort resides both in being able to sense cleanliness directly, but it is also a state of mind: being clean implies inner comfort, freshness, readiness for anything, confidence and purity. People also dislike having dirty hands that can leave other things dirty when touched (including social contacts).

However, there has to be a cue that hands are dirty, and this may not always be true after going to the toilet. Such cues are present after eating, hence HW after eating was often the most common time that soap was thought of as necessary. An additional benefit is the perfumed smell of toilet soap that is liked by some women. However, in a number of countries (Ghana, Uganda) the perfume was thought to spoil the taste of the food if soap was used before eating.

Table 3.9 Motivations: comfort

Setting	Illustrative quotes
Senegal	<i>"When I'm clean, I'm comfortable"</i>
Ghana	<i>"The benefit is that it makes the hands smell good." "I used the soap to wash my hands whenever I clean my child, if she defecates it makes my hands smell good."</i>
Kerala	<i>"Lather will make us feel we have become more clean and less soap is needed."(Ker36(DI)SU 'The soap should have smell because when you come out of a bath the smell of soap should be there and the smell of sweat should be gone' Kebd8e1 'I wash my hands to remove the odour from the hand after using toilet' Kerala34(DI)BT 'After defaecation there is no smell and nothing can be seen so you feel that there is no need to wash your hands' Kerala27(DI)SU</i>
Madagascar	<i>"I like using the soap." "With water it's clean, with soap it's better."</i>
Peru	<i>"So that they feel fresh, comfortable and smell like soap." (chep04) "It smells good."(cuep01) "It has to wash well." (jugf01) "When you are dirty you stink....when you're clean you smell good." (chep03)</i>
Kyrgyzstan	<i>"Soap is good because it is clean and smells good and it is good against microbes." (Child, YsykKul) "Soap makes clothes and body smell good." (Woman, YsykKul) "In the morning it is most important to wash hands against microbes because people have scratched themselves in the night and have dirty hands." (Woman, Talas)</i>
Tanzania	<i>"We use soap to get rid of germs and dirt before meals...have a clean body... clothes properly....get rid of stains... get rid of bad odours...when bathing to remove sweat and clean the skin...to get rid of oil on surfaces." (Students) "[washing gives]...feelings of being happy, light, relieved and free. "Hands should also be clean, for example when you touch charcoal and then wash your hands without soap, they will not be clean for some charcoal will still be left on your hands the hands will therefore not look good" (Woman with child under 5 years Dar es Salaam)</i>
Uganda	<i>"After eating food you can't move with dirty hands. I have got to wash my hands with soap after eating fish or any other oily foods" (Kiboga BT) "When you are from the toilet and you don't wash your hands with soap you just feel uncomfortable" (Kiboga BT).</i>

Nurture is, not surprisingly, a key motivation for women in our target group (see Table 3.10). In discussions about the things that were most important to them, women almost always placed children first. Loving and caring for a child was amongst the most rewarding things a mother could do, and the sources of her greatest pleasure and satisfaction. Mothers felt a keen responsibility and a duty to ensure the smooth functioning of the family, including keeping the child growing well and being correctly educated, whether in good manners, or at school. Children should be cared for automatically, and running off to wash hands should not get in the way of a child's immediate need for comfort or assistance (Uganda). As we saw in part 3.1, HWWS is indeed rare before feeding a child (5% on average). Though mothers agreed that it was logical that HWWS could protect the health of the child, the nurture urge to care for the child whatever the state of one's hands seemed to take precedence. This suggests that the nurture motive works against handwashing to some extent.

Mothers are very sensitive to being told that they are not doing the best for their child, and emphasising the duty aspect of HWWS might be effective as a strategy. However, such an approach is, perhaps, unattractive, from the gender development perspective.

Educating children is a priority for mothers, both in the formal system, but also in the informal system of being a good member of society as we have said. Daughters have to be taught to be good wives and mothers. According to the Senegal report: *“Apprenticeship for married life begins early. By the example of illustrious ancestors and glorious women in their family tradition, girls learn the arts of seduction, the art of keeping the attention of their husband, and the more subtle art of appearing to submit to marital authority.”* It may be possible to harness the maternal desire to educate children to inculcate HWWS habits early since: *“For women in Senegal a good wife is a clean woman both in the physical and moral sense.”*

Table 3.10 Motivations: nurture

Setting	Illustrative quotes
Ghana	<p><i>“Because I brought them into this world and I have to take care of them.”</i></p> <p><i>“They will take care of us in the future, so we should make sure they are healthy.”</i></p> <p><i>“The children are my future, so I should try to look after them well.”</i></p> <p><i>- “[I wash my hands] before carrying a baby so that I don’t infect the child with any disease”</i></p> <p><i>“I know that the child is not grown and if dirty things does into him, he will fall sick and since I don’t want him to fall sick, I ensure that my hands are clean all the time.”</i></p>
Kerala	<p><i>“We do everything for the health of the children. We have to bathe them, wash their hands and legs, we have to give them food, look after them when they are sick.”</i></p> <p><i>(Kerala28(DI)</i></p> <p><i>“Children’s health depends on our neatness.”(Ker89FGD)NU</i></p>
Peru	<p><i>“If I don’t do it (show her how to wash her hands) no one will.” (Mother from Lima)</i></p> <p><i>-Being a homemaker is more work than working at a job because at a job you just do one thing but in the house you have a lot of things: wash, cook and take care of the children.” (arep02)</i></p> <p><i>“A well-cared for child is one that is clean, healthy and well-groomed, in addition to being well-fed.” (report conclusions)</i></p>
Kyrgyzstan	<p><i>“Women don’t like faeces near the house because it is dirty and children might play in it.” (Woman, YsykKul)</i></p>
Tanzania	<p><i>I value my life, my children and their education... I work hard to put my children through school. My first-born is in International school in Dar, St. Teresia (Head Teacher)</i></p>
Uganda	<p><i>“I have to keep myself and my family clean. I have to take the responsibility It’s our responsibility as mothers to ensure their hygiene with in our homes to prevent disease.</i></p> <p><i>“I ought to HWWS to prevent my children from falling sick”</i></p> <p><i>“A woman might be doing some work and she sees a kid who is about to fall in to a trench she will just run to help the child out” [and not stop the HWWS](women FGD Kampala District)</i></p>
Vietnam	<p><i>“All I do is for my children first, I work to have money for my children.” (Son La & Phu Tho-urban)</i></p> <p><i>“I care for my children by cooking, teaching them, making sure they are clean and so on.” (Across most locations)</i></p>

All of the reports showed that people were strongly driven to behave in ways that enhanced their social status (Table 3.11). Being clean could lead to being admired and respected and a clean child is regarded as an ambassador to society from the family. People thus compete with each other to be seen as clean. However, in some societies there was the possibility of being too clean, of being seen trying to get above oneself (Uganda). However, HWWS is a private affair and several respondents pointed out that nobody could see if you had washed your

hands or not, handwashing couldn't really expect to enhance your social standing. Perhaps this is why HWWS is often insisted upon at public functions – public dinners, but not when eating at home.

Table 3.11 Motivation: status

Setting	Illustrative quotes
Senegal	-On soap use- <i>"Who gives a good impression, she's pleasant to see, her and her surroundings"</i>
Ghana	<i>"Even if you are not polite and well mannered, your neighbours will respect you if you are neat." Cleanliness and 'neatness' are of extreme importance. A child or a mother that does not display these qualities is socially unacceptable. A dirty person is unattractive, has low status and cannot thrive. (Report conclusion)</i>
Kerala	<i>"In the morning itself I remove the dirty clothes from the house and put them outside. So when somebody comes to our house, the house will somewhat clean." (Ker2(DI) "If we are clean others will have a good opinion about us. Hearing that we will feel happiness." (Ker9(DI)SU "So if we stay neat they will say that we are neat and clean and when they tell others, then we get respect of others." (Ker29(DI)SU</i>
Madagascar	<i>"It is shameful to be dirty in front of your friends." "My hands stink after the toilet so my friends will boo at me."</i>
Peru	<i>So others don't look at you, so they don't call you a pig." (chep02) If you don't wash they look at you like a pig at the school." (juep04)</i>
Kyrgyzstan	??
Tanzania	<i>Hand washing with soap also boosts one's confidence making users feel important and smart (report) "making one look civilised". "A person who is not clean is like a mad person...people avoid him but feel sorry for him" "Since this person [who WHHS] is of a high class, he will like that classic music"(Woman with child under 5 years Rufiji)</i>
Uganda	<i>"Our community health assistant is a clean lady who happens to be everyone's envy in the village and has hand-washing facilities in her home. She was recently elected to the LC II Council office and I believe it was because of her status in the community" "My children are always clean and admired by other people because soap keeps us clean" (Mayuge BT)</i>

Related to status, but in some senses, its opposite, is affiliation (Table 3.12). Here the objective is to cooperate and fit in, whilst for status the motive is to outcompete others. People everywhere have strong motivations to do what other people are thought to be doing, to do whatever is the norm. This shows that one is anxious to fit in and belong. On the other hand, people who are not clean are a threat to society and are shunned and ostracised, a fate that most people fear greatly, since they depend on others for so many things. On the whole people would tend to comply with whatever local people did about handwashing, so if it was not thought to be common, then people wouldn't bother. The problem here is that most people are conforming to the current low levels of practice, so that, like nurture, this motivation is working against the increase of HWWS.

However, affiliation could be made to work in another way. In Uganda we asked what people thought ought to be done and 84% said people ought to wash hands with soap after the toilet. This is called an injunctive norm³⁴ and could have an influence on behaviour if it could be made widely known.

Table 3.12 Motivation: affiliation, fitting in

Setting	Illustrative quotes
Senegal	<i>"[we] Villagers don't like dirt anymore" "when you are dirty you shouldn't go out or meet people- you risk contaminating them or upsetting them with nauseous smells"</i>
Ghana	<i>"I will say that neatness is very important and good too. Because when you are dirty and go near others, they will say that you smell bad."</i>
Kerala	<i>"When we go near others then there will be a bad odour. What will they think about us? They will think that we are dirty people, they will think that, that girl is stinking."Ker29(DI)SU</i>
Madagascar	<i>"It is shameful to be dirty in front of your friends."</i>
Peru	<i>"My relatives and neighbours would look at me." (liep01)</i>
Tanzania	<i>"I use soap because I want to be clean and be liked by people" (student) "A person who is not clean is like a mad person...people avoid him but feel sorry for him" "[washing makes me]...feel like I am in collaboration with others" "As businesswomen, it is vital to have soap around..."</i>
Uganda	<i>"Washing hands to fit in is very common with us here" -"A clean person is easily accepted by others even when you touch someone". "But you see the problem here is when you are clean people say you want to be different from them and they hate you"</i>

Finally, we discuss the role of attraction as a motive for HWWS (Table 3.13). Not all respondents were comfortable with discussing the idea that sexual attraction might be related to HWWS, and there was distinct variety of responses by country. There seem to be two types of country -- those for which female attractiveness is a very important issue that is out in the open, openly discussed and the seductive arts are taught by mothers to daughters (for example, as we saw in Senegal). At the opposite pole are countries like Uganda, where women present themselves as God-fearing and do not wish to appear to outcompete their 'sisters', because they may depend upon them for assistance in case of need. Here the culture is of modesty and purity. Ghana and Kerala fall towards the Senegalese norm, whilst China and Madagascar fall towards the Ugandan end in this respect. Nevertheless, whilst the rules about admitting to a concern for attractiveness may vary from culture to culture, it is likely that most women everywhere set great store by their personal appearance. However, we are again faced with the conundrum that although attraction is important, HWWS as a means to being attractive is not entirely plausible, since clean hands are not what potential lovers readily notice.

Table 3.13 Motivation: attraction

Setting	Illustrative quotes
Senegal	<p><i>"A clean person is attractive"</i></p> <p>Senegalese culture sets great store by feminine beauty and elegance. learning how to care for ones body (massage, hair styles, manicure, pedicure, henna) and clothes integrates a sense of cleanliness (report).</p> <p>Women do not want to fall ill-it is unattractive, spoils their beauty, their elegance (report).</p>
Ghana	<p><i>"Dirt can even put away a promising suitor"</i></p> <p><i>"Dirty wives put their husbands off"</i></p> <p><i>"We call a person who washes their hands regularly with soap a very neat person"</i></p>
Madagascar	<i>"Soap is good for getting hair clean"</i>
Peru	<i>"First people know her, so when the day comes when she needs a job, they know that she is clean." (Arep05)</i>
Kyrgyzstan	<i>"Soap makes clothes and body smell good." (Woman, YsykKul)</i>
Tanzania	<p><i>"What I really care for is my husband getting or being close to the family so that my children will not miss that fatherly love." (Woman with child less than 5 years Dar es Salaam)</i></p> <p><i>"...even you and your children look attractive when you keep yourselves clean"</i></p>
Uganda	<p><i>"When you have a husband you have got to show him a lot of love. So I have to keep my hands clean so that I do not put any dirt on him".</i></p> <p><i>"Because I believe a home which is clean earns the wife adoration from the husband"</i></p>

3.6 Habits

The final psychological system involved in handwashing behaviour is automated behaviours that happen without the involvement of motivation or cognition. Table 3.9 shows how mothers often ascribed HW habits to what they were taught when they were young. In Ghana some mothers were amazed when told about HWWS because they had never heard about it or been taught it, so there was no local habit. The reports do not enlighten us greatly about what it might take to make HWWS a habit; however, providing appropriate cues is clearly one route to help inculcate and sustain habits. The cue might be a handwash site near the toilet or a tippy tap within sight of the toilet or kitchen. It might even be a poster or sticker or soap wrapper provided as a reminder. Habit may be responsible for up to 50% of daily behaviours and yet has been little investigated in the psychology and behaviour change literature. It could be very important for HWWS.

Table 3.14 Reflex, habit

Setting	Illustrative quotes
Ghana	<p><i>"Anytime I am at home I use soap and water to wash hands since it is the upbringing I was given."</i></p> <p><i>"It's not a habit."</i></p> <p><i>"That is what I do ever since I was a child, I remember when I was a child, they kept telling me to wash my hands with water, but they never mentioned soap."</i></p>
Kerala	<p><i>"We ask the children to wash their hands with soap after playing and wash hands before food, we also wash hands with soap before cooking." (Ker19 (DI))</i></p>
Madagascar	<p><i>"Hand washing with soap is not a habit round here."</i></p>
Peru	<p><i>"They end up being like they were taught, if they were dirty growing up, they'll stay that way when they're big: if they were lean they will stay that way." (Women Arequipa, arep02)</i></p>
Tanzania	<p><i>(Example of poor upbringing)-" For example if you take a walk in a market place most people don't wash their hands with soap. They wash their hands when they want to eat food that has fat because they think it might disturb them- that is why the wash with soap." (Mixed group Dar es Salaam)</i></p>
Uganda	<p>Findings suggest that it is a habit not to hand wash before any key junctures (report)</p> <p><i>"Us Muslims who have been taught from childhood that one must first wash (kutawaaza) with water in the kettle or jerrican that is within the latrine and use soap after leaving the latrine" (several)</i></p> <p><i>- It was a learning experience for my family because before we never used to use soap for washing before eating but now its my responsibility, I never thought of handwashing before (Kiboga BT)</i></p>

3.7 The environment

Finally, in Table 3.15 we have collated information from the reports about environmental factors that facilitate and constitute barriers to handwashing. These are divided into social, biological and physical factors. Physical factors include the cost of soap and water, which are cited as problems by people (though in fact almost all people had soap and water available in their households, and HWWS does not take very much of either resource). Mothers had problems storing soap, toilet soaps were often seen as too precious to leave lying about, and kept hidden for mothers to use for themselves. Laundry soaps were less problematic in this respect.

Biological barriers include lack of time and energy for handwashing and the lack of smellable contamination on hands that would provoke handwashing.

Social barriers include conservative cultures that may be hostile to new ideas, and to people who implement new ideas. In several countries we learnt that health and NGO workers and other extension agents were often regarded as disdainful of poor folk, and hence not very good agents of behaviour change.

Most reports looked at mass media and other channels of communication appropriate to target mothers. We have not reported the results here; however, we were generally positively surprised by the good reach of mass media, which can be used to carry the HWWS message.

Table 3.15 Environmental factors facilitating (F) and constitute barriers (B) to hand washing

Setting		Physical environment	Biological environment	Social environment
Senegal	F	Water access	Smell of urine/faeces	Knowledge of the importance of hygiene/cleanliness Social norms/perceptions Good TV coverage
	B	Water availability (queues) Household environment Management/maintenance of toilets Hard to keep soap safely	Smell of poorly maintained toilets	Fatalism-Culture/Beliefs Conservatism of local culture Husband controls soap (?)
Ghana	F	Water source	Smell of urine/faeces/food	General high level of education Good mass media coverage
	B	Water shortage Poor access to water & cost Soap accessibility & cost Usage of public toilets	Fatigue/Laziness	Economic constraints Living conditions seen as poor Media dark areas esp in North
Kerala	F	Water taps in households	Smell of urine/faeces/food Visual appearance of dirt	Social acceptance of HWWS Spiritual purity is culturally very important Good mass media coverage
	B	Hard to keep soap safety Affordability of soap Inadequate water storage facilities Water availability/collection Location of defaecation sites	Fatigue/Laziness Lack of notice of smell of faeces Bad effects of soap on skin	Social norms not to WHHWS Conservative cultural systems- e.g. caste system, no desire to change it Poverty Husband controls household finances
Madagascar	F	Geographic location Clean water Soap in every household	Smell of urine/faeces/food Visual appearance of dirt	
	B	Water availability/Storage Soap safety Affordability of soap	Fatigue Children are in a hurry Time-mothers are unavailable	Very poor communication infrastructure Lack of knowledge/hygiene awareness
Peru	F	Soap is available Running water in 50% of hh	Visual appearance of dirt	Social teaching on hygiene promotion Husband's awareness Excellent mass media coverage
	B	Water accessibility/storage Soap safety and storage Affordability of soap	Fatigue/Laziness Time-domestic responsibilities	Poverty
Kyrgyzstan	F	Most people own a washstand Soap is available Water is available	Smell of faeces/urine /food Visual appearance of dirt	Hygiene 'propaganda' system still remembered Good TV coverage
	B	Poor design/structure /location/maintenance of latrines Water infrastructure breaking down Affordability of soap	Smell/visual appearance of latrines Child safety-can't use latrines unaided	Collapse of Soviet system, reduced social coherence New levels of poverty/unemployment/alcoholism Little interest in local TV Health workers no longer respected
Tanzania	F		Smell of urine/faeces/food	Good general understanding of germs
	B	Water shortage/availability Soap storage and safety Cost of soap Difficulty of pouring water over hands, no sinks	Fatigue We live in a dirty environment so why wash?	Poverty Husband controls soap (?)
Uganda	F	Placement of soap Easy access to water Geographic location General availability of hand washing stands	Smell of urine/faeces/food	Awareness of importance of HWWS Social status/approval Good radio coverage
	B	Convenience Soap safety Time Water availability Distance to facilities	Fatigue Memory-forgetfulness Smell of faeces/urine Affect of soap on food taste Time-busy with other chores/responsibilities	Lack of knowledge Conservative culture, Health NGO workers not respected Poor TV coverage

4. Discussion

4.1 Limitations of the studies

The FR reports reviewed here provided a rich seam of knowledge about handwashing, both in terms of what was actually practiced and the reasons why. The studies do have a number of limitations. First of all, because the studies were not the same, comparison between countries is difficult. For example, some topics were explored in more detail in some countries than in others, which may have given a biased impression of what was the same and what different.

Second, the studies were of uneven quality: some were well designed and analysed, some poorly. Amongst the more reliable studies are probably Uganda, Ghana and Peru, mainly because they had the most external expert assistance. However, Madagascar and Senegal also provided good reports with less support.

Thirdly, consumer researchers well know the difficulties of eliciting good data about what is actually going on in consumer's brains. . Qualitative and projective techniques using pictures or indirect questioning can give some insights. Questionnaires are of less utility because they require the right questions to be asked and because they encourage respondents to give the 'right answer' rather than the one they actually believe. Even worse, formative researchers do not yet know which constructs in brains are the critical ones to measure. The model we use is a step in the right direction, being built on a biologically meaningful classification of the way in which brains direct behaviour. Armed with this approach, hypotheses about what is driving behaviour can usefully be explored, as we have done here.

A further limitation of the approach we have taken to FR in these studies is implicit in the foregoing discussion. How can we decide which motives and beliefs to build our campaigns on if we have not measured them quantitatively? The approach used here is based on commercial practice where research generates consumer insight and then quantitative testing takes place as a part of the process of intervention design. Now that we have a good sense of what the key drivers of HWWS may be, it might be worthwhile for future FR into HWWS to attempt to get a measure of these constructs. Any such results will have to be treated with caution, for reasons which the companion report to this one on behaviour change theory (Aunger 2007) goes into in some depth.

4.2 Implications of the findings

4.2.1 Cognitions

As one might expect, local beliefs vary about handwashing and its effects. Though mothers had a tendency to dismiss the importance of such local beliefs, they may still be important. If, for example, it is a local norm not to do washing on a Wednesday, then such practices may be still be followed, not because they are believed but because they are the local norm. Changing traditional beliefs does not seem feasible for a communications programme, since these are deeply embedded in cultural belief systems³⁷.

Biomedical beliefs can certainly be changed; however, if we consider the story of the advance of germ theory over the centuries, we learn that this has been a long slow process of assimilation of new knowledge, often in parallel with or adapted to local belief systems³⁷. We have argued that concentrating on changing beliefs about disease may not be an effective strategy, even if it were possible. The causal chain for belief about diarrhoea is probably too long: the threat of catching abenign disease sometime in the future provides no immediate motivation to change a current practice in that instant. Hence enhancing knowledge about

germs, without linking it to something that has plausible immediate value for mothers is not likely to lead to higher levels of handwashing. (It should be noted that disgust is the ancient psychological system designed by evolution to help animals avoid the causes of disease, but this operates at the motivational, not the cognitive level.) On the other hand, whilst a fear of cholera can lead to behaviour change, the results are often temporary.

4.2.2 Motivations

Table 4.1 sets out our main findings about motivations and the implications for whether they are likely to be worth using in behaviour change programmes. We suggest that the most likely motivations for HWWS are disgust and affiliation. Beyond this, comfort and nurture may also motivate handwashing.

Table 4.1 Findings about motivations

Motivation	What we have learnt	Good candidate
Disgust	Being aware of contaminating matter on hands does motivate an immediate need to HWWS. The limitation here is that hands may not feel contaminated after faecal contact, and the sense of disgust may not last as long as the time it takes to find soap and water. The communications task should be to make hand contamination feel real.	Yes
Fear	Child diarrhoea is not perceived as a threat, it is benign and inevitable and so not particularly feared by mothers. The belief link between HWWS and child diarrhoea is tenuous, being in the realm of book learning, it is not something that has been directly experienced. The threat to oneself of a severe or epidemic disease such as cholera may motivate HWWS temporarily, but HWWS stops when the danger is past.	No
Comfort	Mothers will WHHWS when there is visible or smellable dirt and detectable contaminants on hands. They enjoy the feeling of clean, fresh-smelling hands from which dirt has been removed. Clean hands cannot then go on to contaminate other surfaces or people. However, dirt is not always perceived at key times, after toilet and before food handling. The comfort motive may thus provide an additional benefit to mothers from HWWS, but perhaps not provide a central motive.	Maybe
Nurture	This is a strong motivator for maternal behaviour; however, it does not seem to get mothers to HWWS before feeding their child. The nurture motivation rather works against HWWS, when there is an immediate need to care for a hungry child. On the other hand, mothers are strongly motivated to educate their children in good manners, for example, so getting them to teach HW to their children may be promising avenue to explore.	Maybe
Affiliation	Doing what everyone else is perceived to do is a strong motivator of current (lack of) HWWS. The affiliation motive could be employed through highlighting that most people believe that HWWS is the right thing to do. A good strategy to try would be to have communications that make HW seem common and to exploit injunctive norms about what people feel <i>ought</i> to be done.	Yes
Status	People care deeply about their social status and being perceived as dirty is to be avoided at all costs. Cholera, for example can bring great shame to a family. However, HWWS is often a private affair, hence nobody can tell if hands have been washed or not, so status may not operate as a motive, except when being watched, for example, outside a public toilet. High status people tend to be copied, whatever they do, so using role models in HW campaigns can be helpful.	No
Attraction	Though mothers differ in their desire to discuss it, many do want to look attractive to their husbands or others. However, as with status, it may be difficult to tell if hands have been washed with soap or not, hence the motivation link is probably too indirect. In some countries there is an additional motivation to avoid being ill in that it can spoil female beauty.	No

4.2.3 Changing the environment

A second set of routes to behaviour change is to change the environment, whether physical, social or biological.

Changing physical factors on a large scale, such as the cost, or availability of soap or water is unlikely to be feasible within the remit of a two year national HW campaign. Though people cite cost of water and soap as a problem, in fact almost all people had soap and water available in their households, and HWWS does not utilize very much of either resource. One route to behaviour change might be to insist on how little soap and water are needed for effective HW.

Changing the social environment is much more feasible and more likely to be cost-effective. One way to do this is to attempt to change actual norms. For example in Uganda it is the case that only 14% WHWS after the toilet, but 84% felt that was what you *should* do. It should be possible to exploit this injunctive norm, to make people feel they ought to WHWS because others think you should. We suspect this approach may be very effective (this same method has been used to great effect to change alcohol drinking practices) and needs testing. Also campaigns should endeavour to give high visibility to HWWS as a social norm by creating the illusion that 'everyone's doing it'.

4.2.4 Changing habits

The reports do not enlighten us greatly about what it might take to make HWWS a habit; however, providing appropriate cues is clearly one route to help inculcate and sustain habits. The cue might be a handwash site near the toilet or a tippy-tap within sight of the toilet or kitchen. It might even be a poster or sticker or soap wrapper provided as a reminder. (Soap companies provide attractive mini-posters inside soap wrappers, for example?) The topic of habit change has been little addressed in the literature and might repay closer study.

4.3 Similarities and differences

Though there clearly are differences in handwashing habits and the factors that determine them, the overall impression from all of the studies is how similar the findings are. Whilst local beliefs vary, motivations coalesce around a common set of themes.

4.4 Methodological issues for future FR

Overall, the methods used in the studies produced excellent rich results for programme design. They have been refined over the years and dig more deeply and provide new insights in each new round. They use a lot of approaches, and take about a month of fieldwork to complete. There may, nevertheless, be ways in which the approaches could be improved, as we discuss below:

4.4.1 Quantitative approaches to FR

There may be some potential benefit in trying to collect quantitative data on motivations, as we have suggested. However, since motivations are hard to conceptualise and harder to measure, any scores that suggest that one motivator is more important than another must be treated with great caution. For example, we have seen that some cultures are more confident than others in discussing the issue of sexual attraction. If Likert-scale questions are used, they may under- or over-estimate its importance, depending on prevailing moral standards about what can and cannot be said to outsiders. If we saw that those who WHWS were statistically more likely to

cite comfort as a motive than those that didn't, we could not conclude from this that comfort was a determinant of HWWS. It might rather be the consequence of having taken up the habit.

Finally, such quantitative studies require large sample sizes -- typically over a thousand data points -- which is hard to achieve when structured observation is used to determine who HWWS. However, we should be reluctant to base our categorization of handwashers on any other standard, as other measures seem to very much overestimate who is handwashing and so do not accurately separate handwashers from non-handwashers with soap.

4.4.2 Social change

The current FR treats the social environment as a channel of communication and does not go into great depth about the roles that can be played by communities and social institutions in delivering behaviour change at scale. There is scope here for conceptual work to set out what information is needed from the FR and for the development of methods which can deliver this information.

4.4.3 Simplifying and streamlining

It has long been an ambition of those involved in HW programmes to find a way to simplify and streamline the FR research. Since motives and cognitions appear to have a lot of similarities across countries, should it not be possible to do away with FR altogether, or at least radically simplify it? This is probably not a realistic goal. Whilst methods may be improved to some extent, one of the important goals of the FR is to create programme ownership in country partnerships. This cannot be achieved without a report of habits and motivations that is specific to a country. Ministry of health and concerned officials will generally not accept findings from other countries as a basis for programme design. The most recent report, from Uganda is the most detailed, and probably the best of all of the FR reports. The report is now proving detailed guidance for the team working on the next steps of programme design. It is hard to say which aspects of the work could have been left out. Some of the projective tools such as the pictures illustrating different motivations, could; however, be improved or enhanced.

5. Conclusions

Overall, the FR studies reviewed here provided a rich and detailed picture of handwashing practices and their related factors. They showed that HWWS is still rare, but not so rare that the idea of making it more common seems too daunting. Some of the conclusions suggested by this review are set out below.

5.1 For behaviour change

1. Changing beliefs about health or about local traditions is probably not a feasible or useful task for behaviour change communications.
2. Programmes should prioritise using motivations of disgust and of affiliation, possibly coupled with comfort and nurture.
3. Promising approaches that should be explored include:
 - using the social norms approach: e.g., "84% of Ugandans believe that you should HWWS after the toilet"
 - highlighting the disgusting nature of invisible substances on hands
 - HWWS should be made more visible, to give the sense that 'everybody is doing it'
 - HWWS role models are likely to be emulated
 - Mothers are motivated by nurture and a sense of duty to teach their children good manners, which could include HWWS.

4. Promoting proper handwashing techniques is not a priority since most people washed hands effectively without needing detailed instruction.

5.2 For the Formative Research process

1. Countries will always want to design their own proprietary programmes. However, the existing tools can be improved and a review of other tools from the consumer and behavioural sciences may locate other useful approaches.
2. Experimental studies are needed to test and compare approaches on actual behaviours in vivo. For this we will need testbeds which can be wired up to measure handwash habits.
3. New FR studies should always learn from the previous studies.
4. Common reporting formats for FR reports would improve their quality and comparability
5. The question of how to enhance country capacity to carry out such demanding cutting-edge research is a difficult one, with no obvious solutions. Regional centres might be trained to offer support, implying the need for long term partnerships. Universities with strong BC programmes (e.g., Johns Hopkins or Emory) might host short courses on FR and behaviour change for those involved in HW programmes
6. More technical support to handwash coordinators to design their programmes. Commercial companies are expert at programme design and can be asked to provide more support to country programmes at this vital stage. Coordinators also need support in getting financial and political commitment so they can get beyond the design stage more rapidly and into the field on the way to providing measurable behaviour change results. Then we will have much more evidence about what works and what does not.

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Annex 1

Details of FR studies by country

This section provides an overview of the background of the PPPHW formative research projects in the 10 countries stated in the methods section. This section provides a brief review of the methods employed in for the PPPHW formative research projects.

1. Ghana Formative Research

Client: CWSA with World Bank

Contractor for FR and baseline studies: Research International

Technical assistance: LSHTM and Unilever.

Sources of data: Beth Scott et al reanalysis of the results.

Methods: see Table A1

Table A1: methods used in the Ghana FR and baseline

Method	objective	sample
Consumer survey	Attitudes to handwashing, health and soap , exposure to channels of communication	450 mothers 250 male neighbours
In-depth interviews	Motivations for handwashing with(out) soap	30 mothers
Focus group discussions	Motivations for handwashing with(out) soap	10 groups of mothers
Behaviour trials	Motivations for and constraints to handwashing	50 women volunteers
Schools visits	Documenting school latrine and handwash facilities	45 schools
Quantitative Baseline – Structured Observations	Documenting actual handwash behaviour of mothers and other household members	500 mother/child pairs and their households

2. Peru

Client: WSP, MoH, MoW, USAID

Contractor: A.B. Prisma

Technical Assistance: AED, EHP, CDC.

Timing: The research took three and a half months to complete in total. The quantitative component took 54 calendar days and the qualitative component took 25 days.

Methods: see Table A2

Table A2 Overview of methods used in the formative research in Peru

Method	Target Population	Sample Size
Household surveys	Women responsible for caring for children < 5yrs	500
Structured Observations	-Mothers or caregivers -Children under the age of five -School aged children -Other family members who interacted with the index child	500
Image projection	Women	500
Free association	Incorporated into household surveys	500
Behavioural trials	Mothers	34 households
Focus Group Discussions	Mothers	16 FGD with 8 c. 8 mothers each
In-depth interviews	Mothers	48

3. Madagascar

Client: MoH

Contractor: Taratara

Technical assistance: WSP

Methods: see Table A3

Table A3 : Overview of methods used in the formative research in Madagascar

Method	Target Population	Sample Size
Environmental walk	Site	14 sites
Household survey	Households, women, men and persons less than 15 years old	100 households 370 women, 343 men Persons less than 15 years:
In-depth interviews	Households	20 households
Behavioural trials	Households	50 households
Structured Observations	Households	40 households
Key informant interviews	Key informants	70 people
Focus Group Discussions	Children, Mothers with children	Not stated

4. Tanzania

Client: GoT, WSP, World Bank, Ireland AID

Contractor: TMS International Research was commissioned to undertake the study and they employed Steadman Research Services to conduct the field research.

Technical Assistance: WSP

Methods: see Table A4

Table A4: Overview of methods used in the formative research in Tanzania

Method	Target Population	Sample Size
Checklist Observations	Children younger than 5 years	3 hh at each site (3 sites) randomly selected
Structured Observation	Mothers and caregivers of children aged less than 5 years	30 hh, randomly selected
Household Interviews	Community members	30 hh (90 in total)
Focus Group Discussions	Key informants	3 FG's per location
In-Depth Interviews	School children	6 In-Depth Interviews per site
Behavioural Trials	School children	23 children, 20 in sch

Key: hh = household, FG = focus group, sch = school

5. China

Preparatory work was carried out prior to the design of a WorldBank/DFID/Unicef supported water, sanitation and hygiene programme in two provinces of China-Sichuan and Shaanxi. This was not a full programme of FR

Client: BDU

Contractor: Chengdu CDC

Technical assistance:

Methods: see Table A5

Table A5 : Overview of methods used in the formative research in China-Sichuan

Method	Target Population	Sample Size
Structured Observation	Women with children less than 13	64
Questionnaires	Women with children less than 13	181 questionnaires
Sales and Market Analysis	Townships and five primary schools	Not stated

Client: BDU

Contractor: Xian PDU/CDC

Technical assistance:

Methods: see Table A6

Table A6 : Overview of methods used in the formative research in China-Shaanxi

Method	Target Population	Sample Size
Structured Observation	Households with children aged 5 or below	20 per hh (4 project counties/districts)
Sanitation Facilities Review and Individual Interview	Primary schools	2 (4 project counties/districts)
Questionnaires	Members of the sample hh's	60 hh (4 project counties/districts)

6. Kerala

Client: The Kerala Rural Water Supply and Sanitation Agency (KRWSA)

Contractor: IMRB

Technical assistance: Unilever, LSHTM, World Bank

Methods: see Table A7

Table A7 : Overview of methods used in the formative research in Kerala State, India

Method	Target Population	Sample Size
Structured Observation	Mothers with children < 6 years	350
Focus Group Discussions	Groups of mothers	16 groups of mothers
In-depth interviews	Mothers	32 mothers
Behavioural Trials	Mothers	36 mothers

7. Uganda

Client: WSP

Contractor: Stedman International

Technical assistance: WSP, Unilever, LSHTM

Methods: see Table A8

In addition a schools study was carried out (not reported here)

Table A8: Overview of methods used in the formative research in Uganda

Method	Target Population	Sample Size
Structured Observations & interview	Care givers of <5yrs	500 (50 per district)
Behavioural Trials	Primary Care givers of < 5yrs	20
Focus Group Discussions	Care givers of <5yrs both male and female	7(5 female & 2 Male)
In-Depth Interviews	Community leaders	12

8. Vietnam

Client: WSP, MoH

Contractor: Indochina Research Limited

Technical assistance: Unilever, LSHTM (limited)

Methods: see Table A9

Table A9: Overview of methods used in the formative research in Vietnam

Method	Target Population	Sample Size
Focus Group Discussions	Mothers with children 5 years or less (Socio-Economic Class (SEC) Income not higher than US\$150 per hh/per month	720 (90 per province)
Behavioural Trials & In-depth Interviews	Mothers with children 5 years or less (Socio-Economic Class (SEC) Income not higher than US\$150 per hh/per month	720 (90 per province)
Structured Observation & Baseline Quantitative Interviews	Mothers with children 5 years or less (Socio-Economic Class (SEC) Income not higher than US\$150 per hh/per month	720 (90 per province)

9. Senegal

Client: PPPLMS

Contractor: IRIS

Technical assistance: WSP

Methods: see Table A10

Table A10 : Overview of methods used in the formative research in Senegal

Method	Target Population	Sample Size
Questionnaire Survey	Women with children less than 5	400
Structured Observation	Women with children less than 5	202
In-depth Interviews	Women with children less than 5	80
Focus Group Discussions	Women with children less than 5	8 Focus Group Discussions on 10 & 16
Focus Group Discussions	Primary school children	20 kids per group
Key Informant Interviews	Teachers	4
Behavioural Trials	Not stated	40

10. Kyrgyzstan

Client: DFID

Contractor: BDS

Technical assistance: LSHTM, Institute for Regional Studies, Bishkek, Kyrgyzstan, The Central Asia-Caucasus Institute, John Hopkins University

Methods: see Table A11

Table A11 : Overview of methods used in the formative research in Kyrgyzstan

Method	Target Population	Sample Size
Structured Observation	Households (poorest) with a child less than 3	65
Focus Group Discussions	Men, Women, Teachers and Male elders	15
Behavioural Trials	Women with children less than 3	10
Questionnaire Survey	Men, Women and School aged children	255