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**DELIVERING WATER, SANITATION AND HYGIENE SERVICES
IN AN UNCERTAIN ENVIRONMENT**

**An assessment of baseline hand washing practice in
Malawi and the relevance of proxy indicators**

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The Government of Malawi has launched a National Hand Washing Campaign in order to coordinate and intensify efforts on hand washing promotion. However, much of the reported data on actual hand washing practice is unreliable and scanty as it often relies on responses to questionnaires which may not reflect actual practice. This study collected qualitative information on hand washing practice in a few selected villages in rural Malawi to help qualify estimates of hand washing practice from quantitative information collected in national surveys. The findings of the study revealed that hand washing occurs regularly in 50% of households with hand washing facilities. The presence of a hand washing facility alone did not predict hand washing practice unless it is filled with water. Hence a better proxy indicator for assessing hand washing practice in Malawi is observing for households with water in their hand washing facility.

Background

The promotion of hand washing with soap is being actively driven in Malawi through the Open Defecation Free (ODF) Malawi Strategy 2015 and The National Hand Washing Campaign (NHWC)ⁱⁱ. Various methodologies are being used to promote its practice, from health education activities to integration with popular sanitation approaches such as Community-Led Total Sanitation (CLTS). However, information on the effectiveness of these measures is scanty mainly because hand washing behaviour is by its very nature difficult to measure. National surveys, including the Multiple Indicator Cluster Survey (MICS), the Demographic Health Survey (DHS), and the Welfare Monitoring Survey (WMS), collect information on hand washing practice through responses to hand washing related questions and observations of hand washing facilities^{iii,iv,v}. Some of the hand washing interventions encourage households to make their own simple hand washing facility from plastic bottles or other containers (see example in Photograph 1); it has been considered that such facilities may provide a useful proxy indicator of actual hand washing practice that is an improvement on self reporting (e.g. response to questionnaires). An initial qualitative observational study was conducted to gather information hand washing practice after using the toilet in a few selected rural communities, in order to ascertain how well the presence of hand washing facilities might be useful as a proxy indicator of actual practice.



Photograph 1. The Leaky Tin HWF

Source: UNICEF Malawi 2013

Research objectives

The research focussed on hand washing behaviours after toilet use or visible open defecation. Some of the research objectives were:

1. To assess the use of the hand washing facility beside the toilet (When HWF is mentioned throughout the rest of this document, it refers specifically to the HWF beside the toilet and not any other location).
2. To gather data on baseline hand washing practice aside from use of HWF by the toilet
3. To assess the suitability of commonly-used proxy indicators for predicting hand washing practice

Methodology

Two districts (Salima and Blantyre) were purposively selected based on the high rates of hand washing facilities reported but different geographical settings, one by the lake shore and the other one upland. A similar number of group villages per district was included in the sample.

Several research methods were used to meet the multiple research objectives. For observation of hand washing practice, 10 group villages with hand washing facilities by the toilet were chosen and systematic random sampling used to determine households for the study (choosing every 5th household that meets the criteria of: a) Presence of hand washing facility by the toilet (visible) and b) Households permanently residing in the area of study (not visitors).

Everyday a group of villages was chosen for sampling to ensure that enough households which met the criteria could be observed. The sampling began with one target village; if not enough households were found which met the criteria, households from neighbouring villages were also observed. In some cases it was discovered the information received from districts about the status of the villages was inaccurate and some villages with few or no hand washing facilities were included in the study. Hence, some observations were also conducted in HH without HWF.

The village headmen and the households were told by extension staff that the research assistants were there to observe the daily activities of the household. Structured observations were conducted in households from 5:30am to 10:30am where the research assistants were able to observe the toilet and the HWF as well as other domestic activities. A few weeks after the data was collected, the actual intent of the study was explained to the villagers by the extension staff who accompanied the researchers during data collection. Hand washing practice after toilet use or visible open defecation were recorded, as well as characterization of the practice (e.g. use of soap or other cleansing material). Households were classified as regular hand washers if the average hand washing rates of all household members fell above the mean of all observations, while the other households were non-hand washers as their average rates fell below the mean of all observations. Likewise, households with hand washing facilities by the toilet were classified as users of these facilities if their usage rates fell above the mean rate of hand washing facilities use, and non-users if their rates fell below the mean rate.

Rapid assessment of the hand washing facilities was conducted immediately after the structured observation by the same research assistant assigned to the household. Research assistants recorded presence of water in the hand washing facility (not under the facility), and access to soap or other cleansing materials. In addition, the primary female caregiver (if available) was requested to demonstrate skills to wash hands through demonstrations, either by using the hand washing facility or any other means through which they could wash hands in the household (when the HWF was not available or not filled with water). The findings from the rapid assessment were analyzed for agreement with the findings from the structured observations using logistic regression.

Interviews were also conducted immediately after the rapid observation to determine socio-economic information, knowledge of hand washing, and perceptions of household hand washing practices (this data was compared with that obtained from the observation study).

Observations were conducted in 87 households, of which 60 had hand washing facilities and 27 did not. Rapid assessments were conducted in 108 households for additional proxy indicators and interviews in 105 households based on availability of household respondents.

SPSS was used to analyze the quantitative information.

Findings

The observations found that for households with HWF, 50% use it regularly after toilet use; of the households with no HWF, 29% washed their hands regularly in another location. For all households observed (both with and without HWF), 57.5% were found to wash hands regularly. Interviews with

primary female caregivers of the households indicated that in the last 24 hours, 73.3% reported to have washed their hands after toilet use, with 32.4% claiming to have used soap. When asked how often they wash their hands after using the toilet, 88.6% said they wash them often or always and 92.4% claim to wash their hands often or always after defecation. Regardless of whether the question was phrased as “hand washing in the last 24 hours” or when the question was phrased as “after defecation” or “after toilet use”, self-reported rates for hand washing were significantly higher than the observed practice.

Table 1: Comparison of Observed Hand Washing Behaviours and Self-Reported Responses

Observations	Rate	Self-Reported Responses	Rate
% of HH hand washing regularly, with HWF	50%	% HH self-reported to wash hands after toilet use in the last 24 hours	73.3%
% of HH hand washing regularly, without HWF	29%	% HH self-reported to wash hands regularly after toilet use (often or always)	88.6%
% of HH hand washing regularly, with and without HWF	57.5%	% HH self-reported to wash hands regularly after defecation (often or always)	92.4%

The assessment of hand washing facilities showed that water was found in the HWF 63.6% of the time and cleansing material 2.6% of the time. Of the cleansing material found, 1.3% was ash and 1.3% was bar soap. When the HWF was used, water alone was used in 92.5% of the cases. Water and soap were used in 1.25% of the cases.

The primary female caregivers for each household were found to wash hands most often at 72% of the times observed. They also displayed the highest rates of hand washing facility use amongst all household members.

During the hand washing demonstrations, almost all respondents washed both hands (91.5%), 77.4% used water alone and 12.3% used both soap and water. This indicates a high rate of knowledge and skills for hand washing.

Many households brought soap or water within one minute to the latrine (to signal immediate access to hand washing materials). Water was brought immediately in 83.5% of households and soap in 57.1%. This indicates that these hand washing materials are readily available in many Malawian households.

Multiple proxy indicators for hand washing were tested for agreement against observed hand washing facility use, shown in the table below.

Table 2. Logistic Regression – Proxy Indicators against Hand Washing Facility Use

	B	S.E.	Wald	Df	Sig.	Assessment
Water in HWF	-3.186	0.824	14.940	1.000	0.000	Significant
Soap brought within 1 minute	1.609	1.037	2.410	1.000	0.121	Not Significant
Self-reported HW after toilet use in last 24hours	-0.213	0.576	0.137	1.000	0.711	Not Significant
Self-reported HW always or often after toilet use	-0.731	0.909	0.647	1.000	0.421	Not Significant
HW Demo – Soap Used	-0.765	1.254	0.372	1.000	0.542	Not Significant
HW Demo – Both hands washed	-21.351	40192.970	0.000	1.000	1.000	Not Significant
HH Annual Income	1.75E-06	2.392E-06	0.536	1.000	0.464	Not Significant

When the hand washing facility is filled with water, this was found to have significant agreement with whether a hand washing facility was used and thus with whether a household was classified as regular hand washers. The probability that hand washing occurs regularly when this indicator is present is 71.8%. Other proxy indicators tested did not have significant agreement with whether a HH used their HWF regularly.

Proxy indicators were also tested for significant agreement with whether a household washed their hands regularly after toilet use (at the HWF or any other location in the household). Immediate access to water (brought within 1 minute to the toilet) was found to be a significant indicator for whether a HH was found to wash hands frequently. The probability that a HH will be found to be regular hand washers when this proxy indicator is present is 65.57%. The presence of the hand washing facility alone is not a significant indicator of whether a household is classified as hand washing. HWF are used regularly in only 50% of households, hence it is not a strong predictor for hand washing behaviour *unless* there is water inside it (as outlined above). Other proxy indicators commonly measured in hand washing surveys did not show significant agreement with whether a household was found to wash their hands regularly after toilet use.

Table 2. Logistic Regression – Proxy Indicators against Hand Washing Household

	B	S.E.	Wald	Df	Sig.	Assessment
Water brought within 1 minute	-1.1552	0.5825	3.9331	1.0000	0.0473	Significant
HWF Present	-0.331	0.467	0.504	1.000	0.478	Not Significant
HW Demo - Soap used	-0.145	0.650	0.050	1.000	0.824	Not Significant
HW Demo - Both hands washed	-21.673	28420.722	0.000	1.000	0.999	Not Significant
Soap brought within 1 minute	-1.322	0.818	2.610	1.000	0.106	Not Significant
Self-reported HW after toilet use in last 24hours	0.280	0.494	0.322	1.000	0.571	Not Significant
Self-reported HW always or often after toilet use	-0.350	0.675	0.270	1.000	0.604	Not Significant
HH Annual Income	0.000	0.000	1.071	1.000	0.301	Not Significant

Discussion

The findings of the research show that although not all HH members wash their hands at all times, at least half the households with HWF use it regularly for hand washing and over half of all households observed wash their hands regularly at the HWF or in another location. These findings show that hand washing after toilet use or visible open defecation is occurring on a regular basis in at least some households. It is unclear however whether these findings translate to hand washing practice at other critical times (e.g. before preparing food), which may warrant another study to be conducted in order to examine these practices.

Baseline findings indicate that materials and skills to practice hand washing are commonly present in the household. However, these enabling factors alone do not lead to hand washing practice as their presence are not strong predictors for whether a household was found to regularly wash hands.

Although the presence of a hand washing facility alone does not predict hand washing practice, the data shows that households with HWF are more likely to be regular hand washers than in those without. When a hand washing facility is present, 50% of households will wash hands regularly versus 29% of households which do not have a hand washing facility.

Of the proxy indicators tested, only two were found to have significant agreement with the results of the structured observations. When water is found in the hand washing facility, there is a high probability that the hand washing facility is being used. This is thus a suitable proxy indicator for whether a HH is practicing hand washing regularly after toilet use. The other indicator which had significant agreement with whether a

HH was classified as HW is immediate access to water by the toilet. This is a less commonly used indicator to measure hand washing practice but there may be potential to use it in future assessments.

None of the other commonly used hand washing proxy indicators such as hand washing demonstrations or self-reported hand washing rates showed significant agreement with the structured observation results. It is important to note that self-reports to questionnaires bare little relation to actual practice, with 88.6% of households stating they washed hands regularly compared to 57.5% observed to wash hands regularly.

The most recent NSO survey (DHS 2010) gives information on HH that have HWF containing water (5.3%). This research provides evidence that a HWF containing water provides a better indication of actual hand washing practice than self reporting. However, although 5.3% may be a more realistic estimate of hand washing practice in rural Malawi, further research is required to make a more qualified estimate as many households without HWF may also wash hands. Households in this study that did not have HWF are not very representative of country as a whole as most of the villages had received intensive intervention on sanitation promotion.

Conclusion and future research

There are limitations with such a small sample qualitative study thus it would make sense to repeat this study with a larger sample size to increase the reliability of the findings. The structured observation methodology has inherent limitations which include the repeatability of the observations, reactivity under the presence of an observer, and its varying effectiveness based on cultural and physical settings^{vi}. Regardless, this methodology is one of the few measurement tools that can be used to observe actual hand washing practice and all attempts have been made to eliminate observer bias. Expanding the study to villages that have not received sanitation promotion where HWF are not common may help to provide evidence for estimating hand washing practice in households without HWF.

Self-reported hand washing rates through questionnaires, though easy and cost-effective to measure, are not a suitable way of measuring hand washing interventions as they were found to be inaccurate predictors of actual hand washing practice and behaviour change. However, the advantages and widespread use of this method cannot be denied; therefore, it may be useful to examine ways of modifying self-reports to assess whether the questions asked can be adjusted to better predict hand washing practice

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Endnotes

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- ^{iv} National Statistics Office, Demographic Health Survey, 2010
- ^v National Statistics Office, Welfare Monitoring Survey, 2012
- ^{vi} Biran,Rabie, Schmidt, Juvekar, Hirve, and Curtis, 2008

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