Phased Approach to Total Sanitation (PhATS) in Haiyan-Affected Areas

End-line Assessment

June 2016

unite for children

unicef

REACH Informing more effective humanitarian action

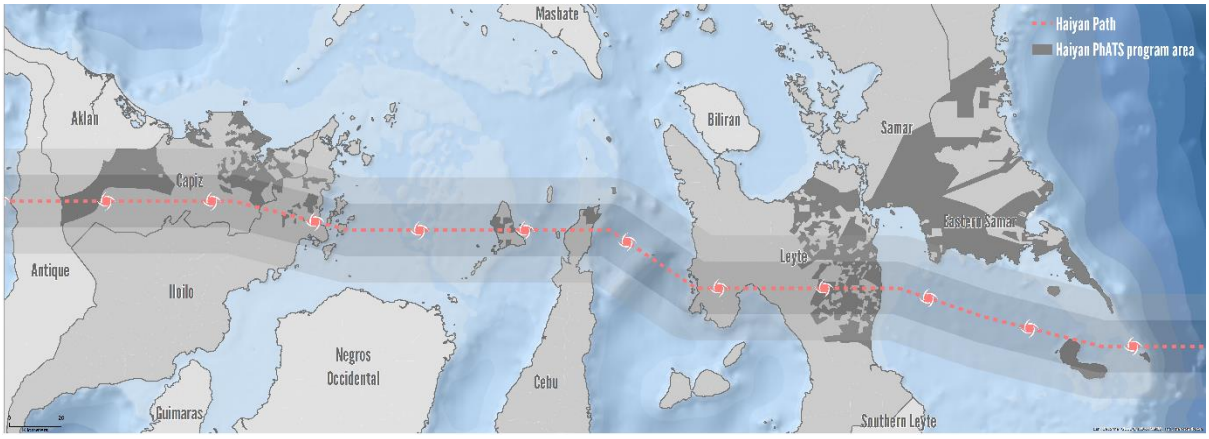
Table of Contents

1 Executive Summary

1.1 Context

On the 8th November 2013, 'Super Typhoon' Haiyan, locally known as Yolanda, first made landfall, lashing coastal communities across the central island of the Philippines. With Tsunami-like storm surge and winds reaching up to 375 kilometers per hour, it was one of the most powerful storms in recorded history. The devastation was overwhelming. A total of 14.1 million people were affected, with more than 6,300 people killed, more than 1,000 missing, and 4.1 million displaced, including 1.7 million children.

Map 1: Haiyan super typhoon path and Haiyan PhATS program areas



In the direct aftermath of Typhoon Haiyan, access to safe water and sanitation was severely compromised across affected areas of the Philippines. Many of the main water service providers recorded damage to pumps, transmission lines and distribution pipes. Many water, sanitation and hygiene (WASH) facilities at household and school levels were also damaged or destroyed, with some 16,800 classrooms in need of repair and 1,127,041 houses damaged. A WASH Cluster survey conducted in early 2014 found high levels of open defecation (36%) had been practiced in the surveyed barangays prior to the emergency, and this practice had increased as a result of damaged facilities.

The Phased Approach to Total Sanitation (PhATS) program was applied to the Haiyan WASH recovery program to build on the work of the response, which had included providing latrine kits for communities to build shared latrines. The program aimed to reach over 900,000 beneficiaries across six provinces, and aimed to end the practice of open defecation through facilitating changes to social norms; fueling demand for sanitation and hygiene; sustaining demand through supply side interventions; and promoting good governance, resilience and disaster risk reduction.

The Haiyan PhATS program was funded and coordinated by UNICEF, in consultation with the Department of Health, and implemented by a coalition of 12 NGOs: ACF (Action Against Hunger); ACTED (Agency for Technical Cooperation and Development); Arche Nova, A Single Drop for Safe Water (ASDSW); Catholic Relief Services (CRS); International Medical Corps (IMC); Islamic Relief Worldwide (IRW); Oxfam; Plan International; Relief International; Save the Children and Samaritan's Purse (SP). In addition, funds were provided directly to 40 Municipalities and to Provincial and Regional Health Offices to implement supplementary activities (including capacity building for PhATS, subsidized latrine construction for the poorest households, monitoring and certification of G1 / G2 status, and water quality monitoring). Under the program, NGO partners were also to demonstrate the Three Star Approach to WASH in Schools (see page 14 for details); while UNICEF supported the Regional Departments of Education (Regions 6 and 8) to develop and test the implementation of school-based management (SBM) for WASH tools and approaches, including downloading small grants to schools for WASH repairs and an online monitoring system (OMS), which complemented the WASH in Schools activities being undertaken by the NGO partners. As the Haiyan PhATS program began to scale up in the final quarter of 2014, UNICEF partnered with REACH to conduct a baseline assessment at household and school level to inform program planning and implementation and facilitate measurement of changes to social norms. In February and March 2016, as the Haiyan PhATS program was transitioning over to Government-led implementation, REACH conducted an end-line assessment to measure the change in knowledge, attitudes and practices related to water, sanitation and hygiene, the results of which are presented in this report.

1.2 Methodology

This assessment used a mixed-methods approach, collecting both quantitative and qualitative data. Household level surveys were conducted to provide statistically significant quantitative data, while focus group discussions were conducted to add further depth and context. A similar approach was taken at the school level, with a school survey administered to principals/head teachers, supplemented by focus group discussions with students in selected schools.

Quantitative Data: Household and School Surveys

A total of 1,794 households were assessed as part of the household survey. The sampling methodology was designed to generate representative data that was statistically significant at the province level with a confidence level of 92% and a margin of error of +/- 7%; and at the overall Haiyan PhATS program level with a confidence level of 95% and a margin of error of +/- 3.2%. Among the 6 provinces targeted in the Haiyan PhATS program, 177 barangays (communities) were selected for inclusion. The household survey also included visual observation components, such as verifying the type of toilet used or asking to see soap if it was reportedly used. All data collected at household level were collected using smartphones with Kobo Toolbox.

Concerning the school survey, 180 schools were assessed. These schools were randomly selected from the list of all schools in Haiyan PhATS program areas (a total of 649 schools). This sampling methodology was designed to generate statistically significant data (92% confidence level, +/-7% margin of error) for all schools in Haiyan PhATS program areas. The school survey had two parts: a key informant interview with the school principal (or Officer in Charge) and a direct observation component covering toilets, taps and other facilities. This allowed for cross-checking and triangulation of information.

Qualitative Data: Focus Group Discussions

A total of 24 community focus group discussions (FGDs) were conducted to help analyze and explain information collected from household surveys. FGDs were held with a male and a female group in each of 12 barangays. These barangays were purposively selected to ensure the inclusion of coastal and inland barangays to capture different themes depending on setting.

In selected schools, student focus group discussions were held to draw out student perspectives and supplement the quantitative data collected in the school survey. A total of 16 FGDs were conducted with students in 8 schools, with separate discussions for boys and girls held in each. The schools were purposively selected to ensure the inclusion of schools of different sizes. It was also important to ensure that the perspectives of both older and younger students were included.

1.3 Household Level Findings

When compared to the baseline study, this end-line assessment found a general improvement in the reported WASH knowledge, attitudes and practices of households and schools within the geographical areas covered by the Haiyan PhATS program. Nevertheless, some of the results show no significant differences between the two assessments, highlighting opportunities for further improvement. It is important to note that as the baseline and end-line did not include a control group, and as a number of other recovery interventions were undertaken in the same geographical areas, this assessment cannot attribute any of the changes identified solely to the Haiyan PhATS program. A summary of key findings is presented below.

Water supply

An estimated 92.8% of households have access to an improved source of drinking water, which shows no change from the baseline data. Despite this, there was an increase in proportion of households that relied on bottled water for drinking, from 16.5% during the baseline to 29.8% during the end-line. Households explained that this was mainly due to a lack of trust in improved water sources, rather than a lack of availability. The Department of Health does not classify bottled water as an improved water source.

For 87.1% of those who had to fetch water from a source outside their plot, the task took on average less than 15 minutes.

More than half of assessed households reported paying for their drinking water. Whether they paid or not was closely related to the type of water source: for those using unimproved water sources, only 7.9% paid for access, compared to 44.2% of those relying on an improved water source, and 100% of those using bottled water. Among

households accessing drinking water for free, the most commonly reported source was a protected dug well (used by 96.4%; classified as improved water source), followed by a protected spring (78.6%; classified as improved water source) and public tap (41.7%; also classified as improved water source). This is an important finding in light of ensuring a sustainable supply of safe drinking water, since payment for improved water sources is necessary to ensure that funds are available to reinvest in the operation and maintenance of water infrastructure.

Although 93.3% of all respondents could name at least one specific health risk related to drinking unsafe water, most households in Haiyan PhATS program areas (71.0%) do not treat their drinking water, including 38% of those using an unimproved water source. Overall, there was a significant decrease in the proportion of households treating their drinking water, from 36.4% during the baseline to 29.0% during the end-line, although this is largely explained by the increased proportion of households drinking bottled water. For those who do treat drinking water, common techniques included boiling water or filtering it with a piece of cloth, the use of both methods increasing from 48.6% and 18.6% to 65.0% and 35.7% respectively. During the same period the proportion of households relying using chlorine decreased, from 27.9% to 5.2%, perhaps as a result of households exhausting supplies of chlorine received after Typhoon Haiyan.

Of the 35.7% households reporting filtering water with a piece of cloth, 88.7% used no additional treatment method, which is inadequate to ensure disinfection. This highlights the need for ongoing efforts to raise households' awareness and adoption of adequate treatment methods.

Hygiene

The end-line study found that 50.8% of respondents had received WASH messages during the last 6 months. Among those, 75.8% had received a message about personal hygiene (excluding handwashing). Overall, there was a decrease in messages received about handwashing with soap, and an increase in messages about solid waste management, safe disposal of excreta, and most dramatically, environmental and domestic hygiene, from 0.0% to 36.8%.

93.2% of households were observed to have a designated place for handwashing. Where handwashing facilities were present, they usually had both soap and water, with 84.7% of all households observed to have a handwashing facility with soap and water present at the time of the visit, representing no significant change compared to the baseline.

However, **the frequency of handwashing appears to have increased since the baseline, with the proportion of households reporting handwashing 7 times or more per day rising from 36.1% during the baseline to 44.3% by the end-line**. Understanding of the critical times to wash hands with soap also improved significantly between baseline and end-line. Significant differences were seen between provinces when comparing respondents that reported washing hands both before eating and after defecating.

Sanitation

It was found that an estimated 90.8% of households in Haiyan PhATS program areas are currently using an hygienic sanitation facility (that separates human excreta from human contact and are shared by less than 20 people), most commonly flush or pour flush toilets, which indicates no significant change from the baseline. However, there was a significant increase in the proportion of households using an improved non-shared sanitation facility, from 63.7% during the baseline to 76.3% during the end-line study.

In three of the six assessed provinces, the end-line also showed a statistically significant decrease in the proportion of households with no toilet. **For those still lacking access to toilets, the high cost of toilet construction was the most commonly reported reason, mentioned by 81.6% of these households**. Almost half of households (47.2%) reported a lack of access to materials among the main barriers, significantly higher than the proportion reporting this during the baseline (33.5%).

15.2% of households have at least one member still practicing open-defecation, with no significant change between baseline and end-line. While small differences could be observed between the proportion of households with members reportedly practicing open defecation, these fell within the margin of error for the assessed sample and therefore could not be generalized to the population overall.

According to all respondents, the main reason for people practicing open defecation was the lack of toilet availability, mentioned by 96.2%, while other commonly reported reasons were related to sharing of toilet facilities. When comparing the type of toilet facility used, only 7.7% of households using improved non-shared toilet facilities reported at least one member practicing open defecation, compared to 38.9% of households that had access to

other types of toilet facilities. FGDs highlighted that often small children continue to practice open defecation even if the household has access to a toilet, and also reported that people continued to practice open defecation when not nearby their homes (e.g. when farming, fishing, etc.).

Among households using a toilet facility that requires water, collection time was also found to make a significant difference. Almost a quarter (24.2%) of households taking over 15 minutes to collect water reported at least one member practicing open defecation, compared to only 9% of those for whom water collection takes 15 minutes or less. While this difference was explained in the focus group discussions by the fact that "people are too lazy to fetch water", it might also be the consequence of other factors. For example, a household living on the outskirts of a community, and therefore further from the water point, might also be less subject to peer pressure against open defecation.

In terms of measuring social expectations, communities perceived open defecation to have decreased since the baseline assessment. There was a significant increase in the proportion of respondents believing that no one in their community practiced open defecation, from 9.7% during the baseline to 27.7% during the end-line.

1.4 WASH in Schools Findings

The findings in this section show a net increase in the proportion of schools with structures in place to improve water, sanitation and hygiene practices.

WASH was found to be incorporated into the Annual Investment Plan (AIP) or the School Improvement Plan (SIP) of 91.1% of schools in Haiyan PhATS program areas – a significant increase compared to the baseline where this was the case for 67.1% of schools. In addition, 83.9% of the schools reported having funds allocated or available for WASH in the Maintenance and Other Operation Expenses (MOOE) or the School Building Repair and Maintenance Fund (SBRMF), up from 59.2% during the baseline.

A significant change was found in the proportion of schools reporting the presence of student clubs or committees promoting water, sanitation and hygiene awareness. In the end-line assessment, 78.3% of schools in Haiyan PhATS program areas reporting having a student club or committee promoting WASH issues, compared to 23.7% of schools during the baseline.

Water Supply in Schools

The proportion of schools with a drinking water source increased from 44.9% during baseline to 63.8% during the end-line assessment. In schools without water points, any drinking water available was brought in from external sources, such as children bringing in water from home or teachers fetching water for school use from a communal source outside the school compound. The most common problem related to drinking water access was inconsistent availability (mentioned by 30.6% of schools). A significant increase in the proportion of schools reporting this issue was found between baseline and end-line study, suggesting that even though additional water points are now available in schools, intermittent water supply continues to pose challenges.

Hygiene in Schools

In 86.6% of schools in Haiyan PhATS program areas, the school or the Department of Education had led at least one hygiene-related education activity in the last six months, compared to 48.0% during the baseline. The most common themes were handwashing, tooth-brushing and personal hygiene, in respectively 89.1%, 72.9% and 57.4% of schools that received WASH campaigns. This indicates a strong increase of leadership on WASH on the part of individual schools and the Department of Education since the baseline.

With regards to group hygiene activities, in 57.8% of schools in Haiyan PhATS program areas, all classes are practicing daily group handwashing with soap. A similar proportion of schools (55.0%) reported that all classes were practicing daily group tooth-brushing activities.

Based on direct observation, an estimated 11.7% of schools do not have any handwashing facilities near the toilets. A further 28.9% have handwashing facilities near some but not all toilets. Where schools did have handwashing facilities, the two main types were taps connected to piped water (56.8%) and buckets or containers (22%). A significant increase in the proportion of schools using a locally made facility was found, from 1.6% during the baseline to 8.8% during the end-line, which might be a positive outcome of increased school-based management for WASH in Schools and the application of the Three Star Approach to WASH in Schools which promotes the use of locally made / available solutions.

Lack of water was a major barrier to properly functioning handwashing facilities. At the time of the visit, 44% of schools with handwashing facilities were observed not to have water at some or all of the handwashing facilities. However a significant decrease has been found in the proportion of key informants reporting that children do not wash their hands when facilities are broken, from 53.7% during the baseline to 25.3% during the end-line. There was also an increase in the proportion of schools where children bring water from home or where community members provide water for the school, which could indicate an improved commitment to handwashing on the part of students, schools and communities in Haiyan PhATS program areas.

Sanitation in Schools

Almost all schools in Haiyan PhATS program areas (99.4%) have improved sanitation facilities, while only 0.6% of surveyed schools have no sanitation facilities at all. The vast majority of toilets were flush or pour flush toilets connected to septic tanks, used in 86.1% of all assessed schools, with no significant change found since the baseline. A statistically significant decrease was found in the number of students per functioning toilet between the two data collection rounds, from 39.9 students per functioning toilet to 31.9.

A key issue identified during the baseline was the relative rarity of single sex toilets in schools in Haiyan PhATS program areas (23.6%). A significant increase was found in the proportion of schools reporting sex separated toilets, with 53.1% of schools having at least one sex separated toilet during the end-line. In 95% of schools, toilets were less than 2 minutes' walk from classrooms or in the class room. However, it is important to note that having toilets too close to (particularly adjacent to or inside) classrooms was reported to be a disincentive for students to use them for defecation.

In terms of cleanliness, 87.7% of toilets were observed to be "very clean" or "mostly clean", while 2.2% of schools were observed to have "very unclean" toilets at the time of the school visit. No significant difference was found between the baseline and end-line. The most commonly reported challenges for keeping toilets clean were a shortage of water (46.7%) and a shortage of cleaning supplies (38.3%). The latter represents a significant decrease compared to the baseline, when 55.5% of key informants reported a lack of cleaning supplies. This may have been affected by the incorporation of WASH in school budgets.

When school toilets are not functioning, 82.7% of schools reported that students' main coping mechanism was to go home to use the toilet, while 10.1% of schools reported that the main coping mechanism was for the children to practice open defecation either inside or outside the school compound. Overall, open defecation was reported in 15.1% of schools in Haiyan PhATS program areas, while open urination was reported in 64.4%. No significant differences were found between baseline and end-line for these indicators. Key informants and students highlighted the significant role played by teachers in enabling or discouraging open defecation, mainly by allowing children to go home or to other classrooms when the toilets are not working.

1.5 Conclusions and Recommendations

Overall the assessment found an increased awareness of and importance given to improved practices relating to water, sanitation and hygiene in the areas surveyed, demonstrated by the increase in households choosing to purchase bottled water, the increased ownership of improved non-shared sanitation facilities, the increase in number of times people reportedly wash their hands with soap on a daily basis, and in the net increase in the proportion of schools with structures in place to improve WASH practices.

However, the findings highlight several persistent challenges across Haiyan-affected areas. The lack of trust in improved water sources combined with the lack of household's knowledge on how to adequately treat drinking water is a concern, and should be addressed through strengthened and publicly accountable water quality monitoring and reporting mechanisms, along with increased behavior change communications on safe household water treatment and storage methods. Schools need to identify solutions to challenges of reliability of water supplies (by increasing on-site storage capacities, for example) to ensure that water is available for drinking, flushing and cleaning toilets and for daily group handwashing and toothbrushing.

The insights relating to the ongoing practice of open defecation, even in households that have access to a toilet and in communities that have declared 'zero open defecation' status, highlights areas that can be strengthened in future programming. Local authorities should encourage and support communities to continue improving sanitation practices and facilities, to reduce the use of shared toilets at the household level and to ensure access to clean and functioning sanitation facilities in schools, health centers and other government institutions, in order to ensure that all members of a household consistently use a toilet (or practice safe disposal), no matter their age, or whether they are at home, at school, at work or in a public place.

1.6 Summary of change observed across key indicators

Indicator	Baseline value	Margin of error	End-line value	Margin of error	Overall trend
Water Supply					
Proportion of household with access to an improved source of drinking water	91.5%	(89.9; 93.2)	92.8%	(91.1; 94.5)	No significant change
Proportion of households treating their drinking water	36.4%	(34.1; 38.8)	29.0%	(25.8; 32.1)	▼ Significant decrease
Hygiene					
Proportion of households where a designated place for handwashing with soap and water was observed	79.9%	(77.4; 82.3)	84.7%	(82.1; 87.2)	No significant change
Proportion of respondents that reported washing their hands 7 times or more per day	36.1%	(33.1; 39.0)	44.3%	(40.1; 48.6)	▲ Significant increase
Sanitation					
Proportion of households that used an improved not shared sanitation facility	63.7%	(60.6; 66.7)	76.3%	(72.5; 80.2)	▲ Significant increase
Proportion of households practicing open defecation	18.4%	(15.8; 21.0)	15.2%	(11.7; 18.7)	No significant change
WASH in Schools					
Proportion of schools having WASH incorporated into the AIP or the SIP	67.1%	(61.8; 72.4)	91.1%	(87.3; 94.8)	▲ Significant increase
Proportion of schools without a drinking water point	55.1%	(49.5; 60.7)	37.2%	(30.1; 43.5)	▼ Significant decrease
Proportion of schools in which at least one hygiene-related activity was conducted in the last six months	48.0%	(42.3; 53.6)	86.6%	(82.1; 91.1)	▲ Significant increase
Proportion of school having at least one sex separated toilet	23.6%	(18.9; 28.5)	53.1%	(46.5; 59.6)	▲ Significant increase
Proportion of schools without any handwashing facilities near the toilets	25.3%	(20.4; 30.2)	11.7%	(7.5; 15.9)	▼ Significant decrease
Proportion of schools in which open defecation was reported	17.1%	(12.9; 21.4)	15.1%	(10.4; 19.8)	No significant change

List of tables

List of maps

List of acronyms

ACTED	Agency for Technical Cooperation and Development
ACF	Action Against Hunger
AIP	Annual Investment Plan
ASDSW	A Single Drop for Safe Water
CRS	Catholic Relief Services
DepEd	Department of Education
DILG	Department of the Interior and Local Government
DoH	Department of Health
FGD	Focus Group Discussions
GPTA	General Parent Teachers Association
HWF	Handwashing Facility
IMC	International Medical Corps
IRW	Islamic Relief Worldwide
MOOE	Maintenance and Other Operations Expenses
NGO	Non-Government Organization
OD	Open Defecation
PhATS	Phased Approach to Total Sanitation
SBO	Student Body Organization
SBRMF	School Building Repair and Maintenance Fund
SIP	School Improvement Plan
SP	Samaritan's Purse
WASH	Water, Sanitation and Hygiene
WinS	WASH in schools
ZOD	Zero Open Defecation

2 Introduction

One of the most powerful storms in recorded history, 'Super Typhoon' Haiyan cut through the Philippines with Tsunami-like storm surge and winds reaching up to 375 kilometers per hour. Even in the third most disaster-prone country[1], where on average 20 typhoons make landfall every year, the devastation was overwhelming. Locally known as Yolanda, Haiyan made landfall in the early hours of 8 November 2013, lashing coastal communities in the Philippines central islands. More than 6,300 people lost their lives, more than 1,000 are still missing, and a total of around 14.1 million people were affected. 4.1 million people were displaced by Typhoon Haiyan, including 1.7 million children[2]. People were simultaneously cut off from assistance as land, air and sea access was close to impossible.

In the direct aftermath of Typhoon Haiyan, access to safe water and sanitation was severely compromised across affected areas of the Philippines, triggering concerns about water-borne disease. Many of the main water service providers suffered damage to pumps, transmission lines and distribution pipes. Winds and storm surge also damaged or destroyed many water, sanitation and hygiene (WASH) facilities at household and school levels, with 16,800 classrooms in need of repair and 1,127,041 houses damaged, while health centers were shut down across all affected areas.

The government estimated the total loss at USD 12.9 billion, while the country as a whole was still recovering from other emergencies, including an escalation of conflict in Zamboanga in September 2013 which displaced 120,000 people and a 7.2 magnitude earthquake that struck Bohol province in October 2013 affecting more than 3.2 million.

Given the scale of the devastation, the Government of the Philippines mounted an immediate response to deliver life-saving relief, accepting the offer of assistance from the United Nations. Based on a Multi-Cluster/Sector Initial Rapid Assessment (MIRA), an Inter-Agency Strategic Response Plan (SRP) was developed. The UN response was rolled out under the SRP, running from November 2013 to November 2014 with a total appeal of USD 791 million. The inter-agency response complemented the Government-led efforts under the "Reconstruction Assistance for Yolanda" (RAY) plan for 2014-2015 and beyond, with requirements estimated at more than USD 8 billion.

2.1 The Haiyan WASH Response

The WASH cluster, led by Department of Health and co-led by UNICEF, responded to lifesaving needs in the most affected areas, based on analysis of the Typhoon's path, storm strength, and the pre-crisis population. The 40 targeted municipalities were home to 1.34 million affected people, 558,000 of them children. In addition to distributing emergency water and hygiene kits, conducting hygiene promotion activities, and installing sanitation facilities in temporary shelters and camps, substantial efforts were undertaken to rehabilitate existing water systems. In addition, as many of the affected population remained in their communities, a strategy of combining hygiene promotion and community mobilization with the distribution of materials for communal latrine construction was implemented as a way to ensure minimum sanitation conditions across the affected areas. The implementation of these activities resulted in considerable achievements, in many cases returning access to water and sanitation to pre-Haiyan levels. In fact, the WASH cluster response was able to target not only households with storm-damaged latrines, but also those that had no access to latrines before the typhoon. A WASH Cluster survey[3] conducted in early 2014 found that the response had almost restored latrine access to the pre-emergency levels across the surveyed barangays (with 60.6% of the population with access, compared to 63.7% previously).

The WASH recovery program therefore provided an opportunity to address the long-standing issues of open defecation in the affected areas (which were relatively high pre-Haiyan), particularly in rural areas and amongst the lowest income groups.

[1] World Disaster Report, 2012
[2] NDRRMC – Final report re Effect of Typhoon "Yolanda" (Haiyan)
[3] WASH Cluster Philippines & Inter-Agency Rapid Assessment Team, April 2014, WASH Baseline Barangay Assessment Typhoon Haiyan Philippines, Phase 1: Interim Technical Report.

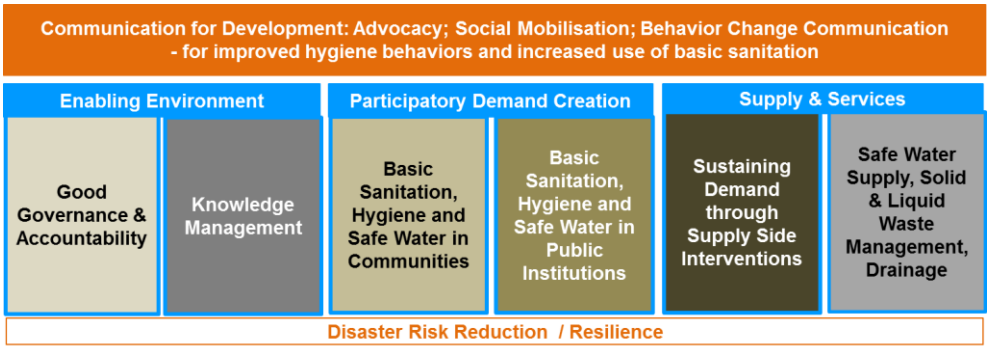
2.2 The Haiyan WASH Recovery Program: Phased Approach to Total Sanitation (PhATS)

The Philippines WASH Cluster partners developed a Sanitation Strategy for Early Recovery in Haiyan-affected areas, building on the response and based on prior rural sanitation programming successes in other parts of the Philippines, as well as UNICEF's experiences of post-emergency programming in other countries. The Phased Approach to Total Sanitation (PhATS) was designed to support the goals of the National Sustainable Sanitation Plan (NSSP), including the target to achieve by 2028, "universal access (100%) to safe and adequate facilities, where behavior change and proper hygiene practices are accepted norms within families and communities, and mechanisms for sustainable sanitation (i.e. linkage with health, agriculture and environment) are institutionalized" (Department of Health, 2010). PhATS encourages communities to incrementally improve their sanitation and hygiene practices, aiming first to eliminate open defecation (OD) and to gradually move up the sanitation ladder to total sanitation.

Figure A: PhATS graduated approach to reaching total sanitation (version dated June 2014).

PhATS aims to address issues of demand, supply and the enabling environment for WASH in a holistic manner. Community-based approaches are used with local government authorities and communities to trigger their desire to stop open defecation and then provide support to help them determine and plan what needs to be done to achieve this. The triggering tools used increase the demand for sanitation facilities and also promote hand washing with soap, improved household water treatment, and solid and liquid waste management. To reinforce behavior change, marketing approaches are applied to scale-up supply and demand for low-cost improved sanitation facilities, while support is also provided to promote and strengthen capacity for WASH governance, resilience and disaster risk reduction to ensure sustainability.

Figure B: PhATS Implementation Framework



Within the post-emergency context, some adaptations were made to PhATS to take into account the additional vulnerabilities of the affected populations. Subsidies for toilets for the poorest and most vulnerable households were included, as well as financial rewards for communities that were able to reach G1 (zero open defecation) and G2 (sustainable sanitation). These rewards could then be used by the communities to support ongoing implementation of their community WASH plans.

The strategy aimed to provide a common framework to all WASH partners in order to reach over 900,000 beneficiaries across six provinces.

The Haiyan PhATS program was funded and coordinated by UNICEF, in consultation with DoH, and implemented by a coalition of 12 NGOs: ACF (Action Against Hunger); ACTED (Agency for Technical Cooperation and Development); Arche Nova, A Single Drop for Safe Water (ASDSW); Catholic Relief Services (CRS); International Medical Corps (IMC); Islamic Relief Worldwide (IRW); Oxfam; Plan International; Relief International; Save the Children and Samaritan's Purse (SP). In addition, funds were provided directly to 40 Municipalities and to Provincial and Regional Health Offices to implement supplementary activities (including capacity building for PhATS, subsidized latrine construction for the poorest households, monitoring and certification of G1 / G2 status, and water quality monitoring).

2.3 The Haiyan WASH Recovery Program: WASH in Schools

In the Haiyan PhATS program areas, UNICEF and NGO partners also operated within the framework of the Three Star Approach[4]. The Three Star Approach for WASH in Schools is designed to improve the effectiveness of hygiene behavior change programs. The approach ensures that healthy habits are taught, practiced and integrated into daily school routines. The program follows a set of steps designed to ensure that all students wash their hands with soap, have access to drinking water, and are provided with clean, gender-segregated toilets at school every day. Group activities drive this incremental approach, beginning with daily, supervised group handwashing sessions. Once minimum standards are achieved, schools can move from one to three stars by expanding hygiene promotion activities and improving infrastructures, especially for girls, to ultimately achieve the national standards for WASH in Schools. The Three Star Approach involves changing the way WASH in Schools programming is perceived by schools, communities, and decision makers in government and support agencies. By prioritizing the most essential actions for achieving goals, the Three Star Approach helps schools focus on meeting children's needs through key interventions. At the same time, it provides a clear pathway for all schools to meet national standards, and for all children to have hygiene-promoting and healthy schools. It encourages local action and support from communities and does not depend on expensive hardware inputs from the education system or external support agencies. 'Keep it simple, scalable and sustainable' is the guiding concept for interventions at all stages, so that the approach can be sustainably expanded countrywide at low cost.

Under the Haiyan PhATS program, NGO partners were to demonstrate the Three Star Approach in a selected number of schools. At the same time, UNICEF supported the Regional Departments of Education (Regions 6 and 8) to develop and test the implementation of school-based management (SBM) for WASH tools and approaches, including downloading small grants to schools for WASH repairs and an online monitoring system (OMS), which complemented the WASH in Schools activities being undertaken by the NGO partners.

2.4 Monitoring implementation impact

As implementation of the Haiyan PhATS program scaled-up in the fourth quarter of 2014, a baseline assessment was conducted at household and school level to inform program planning and implementation, including a section on knowledge, attitudes and practices, which aimed to facilitate measurement of changes to social norms. Just over a year later, after completion of most of the NGO and MLGU activities, an end-line assessment was conducted in order to measure the changes in knowledge, attitudes and practices over the course of the program to-date.

To provide this data, UNICEF funded REACH to carry out a mixed-methods assessment, consisting of a large-scale household survey, community focus group discussions, a school survey, and student focus group discussions. Fieldwork was conducted in each of the six provinces of Leyte, Eastern Samar, Samar (Western Samar), Cebu, Iloilo and Capiz. The baseline took place between September and November 2014 and the end-line between February and March 2016.

This report provides a detailed description of the methodology and outlines the key findings, organized into two main sections. The first section focuses on Water, Sanitation and Hygiene (WASH) at household and community level. The second section addresses WASH in schools (WinS) - including WASH governance, group hygiene activities, water supply and sanitation.

[4] UNICEF & GIZ, 2013, Field Guide: The Three Star Approach to WASH in Schools

3 Methodology

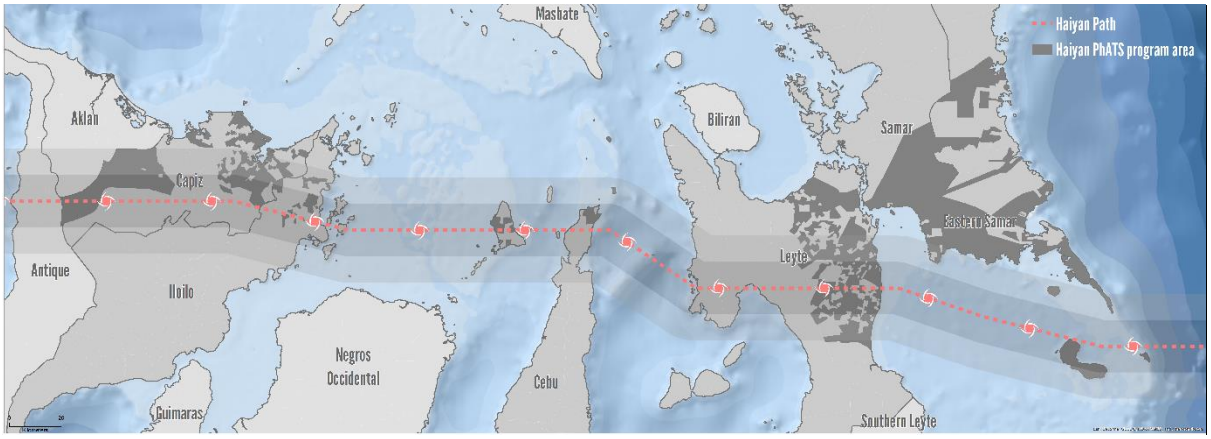
This assessment used a mixed-methods approach, collecting both quantitative and qualitative data. Household level surveys were conducted to provide statistically significant quantitative data. Focus group discussions were conducted for additional depth and context, therefore providing qualitative information. A similar approach was taken at the schools level, with a school survey administered to principals/head teachers, supplemented by focus group discussions with students in selected schools.

The questionnaires and other tools (see Annexes 1 and 2) were designed in close consultation with UNICEF, and all fieldwork was conducted between February and March 2016. Data collection was undertaken by mixed teams of female and male enumerators, who were thoroughly trained on the tools and methodology, with between two and four full days of training depending on their roles.

3.1 Geographical Scope

This assessment is limited to Haiyan PhATS program areas, which were identified by the WASH cluster as the areas being in greater need of WASH intervention after Haiyan, as shown in the following map.

Map 2: Haiyan Super Typhoon path and Haiyan PhATS program areas



The program areas include three regions, six provinces and 879 barangays, covering a total of 223,365 households and 1,009,003 individuals (see Table 1).

Table 1: Populations and NGOs in Haiyan PhATS program areas

Sn	PCA Partners	Province	# of Barangay	# HH	# ind.
1	ACF	Eastern Samar	40	5,805	28,704
2	ACF	Capiz / Iloilo	44	11,827	58,289
3	ACTED	Eastern Samar	74	12,634	59,331
4	ARCHE NOVA	Leyte	38	13,459	59,802
5	ASDSW	Capiz	105	29,747	151,257
6	CRS	Leyte	62	17,762	73,680
7	IMC	Leyte	74	12,932	56,451
8	Islamic Relief (IRW)	Cebu	15	13,308	58,842
9	OXFAM	Eastern Samar	79	14,209	63,835
10	Plan International	E-Samar / Samar	62	10,444	51,542
11	Relief International (RI)	Leyte	93	20,146	95,413
12	Save the Children	Leyte	63	28,516	117,243
13	Samaritan Purse (SP)	Leyte / Samar	130	32,576	134,614
	Grand Total		**879**	**223,365**	**1,009,003**

3.2 WASH Assessment at Household and Community Level

3.2.1 Quantitative Data: Household Surveys

A total of 1,794 households were assessed as part of the household survey. The sampling methodology was designed to generate representative data statistically significant at the province level, with a confidence level of 92% and a margin of error of +/- 7% *(see Table 2 below)* and at the level of Haiyan PhATS program areas with a confidence level of 95% and a margin of error of +/- 3.2%. From the 6 provinces, 177 barangays were randomly selected for inclusion.

The sampling was a two stage cluster sampling: the first stage was a Probability Proportional to Size (PPS) cluster sampling with replacement of primary sampling units (PSUs). Cluster sampling generally increases variances in the findings compared to simple random sampling. The ratio of variance assuming cluster sampling and assuming random sampling for a given variable is known as "design effect" (DEFF) [5].

$$ICC = \frac{DEFF - 1}{M - 1}$$

M = average sample size per cluster; ICC = intra-cluster correlation; $DEFF$ = design effect

The intra-cluster correlation coefficient (ICC) is a measure of the relatedness of clustered data. The sampling size by province was thus adjusted to account for the design effect that affects cluster sampling methodologies, with an average intra-cluster correlation (ICC) by province (average calculated on the PhATS baseline). A cluster of five surveys was conducted in each selected barangay. Where a barangay was selected more than once, an additional cluster of five surveys was added. In the second stage, a simple random sampling of the households inside the barangays was conducted based on household lists available at barangay level.

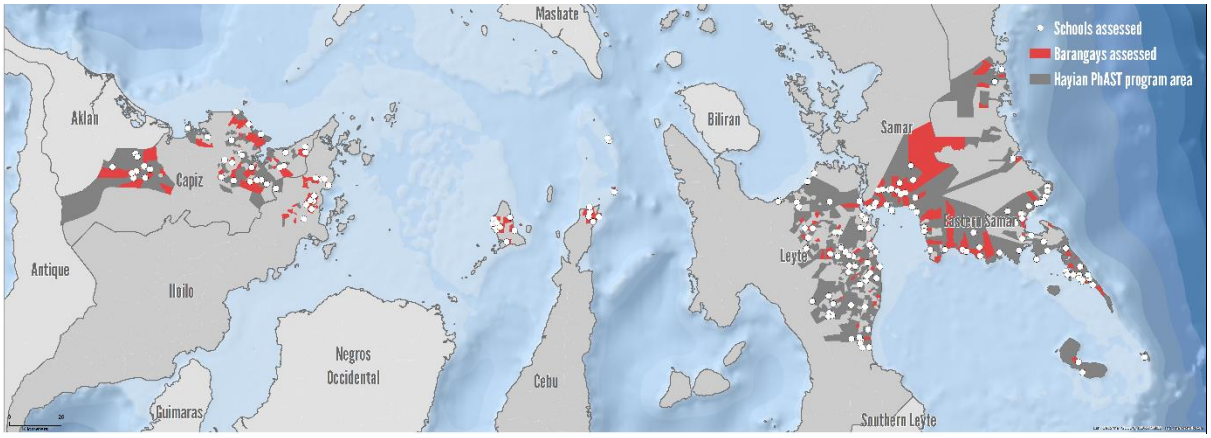
Where a list of households was not available from the Barangay Captain, households were selected randomly inside each Porok using proportional sampling based on population and field randomization technique. Each household on the list was assigned a number, and a random number generator was used to select the required number of households. Interviewers then visited these households and requested to interview the head of household. This list-based sampling approach was chosen instead of an 'every fifth house' type geographical approach, to ensure that households far away from the center of the barangay also had an equal chance of being selected. This approach was time-consuming, but meant that households outside the central sitios (which often had very different sanitation facilities and practices) were included in the assessment.

Table 2: Sample size and statistical significance by administration level

Province	Population (estd. HH)	Effective sample size	Average cluster size	Intra Class Correlation	Average design effect	Sample size (with DEFF)	Number of surveys conducted	Statistical Significance
Capiz	36,673	157	6.77	0.06	1.34	210	244	92% +/-7%
Cebu	13,308	155	16.67	0.039	1.61	250	349	92% +/-7%
Eastern Samar	40,046	157	6.03	0.1	1.5	235	279	92% +/-7%
Iloilo	4,901	155	15.91	0.084	2.26	350	400	92% +/-7%
Leyte	113,989	160	5.77	0.086	1.41	225	270	92% +/-7%
Samar	14,448	156	7.65	0.057	1.38	215	252	92% +/-7%
Area of intervention	**223,365**	**940**				**1,485**	**1,794**	**95% +/- 3.2%**

[5] Kish, Leslie (1965). "Survey Sampling". New York: John Wiley & Sons, Inc

Map 3: Barangays and schools assessed during PhATS end-line data collection



The household survey also included visual observation components, such as verifying the type of toilet used or asking to see soap if it was reportedly used. All data collected at household level were collected using smartphones with KoboToolbox. This allowed completed questionnaires to be uploaded directly from the phone to the database on a daily basis, therefore eliminating the need for data entry and improving accuracy. In addition, the following measures were taken to ensure data quality:

1) Constraints have been integrated in the Kobo questionnaire to ensure consistency of answers during the interview. In case of inconsistency, the enumerators were invited to check the previous answers for entry mistakes or with the respondent in order to complete the interview.

2) Before sending the data to the Kobo server, the team leaders were tasked to double check each questionnaire.

3) REACH team in country created an interactive monitoring dashboard in order to visualize and monitor data collection on a daily basis.

4) The data have been checked for inconsistencies and cleaned when possible. Both baseline and end-line have been checked to write this report. This additional cleaning of the baseline data led to slight differences between the results of the baseline report (published in February 2015) and the present report.

Collecting surveys in the largest and smallest provinces yield very similar statistical significance. That is, the samples are weighted, not every house has an equal opportunity to be selected; those in smaller provinces will have a greater chance of being selected. This needs to be taken into consideration when aggregating data (it should be weighted) but will provide more accurate information as a result. For example, if two provinces are aggregated then the province that has a larger population should have a larger impact on the aggregated results.

The confidence intervals used to compare results are either 95% at Haiyan PhATS program area level, or 92% for findings at province level. In both cases, the two proportions can be statistically significantly different from one another at the alpha = 0.05 / 0.07 level, even when confidence intervals overlap.[6] Where possible, Pearson's X^2 tests or t-tests have been performed on the results to ensure the accuracy of conclusions drawn.

The data was analyzed using R Cran software with 'survey' package library.

3.2.2 Qualitative Data: Community Focus Group Discussions

A total of 24 community focus group discussions (FGDs) were conducted to help analyze and explain information collected from household surveys. FGDs were held with a male and a female group in each of 12 barangays. These barangays were purposively selected to ensure the inclusion of coastal and inland barangays to capture different themes depending on setting (see table 3 below).

[6] Austin PC, Hux JE. A brief note on overlapping confidence intervals. J Vasc Surg. 2002; 36:194–195. doi: 10.1067/mva.2002.125015

Table 3: List of barangays selected for focus group discussion

Province	Municipality	Barangay	Urban / Rural	Coastal / Inland	ZOD status[7]
Capiz	Panay	Binantuan	Rural	Inland	Not Certified
Capiz	Panay	Pawa	Rural	Sea access	Not Certified
Iloilo	San Dionisio	Agdaliran	Rural	Sea access	Certified
Iloilo	San Dionisio	Amayong	Rural	Inland	Certified
Cebu	Bantayan	Kabangbang	Rural	Inland	Not Certified
Cebu	Daanbantayan	Carnaza	Rural	Sea access	Not Certified
Eastern Samar	Borongan City	Pinanag-an	Rural	Inland	Certified
Eastern Samar	Giporlos	Barangay 1 (Pob.)	Rural	Sea access	Certified
Leyte	Palo	Baras	Rural	Sea access	Certified
Leyte	Tabontabon	District IV Pob. (Macarthur)	Rural	Inland	Certified
Samar	Basey	Inuntan	Rural	Inland	Certified
Samar	Marabut	Logero	Urban	Sea access	Not Certified

3.3 WASH in Schools (WinS)

3.3.1 Quantitative Data: School Surveys

180 schools were assessed as part of the school survey. These schools were randomly selected from the list of all schools in PhATS program areas (a total of 649 schools). This sampling methodology was designed to generate statistically significant data (92% confidence level, +/-7% margin of error) at the level of all schools in PhATS program areas. A full list of the assessed schools is available in Annex 3.

The school survey had two parts: a key informant interview with the school principal (or Officer in Charge) and a direct observation component covering toilets, taps and other facilities. This allowed for cross-checking and triangulation of information. The full questionnaire is available in Annex 2.

3.3.2 Qualitative Data: Student Focus Group Discussions

In selected schools, student focus group discussions were held to draw out student perspectives and supplement the quantitative data collected in the school survey. A total of 16 student FGDs were conducted in 8 schools, with FGDs for boys and girls held separately in each. The schools were purposively selected among schools selected for the quantitative assessment to ensure the inclusion of schools of different sizes. It was also important to ensure that the perspectives of both older and younger students were included.

Table 4: Schools selected for students FGDs during the end-line data collection

Number of students	Number of schools
> 1000	2
500 - 999	2
< 500	4
Total	8

[7] Data as of November 2015.

3.4 Limitations

3.4.1 Bias in Self-Reported Data and Key Informant Reports

This assessment was largely based on self-reported data. Indeed, one of the key objectives was to go beyond assessing infrastructure (which can be directly observed) to explore attitudes and social norms, which are best assessed through individual self-reporting and group discussions. Self-reporting is a practical method of collecting data on individual behavior, as direct observation of hygiene behaviors (such as handwashing or open defecation) of large numbers of individuals over extended periods is rarely feasible. However, self-reported data is subject to various bias, with social desirability bias being a particular concern for WASH topics.

Such a concern also arose at school level. Indeed, the school survey was administered to school principals (or the Officer in Charge where the school did not have a full-time principal or where the principal was unavailable). This offered a useful snapshot of the WASH situation in each school, but was based largely on the report of key informants, who may have been incentivized to either understate or overstate problems with WASH in their schools.

A range of strategies were used to minimize the impact of social desirability and other biases, including:

- Ensuring complete anonymity and confidentiality of all data collected, and carefully explaining this to respondents before beginning the survey/FGD.
- Explaining before FGDs and household surveys that there are no right or wrong answers, and making sure that respondents understand why these questions are being asked, how the information will be used, and why truthful responses are important.
- Giving respondents the opportunity to skip any question they would prefer not to answer (minimizing the chance of capturing false answers when respondents are not comfortable answering truthfully).
- Training data collection team on the importance of neutral, non-judgmental approaches, including specific verbal and non-verbal facilitation and interview techniques.
- Ordering questions so that more sensitive questions come later in the interview/FGD when greater trust has been established.
- Wording questions so that there is no assumption of hygiene-positive behavior, or even an assumption of hygiene-negative behavior, so that disclosing socially undesirable behavior (including behavior perceived as shameful) is as easy as possible for the respondent. For example, the question used to ask about open defecation was 'how often does a member of your household defecate openly?' instead of 'do any members of your household defecate openly?' This phrasing assumed open defecation was being practiced, to make it easier for households to disclose this practice, while still allowing respondents to report that members of their households never defecated openly.
- Including direct observation components to verify self-reported data where possible. For example, as part of the household survey, soap and handwashing facilities were observed to verify self-reported data on handwashing and soap availability. Another example is from the school survey: in order to verify the information reported, the assessment team requested to observe toilets, water infrastructure, handwashing facilities, outside areas and (where group hygiene practices were reportedly practiced) evidence of group hygiene practice. The direct observation component also allowed to assess issues that may be overlooked by principals but important to students (such as adequate light in toilets and appropriate facilities for menstruating girls).
- Triangulating data from difference sources (eg. FGDs, survey and secondary data).

Despite these strategies to minimize the impact of social desirability bias, behaviors perceived as 'undesirable' are still likely to be somewhat underreported, and behaviors perceived as socially desirable over-reported. This is noted in the findings where relevant.

3.4.2 Generalization

The sampling methodology for the household assessment allows for accurate generalization about households in Haiyan PhATS program areas in each province and overall. However, this does not apply to data from questions that were not asked to every household. This data, particularly at province level, offers a reduced precision that impacts the confidence interval on findings (broader interval).

The assessment of knowledge, attitudes and practices was focused at household level rather than individual level. This was an efficient way of assessing WASH practices that relate to households rather than individuals (eg. water storage) and enabled the generation of statistically significant data at province level across the six provinces - which would not have been feasible to do at individual level with the existing resources. However, a limitation of this approach was that variation within households for example, gender differences in attitudes and knowledge could not be thoroughly explored.

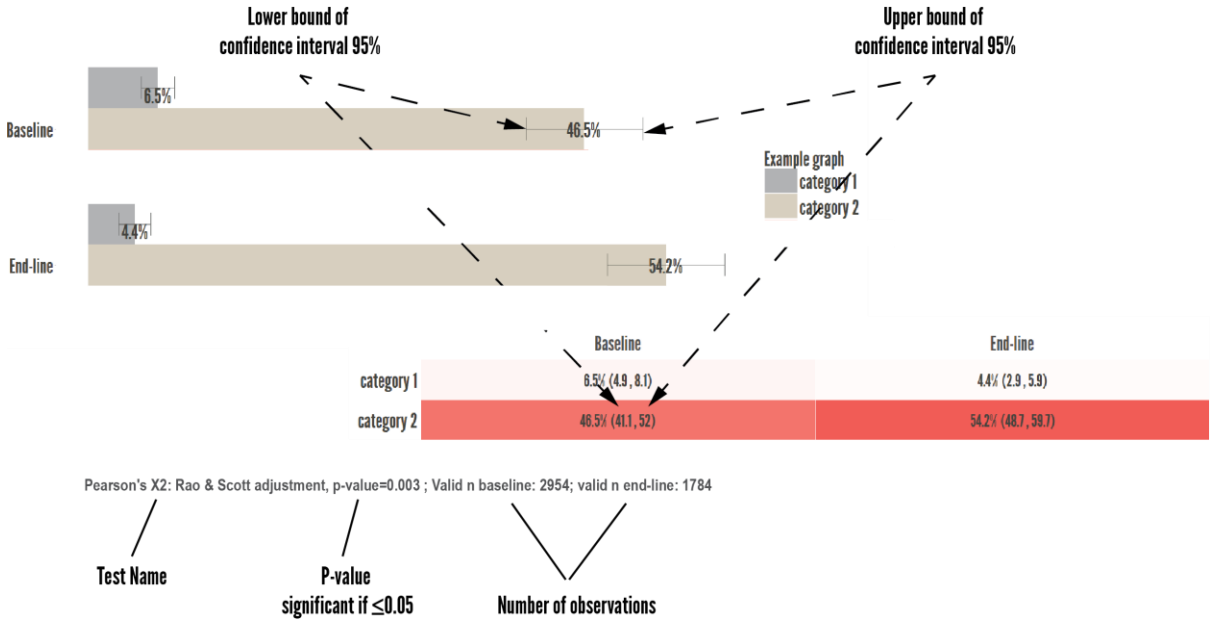
The sampling methodology for the schools assessment was designed to generate statistically significant data (92% confidence level, +/- 7% margin of error) at the level of all schools in Haiyan PhATS program areas. It does not provide accurate data at the province/division level that can be used to compare between provinces/divisions. Selecting statistically significant samples at the level of each province/division was discussed, but not considered efficient as it would essentially have involved a census, which was not required. Actual student input was limited to 8 focus group discussions, which allowed for some student perspectives to be included in the analysis, but was not representative. A compressive student survey on WASH knowledge, attitudes and practices was well beyond the scope of this assessment, but may be relevant to consider in the future.

It is important to note that the change between baseline and end-line measured in the Haiyan PhATS program areas cannot be solely attributed to the Haiyan PhATS program. Although the Haiyan PhATS program will have contributed to changes in water and sanitation conditions, other WASH projects undertaken in the same geographical areas, as well as the resilience and recovery of households after Haiyan are among a number of other factors that could also have contributed to the results found in this report.

3.5 Notes on graphics and visualization

The graphs and visualizations presented in this report show confidence intervals for all findings. These are demonstrated using an error bar that shows the confidence interval for each finding, with a 92% confidence at province level and a 95% confidence level for results generalized to the Haiyan PhATS program area overall. The confidence interval indicates the range within which the finding observed in the sample is true in the population of interest with a given level of confidence (e.g. 95%). The confidence interval is also reported in brackets [ ] directly following the findings throughout the report. If the confidence interval of two percentages overlap, we cannot be confident that the two values are different.

Figure 1: Graph interpretation of national level findings



4 Findings

This section of the report presents the main findings of the end-line assessment and is comprised of two main sections: WASH assessment at household and community level; and WASH in schools.

4.1 WASH Assessment at Household and Community Level

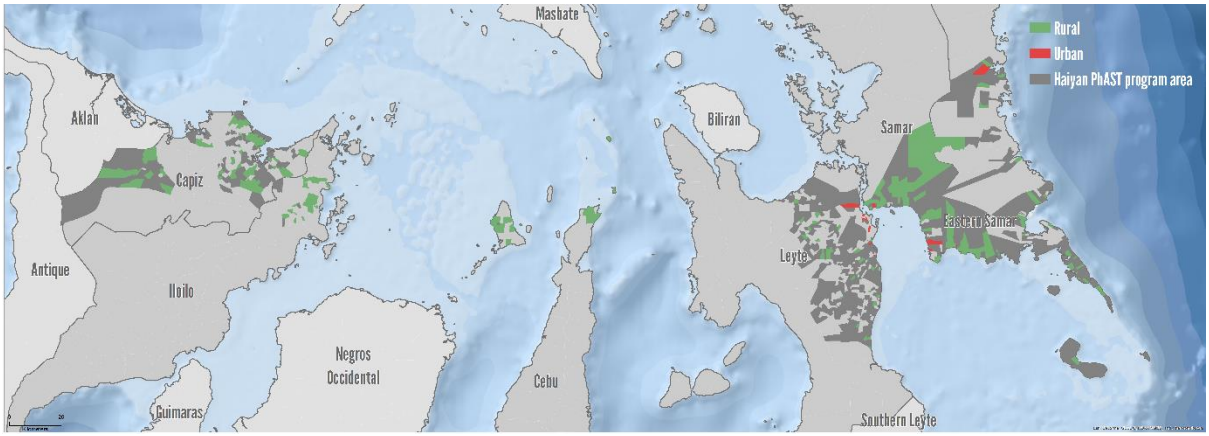
4.1.1 Population of interest

This section provides a brief description of the population of interest in the Haiyan PhATS program areas.

The results concerning the geographical features in the area are used to check the adequacy of the sampling in the two data collection rounds. For example, a significant difference between baseline and end-line in the proportion of rural / urban households might indicate a bias in household selection between the two rounds of data collection. No differences were found between baseline and end-line on these indicators.

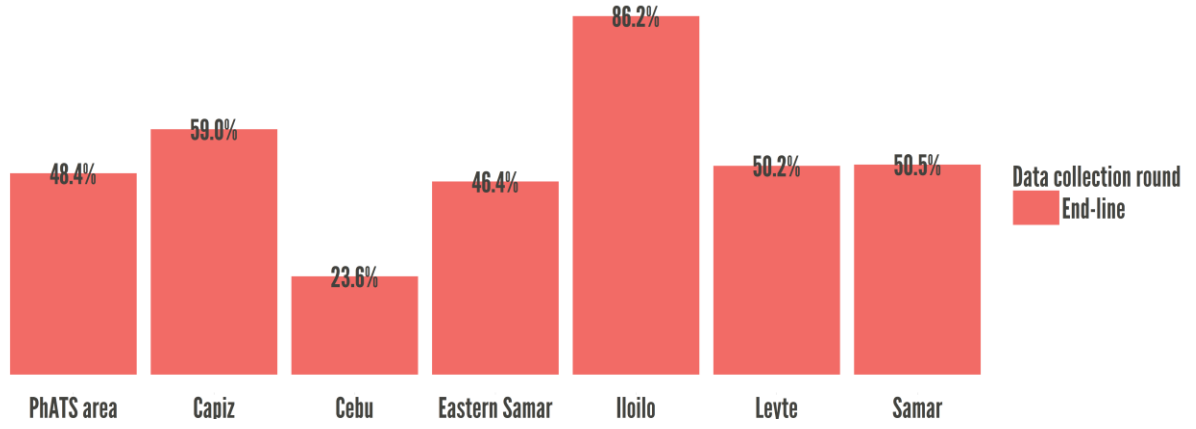
The households surveyed were largely living in rural areas: 78.5% [68.7; 88.3] and half of households were living in a Barangay with sea access, 50.5% [54.5; 66.4].

Map 4: Rural / Urban barangays assessed in the Haiyan PhATS program areas



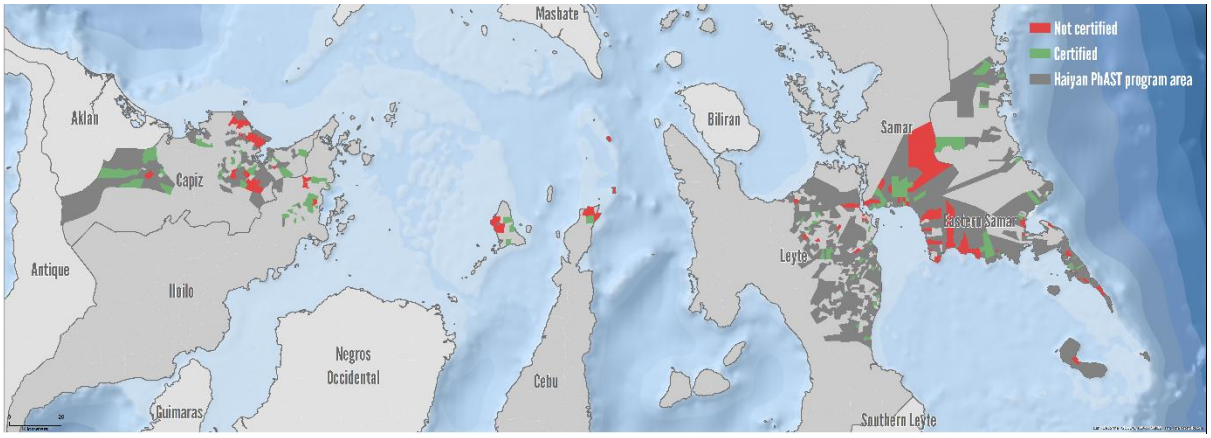
Almost half (48.4%) of households in the Haiyan PhATS program areas are living in certified ZOD (Zero Open Defecation) barangays according to data obtained from UNICEF (November 2015) (see Figure 2: Households living in ZOD certified barangays during end-line data collection below).

Figure 2: Households living in ZOD certified barangays during end-line data collection



Valid n end-line: 1794

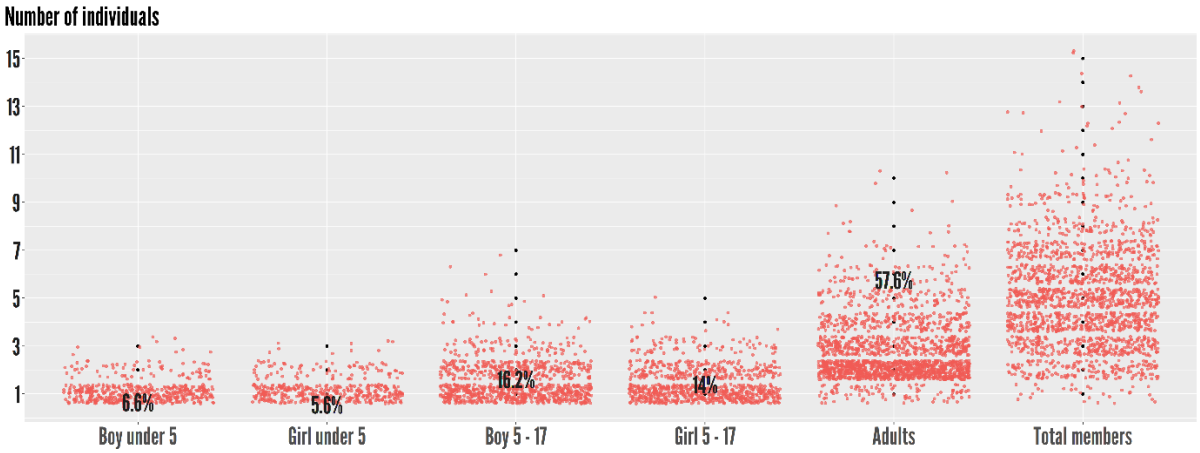
Map 5: ZOD certified barangays assessed in Haiyan PhATS program areas



4.1.2 Respondent and household characteristics

The majority (62.5%) of respondents were female. Less than half (41.1%) of respondents had left school between grades 7 and 10, and 38% of respondents that had graduated had done so from primary school. 15.2% of the respondents reported having attended college. The average household size was 5.1. Over half (57.6%) of household members were adults and 13.2% were children under 5 years. In the Haiyan PhATS program areas, 9.5% of households had at least one member with a physical disability. For this indicator, no significant difference could be detected between the provinces assessed nor the two data collection rounds.

Figure 3: Distribution of household members and percentage of members by age and sex



A significant increase in households reporting an average income between 3,333 and 5,000 PHP was identified, from 19.3% [16.7; 21.9] during the baseline to 27% [24; 29.9] during the end-line. Correspondingly, the proportion with an average monthly income between 1 and 3,332 PHP (under 40,000 PHP per year), had dropped from 64.5% [61; 67.9] to 54.7% [50.1; 59.4] by the end-line, indicating that households may have started to recover after being affected by Haiyan (see Figure 4).

Figure 4: Households' average monthly income by data collection round[8]

	Baseline	End-line
0 PHP	4.2% (3.2 , 5.2)	2.1% (0 , 4.2)
1 - 3,332 PHP	64.5% (61 , 67.9)	54.7% (50.1 , 59.4)
3, 333 – 5,000 PHP	19.3% (16.7 , 21.9)	27% (24 , 29.9)
5,001 – 8, 333 PHP	8% (6 , 10.1)	9.3% (7.1 , 11.5)
8, 334 – 20, 833 PHP	3.2% (1.5 , 4.9)	6% (3.3 , 8.8)
More than 20,883 PHP	0.7% (0.1 , 1.2)	0.8% (0.2 , 1.4)

Pearson's X2: Rao & Scott adjustment, p-value=0.003; Valid n baseline: 2954; valid n end-line: 1784

Almost half of households were living in timber frame houses with nipa or corrugated galvanized iron (CGI) roofs (see Figure 5 below). The next most common house type was timber and concrete: 23.9% [20.8; 27.1].

Figure 5: Type of housing by data collection round

	Baseline	End-line
Timber frame	46.1% (42.8 , 49.5)	44.2% (40.6 , 47.8)
Timber and concrete	25.1% (22.3 , 27.8)	23.9% (20.8 , 27.1)
Hut	14.1% (11.9 , 16.2)	14.4% (11.6 , 17.2)
Concrete	10.6% (8.6 , 12.7)	16.9% (13.4 , 20.5)
Makeshift shelter	4.1% (2.8 , 5.3)	0.5% (0 , 1)

Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 3024; valid n end-line: 1794

There was an increase in the proportion of households living in concrete houses from 10.6% [8.6; 12.7] during the baseline to 16.9% [13.4; 20.5] during the end-line. This increase might be the consequence of the recovery of households after Haiyan. The highest proportion of households living in huts was found in Iloilo where all barangays assessed were in rural areas.

94.2% [92.8; 95.7] of households in the Haiyan PhATS program areas overall reported owning the house where they lived. This proportion had increased from 89.6% [87.5; 91.6] during the baseline. No significant differences could be detected between provinces in proportion of households owning their house.

4.1.3 Water Supply

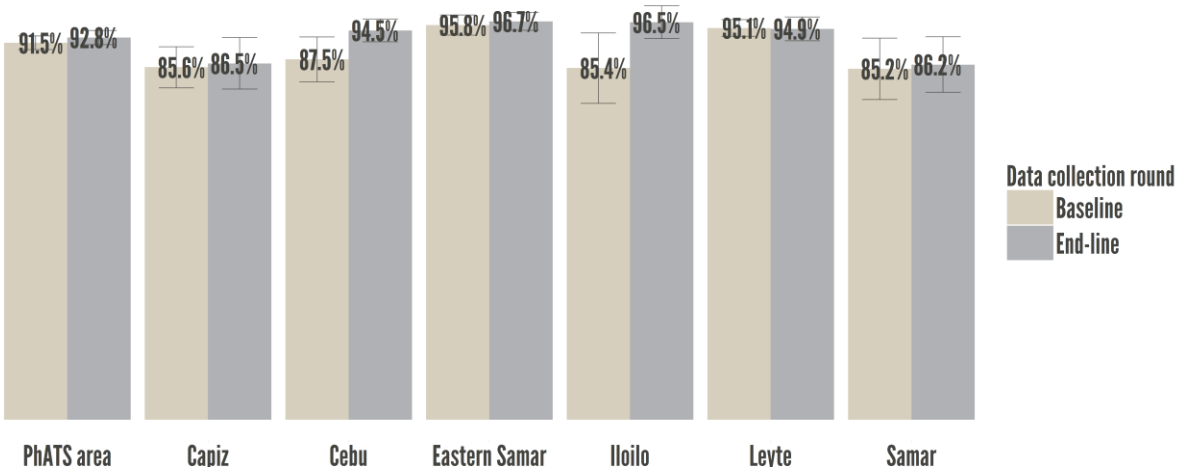
4.1.3.1 Drinking water source

This assessment found that an estimated 92.8% [91.1; 94.5] of the population in Haiyan PhATS program areas have access to an improved[9] source of drinking water. No significant variation could be found between baseline and end-line and between provinces, as shown below.

[8] This table includes conditional formatting to help the reader clearly identify higher and lower values at a glance: the darker the shading, the higher the value. The same formatting is used for tables throughout this report.

[9] An "improved" water source is one that, by the nature of its construction and when properly used, adequately protects the source from outside contamination, particularly faecal matter. Is considered as improved water source in this report: Piped water into dwelling (house); Piped water to yard or plot; Public tap or standpipe; Tube well or borehole; Protected dug well; Protected spring.

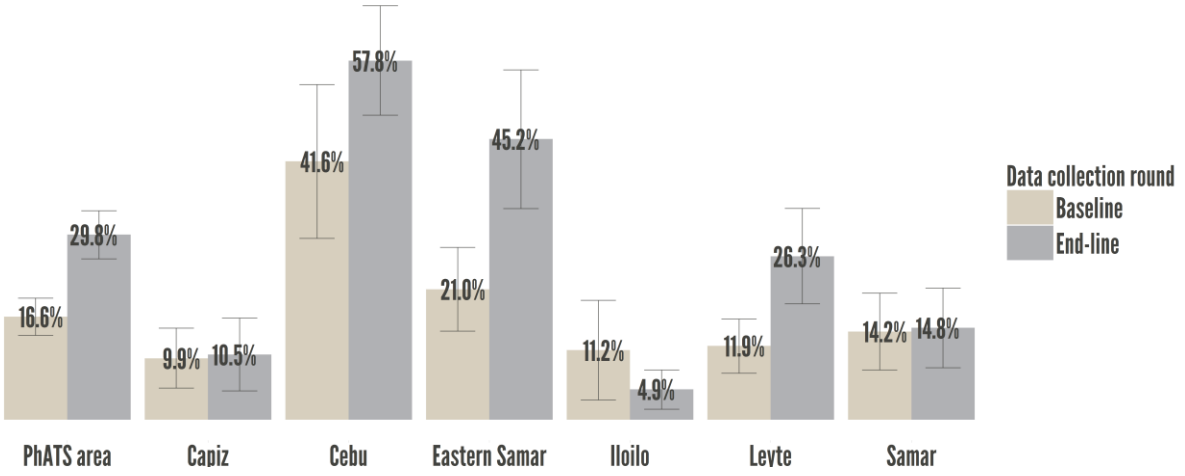
Figure 6: Households with access to improved water sources by data collection round



Valid n baseline: 2938; valid n end-line: 1794

However, the end-line survey found that despite access to improved water sources, there was a significant increase in households using bottled water as their main source of drinking water[10], from 16.7% [13.7; 19.7] during the baseline to 29.8% [25.9; 33.6] during the end-line assessment – making bottled water the most common drinking water source during the end-line. Significant differences were found between provinces, as illustrated in Figure 7 below. A significant increase in households using bottled water as the main source of drinking water was found in Eastern Samar and Leyte, from 21% [14.3; 27.7] and 11.9% [7.5; 16.2] during the baseline to 45.2% [34; 56.3] and 26.3% [18.7; 34] during the end-line assessment.

Figure 7: Households using bottled water as drinking water source by data collection round



Piped water was the second most common source of drinking water in Haiyan PhATS program areas. Piped water was used by 24.4% of households (see

Figure 8 below), with 13.3% [10.4; 16.2] of all households having water piped directly into their dwelling and 11.2% [8.7; 13.6] having piped water inside their yard or plot. A significant decrease was seen in households relying on tube wells or boreholes for their drinking water, from 26.5% [22.2; 30.8] to 17% [13.2; 20.9].

[10] Bottled water is considered an 'unimproved source' by the Philippines Department of Health.

Figure 8: Household drinking water source by data collection round

		Baseline	End-line
	Bottled water	16.7% (13.3 , 20)	29.8% (25.4 , 34.1)
Improved water source	Piped water into dwelling (house)	10.9% (8.8 , 13.1)	13.3% (10.4 , 16.2)
	Piped water to yard or plot	19.7% (16.4 , 22.9)	11.1% (8.7 , 13.6)
	Public tap or standpipe	11.5% (9.2 , 13.8)	11.9% (9.3 , 14.5)
	Tube well or borehole	26.4% (22.2 , 30.7)	17% (13.2 , 20.8)
	Protected dug well	5.8% (4.2 , 7.4)	8.8% (5.9 , 11.6)
	Protected spring	2.3% (1.4 , 3.3)	3.8% (2.1 , 5.5)
Unimproved water source	Rainwater collection	0.7% (0.2 , 1.2)	0.7% (0 , 1.3)
	Unprotected dug well	3% (2.1 , 3.9)	2.4% (1.4 , 3.5)
	Unprotected spring	1.8% (1 , 2.7)	0.8% (0.2 , 1.4)
	12 - Cart with small tank or drum	0.1% (0 , 0.2)	0.1% (-0.1 , 0.3)
	Tanker-truck	0.4% (0 , 0.8)	0% (0 , 0.1)
	Surface water	0.4% (0.1 , 0.7)	0.2% (0 , 0.4)

Pearson's X^2: Rao & Scott adjustment, p-value=0.00; Valid n baseline: 3016; valid n end-line: 1794

Sources of drinking water varied significantly between the provinces. The full breakdown by province is outlined in Figure 9. Piped water into dwelling or plot was the main source of drinking water in Leyte, but it was used by less than 25% of households in program areas in Iloilo, Capiz, Eastern Samar and Samar. Tube wells were the main source of drinking water in Capiz and Iloilo, while in Samar public taps were most common. In program areas in Cebu and Eastern Samar, bottled water was the main source of drinking water, relied upon by 57.8% [48.0; 67.7] and 45.2% [32.7; 57.6] of households respectively.

Figure 9: Household drinking water source by province

		Samar	Leyte	Iloilo	Eastern Samar	Cebu	Capiz
	Bottled water	14.8% (7.6 , 22)	26.3% (17.7 , 34.9)	4.9% (1.3 , 8.4)	45.2% (32.7 , 57.6)	57.8% (48 , 67.7)	10.5% (3.9 , 17.1)
Improved water source	Piped water into dwelling (house)	12.6% (7.9 , 17.4)	20.3% (14.7 , 25.9)	1.4% (-0.2 , 2.9)	14.4% (10.6 , 18.3)	6.9% (3.6 , 10.1)	11.7% (2 , 21.4)
	Piped water to yard or plot	8.7% (4.7 , 12.6)	20.3% (15.7 , 24.9)	0.8% (-0.4 , 2)	7.7% (2.6 , 12.7)	10.2% (5.2 , 15.3)	4% (-0.6 , 8.7)
	Public tap or standpipe	29.4% (19.4 , 39.5)	15.4% (9.8 , 21)	5.1% (-0.6 , 10.9)	18.4% (9.8 , 26.9)	3.3% (1.2 , 5.4)	1.1% (-0.1 , 2.3)
	Tube well or borehole	15.6% (4.6 , 26.5)	10% (3.8 , 16.2)	46.9% (33.5 , 60.3)	10.9% (4.8 , 16.9)	4.2% (0 , 8.4)	38.9% (25.5 , 52.2)
	Protected dug well	7.8% (2.3 , 13.4)	3.2% (0.7 , 5.6)	11.6% (7.1 , 16.1)	2.3% (0.5 , 4.1)	15% (4.8 , 25.2)	17% (9.2 , 24.8)
	Protected spring	1.3% (-0.8 , 3.4)	1.7% (-0.3 , 3.6)	26% (9.3 , 42.6)	0% (0 , 0)	0% (0 , 0)	8.5% (2.7 , 14.2)
Unimproved water source	Rainwater collection	1.6% (-0.2 , 3.3)	0% (0 , 0)	0% (0 , 0)	0% (0 , 0)	0% (0 , 0)	2.9% (-0.7 , 6.4)
	Unprotected dug well	6.5% (1.7 , 11.3)	1.2% (0.1 , 2.3)	2.4% (-0.6 , 5.5)	1.3% (0 , 2.5)	2.5% (-0.4 , 5.4)	3% (0.7 , 5.2)
	Unprotected spring	0.8% (-0.5 , 2.2)	1.1% (-0.4 , 2.7)	0.4% (-0.4 , 1.1)	0% (0 , 0)	0% (0 , 0)	2% (0.1 , 4)
	Cart with small tank or drum	0% (0 , 0)	0% (0 , 0)	0.2% (-0.2 , 0.5)	0% (0 , 0)	0% (0 , 0)	0.5% (-0.5 , 1.5)
	Tanker-truck	0.3% (-0.3 , 0.9)	0% (0 , 0)	0% (0 , 0)	0% (0 , 0)	0% (0 , 0)	0% (0 , 0)
	Surface water	0.5% (-0.5 , 1.5)	0.4% (-0.1 , 1)	0.4% (-0.4 , 1.1)	0% (0 , 0)	0% (0 , 0)	0% (0 , 0)

Valid n end-line: 1794

4.1.3.2 Cost of drinking water

In the Haiyan PhATS program areas, 51.5% [46.7; 56.3] of households are paying for their drinking water. There was significant variation in this proportion per province, with Iloilo and Capiz having the lowest percentage of households paying for water and Leyte and Cebu having the highest proportions paying.

The cost of water is closely linked with the type of water sources used by the household. 92.1% [86.4; 97.8] of households that use an unimproved water source are not paying for their water, compared to 55.8% [48.0; 63.6]

of those relying on an improved water supply. The main source of improved water source accessed for free by households included protected dug wells (reported by 96.4% [93.2; 99.6] of households), protected springs 78.6% [62.2; 94.9] and public taps 41.7% [30.3; 53.1]. This result is important in the light of ensuring a sustainable supply of safe drinking water in communities, since households payments to access the service are usually reinvested to support the maintenance cost of the infrastructure.

Figure 10: Average monthly cost for drinking water by households accessing improved, unimproved or bottled water as water source for drinking

	Unimproved water source	Improved water source	Bottled water
0 PHP	92.1% (86.4, 97.8)	55.8% (48, 63.6)	0% (0, 0)
1-100 PHP	2.1% (-1.1, 5.3)	11.9% (8.7, 15.1)	23% (17.3, 28.7)
101-250 PHP	5.1% (0.1, 10.1)	22.6% (17.1, 28.1)	55% (45.9, 64.1)
251-500 PHP	0.7% (-0.7, 2)	7.4% (4.3, 10.4)	17.1% (10.3, 23.9)
501-750 PHP	0% (0, 0)	0.4% (-0.1, 0.9)	4.6% (1.6, 7.6)
751-1000 PHP	0% (0, 0)	0.8% (-0.3, 1.9)	0.3% (-0.3, 0.8)
More than 1000 PHP	0% (0, 0)	1.1% (-0.4, 2.7)	0% (0, 0)

Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n end-line: 1786

Considering the post-emergency investments that were made on repairing and improving water supply infrastructure (some though the Haiyan PhATS program, but also through other WASH response and recovery projects), the increase in the proportion of households using bottled water is unexpected. According to the Haiyan PhATS program documentation, 152,000 additional individuals now have access to an improved water source as a result of the Haiyan PhATS program. According to end-line survey findings, the vast majority, 91.8% [88.1; 95.5], of households using bottled water as their main source of drinking water had access to another improved water source. Lack of alternative improved water sources thus appears not to be the sole factor driving households to choose bottled water over other improved water sources. To explore what drives this decision, the topic was covered in end-line focus group discussions (FGDs). Participants reported concerns over the quality of water coming from their improved water sources. The main reasons for concern reported were 1) Being unsure about water quality; 2) Turbidity in water after tropical storm episodes; 3) Diarrhea episodes in the community.

Bottled water is more expensive for households than other sources of drinking water. The cost of bottled / purified water generally ranges from PHP 2.50 to PHP 6.00 per litre. Among households drinking bottled water, 77% pay more than 100 PHP per month. When looking at household income, there is no significant difference in consumption of bottled water when comparing households with low and high incomes, indicating that that household income is not the main factor driving the increase in use of bottled water.

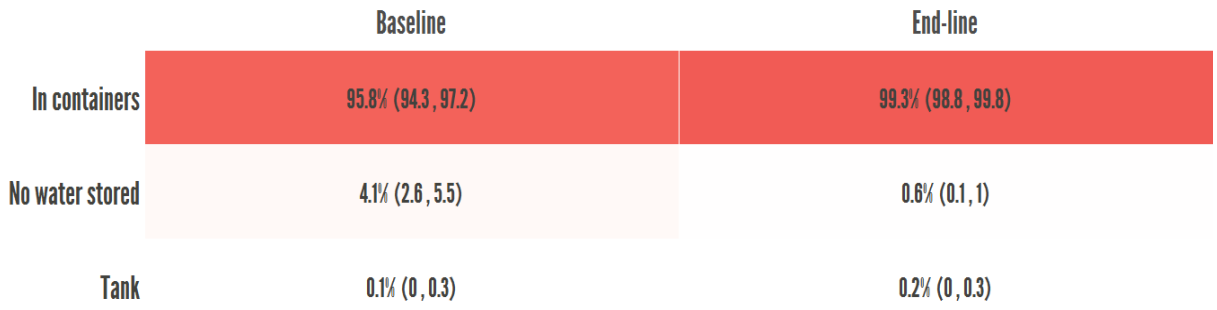
A study on water use in Philippines from 2014 also found that the choice to purchase bottled water for drinking over the regular source of water was mainly driven by the perceived lack of quality or lack of evidence of adequate quality of the household main water source[11]. In the Haiyan PhATS program areas, water quality control checks are scheduled on a quarterly basis by the Provincial Health Office. Participants in FGDs in communities where bottled water was not relied on at all, reported that the quality of their drinking water sources was analyzed on a regular basis and they trusted that the water from these sources was safe for drinking. The increase in bottled water consumption could thus be mainly explained by a lack of trust by households in their improved water source, rather than the availability of improved water sources.

4.1.3.3 Household water storage

The main way that households stored drinking water was in containers - such as bottles, jerry cans and drums - as reported by 99.3% [98.8; 99.8] of households in Haiyan PhATS program areas, up from 95.8% [94.3; 97.2] during the baseline.

[11] Francisco, J. P. S. (2014), Why households buy bottled water: a survey of household perceptions in the Philippines. International Journal of Consumer Studies, 38: 98–103. doi: 10.1111/ijcs.12069

Figure 11: Type of water storage by data collection round



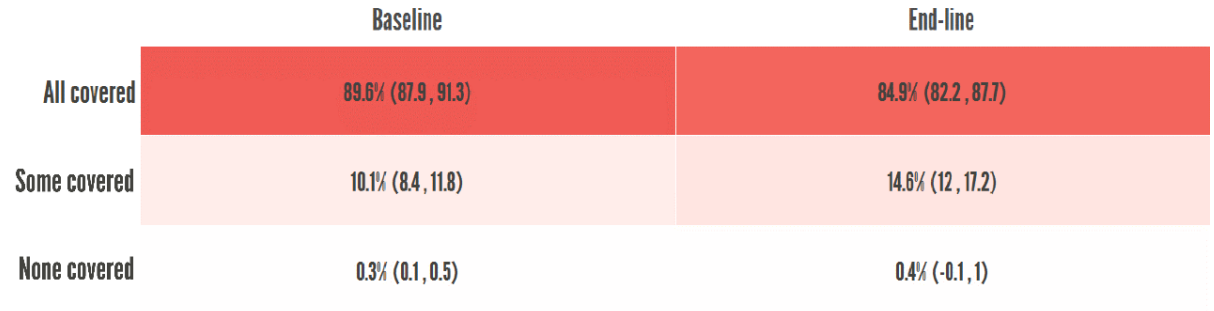
Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 3016; valid n end-line: 1794

0.6% [0.1; 1.0] reported that they do not store water at household level, and only 0.2% [0.0; 0.3] reported using water tanks (see figure above).

It demonstrates that even when households have piped water (as do over a quarter of households in Haiyan PhATS program areas), many still choose to store water in containers. This phenomenon has been reported elsewhere in Asia, and typically occurs where water supplies are not reliable in terms of quantity, quality and consistency[12].

As part of the household survey, enumerators asked to observe the water containers of all households who reported having water stored in containers, to check whether they were covered. 84.9% [82.2; 87.7] of households with water stored in containers had their containers covered at the time of the survey, with a further 14.6% [12.0; 17.2] having some but not all water containers covered. Only 0.4% [0.0; 1.0] of households with water stored in containers did not have any of these containers covered (see Figure 12 below). This pattern was consistent across the six provinces, with households with no containers covered representing less than 1% of households in Haiyan PhATS program areas. However, a significant decrease in households covering all water containers was found from 89.6% [87.9; 91.3] during the baseline to 84.6% [82.2; 87.7] during the end-line. This result is concerning since unclean and uncovered containers can contaminate water and cause diarrheal disease, with a 1995 study in the Philippines[13] showing that water contamination at point of consumption through improper handling and storage of water was even greater than contamination at source. Furthermore, uncovered household water storage containers play a dominant role in aiding vector breeding in many areas, and can thus contribute to the spread of dengue[14].

Figure 12: Households that cover container for drinking water by data collection round



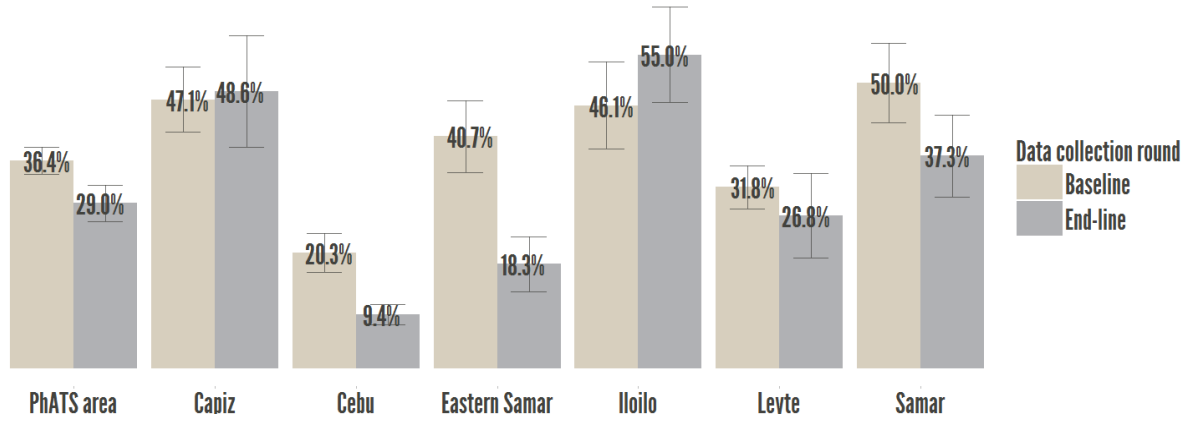
Pearson's X^2: Rao & Scott adjustment, p-value=0.002; Valid n baseline: 2931; valid n end-line: 1779

[12] World Health Organization, Dengue haemorrhagic fever: diagnosis, treatment, prevention and control, 2nd ed., (Geneva: World Health Organization1997), p. 53
[13] Government of the Philippines, Philippine Progress Report on the Millennium Development Goals (Manila, Philippines: 2003) p. 22.
[14] World Health Organization, Dengue haemorrhagic fever: diagnosis, treatment, prevention and control, 2nd ed, (Geneva: World Health Organization1997), p. 53

4.1.3.4 Household water treatment

Less than a third of assessed households in Haiyan PhATS program areas, 29.0% [25.8; 32.1], reported treating their drinking water (see Figure 13 below); 17.5% [15.2; 19.7] of households reported always treating their drinking water; and 11.5% [9.2; 13.7] reported that they sometimes do.

Figure 13: Households reporting to treat their drinking water by data collection round

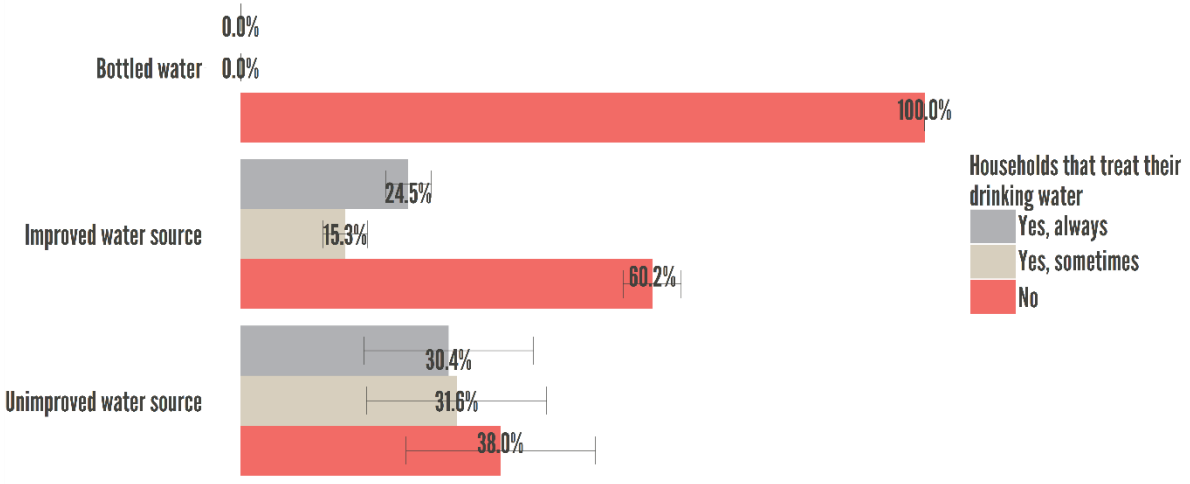


Valid n baseline: 3021; valid n end-line: 1794

There was a significant decrease in the proportion of households treating their drinking water in the Haiyan PhATS program area, from 36.4% [34.1; 38.8] during the baseline to 29.0% [25.8; 32.1] during the end-line. These overall results can be explained by the important decrease of treatment behavior in Cebu: 20.3% [16.9; 23.6] at the time of the baseline, which dropped to 9.4% [7.7; 11.2] during the end-line; and in Eastern Samar: 40.7% [34.4; 47] during the baseline, which dropped to 18.3% [13.5; 23.1] during the end-line data collection. There are no other significant differences between baseline and end-line in other provinces.

This reduction in use of drinking water treatment could be partly explained by the increase in proportion of households that relied on bottled drinking water (Figure 7). Households relying on improved water sources were also less likely to treat their drinking water, as seen in Figure 14 below.

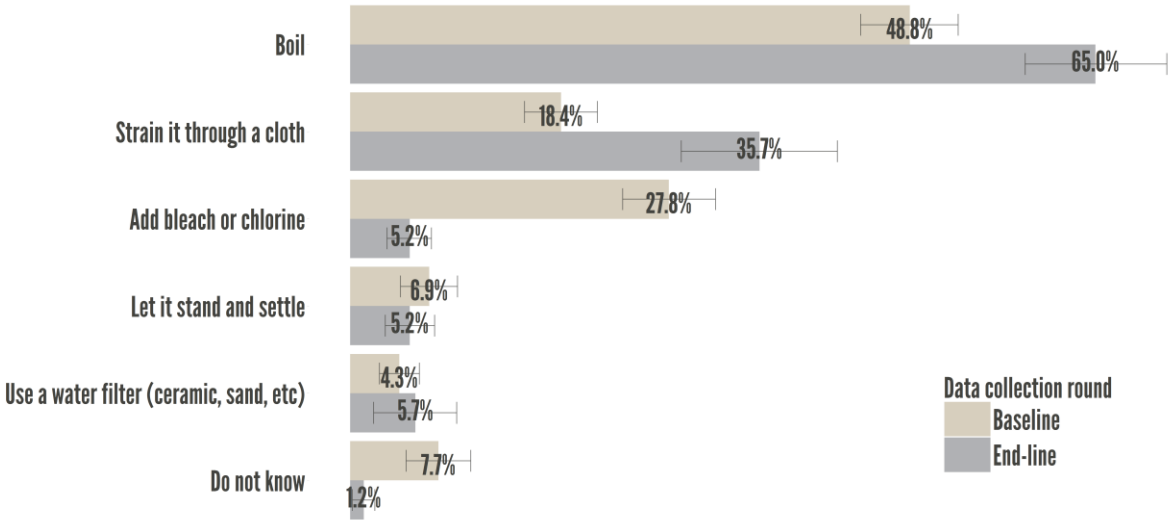
Figure 14: Households that treat their drinking water by access to an improved or unimproved water source



Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n end-line: 1794

39.8% [35.6; 44.1] of households using an improved water source reported treating their water at least occasionally before drinking. 62% [48.1; 75.8] of households using an unimproved water source reported treating their water at least occasionally, leaving 38% [24.2; 51.9] of households using an unimproved drinking water source never treating their water before consumption, and an additional 31.6% [18.4; 44.7] of households not always treating their unimproved water source.

Figure 15: Type of treatment used among households treating their drinking water by data collection round



Valid n baseline: 1167; valid n end-line: 606

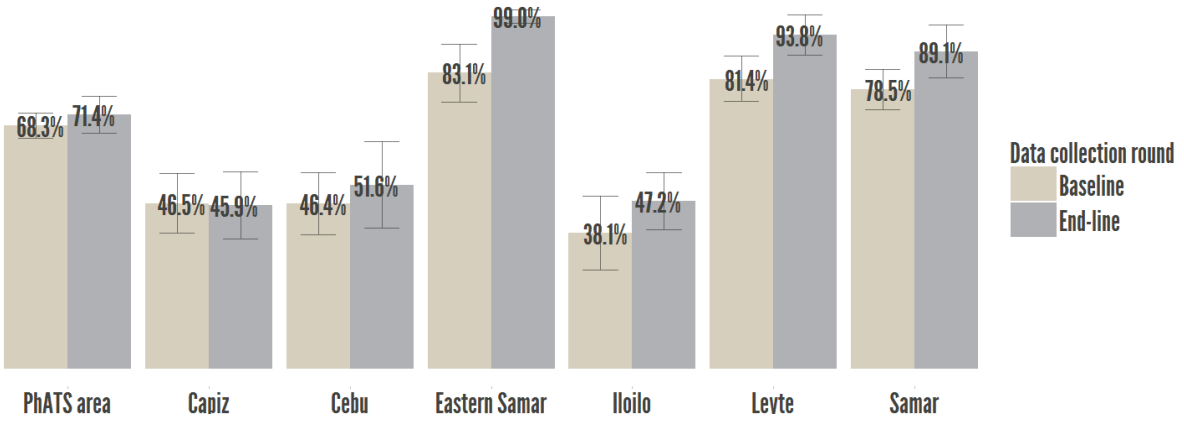
Of the households that did treat their drinking water, there was a significant decrease in the proportion of households using chlorine to treat the water, from 27.9% [23.8; 31.9] during the baseline to 5.2% [3.2; 7.1] during the end-line. The higher level of chlorine usage during the baseline could be explained by the distribution of water treatment kits which took place in Haiyan-affected areas as part of the WASH cluster emergency response. During community discussions, most communities reported to have received treatment products like Hyposol or Aquatab from NGOs after Haiyan.

By the end-line assessment, boiling water was the most commonly reported technique to treat drinking water, used by 65.0% [58.9; 71.2] of households. There was a significant increase in households using this method compared to the baseline, when only 48.6% [44.4; 52.9] reported boiling their water before drinking. There was also a significant increase in households filtering water with a piece of cloth (see Figure 15 above).

This suggests a shift in household treatment methods, which might have occurred after chlorine supplies received after Haiyan were used up and is encouraging in the light of households understanding the need to treat water. However 88.7% [84.6; 89.6] of households filter water with a piece of cloth, without any other disinfection method (such as boiling, chlorine / bleach or solar disinfection). This result is concerning, since while filtration with a piece of fabric is a good method to reduce the turbidity of water, it needs to be combined with a disinfection method to ensure water quality. This highlights the need for further campaigns to increase household awareness of adequate treatment methods.

Looking at the adequacy of water treatment methods (use of efficient treatment methods: boiling; solar disinfection; chlorine; water filter), 71.4% [65.5; 77.2] of households in the Haiyan PhATS program areas are using an adequate treatment method. There was high variation between the provinces (see Figure 16), with the lowest proportion of households using adequate water treatment found in Capiz, Cebu and Iloilo. No significant differences can be found between baseline and end-line in Haiyan PhATS program areas as a whole. While an increase in the proportion of households using adequate water treatment was found in Eastern Samar and Leyte provinces, the sample size does not enable meaningful comparison between the adequacy of treatment with the type of water source at this level.

Figure 16: Adequate water treatment by data collection round

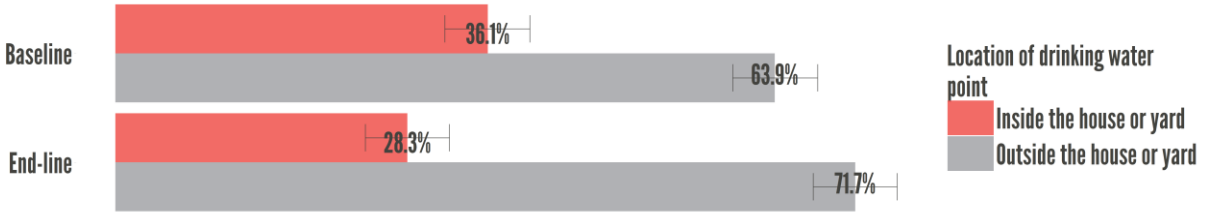


Valid n baseline: 1259; valid n end-line: 651

4.1.3.5 Fetching Water

86.2% [83.8; 88.7] of households among the 71.7% [67.6; 75.8] of households that fetch water from a source outside their plot (Figure 17) reported that it takes them less than 15 minutes to go to the water source, collect water and come back (excluding any time spent socializing) (see Figure 18).

Figure 17: Location of drinking water point by data collection round



Pearson's $X^{2:}$ Rao & Scott adjustment, p-value=0.009; Valid n baseline: 3009; valid n end-line: 1794

Across all Haiyan PhATS program areas, a remaining 12.9% [10.4; 15.4] of households who fetch water take 15 minutes or more for this task. There was no significant difference between baseline and end-line, as seen in Figure 18 below.

Figure 18: Water collection time by data collection round

	Baseline	End-line
Less than 15 minutes	84.6% (82 , 87.2)	86.2% (83.8 , 88.7)
15 to 29 minutes	12.3% (10 , 14.5)	11.4% (9.2 , 13.6)
30 minutes to 1 hour	2.1% (1.2 , 3)	2.2% (0.9 , 3.4)
More than 1 hour	1% (0.4 , 1.6)	0.2% (0 , 0.4)

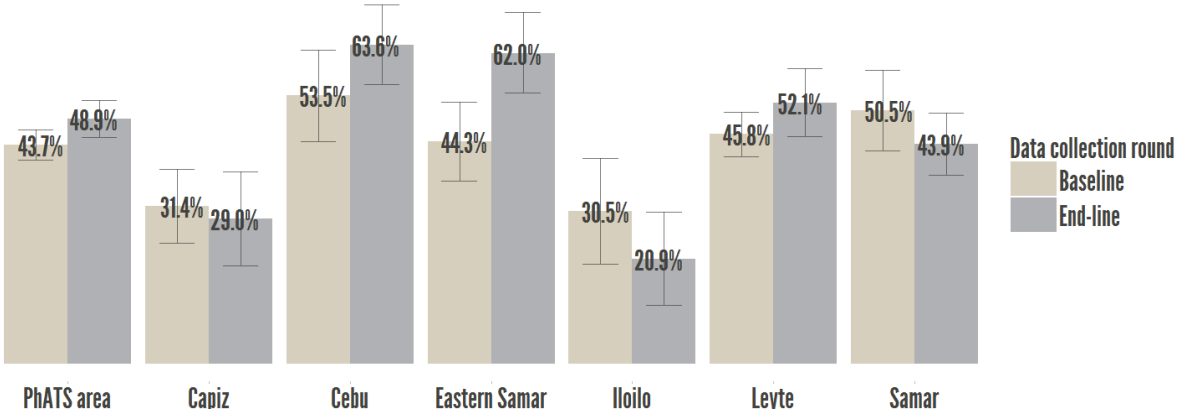
Pearson's $X^{2:}$ Rao & Scott adjustment, p-value=0.217; Valid n baseline: 1870; valid n end-line: 1207

4.1.3.6 Sources of water for use other than drinking

48.9% [44.7; 53.0] of households in Haiyan PhATS program areas have a second source of water for use other than drinking. There was no significant change at the Haiyan PhATS program area level, however there was a

significant increase in Eastern Samar where 62.0% [54.0; 70.1] of households now had a second source of water, a proportion that rose from 44.3% [36.4; 52.2] during the baseline.

Figure 19: Households having a second source for non-drinking water by data collection round



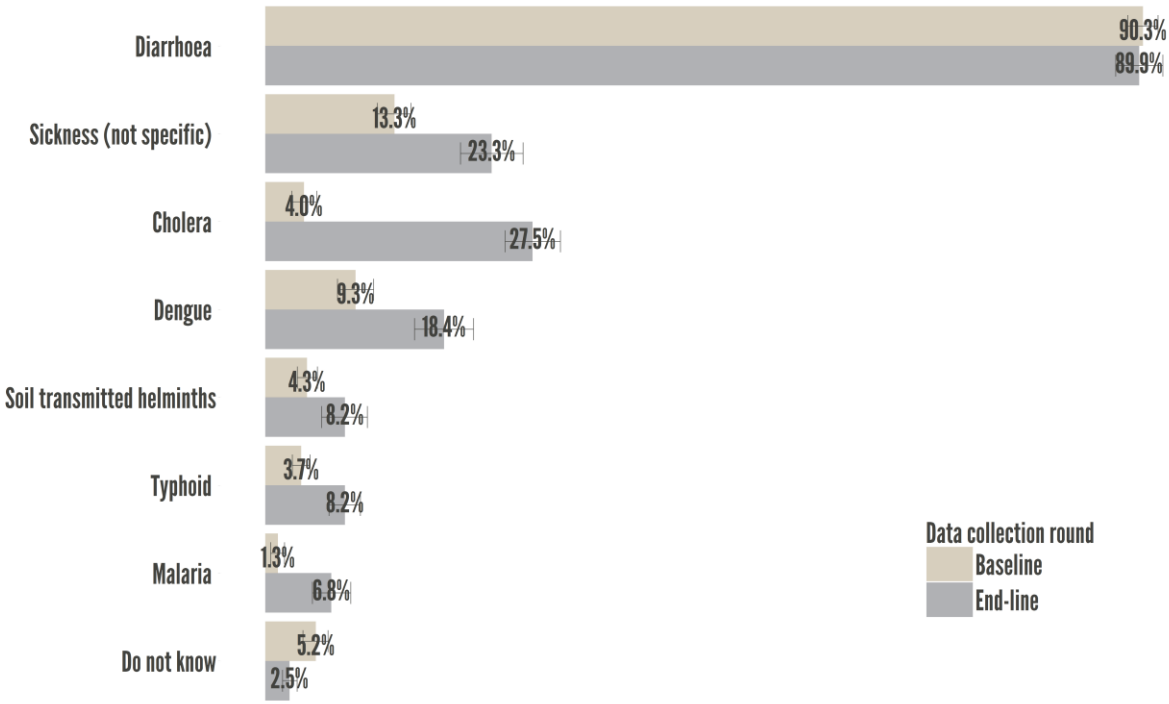
Valid n baseline: 3019; valid n end-line: 1794

This increase in Eastern Samar is consistent with the increased use of bottled water for drinking (and decreased use of water treatment) also measured between the baseline and end-line in this province.

4.1.3.7 Knowledge of the risks of unsafe water

The vast majority (93.3% [91.8;94.8]) of all respondents could name at least one specific health risk of unsafe water, with diarrhea by far the most commonly identified, mentioned by 89.9% [87.5; 2.3] of all households. The second most commonly mentioned was cholera, identified by 27.5% [24.7; 30.4] of households.

Figure 20: Perception of respondents of the risk of unsafe water by data collection round



Valid n baseline: 3025; valid n end-line: 1794

There is an increase in the understanding of the link between unsafe water and diarrhea and sickness in general. In addition, since the baseline assessment, there is an increased awareness of respondents about the risk of dengue fever, cholera, typhoid and malaria. There was a notable increase in the proportion of households reporting cholera from only 4.0% [2.7; 5.3] of respondents in the baseline to 27.5% [24.7; 30.4] in the end-line. Almost one quarter of respondents, 23.3% [20.1; 26.5], mentioned sickness as a risk of unsafe water without being able to identify a specific type. These increases may be positive outcomes of both PhATS programming, other

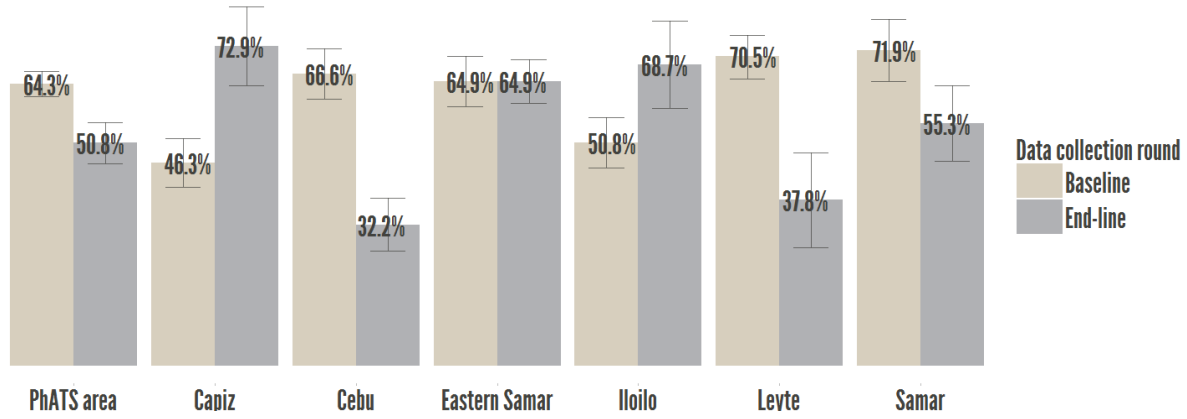
humanitarian interventions, and efforts by the Department of Health (DOH) to intensify anti-dengue awareness campaigns[15].

4.1.4 Hygiene and Health

4.1.4.1 WASH messaging

The proportion of households that recalled receiving WASH (water, sanitation and hygiene) messages during the last 6 months from the time of data collection reduced between the baseline (64.3% [61.4; 67.2]) and the end-line (50.8% [46.1; 55.5]). There was a significant difference between provinces, with the largest decrease in the proportion of respondents that recalled receiving a WASH message seen in Cebu (from 66.6% [60.9; 72.3] during baseline to 32% [26.2; 38.3] during end-line) and in Leyte (from 70.5% [65.5; 75.4] to 37.8% [27; 48.6]). On the contrary, Capiz and Iloilo saw an increase in the proportion of respondents that had received a WASH message, from 46.3% [40.8; 51.8] to 72.9% [63.9; 81.8] and from 50.8% [45; 56.5] to 68.7% [58.7; 78.6] respectively (see Figure 21 below).

Figure 21: Respondents that received a WASH message during the last 6 months by data collection round

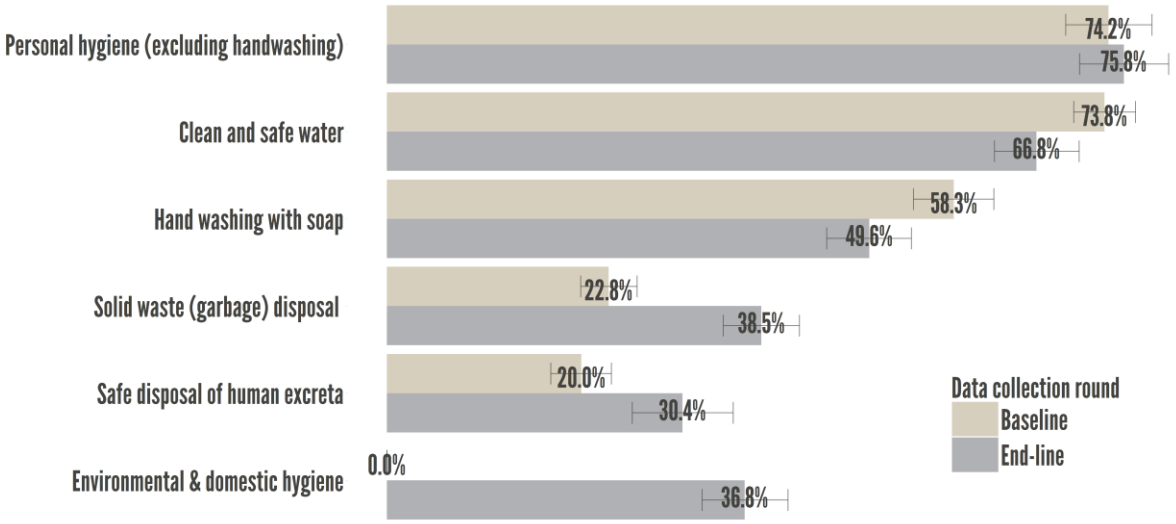


Valid n baseline: 3004; valid n end-line: 1781

Among respondents that remembered receiving a WASH message, 75.8% [71.2; 80.4] had received a message about personal hygiene (excluding handwashing). There was an overall decrease in messages received about handwashing with soap, and an increase in messages about solid waste management or garbage disposal; safe disposal of excreta; and most dramatically, from 0.0% [0.0; 0.0] to 36.8% [32.4; 41.3], environmental and domestic hygiene (see Figure 22 below). The increase of messaging about solid waste management or garbage disposal and safe disposal of excreta corresponds to recommendations of the PhATS baseline report to increase the hygiene promotion campaign efforts of the PhATS implementing partners on those specifics themes.

[15] DOH: Don't just remember, practice 4S to prevent Dengue, October 2015; http://www.doh.gov.ph/node/2571

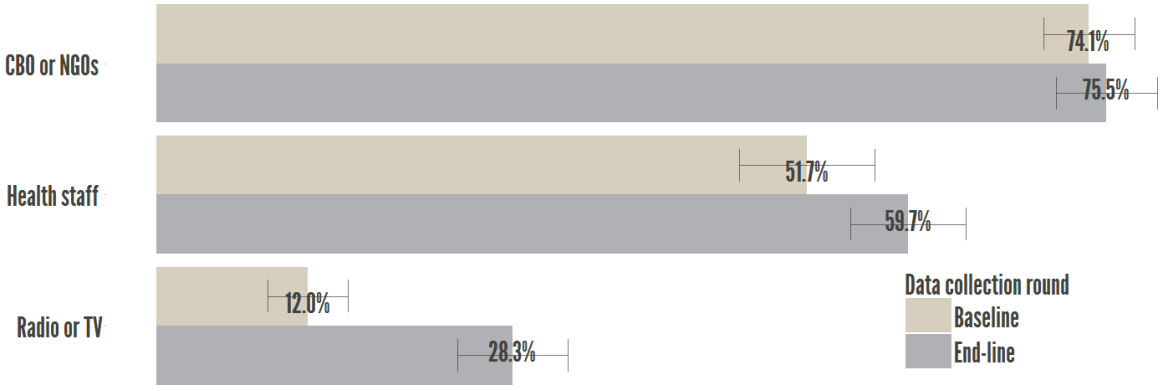
Figure 22: Type of WASH message received by respondents by data collection round



Valid n baseline: 1863; valid n end-line: 1010

Community-based organizations (CBO) and Non-governmental organizations (NGOs) were found to be the most common sources of WASH messages during both baseline and end-line survey, with no significant change observed. However, there was a significant increase in the proportion of respondents that received WASH messages through TV and Radio. It is important to note that there was simultaneously an increase in households that reported owning a TV compared to the baseline, hence the increase in messages received via TV may be attributable to increased access to TVs as well as increased broadcasting of messages via TV.

Figure 23: Origin of the WASH message received by respondents by data collection round



Valid n baseline: 186; valid n end-line: 1010

4.1.4.2 Handwashing facilities at household level

As part of the household survey, respondents were asked if their household had a designated place for handwashing. Enumerators then asked to observe these handwashing facilities, to verify the response and check for soap and water. Overall, 93.2% [91.8; 94.6] of households had a designated place for handwashing (verified by the enumerator), and where handwashing facilities (HWF) were present they usually had both soap and water, with 84.7% [82.1; 87.2] of all households observed to have a handwashing facility with soap and water present at the time of visit. 4.3% [2.4; 6.3] of households had no handwashing facilities at the time of observation. There was no significant change in proportions compared to the baseline.

Figure 24: Households having a handwashing facility with water and soap, by data collection round

	Baseline	End-line
Handwashing facility with Water & Soap	79.9% (77.4 , 82.3)	84.7% (82.1 , 87.2)
Handwashing facility with Water without Soap	5.4% (4.3 , 6.4)	4.3% (2.4 , 6.3)
Handwashing facility without Water and Soap	4.6% (3.6 , 5.6)	4.2% (3 , 5.4)
No Handwashing facility	10.2% (8.1 , 12.3)	6.8% (5.2 , 8.4)

Pearson's X^2: Rao & Scott adjustment, p-value=0.039; Valid n baseline: 3025; valid n end-line: 1794

4.1.4.3 Availability of soap in households

74.9% [71.7; 78.1] of the respondents reported to always have soap in the household, while 23.7% [20.9; 26.6] reported sometimes having soap in the household. There was no significant difference compared to the baseline.

Figure 25: Availability of soap by data collection round

Pearson's X^2: Rao & Scott adjustment, p-value=0.132; Valid n baseline: 3025; valid n end-line: 1794

It is important to note that the same soap is often used for washing clothes and dishes as well as hands, so the observed availability of soap does not necessarily mean it is available and used for handwashing. However, we rely on self-reporting here due to the difficulty of gathering comprehensive observational data on handwashing behavior.

4.1.4.4 Handwashing behavior

Self-reported frequency of handwashing was seen to have increased since the baseline. While 36.1% [33.1; 39] reported washing their hands 7 times or more per day during the baseline this rose to 44.3% [40.1; 48.6] by the end-line (see Figure 26 below). It is important to note that the frequency could not be verified and in consequence is likely to be overestimated in both assessments (baseline and end-line).

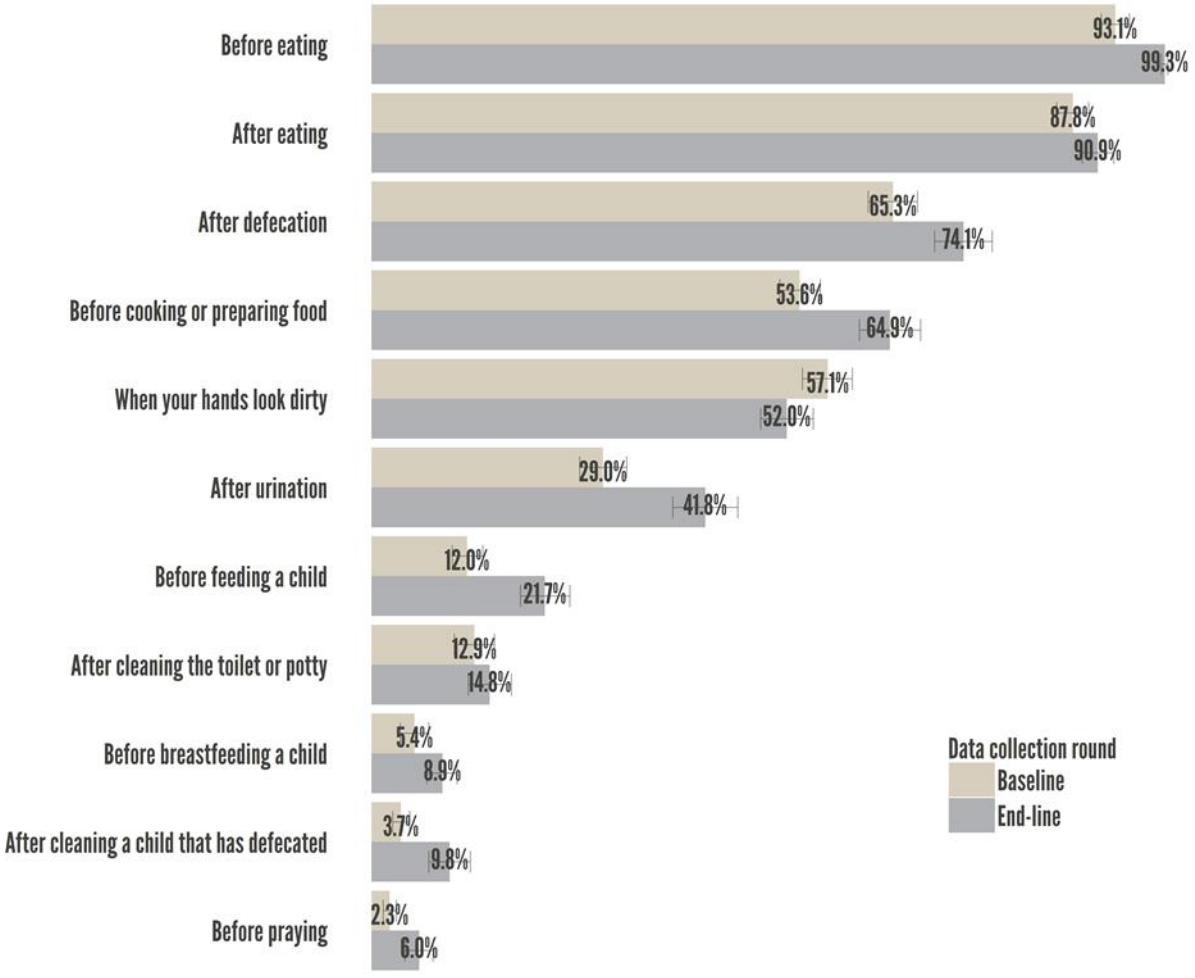
Figure 26: Respondents handwashing frequency by data collection round

	Baseline	End-line
0 - 2 times	1.4% (0.9 , 2)	1.5% (0.7 , 2.3)
3 - 4 times	29.5% (27 , 31.9)	18.4% (15.6 , 21.1)
5 - 6 times	33% (30.7 , 35.3)	35.8% (31.6 , 40)
7 times and more	36.1% (33.1 , 39)	44.3% (40.1 , 48.6)

Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 3025; valid n end-line: 1794

The proportion of respondents that reported washing their hands on different types of occasion had generally increased compared to the baseline, except for 'when hands look dirty' which had dropped from 57.1% [54; 60.2] to 52.0% [48.7; 55.3]. In addition, 0.3% of respondents reported washing their hands ONLY when their hands look dirty during the end-line compared to 2.8% during the baseline assessment. These results are encouraging since they show an increase in understanding of when it is important to wash hands.

Figure 27: Reported handwashing practices by data collection round

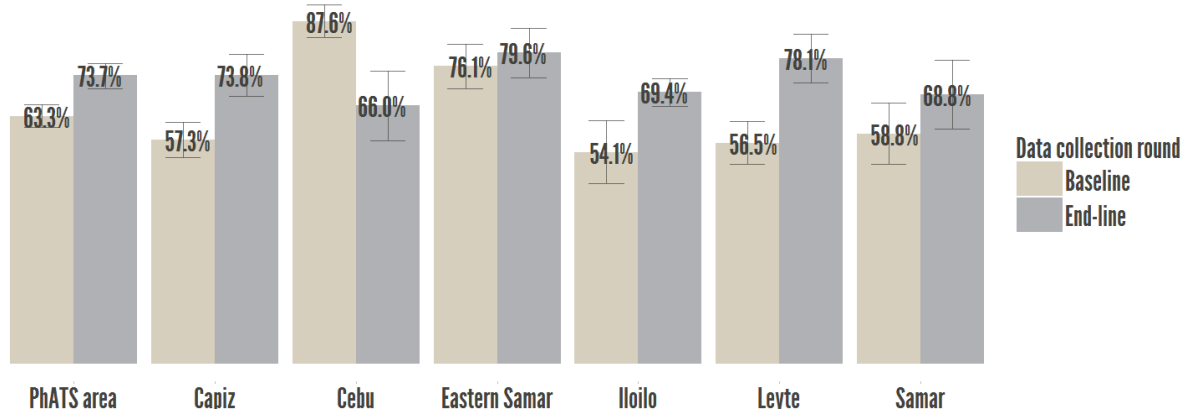


Valid n baseline: 3022; valid n end-line: 1792

Looking at the key handwashing moments, significant differences in change were seen between provinces when comparing respondents that reported washing hands both before eating and after defecating. The proportion had increased in Capiz, Iloilo and Leyte, while it had remained the same in Eastern Samar and Samar. In Cebu, it had

dropped from 87.6% [83.4; 91.8] during the baseline to 66.0% [57.1; 74.9] during the end-line (see Figure 28 below). This result is consistent with the decrease in the proportion of respondents that recalled receiving a WASH message about handwashing in Cebu, which decreased from 62.4% [53.4; 71.4] to 37.8% [25.5; 50.1]. However no link can be made between these two indicators overall, since in other provinces a reported decrease in handwashing messages was accompanied by an increase in the proportion of respondents reporting washing their hands before eating and after defecating.

Figure 28: Respondents that mentioned handwashing both before eating and after defecating by data collection round



Valid n baseline: 3022; valid n end-line: 1792

4.1.4.5 Perception of handwashing by respondents

The proportion of respondents that strongly agreed that hands should be washed before feeding children had increased from 59.4% [56.4; 62.4] to 66.6% [62.6; 70.7] by the end-line.

Figure 29: Responses to the statement "It is important to wash hands with soap before feeding children" by data collection round

	Baseline	End-line
Strongly disagree	1% (0.5, 1.4)	0.3% (-0.2, 0.8)
Disagree	3.5% (2.3, 4.6)	0.1% (0, 0.2)
Neutral	2.6% (1.5, 3.7)	0.8% (0.3, 1.2)
Agreee	33.6% (30.5, 36.7)	32.2% (28.4, 36.1)
Strongly agree	59.4% (56.4, 62.4)	66.6% (62.6, 70.7)

Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 3025; valid n end-line: 1794

Perception of handwashing habits in the wider community had also slightly changed, with the proportion that did not believe people that people washed their hands before feeding children decreasing from 5.0% during the baseline to 0.5% during the end-line (see Figure 30 below).

Figure 30: Responses to the statement "I believe most people in my community wash their hands with soap before feeding their children" by data collection round

	Baseline	End-line
Strongly disagree	0.5% (0.2 , 0.8)	0.1% (0 , 0.1)
Disagree	4.5% (3.2 , 5.8)	0.4% (0 , 0.8)
Neutral	26.5% (23.3 , 29.8)	20% (16.6 , 23.4)
Agreee	33.5% (30.6 , 36.4)	37.9% (33.6 , 42.2)
Strongly agree	35% (31.3 , 38.8)	41.6% (38.5 , 44.8)

Pearson's X2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 3024; valid n end-line: 1794

The perceived importance of washing hands after using the toilet was generally high: 74.3% [71.2; 77.4] of respondents strongly agreed that it was important. No significant difference was seen between baseline and end-line.

Figure 31: Responses to the statement "It is important to wash hands with soap after using the toilet" by data collection round

	Baseline	End-line
Strongly disagree	0.5% (0.2 , 0.8)	0.1% (0 , 0.1)
Disagree	0% (0 , 0)	0.1% (-0.1 , 0.2)
Neutral	0.1% (0 , 0.1)	0.3% (0 , 0.5)
Agreee	30.3% (27.2 , 33.5)	25.3% (22.2 , 28.4)
Strongly agree	69.1% (66 , 72.3)	74.3% (71.2 , 77.4)

Pearson's X^2: Rao & Scott adjustment, p-value=0.001; Valid n baseline: 3024; valid n end-line: 1794

Perceptions of handwashing by other people after using the toilet also remained the same during baseline and end-line with no significant difference between provinces. Almost three quarters of respondents, 74.3% [71.2; 77.4] strongly agreed that handwashing after toilet use was important.

Figure 32: Responses to the statement "I believe most people in my community wash their hands with soap after using the toilet" by data collection round

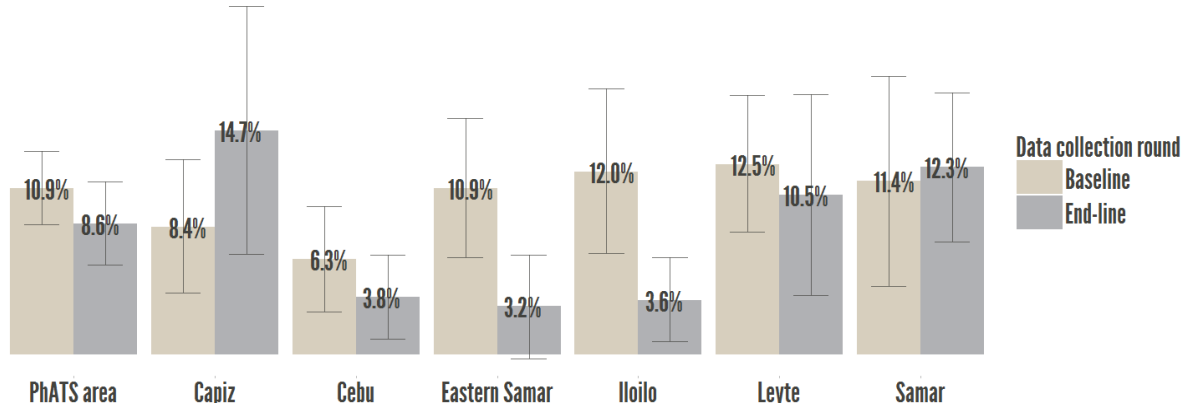
	Baseline	End-line
Strongly disagree	0.2% (0.1 , 0.4)	0.3% (-0.2 , 0.8)
Disagree	0.8% (0.5 , 1.1)	0.7% (0.1 , 1.3)
Neutral	24.8% (21.7 , 27.8)	19.8% (16.8 , 22.8)
Agreee	35.9% (33.2 , 38.6)	35.2% (31.1 , 39.3)
Strongly agree	38.3% (34.3 , 42.3)	44% (40.5 , 47.6)

Pearson's X^2: Rao & Scott adjustment, p-value=0.096; Valid n baseline: 3024; valid n end-line: 1793

4.1.4.6 Children under 5 suffering from diarrhea

The prevalence of households with children under 5 falling ill with diarrhea did not change significantly between baseline and end-line. Variation could be seen in the sample in some provinces, the proportion had dropped in both Eastern Samar and Iloilo, while it had risen in Capiz, but it was not possible to conclude that this difference was true in the population of interest since the confidence intervals for the baseline and end-line findings overlapped in all cases.

Figure 33: Households with children under 5 that were sick from diarrhea during the past 2 weeks by data collection round



Valid n baseline: 1242 ; valid n end-line: 753

When comparing households that relied on improved and unimproved water sources, there was also no significant difference detected in the prevalence of children under 5 sick from diarrhea (see Figure 34 below).

Figure 34: Households with children under 5 that was sick from diarrhea during the past 2 weeks by households accessing improved or unimproved water source for drinking water

Pearson's $X^{2:}$ Rao & Scott adjustment, p-value=0.312; Valid n end-line: 753

In the focus group discussions, participants reported using bottled water over other improved water sources to ensure that children would not suffer from diarrhea. Looking into it, there was also no significant difference detected in prevalence of children under 5 sick from diarrhea when comparing households that relied on bottled water compared to other sources (see

Figure 35 below). However, poor water quality is not the only factor that contributes to diarrhea, since contaminated food or contact with feces may also cause those symptoms.

Figure 35: Households with children under 5 that were sick from diarrhea during the past 2 weeks by households using bottled water or other water sources

Pearson's X2: Rao & Scott adjustment, p-value=0.432; Valid n end-line: 753

Although the confidence intervals overlap, the p-values of the Pearson X2 <0.05 do show a relationship between the prevalence of children sick from diarrhea and whether or not the respondent mentioned washing hands before feeding children.

Figure 36: Households with children under 5 that were sick from diarrhea during the past 2 weeks, by respondents that mentioned handwashing before feeding children or not

Pearson's X^2: Rao & Scott adjustment, p-value=0.032; Valid n end-line: 753

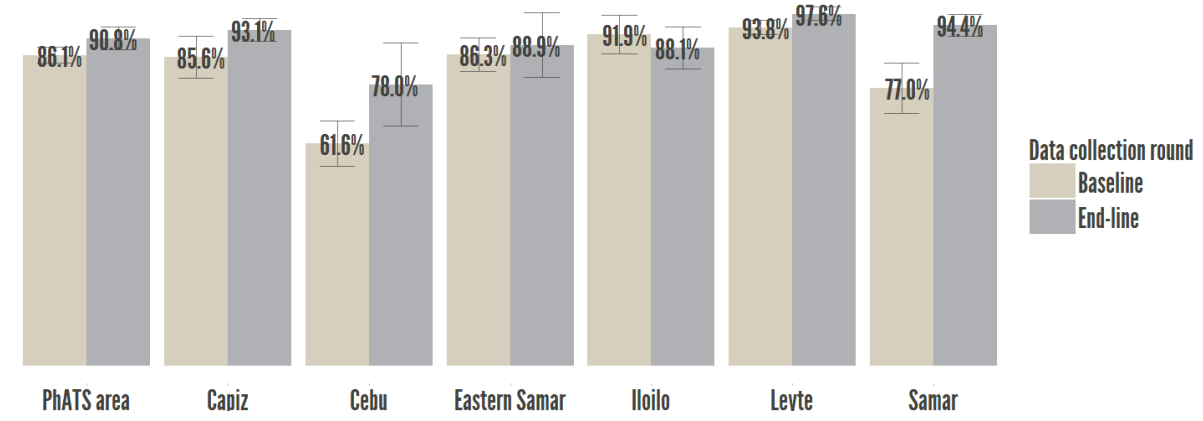
4.1.5 Sanitation

4.1.5.1 Toilet facilities

Under the PhATS guidelines, for a community to be certified ZOD, sanitation facilities are considered to be 'hygienic' if they separate human excreta from human contact and are shared by less than 20 people[16]. Using this definition, 90.8% [87.6; 93.9] of households in Haiyan PhATS program areas were found to have be using a hygienic sanitation facility[17].

No difference was found for this indicator between baseline and end-line for the Haiyan PhATS program areas (though there was a significant increase in use of hygienic toilets in Samar Province, see Figure 37). Although this finding was unexpected, it is important to note that a rapid assessment in early 2014 estimated sanitation access in the Haiyan-affected areas to be at around 60%. These findings may therefore provide an indication of the positive impact of the WASH cluster emergency response strategy, which included distributing latrine construction kits to communities and encouraging them to build shared / communal toilets to eliminate open defecation. This strategy was implemented from early 2014 onwards and was merged into the subsequent PhATS program, so could have already brought about increased toilet use by the time of the Haiyan PhATS baseline survey in late 2014.

Figure 37: Households using a hygiene sanitation facility, by data collection round



Valid n baseline: 2846; valid n end-line: 1741

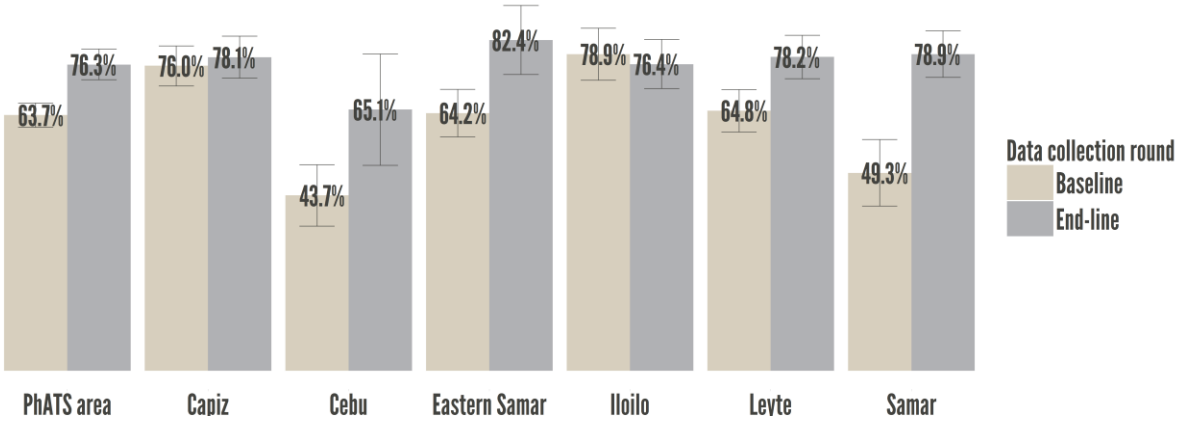
The use of shared facilities can be problematic, as shared facilities (particularly when shared by more than 20 people) are less likely to be kept clean and may not be regarded as sufficiently private. These issues can discourage the use of the facilities and may lead to open defecation. Lack of toilet cleanliness is the second most commonly reported reason for open defecation (see Figure 46).

However, the assessment found that there was a significant increase in the proportion of households that used an improved non-shared sanitation facility, up from 63.7% [60.6; 66.7] during the baseline to 76.3% [72.5; 80.2] during the end-line.

[16] PhATS framework, UNICEF.

[17] This includes: Flush to sewer system, Flush to septic tank, Flush to pit latrine, VIP latrine, Pit latrine with slab, and Composting toilet.

Figure 38: Households that usually use an improved (non-shared) toilet facility by data collection round



Valid n baseline: 3020; valid n end-line: 1783

Looking at the toilet facility type, there was an increase in households using flush or pour toilets to a septic tank and a decrease in the proportion using flush or pour flush to pit latrine (see Figure 39 below). Overall, no significant difference was found in the proportion of households reporting no access to any toilet facility between baseline and end-line.

Figure 39: Type of toilet facility usually used by household by data collection round

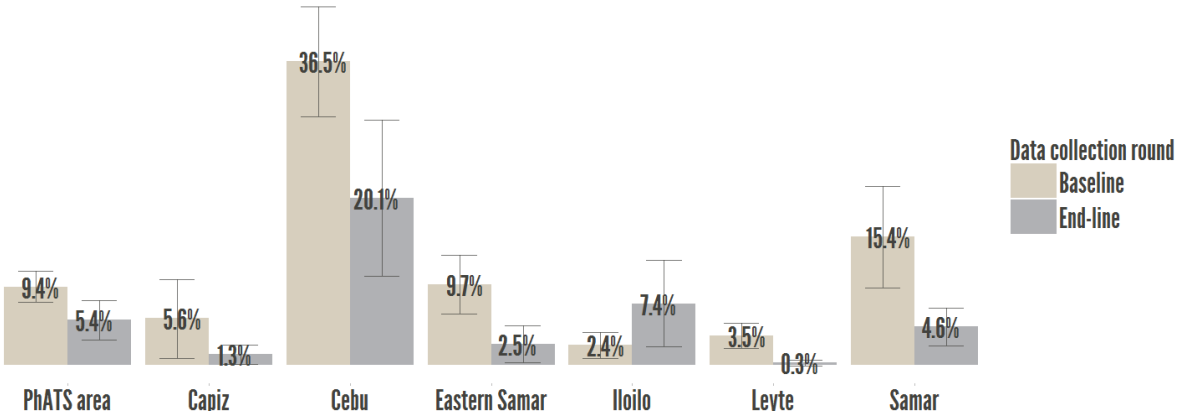
		Baseline	End-line
Improved sanitation	Flush or pour flush to septic tank	62.6% (59 , 66.3)	76.1% (71.9 , 80.3)
	Flush or pour flush to pit latrine	17.2% (14.8 , 19.5)	10.8% (8.8 , 12.8)
	Ventilated Improved Pit (VIP) Latrine	2.4% (1.6 , 3.1)	1.7% (1 , 2.4)
	Composting toilet	0.5% (-0.2 , 1.2)	0.3% (0 , 0.5)
	Pit latrine with slab	4.5% (3.4 , 5.6)	2.2% (1.3 , 3.1)
Unimproved sanitation	Pit latrine without slab or open pit	2% (1.2 , 2.8)	1.1% (0.4 , 1.7)
	Hanging toilet or hanging latrine	0.6% (0.2 , 1.1)	1.4% (-0.1 , 3)
	Bucket (excreta collected from floor in bucket)	0.1% (0 , 0.3)	0.2% (-0.1 , 0.4)
	Flush or pour flush to elsewhere	0.6% (0.3 , 1)	0.8% (0.1 , 1.5)
	No facilities bush or field or river or open	9.4% (7.3 , 11.5)	5.4% (2.8 , 8.1)

Pearson's X^2: Rao & Scott adjustment, p-value=0.000; Valid n baseline: 2985; valid n end-line: 1785

However, significant differences between the proportions of households reporting no toilet access could be detected in some provinces. During the baseline, Cebu had the highest proportion of households without access to latrines (36.5% [29.9; 43.0]), which dropped to 20.1% [10.7; 29.4] in this assessment. The same trend was found in Samar with a decrease from 15.4% [9.2; 21.5] to 4.6% [2.3; 6.9], to a lesser degree in Eastern Samar where the proportion without access to a toilet facility dropped from 9.7% [6.2; 13.2] to 2.5% [0.3; 4.8] and in Leyte where it dropped from 3.5% [2.0; 5.0] to 0.3% [0.0; 0.6] (see Figure 40). The statistically significant decrease in four of the six provinces, can be seen as a positive outcome of the Haiyan PhATS program in the area where UNICEF partners have been promoting the use and the construction of latrines.

In contrast to other assessed provinces, the proportion of households in Iloilo reporting not to use sanitation facilities appeared to increase between the baseline and end-line assessments. However, this increase falls within the margin of error and is therefore not statistically significant.

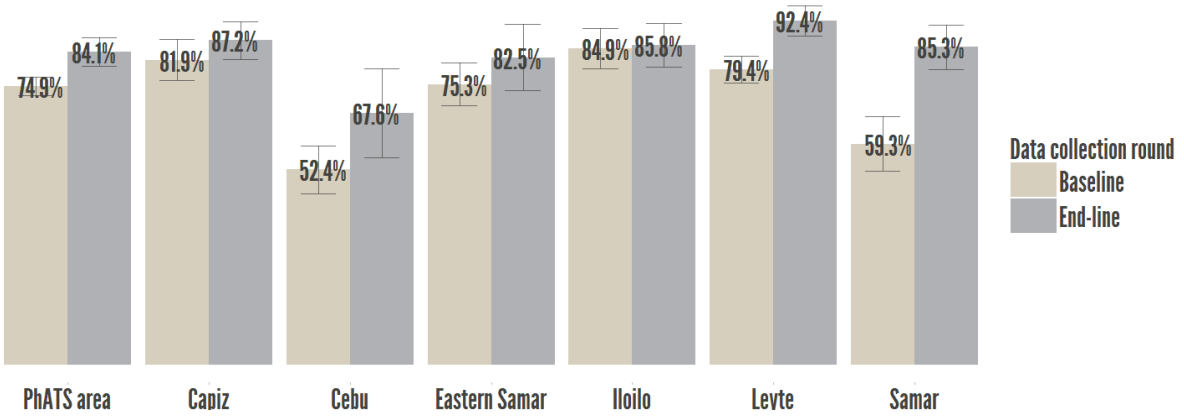
Figure 40: Households not using sanitation facilities, by data collection round



Valid n baseline: 2985; valid n end-line: 1785

In addition, it is important to note that this data shows the self-reported usual use of toilets, which means that even if households have a toilet facility, some factors could prevent them from using it. For example, a full septic tank and a lack of money to desludge would make latrines unusable, which might lead people to practice open defecation again.

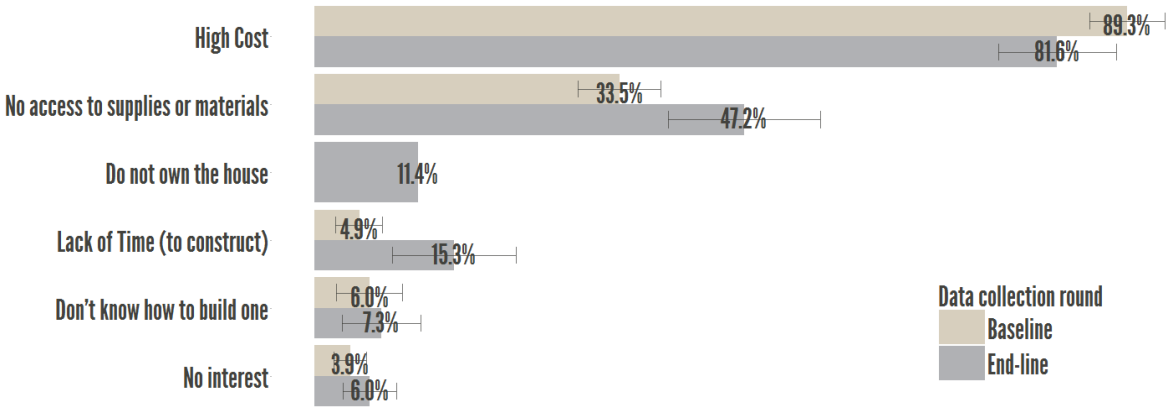
Figure 41: Households that use and own an improved sanitation facility, by data collection round



Valid n baseline: 3017; valid n end-line: 1793

There was an increase in households that own an improved toilet facility between baseline and end-line from 74.9% [72.4; 77.4] to 84.1% [80.3; 87.8], with a significant increase also in Samar and Leyte. This finding is important since a relation was identified between households owning an improved sanitation facility and a lower rate of households practicing open defecation (see Figure 48 later in report).

Figure 42: Main barriers for household toilet ownership among households not owning a toilet, by data collection round

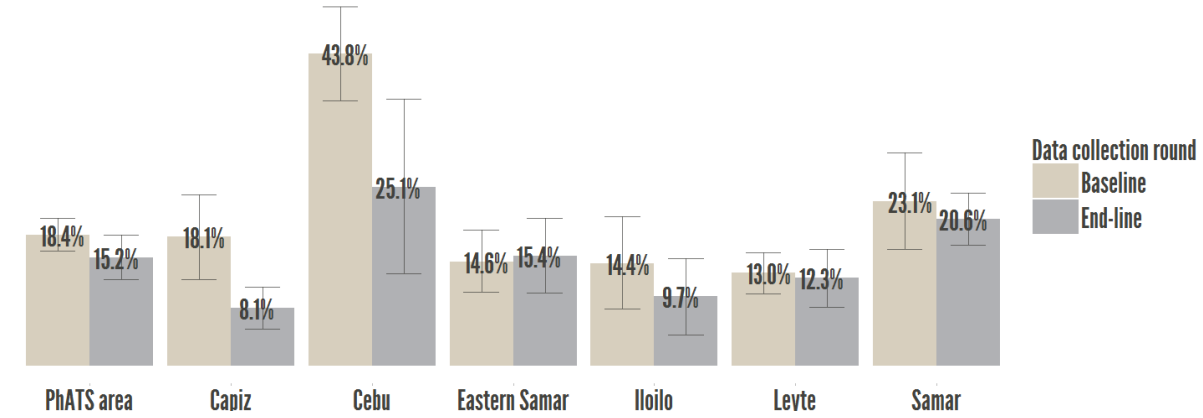


Valid n baseline: 712; valid n end-line: 289

The main barrier to own a toilet facility for households that do not have their own toilets is the high cost of toilet construction, which was mentioned by 81.6% [75.2; 88.1] of the households not having their own toilets. 47.2% [38.8; 55.6] of households reported that the access to materials was one of the main barriers, which was significantly higher than the proportion during the baseline (33.5% [28.9; 38]). Compared to baseline there was also an increase in the proportion of households that reported lack of time as one of the main reasons. Interestingly, 11.4% of households reported that not owning the house was a key barrier to building a toilet facility, which could be related to the reluctance of landlords to see "permanent" structures built on their land, or of tenants to build structures that would be difficult to move if needed. It is important to note that since this option ("do not own the house") was not asked during the baseline, it is in consequence not possible to measure change between baseline and end-line.

4.1.5.2 Open defecation

Figure 43: Households practicing open defecation,[18] by data collection round and by province

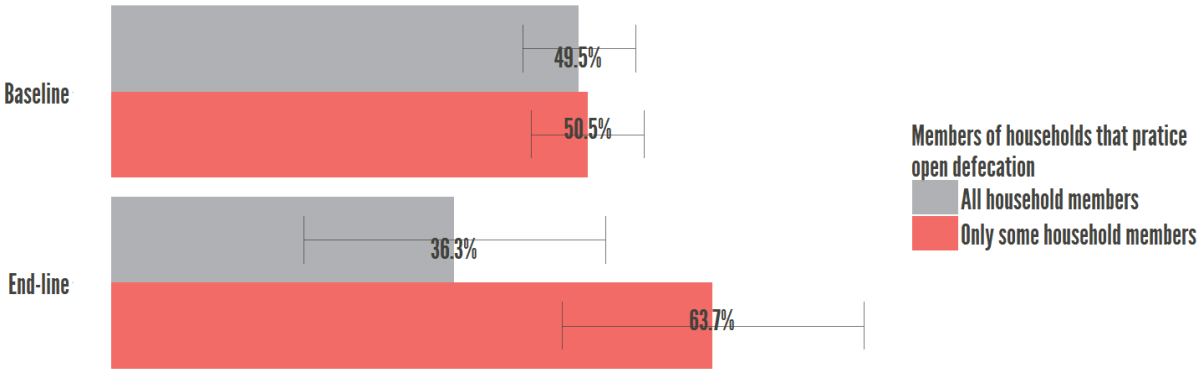


Valid n baseline: 3000; valid n end-line: 1788

When asked how often a member of their household defecates in the open, no significant differences could be detected in the proportion of households practicing open defecation between baseline and end-line.

Overall, 15.2% [11.7; 18.7] of households still had at least one member who practices open defecation at least sometimes. If we consider the unsafe disposal of stool of children under 3, the proportion of households reaches 17.2% [13.7; 20.8].

Figure 44: Members of households that practice open defecation by data collection round



Pearson's X^2: Rao & Scott adjustment, p-value=0.144; Valid n baseline: 547; valid n end-line: 244

There was no significant difference between baseline and end-line when comparing household members that practice open defecation. However, as seen in Figure 44 above, differences in proportions could be observed in the sample but could not be generalized to the population overall as confidence intervals overlap. This is due to

[18] Open defecation is determined based on: 1) households that report not having access to toilet 2) Households where at least one-member practices open defecation.

the relatively small number of households that reported practicing open defecation and thus the small sample size available when exploring this disaggregation.

Compared to the baseline, there was a decrease in proportion of households practicing open defecation in Cebu and Capiz.

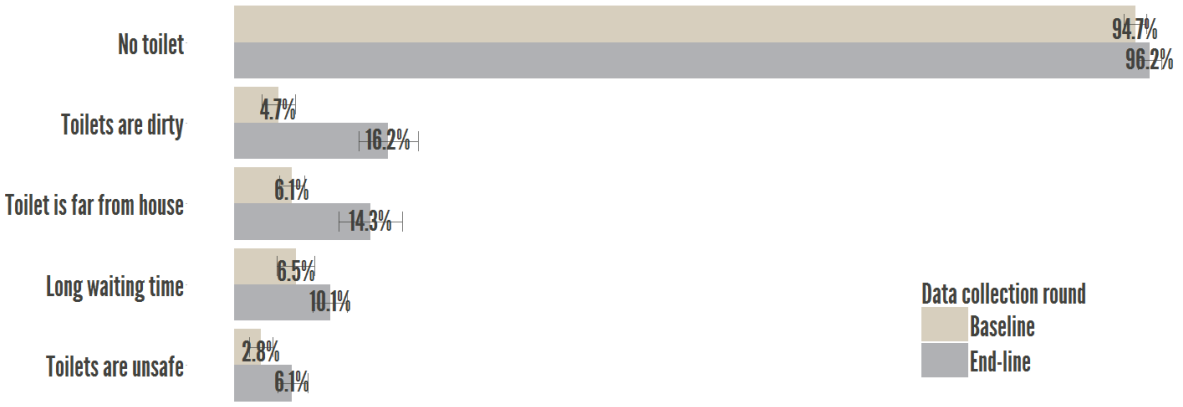
Based on the confidence intervals, no significant difference could be detected in the proportion of households practicing open defecation when comparing Zero Open Defection (ZOD) certified areas with uncertified areas, however the significant Pearson X^2 test shows that there is a relationship between open defecation and whether or not an area has ZOD certification (see Figure 45 below). This finding suggest that even if open defecation is still happening in ZOD certified communities, the prevalence of this practice is significantly different.

Figure 45: Households practicing open defecation by households living in ZOD certified barangays

Pearson's X^2: Rao & Scott adjustment, p-value=0.012; Valid n end-line: 1788

The main reason for open defecation reported by all respondents (whether practicing or not open defecation) was the lack of toilet availability, mentioned by 96.2% [95.0; 97.4], a proportion which had not changed significantly since the baseline. Other reasons, which were more commonly reported during the end-line, can be seen to be related to sharing of toilet facilities. This included 16.2% [13.1; 19.4] of respondents that reported toilets being dirty, an increase from 4.7% [2.9; 6.4] during the baseline, followed by 14.3% [10.9; 17.6] reporting that toilets are far from the house, compared to 6.1% [4.7; 7.4] during the baseline and 10.1% [8.2; 11.9] that said the waiting time for the toilet was too long. Lack of safety was also raised by 6.1% [4.5; 7.7] of respondents, up from 2.8% [1.6; 4.0] during the baseline.

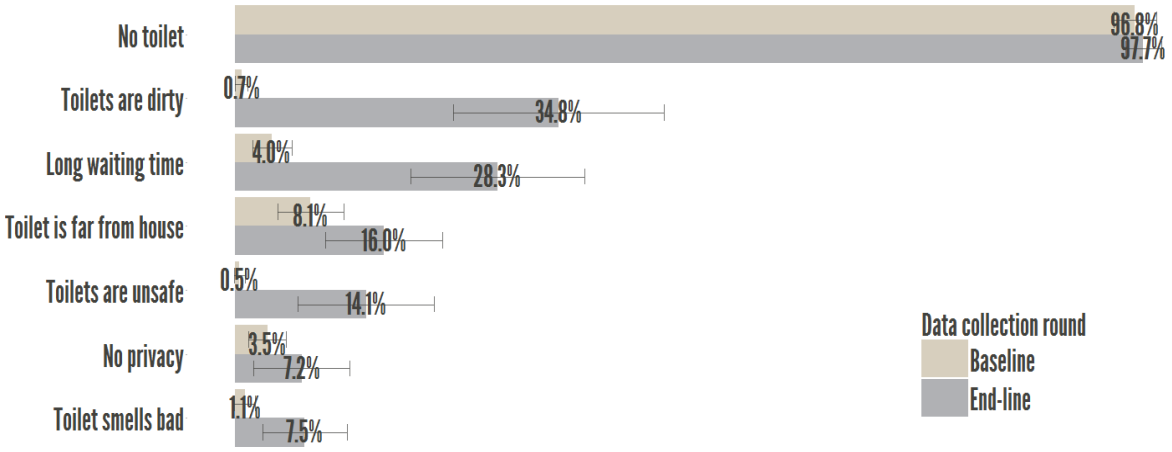
Figure 46: Main reason perceived for open defecation in the community by data collection round



Valid n baseline: 3025; valid n end-line: 1794

The reasons given by households practising OD were broadly similar to those given by households overall. However, among households praticing OD, report of dirtiness of toilets as reason for open defecation was significantly higher than for the overall population 34.8% [23.5; 46.1], as was the prevalence of households reporting long waiting times 28.3% [18.9; 37.6] (see Figure 47).

Figure 47: Main reported reason for open defecation in the community, by households that practice open defecation

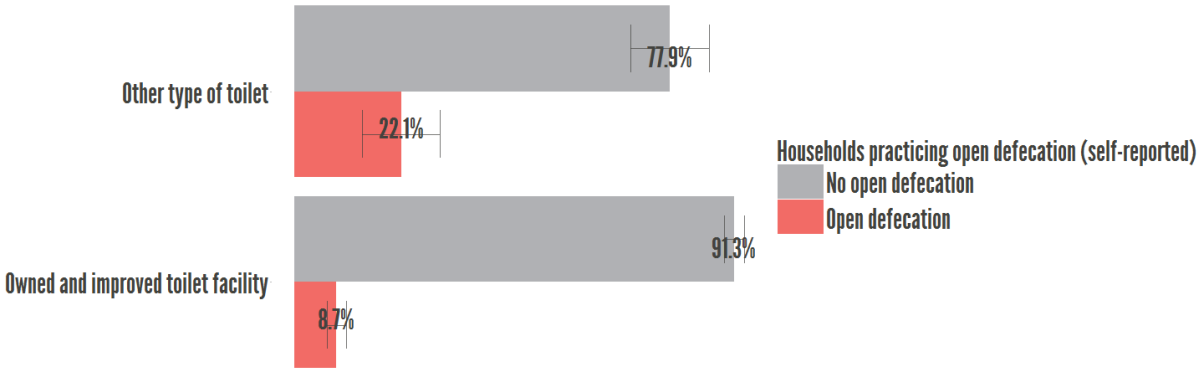


Valid n baseline: 604; valid n end-line: 276

In parallel to the household interviews, focus group discussions were conducted in order to understand why there was seemingly no change in the proportion of households are still practicing open defecation in the Haiyan PhATS program areas. In the FGDs, the main reasons reported for open defecation were: 1) No toilet at home; 2) It is acceptable to have children defecating in the open; 3) No toilet at work; 4) Lack of water availability to flush toilets.

The availability of toilets was the main reason reported by households and in communities for open defecation. Indeed, a significant difference was found in the proportion of households reporting practicing open defecation depending on whether they own an improved toilet facility or not: only 8.7% [6.7; 10.8] of households that own an improved toilet facility practiced open defecation while 22.1% [14.0; 30.2] of households with other toilet facilities were practicing open defecation (see Figure 48 below). This finding confirms communities' perceptions of reasons for open defecation.

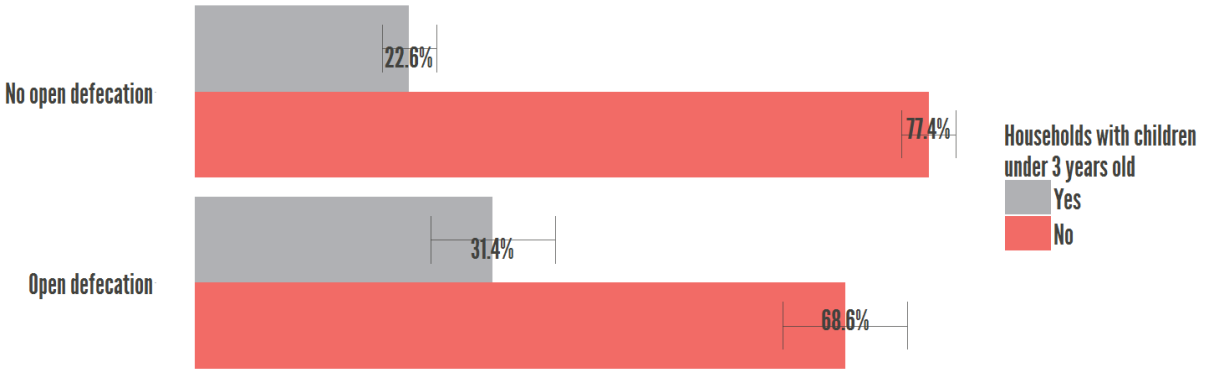
Figure 48: Households practicing open defecation (self-reported) by ownership of an improved toilet facility (households reporting not using any facilities are excluded).



Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n end-line: 1655

The second reason for open defecation mentioned in focus group discussions was the acceptability of open defecation by children. A significant difference in the proportion of households practicing open defecation can be found in the household survey depending on whether they have at least one child under 3 (see Figure 49 below).

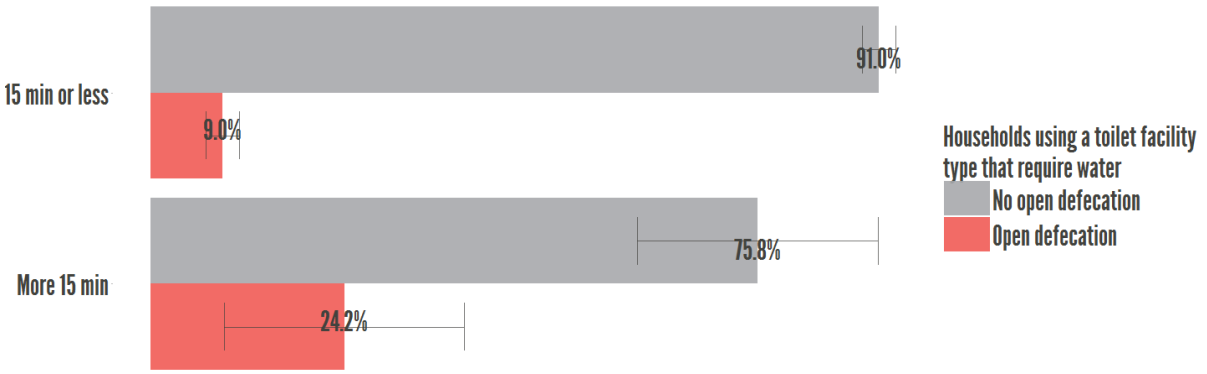
Figure 49: Households with at least a child under 3 years old by households practicing open defecation



Pearson's X^2: Rao & Scott adjustment, p-value=0.009; Valid n end-line: 1788

In the focus group discussions, some participants mentioned that availability of water was a reason for some people to practice open defecation, as "people are too lazy to fetch water". A significant difference was found in the proportion of households that were practicing open defecation depending on the water collection time (see Figure 50 below).

Figure 50: Among households that use a toilet facility that require water (flush toilets), households practicing open defecation by water collection time



Pearson's X^2: Rao & Scott adjustment, p-value=0.010; Valid n end-line: 1301

While this difference is consistent in both household questionnaires and focus group discussions, it is however important to keep in mind that this result might be the consequence of other factors influencing both outcomes, for example a household living in the outskirts of a community might be far from the water point and also less subject to peer pressure related to open defecation practices.

Figure 51: Most people in my community believe that defecating in the open is acceptable / I believe that defecating in the open is acceptable, by water collection time.

OD acceptable in household: t = 2.932, df = 507, p-value = 0.003; OD acceptable in community t = 3.7399, df = 507, p-value = 0.000;

This hypothesis is supported by Figure 51 above. The figure shows the average from Likert scale measurement converted to scores from strongly agree = 5 to strongly disagree = 1. The higher the score the more open defecation is acceptable in the household or in the community.

There are significant differences between the average normative expectations of respondents toward open defecation depending on the distance of the water point. Respondents that take 15 minutes or more to reach the water point found open defecation more acceptable than respondents that take less than 15 minutes to collect water.

Figure 52: Most people in my community believe that defecating in the open is acceptable / I believe that defecating in the open is acceptable

Average from Likert scale measurement (strongly agree = 5 to strongly disagree = 1); OD acceptable in household; t = -1.0769, df = 507, p-value = 0.282 / OD acceptable in community; t = -2.3426, df = 507, p-value = 0.020

When asked if open defecation is acceptable in their household, there was no difference in acceptance of open defecation between baseline and end-line. However, a significant difference was found between the baseline and end-line in the proportion perceiving that other households in the community found open defecation acceptable.

Similarly, the perceived rate of open defecation in communities decreased since the baseline. There was a significant increase in the proportion of respondents that believed that no one in their community practiced open defecation, from 9.7% during the baseline to 27.7% during the end-line (see Figure 53 below).

Figure 53: Perceived rate of open defecation in the community, by data collection round

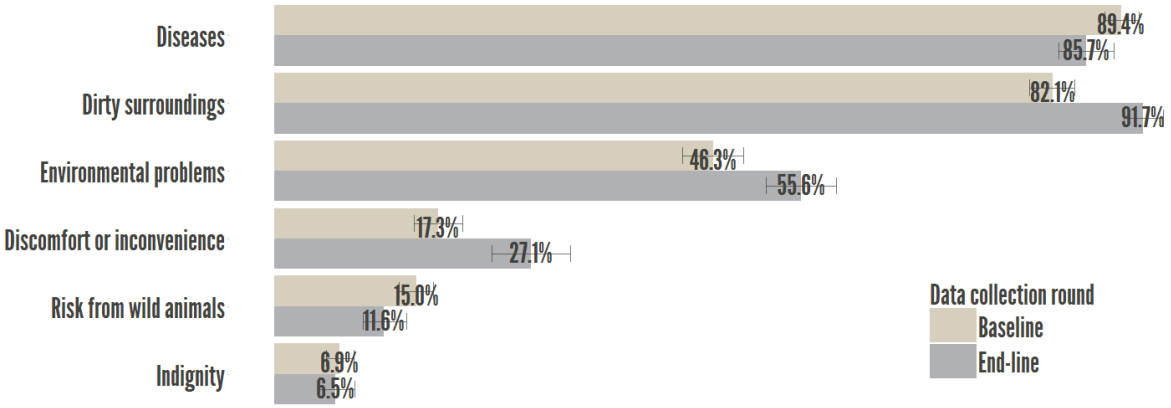
	Baseline	End-line
0%	9.7% (7.6, 11.9)	27.2% (22.7, 31.6)
1- 20%	55.5% (52, 59.1)	47.6% (43.1, 52)
21-40%	15.8% (13.6, 18)	9.1% (6.6, 11.6)
41-60%	10.2% (8.6, 11.8)	6.7% (4.7, 8.8)
61-80%	7.5% (5, 10.1)	6.7% (4.5, 8.9)
81-100%	1.2% (0.6, 1.9)	2.7% (0.5, 4.9)

Pearson's X^2: Rao & Scott adjustment, p-value=0.000; Valid n baseline: 2862; valid n end-line: 1682

4.1.5.3 Perceived risks and problems of open defecation

When asked what they saw as the risks and problems of open defecation, 85.7% [82.8; 88.6] of all respondents mentioned disease indicating a widespread understanding of the link between open defecation and disease. There is no significant difference between baseline and end-line. The most commonly mentioned risk/problem of open defecation was dirty surroundings, including concerns about visual pollution, bad smells, attracting flies, and the risk of stepping in feces. Compared to the baseline, there is an increase of respondents identifying dirty surroundings as a problem of open defecation, from 82.1% [79.6; 84.5] during the baseline to 91.7% [89.6; 93.8] during the end-line. Similarly, there is an increase in the proportions of respondents mentioning environmental problems and discomfort / inconvenience since the baseline assessment. These increases in understanding of the risks of open defecation could be linked with the triggering process and ongoing hygiene promotion activities implemented by NGOs and LGUs during the Haiyan PhATS program.

Figure 54: Households' perceptions of the risks of open defecation, by data collection round

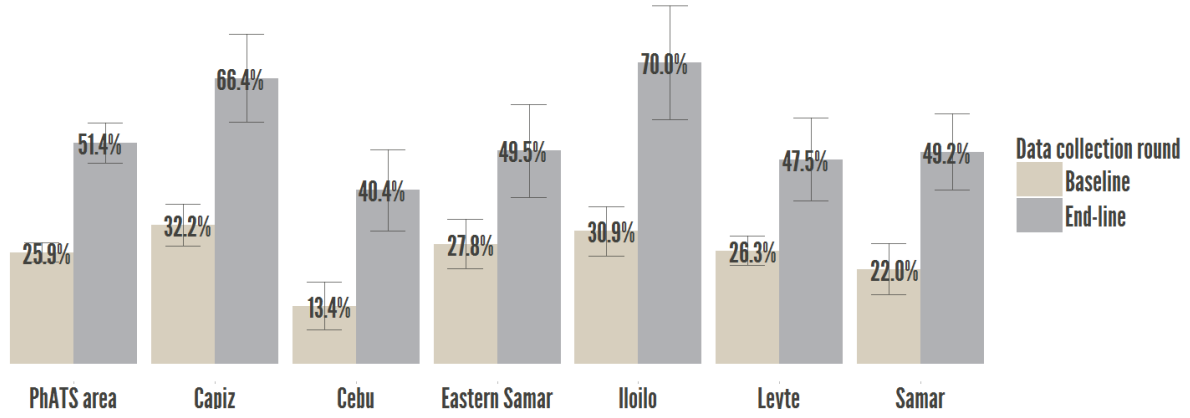


Valid n baseline: 3025; valid n end-line: 1794

4.1.5.4 ZOD program

A significant increase in the proportion of respondents that received information about a ZOD program was found, with the proportion receiving information doubling from 25.9% [23.8; 28.1] during the baseline to 51.4% [46.6; 56.1] during the end-line. Significant increases were seen in each of the provinces (see Figure 55 below).

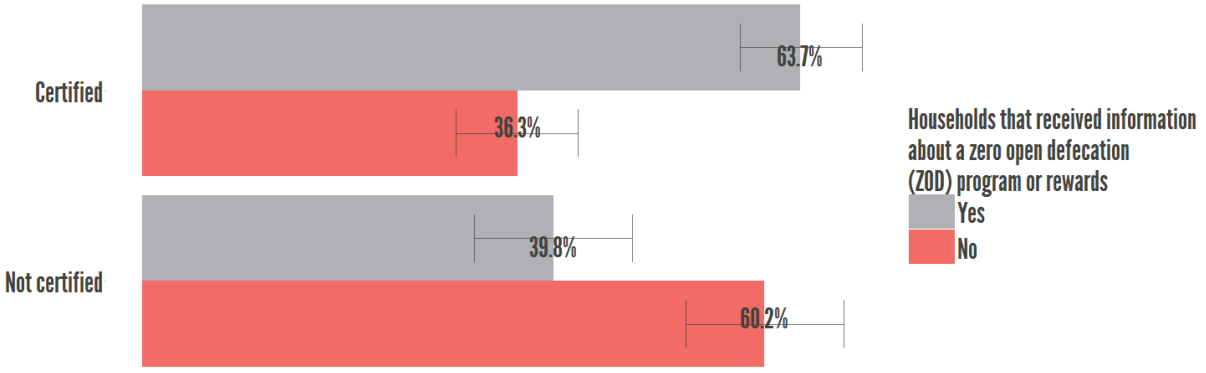
Figure 55: Households that received information about a zero open defecation (ZOD) program or rewards by data collection round



Valid n baseline: 3025; valid n end-line: 1794

This result indeed goes along with the increase of ZOD certified barangays in the Haiyan PhATS program areas. Although no statistical relation was been found between the proportion of households practicing open defecation and the awareness of the ZOD program; factors such as awareness of households, recognition at community level and competition between barangays to achieve recognition are known to contribute to achieving changes in social behavior.

Figure 56: Households that received information about a zero open defecation (ZOD) program or rewards by households living in ZOD certified barangays



Pearson's $X^{2:}$ Rao & Scott adjustment, p-value=0.000; Valid n end-line: 1794

4.1.5.5 Disposal of children's stools

No significant change could be detected for practices relating to disposal of child stools between the baseline and the end-line. During the end-line, 38.2% [30.3; 46.1] of households reported throwing the stool directly into the garbage[19], the most commonly stated mode of disposal, followed by 20.2% [15.4; 25] where children were reported to be using the toilet and 16.8% [12.1; 21.5] that reported burying the stools (see Figure 57 below). Overall, only 46.1% [38.3; 53.9] of households were reporting using a sanitary disposal of the children stools, while 53.9% [46.1; 61.7] were using unsanitary disposal.

[19] Throwing disposable diapers into the garbage is currently classified as 'unsanitary disposal' by the JMC as most developing countries do not have adequate solid waste collection and management systems in place. However, no alternative method of disposing of disposable diapers has been identified as a solution by the JMC.

Figure 57: Stool disposal practices of children under 3 by data collection round

		Baseline	End-line
Sanitary disposal	Child used toilet	22.1% (18.3 , 25.9)	20.2% (15.4 , 25)
	Put or rinsed into toilet	8.1% (5.7 , 10.5)	9% (3.7 , 14.3)
	Buried	17.1% (13.5 , 20.6)	16.8% (12.1 , 21.5)
Unsanitary disposal	Put or rinsed into drain or ditch	4.8% (2.8 , 6.7)	4.7% (2.3 , 7.1)
	Thrown into garbage	37.7% (31.8 , 43.6)	38.2% (30.3 , 46.1)
	Diaper left on ground	7.3% (5.1 , 9.5)	7.5% (4.5 , 10.6)
	Not disposed or left on the ground	2.9% (1.4 , 4.3)	3.3% (-0.3 , 6.9)

Pearson's X^2: Rao & Scott adjustment, p-value=0.999; Valid n baseline: 848; valid n end-line: 445

This finding is unexpected given that safe disposal of children's feces is a criteria for community ZOD certification, and highlights the need for PhATS to further emphasize the risks of unsafe child feces disposal during triggering and other communication for development activities.

4.2 WASH in Schools (WinS)

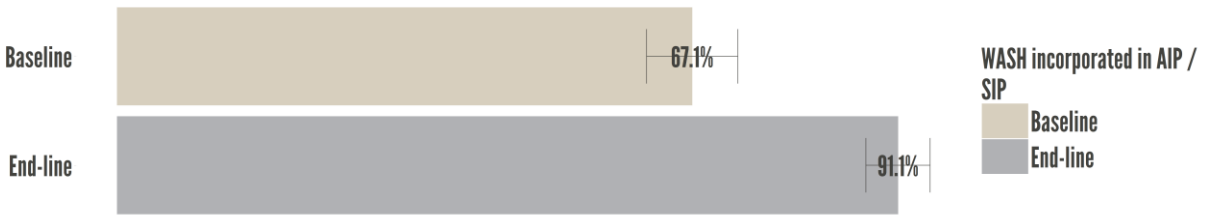
This section outlines the main assessment findings on WASH governance in schools, group hygiene practices, handwashing facilities, water supply and sanitation. It is based on direct observation and interviews with key informants (school principals or head teachers) in 180 schools across Haiyan PhATS program areas, as well as student focus group discussions in 8 selected schools.

4.2.1 WASH Governance

Good governance is a critical component of sustainable progress in WASH. This sub-section covers elements of WASH governance in schools, including the incorporation of WASH in school level planning, the allocation and availability of funds for WASH, the existence of committees promoting and overseeing WASH, and the frequency and type of WASH activities led by schools and the Department of Education (DepEd).

91.1% [87.3; 94.8] of schools reported that WASH was currently incorporated into their Annual Investment Plan (AIP) or School Improvement Plan (SIP). This is an increase since the baseline where 67.1% [61.8; 72.4] of schools had incorporated SIP and AIP (see Figure 58 below).

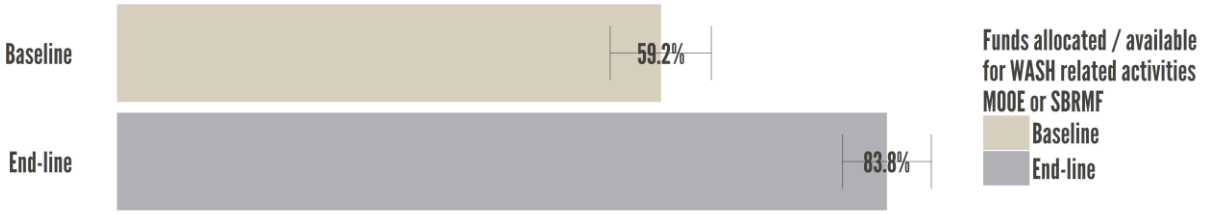
Figure 58: WASH currently incorporated in the Annual Investment Plan (AIP) / School Improvement Plan (SIP) by data collection round



Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 240; valid n end-line: 179

In addition, 83.8% [79; 88.6] of the schools in Haiyan PhATS program areas reported having funds allocated or available for WASH in the Maintenance and Other Operation Expenses (MOOE) or the School Building Repair and Maintenance Fund (SBRMF), as illustrated in Figure 59 below. That is an increase compared to the baseline where 59.2% [53.7; 64.7] of the schools had specific WASH funds.

Figure 59: Funds allocated/available for water, sanitation and hygiene related activities in the Maintenance and Other Operations Expenses (MOOE) or School Building Repair and Maintenance Fund (SBRMF) by data collection round



Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 245; valid n end-line: 179

78.3% [72.9; 83.7] of schools in Haiyan PhATS program areas reported having a student club or committee promoting water, sanitation and hygiene awareness (see Figure 60 below). This was generally the Student Body Organization (SBO), rather than a separate club or committee established specifically for WASH promotion. That is an increase compared to the baseline where there was a club promoting WASH in only 23.7% [18.9; 28.4] of schools.

Figure 60: Presence of student club or committee promoting WASH by data collection round

Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 245; valid n end-line: 180

A similar proportion, 68.3% [62.2; 74.4], of schools reported having an active non-student committee overseeing water, sanitation and hygiene at the school (see Figure 61 below).

Figure 61: Other sort of active committee at the school that oversees WASH activities by data collection round

Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 245; valid n end-line: 180

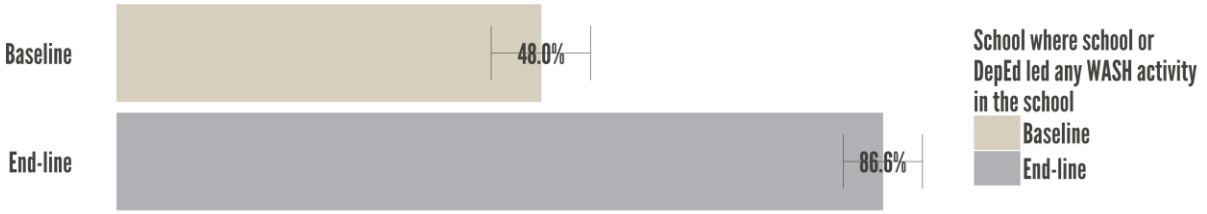
This role was usually performed by the General Parent Teachers Association (GPTA). These findings indicate that a majority of schools in Haiyan PhATS program areas currently have committees actively involved in promoting or overseeing WASH in schools.

The findings in this section show a net increase between the baseline and end-line in the proportion of schools having structures in place to improve and maintain water and sanitation in schools.

4.2.2 WASH activities in schools

In 86.6% [82.1; 91.1] of schools in Haiyan PhATS program areas, the school or the DepEd had led at least one WASH activity in the school in the last six months (see Figure 62 below). This indicates a strong increase of leadership on WASH on the part of individual schools and the DepEd since the baseline.

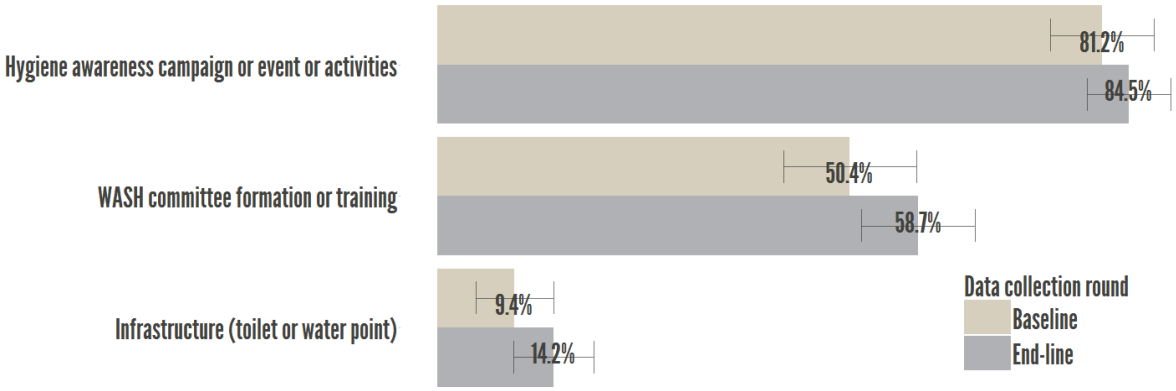
Figure 62: Schools where school or DepEd led any water, sanitation or hygiene activity in the school in the last 6 months by data collection round



Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 244; valid n end-line: 179

The most common type of WASH activity led by schools or the DepEd was hygiene awareness (in 84.5% [79.4; 89.6] of schools where activities where conducted). The next most common WASH activity led by schools or the DepEd was WASH committee formation (58.7% [51.8; 65.7]). Infrastructure projects were the least common, reported by 14.2% [9.3; 19.1] of schools who led a WASH activity in the last six months.

Figure 63: Reported theme of WASH campaign by data collection round

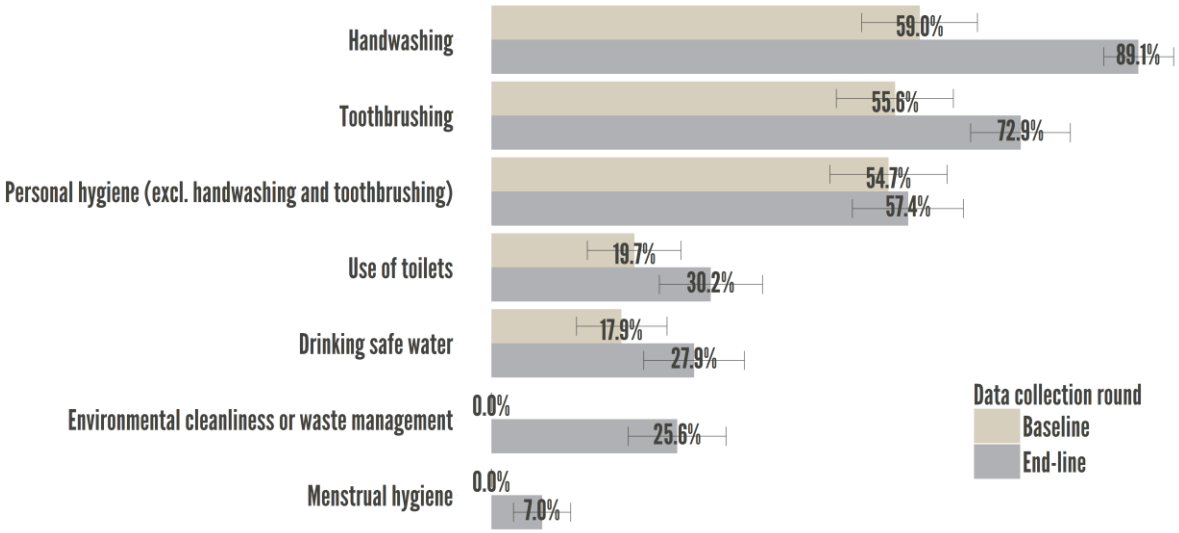


Valid n baseline: 117; valid n end-line: 129

The most common themes of hygiene awareness campaigns in the last six months were handwashing, tooth brushing and personal hygiene (see Figure 64 below) in respectively 89.1% [84.3; 94], 72.9% [66; 79.7] and 57.4% [49.7;65] of schools that receive WASH campaign. These messages are in line with DepEd's Essential Health Care Program[20] (EHCP). Campaigns on drinking safe water and use of toilets were far less commonly reported, in 27.9% [21; 34.8] and 30.2% [23.1; 37.3] of schools respectively. Compared to the baseline, awareness campaigns about environmental cleanliness and waste management have appeared in 25.6% [18.8; 32.3] of schools, and menstrual hygiene in 7.0% [3.0; 10.9].

[20] Flagship DepED program to improve health and hygiene in school children

Figure 64: Theme of WASH campaign by data collection round



Valid n baseline: 117; valid n end-line: 129

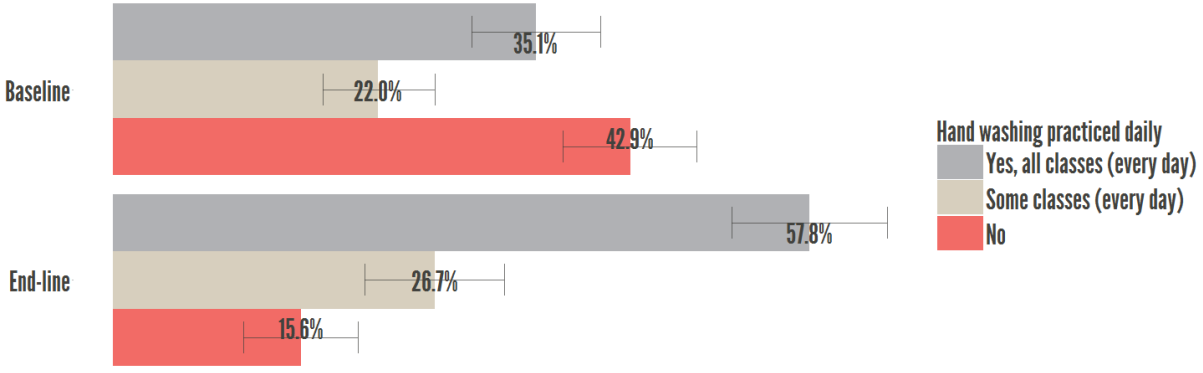
4.2.3 Group Hygiene Activities

Group handwashing with soap and group tooth-brushing reinforce positive hygiene habits for students with skills-based learning.

4.2.3.1 Daily group handwashing with soap

In 57.8% [51.3; 64.2] of schools in Haiyan PhATS program areas, all classes are practicing daily group handwashing with soap, with a further 26.7% [20.9; 32.5] of schools practicing this in some classes only. Compared to the baseline where 42.9% [37.3; 48.4] of schools were not practicing daily group handwashing with soap at all (see Figure 65 below) during the end-line only 15.6% [10.8; 20.3] of schools are not conducting this activity daily.

Figure 65: Reported practice of daily handwashing practice in school by data collection round

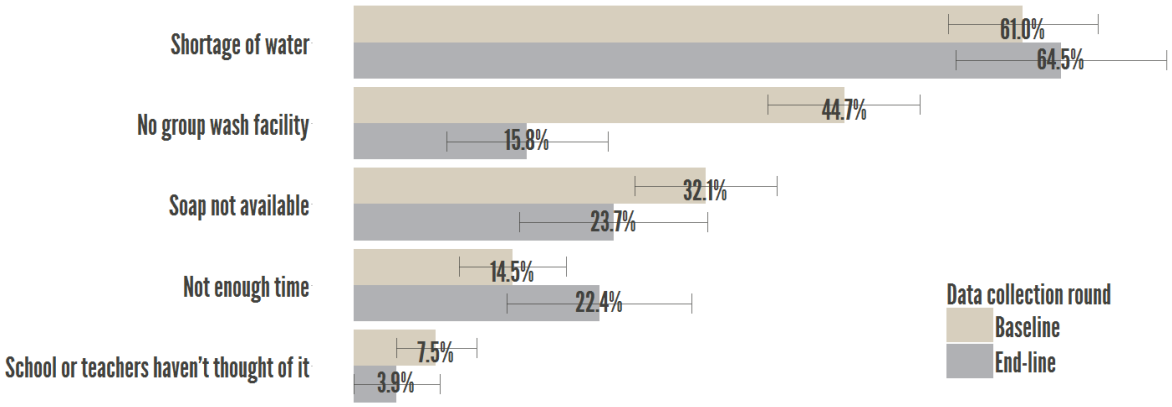


Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 245; valid n end-line: 180

Where daily group handwashing with soap was not practiced in all classes, key informants were asked about the barriers to practicing daily group handwashing. The top four most frequently reported challenges were water shortages (64.5% [54.8; 74.1]), not having soap available (23.7% [15.1; 32.2]), not having a functioning group WASH facility (15.8% [8.4; 23.1]) and not having enough time during the day (22.4% [14;3 0.8]).

A significant decrease of key informants reporting the lack of handwashing facility as a barrier for handwashing (in school that does not practice handwashing daily in all classes) was found, from 44.7% [37.7; 51.6] during the baseline to 15.8% [8.4; 23.1] during the end-line. These findings indicate that the barriers to practicing group handwashing in schools continue to be largely resource-based, despite the progress made in addressing the barrier of no group handwashing facility (see Figure 66 below).

Figure 66: Barriers to practice group handwashing with soap daily by data collection round

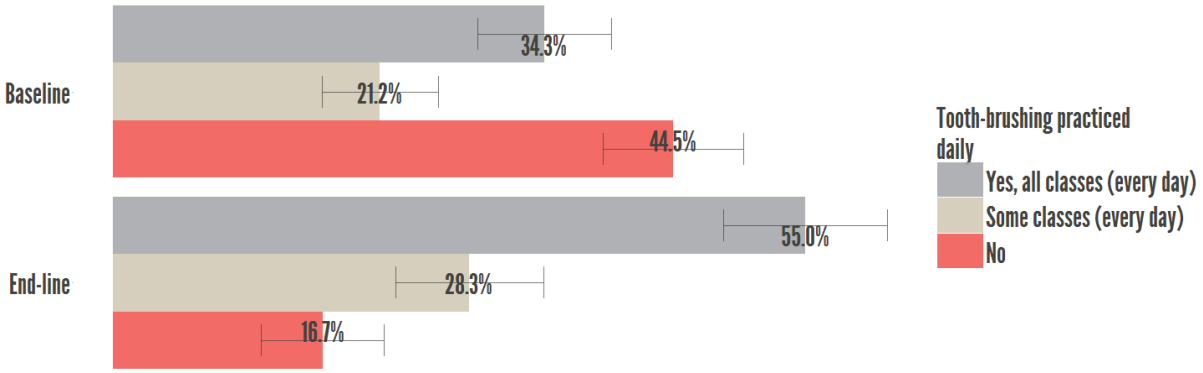


Valid n baseline: 159; valid n end-line: 76

4.2.3.2 Daily Group Tooth-brushing

55.0% [48.5; 61.5] of schools in Haiyan PhATS program areas were practicing daily group tooth-brushing activities in all classes, with an additional 28.3% [22.4; 34.2] practicing it in some classes only. A significant decrease of schools not practicing daily group tooth-brushing was found from 44.5% [38.9; 50.1] during the baseline to 16.7% [11.8; 21.5] during the end-line (see Figure 67 below). Therefore, the proportion of schools practicing group tooth-brushing was very similar to the proportion of schools practicing group handwashing, with 87.8% [83.5; 92.1] of schools practicing both of these two activities daily in at least some classes.

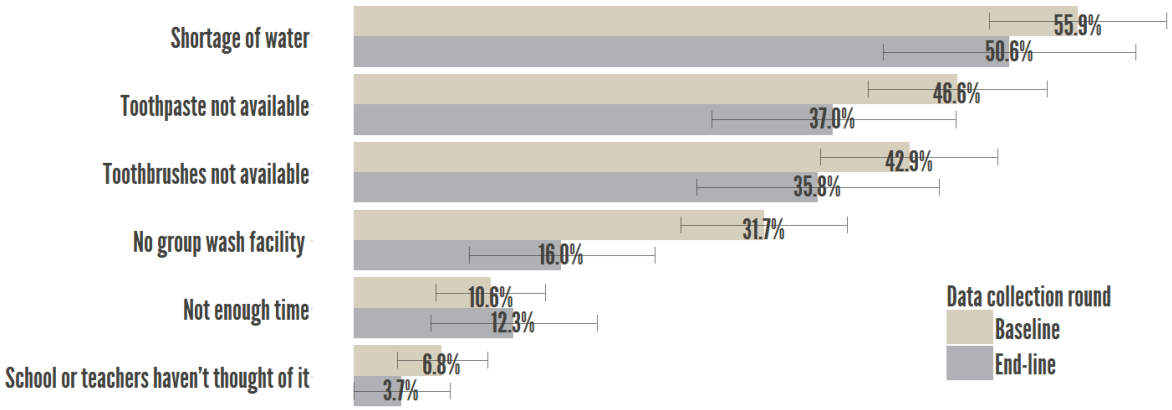
Figure 67: Reported frequency of tooth-brushing daily practice by data collection round



Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 245; valid n end-line: 180

As with group handwashing, the main issues preventing group tooth-brushing activities in school were resource-based. Among schools who did not practice group tooth-brushing in all classes, the most commonly reported barrier was water shortages (reported by 50.6% [40.9; 60.4] of schools that did not practice it in all classes), followed by lack of toothpaste (37.0% [27.6; 46.5]) and lack of toothbrushes (35.8% [26.5; 45.2]). A significant decrease was found in the proportion of key informants reporting the lack of a group facility, from 31.7% [25.2; 38.1] during the baseline to 16.0% [8.9; 23.2] during the end-line.

Figure 68: Barriers to daily tooth brushing by data collection round

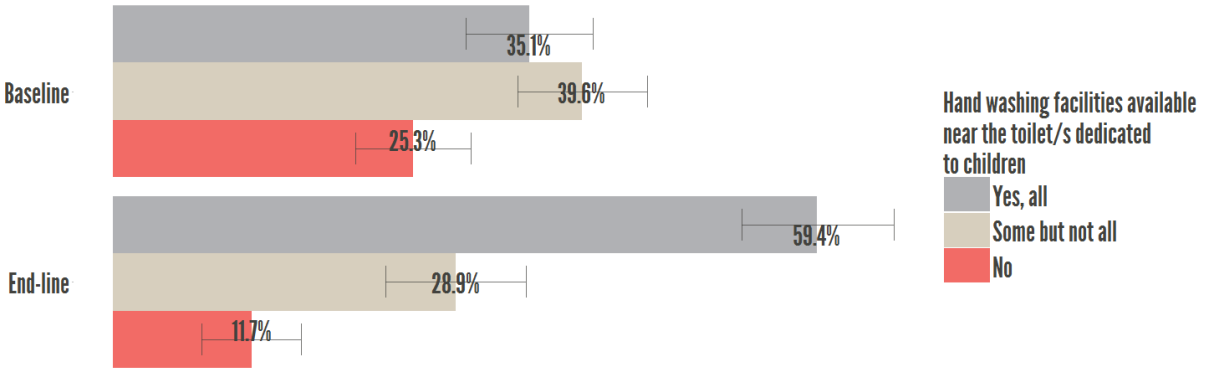


Valid n baseline: 161; valid n end-line: 81

4.2.4 Handwashing Facilities

Based on direct observation at the schools, an estimated 11.7% [7.5; 15.9] of schools in Haiyan PhATS program areas do not have any handwashing facilities (HWFs) near the toilets. A further 28.9% [23; 34.8] have handwashing facilities near some but not all toilets. A significant decrease in the proportion of schools not having any handwashing facilities was found between baseline and end-line, dropping from 25.3% [20.4; 30.2] to 11.7% [7.5; 15.9].

Figure 69: Observed handwashing facilities available near the toilets dedicated to children by data collection round



Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 245; valid n end-line: 180

Where schools did have handwashing facilities, the two main types were taps connected to piped water (56.8% [50.4; 63.3] of schools with HWFs) and buckets or containers (22% [16.2; 27.8]). A significant increase in the proportion of schools that use a locally made facility[21] was found, from 2.2% [0.3; 4.1] during the baseline to 12.6% [8.0; 17.2] during the end-line, this finding might be a positive outcome of the three-star approach promoting the use of locally made / available solutions (see Figure 70 below).

[21] Locally made facilities include tippy taps, water bottles and other designs.

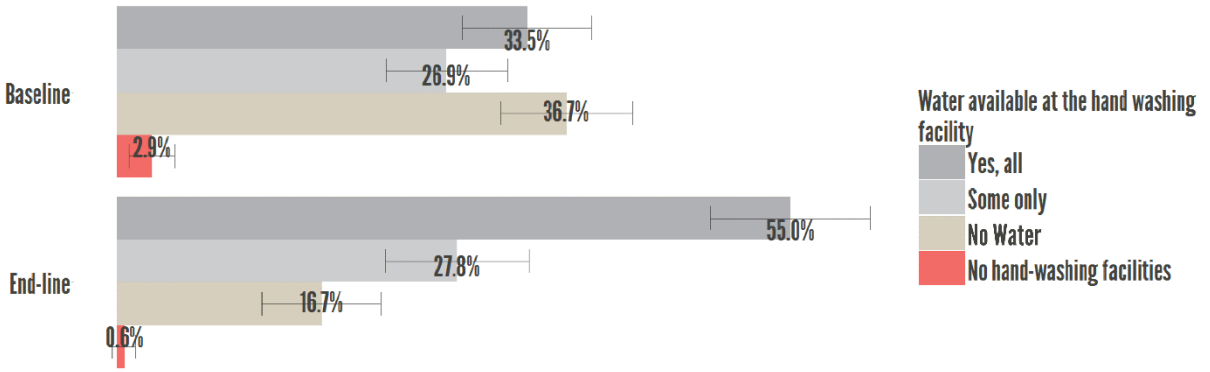
Figure 70: Type of handwashing facility by data collection round

	Baseline	End-line
Tap connected to piped water	56.8% (50.4 , 63.3)	65.4% (58.8 , 72)
Bucket or container	37.7% (31.4 , 44)	22% (16.2 , 27.8)
Locally made	2.2% (0.3 , 4.1)	12.6% (8 , 17.2)
Other	3.3% (1 , 5.6)	0% (0 , 0)

Pearson's X²: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 183; valid n end-line: 159

Lack of water was a major barrier to properly functioning handwashing facilities (see Figure 71). At the time of visit, 16.7% [11.8; 21.5] of schools with handwashing facilities were observed not to have water at some or all of the HWFs. However, between baseline and end-line, a significant increase was found in the proportion of schools observed to have water in all handwashing facilities, from 33.5% [28.2; 38.8] during the baseline to 55.0% [48.5; 61.5] during the end-line.

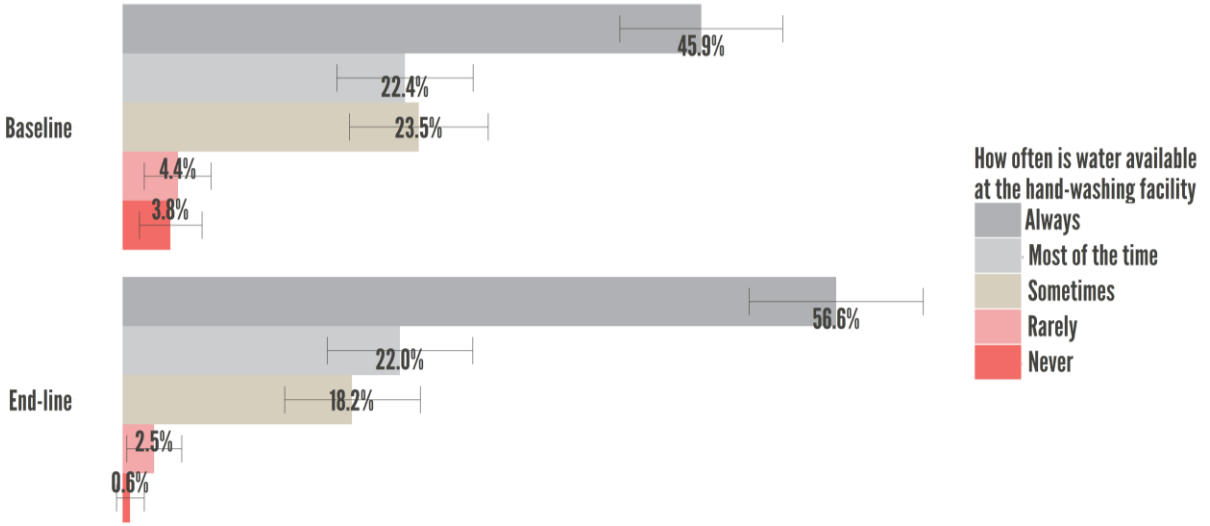
Figure 71: Observed water availability at the handwashing facility by data collection round



Pearson's X2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 245; valid n end-line: 180

Despite this, the presence of water appears to remain a problem in many schools, with just under half (43.4%) reporting that they did not always have water at the HWFs.

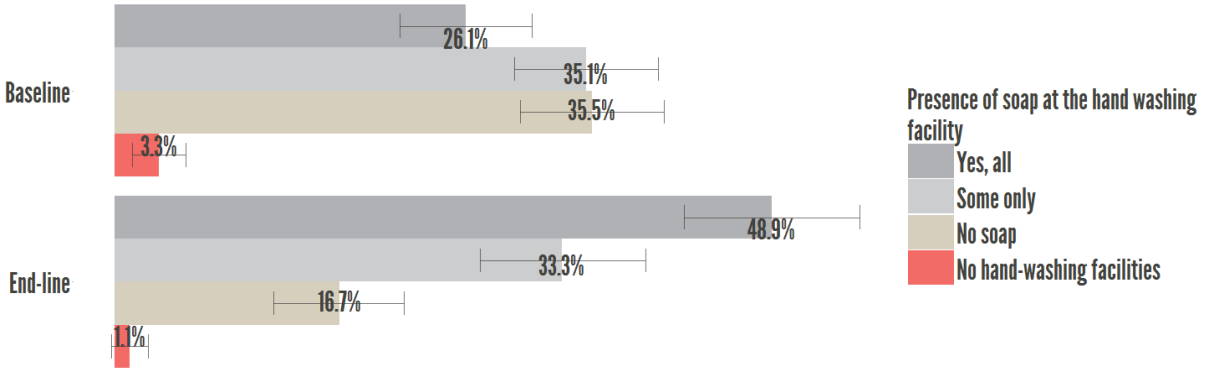
Figure 72: Reported water availability at the handwashing facility by data collection round



Pearson's X²: Rao & Scott adjustment, p-value=0.109; Valid n baseline: 183; valid n end-line: 159

Direct observation indicated that 16.7% [11.8; 21.5] of schools with HWFs near toilets did not have soap at any HWFs at the time of visit, with a further 33.3% [27.2; 39.5] having soap at some but not all HWFs (see Figure 73 below). Compared to the baseline, there is a significant difference in proportion of schools where soap in at least some facilities was observed, from 65.5% during the baseline to 83.3% during the end-line.

Figure 73: Observed presence of soap at the handwashing facility by data collection round



Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 245; valid n end-line: 180

According to key informants, children use a range of coping mechanisms when handwashing facilities are not functioning. A significant decrease was found in the proportion of key informants reporting that children do not wash their hands when the facility is broken, from 52.7% [47.1; 58.2] during the baseline to 25.3% [19.6; 31.0] during the end-line. There was also an increase in the proportion of schools where children bring water from home, and where communities provide water for the school. These increases indicate an improved commitment to handwashing on the part of students, schools and communities in Haiyan PhATS program areas.

Figure 74: Reported coping strategy used by children when handwashing facility is not working by data collection round

	Baseline	End-line
Don't clean hands	52.7% (47.1 , 58.2)	25.3% (19.6 , 31)
Bring water from home	14.3% (10.4 , 18.2)	29.2% (23.2 , 35.2)
Community provides water for whole school	5.3% (2.8 , 7.8)	20.2% (14.9 , 25.5)
Use other water source	16.7% (12.6 , 20.9)	5.6% (2.6 , 8.6)
Hand sanitizer or alcohol provided by students	0.8% (-0.2 , 1.8)	10.1% (6.1 , 14.1)
Buy bottled water or iced water to wash hands with	3.3% (1.3 , 5.3)	2.8% (0.6 , 5)
No problem	1.6% (0.2 , 3.1)	3.9% (1.4 , 6.5)
Hand sanitizer or alcohol provided by school or teacher	1.6% (0.2 , 3.1)	2.8% (0.6 , 5)
Other	2% (0.5 , 3.6)	0% (0 , 0)
Don't know	1.6% (0.2 , 3.1)	0% (0 , 0)

Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 245; valid n end-line: 178

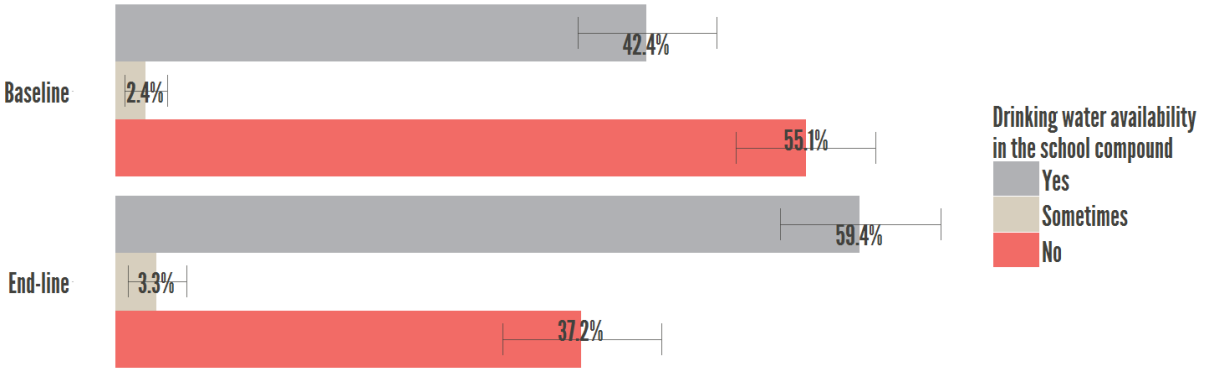
Interestingly, despite most schools having some practice of group handwashing, most members of each student FGD reported that they wash their hands more often at home than at school. According to students, the three main reasons for washing their hands more often at home are the following: 1) Availability of water; 2) They eat at home; 3) There is always soap at home. When asked the main reasons for not washing their hands with soap, the most common responses provided by children were: 1) They forget because they were playing; 2) There was a lack of water; 3) The lack of soap.

4.2.5 Water Supply

Issues with water supply emerged as a major barrier to maintaining functional handwashing facilities and practicing daily group hygiene activities. The following section covers the main sources of water used for drinking and other purposes in schools, and the barriers to accessing water.

In 37.2% [30.1; 43.5] of schools in Haiyan PhATS program areas, drinking water was reportedly not available in the school compound. A significant decrease in the proportion of schools that do not have a drinking water point was found, from 55.1% [49.5; 60.7] during the baseline to 37.2% [30.1; 43.5] during the end-line.

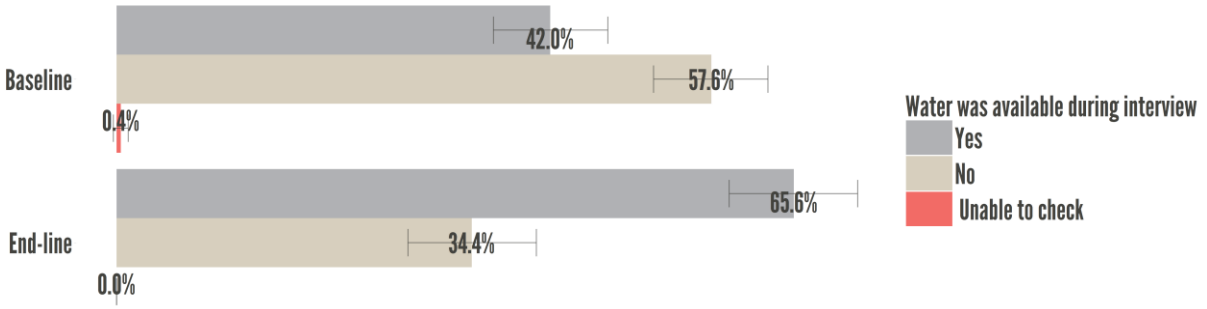
Figure 75: Reported drinking water availability in the school compound by data collection round



Pearson's X^2: Rao & Scott adjustment, p-value=0.001; Valid n baseline: 245; valid n end-line: 180

In schools without a drinking water point, any drinking water available was brought in from external sources, such as children bringing in water from home or teachers fetching water for school use from a communal source outside the school compound.

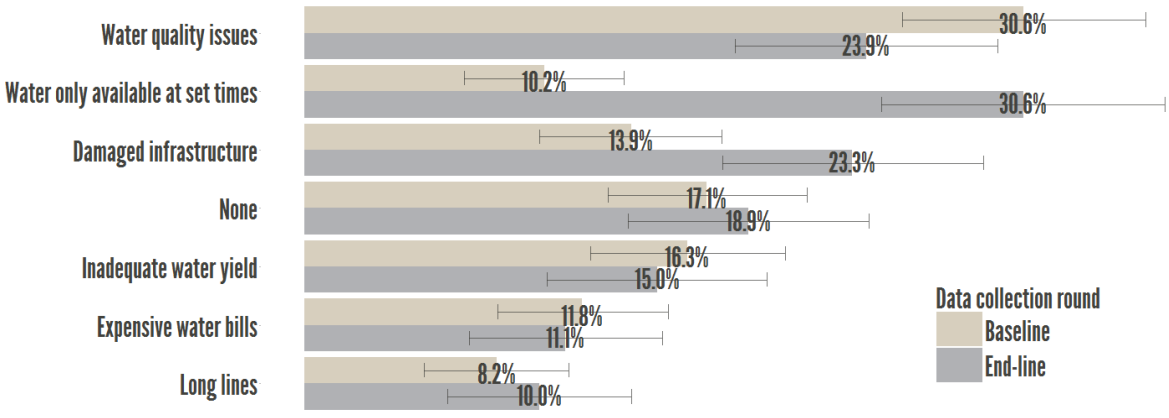
Figure 76: Observed availability of water during the assessment by data collection round



Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 245; valid n end-line: 180

When key informants at each school were asked about the problems encountered in accessing drinking water, the most common problem identified was inconsistent water availability, mentioned in 30.6% [24.5; 36.6] of schools. A significant increase was found in the prevalence of this issue between baseline and end-line, which may indicate that while the proportion of schools with access to water has increased, water availability in schools remains an issue. 23.3% [17.8; 28.9] identified damaged infrastructure and 23.9% [18.3; 29.5] identified water quality issues as a problem, potentially indicating an increased need to maintain school infrastructure.

Figure 77: Reported issue with accessing drinking water by data collection round



Valid n baseline: 245 ; valid n end-line: 180

When water points are not functioning, 85.1% [80.3; 89.8] of key informants reported that the most common coping strategy for students is to bring water from home. No significant difference was found between baseline and end-line.

4.2.6 Sanitation

This sub-section outlines key findings related to school toilets, open defecation and solid waste disposal.

4.2.6.1 School toilets and open defecation

An estimated 99.4% of schools in Haiyan PhATS program areas have improved sanitation facilities, while only 0.6% [-0.4; 1.5] of schools have no sanitation facilities at all. None of the schools has an unimproved sanitation facility. The vast majority of toilets were flush or pour flush toilets connected to septic tanks (used by 86.1% [81.6; 90.6] of all schools). While these toilets allow for the hygienic separation of excreta, they also require large quantities of water, which is likely to be problematic given the difficulties in consistently accessing water reported by many schools. Indeed, a lack of water available for flushing was discussed as a problem in some student focus groups.

Figure 78: Main toilet facility type by data collection round

		Baseline	End-line
Improved toilet facility	Flush or pour flush to piped sewer system	0% (0 , 0)	8.9% (5.2 , 12.6)
	Flush or pour flush to septic tank	91.4% (88.3 , 94.6)	86.1% (81.6 , 90.6)
	Flush or pour flush to pit latrine	3.3% (1.3 , 5.3)	3.9% (1.4 , 6.4)
	Ventilated Improved Pit (VIP) Latrine	1.6% (0.2 , 3.1`	0.6% (-0.4 , 1.5)
	Pit Latrine With Slab	0.8% (-0.2 , 1.8)	0% (0 , 0)
	No facilities	2.9% (1 , 4.7)	0.6% (-0.4 , 1.5)

Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 245; valid n end-line: 180

A significant decrease in the ratio of students by functioning toilets between the two data collection rounds was found from 39.95 [36.74; 43.14] students per functioning toilet in the baseline, down to 31.90 [29.65; 34.13] students per functioning toilet in the end-line (see Figure 79 below).

Figure 79: Number of students per functioning toilet by data collection round

Design-based t-test p-value=0,000; Valid n baseline: 237; valid n end-line: 178

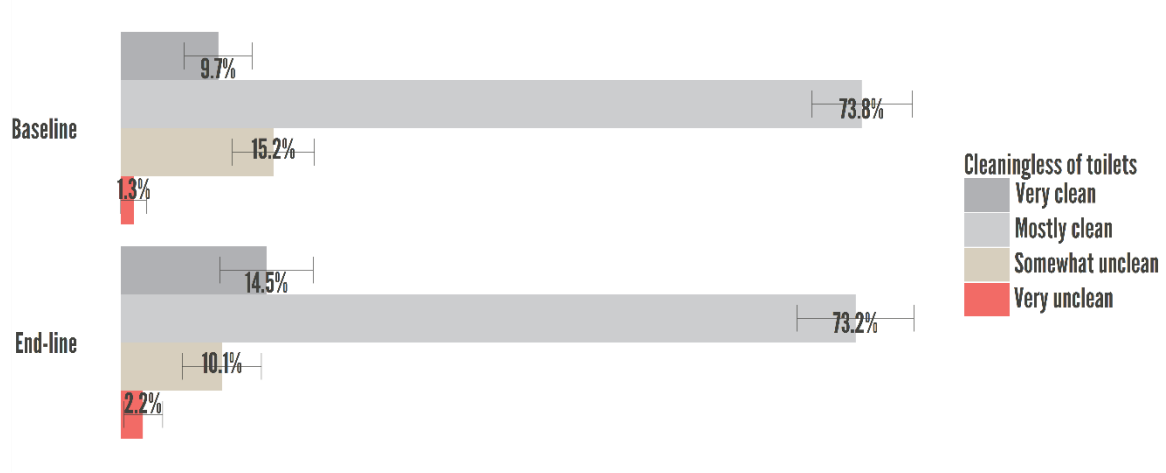
A key issue identified during the baseline was the relative rarity of single sex toilets in schools in Haiyan PhATS program areas. The vast majority of existing toilets in schools are unisex, which can present problems with privacy, particularly for older girls in relation to menstrual hygiene. However a significant increase in schools having sex-separated toilets between baseline and end-line has been found, with 53.1% [46.5; 59.6] of schools having at least one set of sex-separated toilets during end-line compared to 23.6% [18.8; 28.5] during baseline (Figure 80).

Figure 80: Proportion of school having at least one set of sex-separated toilet by data collection round

Pearson's X^2: Rao & Scott adjustment, p-value=0,000; Valid n baseline: 237; valid n end-line: 179In 95.0% [92.1; 97.8] of schools, toilets were less than 2 minutes' walk from classrooms or in the class room. There is no difference between baseline and end-line for this indicator. FGD data indicated that having toilets too close to (and particularly adjacent to) classrooms was actually a disincentive to their use for defecation in some cases. Many focus group participants expressed embarrassment and concern (particularly about the smell reaching the classroom) about defecating in toilets so close to their classrooms.

The cleanliness of toilets was a problem in some schools. While 87.7% of toilets were observed to be very clean or mostly clean, 2.2% [0.3; 4.2] of school were observed to have very unclean toilets at the time of the school visit (see Figure 81 below). No significant differences were found between baseline and end-line.

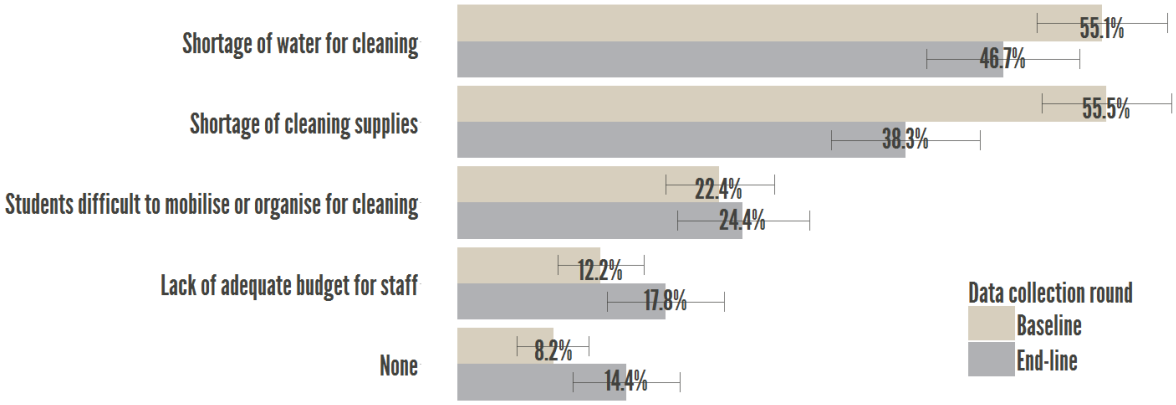
Figure 81: Cleanliness of toilets by data collection round



Pearson's X^2: Rao & Scott adjustment, p-value=0.201; Valid n baseline: 237; valid n end-line: 179

Key informants at each school were asked about the challenges of keeping toilets clean. The main challenges reported were a shortage of water (46.7% [40.1; 53.2]) and a shortage of cleaning supplies (38.3% [32; 44.7]). A significant decrease was found in the proportion of key informants reporting a lack of cleaning supplies, from 55.5% [49.9; 61.1] during the baseline to 38.3% [32; 44.7] during the end-line, which could be an effect of the incorporation of WASH in school budgets. The third most common challenge identified was students being difficult to mobilize for cleaning (24.4% [18.8; 30.1]) as shown in Figure 82.

Figure 82: Main challenges reported to keep toilets clean by data collection round



Valid n baseline: 245; valid n end-line: 180

This third challenge is explained by the widespread reliance on students for cleaning school toilets. While 99.4% of schools had some system in place for the regular cleaning of toilets, only 7.8% [4.3; 11.3] reported that toilets were cleaned by a janitor, with toilet cleaning performed by students in 65.0% [58.8; 71.2] of schools, and by teachers in 25.0% [19.3; 30.7] (see Figure 83 below). 1.7% [0.0; 3.3] of schools reported that toilets were cleaned by parent volunteers, which may offer a possible model for schools that lack the resources to pay for cleaning services. No significant differences were found between baseline and end-line.

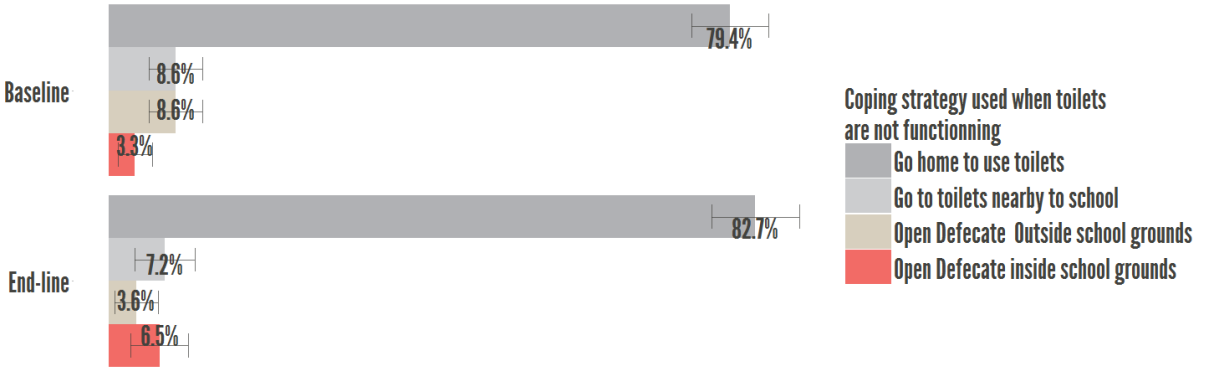
Figure 83: Toilets facilities cleaned frequently by data collection round

	Baseline	End-line
Yes, by students	65.7% (60.4, 71)	65% (58.8, 71.2)
Yes, by teachers	24.1% (19.3, 28.9)	25% (19.3, 30.7)
Yes, by janitor or cleaning staff	4.1% (1.9, 6.3)	7.8% (4.3, 11.3)
Yes, by parent or community volunteers	2.9% (1, 4.7)	1.7% (0, 3.3)
No, no current system in place.	2.9% (1, 4.7)	0.6% (-0.4, 1.5)
Don't know	0.4% (-0.3, 1.1)	0% (0, 0)

Pearson's X^2: Rao & Scott adjustment, p-value=0.235; Valid n baseline: 245; valid n end-line: 180

Key informants at each school were asked what students do when school toilets are not functioning. In 82.7% [77.1; 88.4] of schools, students' main coping mechanism was to go home to use the toilet. This disrupts learning, particularly where students' homes are far away. In 10.1% of schools, it was reported that the main coping mechanism was to defecate inside or outside the school compound (see Figure 84). These negative coping mechanisms emphasize the importance of ensuring that school toilets are functioning and sufficiently comfortable for students to use them. No significant differences were found between baseline and end-line for this indicator.

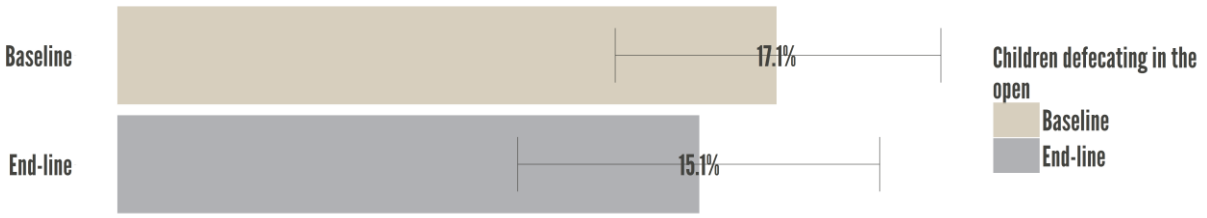
Figure 84: Reported coping strategy used by children when toilet broken by data collection round



Pearson's X^2: Rao & Scott adjustment, p-value=0.155; Valid n baseline: 209; valid n end-line: 139

Open defecation was reported in 15.1% [10.4; 19.8] of schools in Haiyan PhATS program areas, while open urination was reported in 64.4% [58.1; 70.7]. No significant differences were found between baseline and end-line. Focus group data emphasized the significant role teachers' play in enabling or discouraging open defecation, mainly by allowing children to go home, or to other classrooms when the toilets are not working.

Figure 85: Key informants reporting children defecating in the open by data collection round



Pearson's X^2: Rao & Scott adjustment, p-value=0.571; Valid n baseline: 245; valid n end-line: 179

4.2.6.2 Solid Waste Disposal

78.3% [72.9; 83.7] of schools in Haiyan PhATS program areas reported that they were disposing of garbage every day, with only 2.8% [0.6; 4.9] reporting irregular garbage disposal.

Figure 86: Frequency of garbage disposal by data collection round

	Baseline	End-line
Daily	75.1% (70.3 , 79.9)	78.3% (72.9 , 83.7)
Weekly	9% (5.8 , 12.2)	11.1% (7 , 15.2)
Several times a week	6.5% (3.8 , 9.3)	5.6% (2.6 , 8.6)
Irregular	9% (5.8 , 12.2)	2.8% (0.6 , 4.9)
Other	0% (0 , 0)	1.1% (-0.3 , 2.5)
No disposal	0% (0 , 0)	1.1% (-0.3 , 2.5)
Several times a month	0.4% (-0.3 , 1.1)	0% (0 , 0)

Pearson's X2: Rao & Scott adjustment, p-value=0.04; Valid n baseline: 245; valid n end-line: 180

The most common method of garbage disposal was incineration, followed by piling solid waste inside the school compound. Piling garbage inside the school compound was practiced by 34.4% [28.2; 40.7] of schools, with an additional 13.3% [8.9; 17.8] piling it outside the school compound. These garbage disposal methods pose a health risk as they are likely to attract vermin and may also facilitate students' easy contact with this solid waste.

Figure 87: Disposal of garbage by data collection round

	Baseline	End-line
Thrown or Piled inside school premises	29.4% (24.3 , 34.5)	34.4% (28.2 , 40.7)
Incinerate	32.2% (27 , 37.5)	16.7% (11.8 , 21.5)
Buried	22.4% (17.8 , 27.1)	20.6% (15.3 , 25.8)
Thrown or Piled outside of school premises	6.9% (4.1 , 9.8)	13.3% (8.9 , 17.8)
Collection Service	7.3% (4.4 , 10.3)	12.2% (7.9 , 16.5)
Other	1.6% (0.2 , 3.1)	2.2% (0.3 , 4.2)
No disposal	0% (0 , 0)	0.6% (-0.4 , 1.5)

Pearson's X^2: Rao & Scott adjustment, p-value=0.004; Valid n baseline: 245; valid n end-line: 180

5 Conclusions and Recommendations

Overall this assessment found an increased awareness of, and importance given to, improved practices relating to water, sanitation and hygiene in the areas surveyed, including an improved understanding of water, sanitation and hygiene related health risks (particularly of cholera, dengue and other illnesses).

5.1 Water, sanitation and hygiene at household and community level

The end-line survey found that an estimated 92.8% of households have access to an improved source of drinking water, with no significant change since the baseline. 44.2% of households that have access to an improved water source (excluding bottled water) do not pay for their water. This is an important finding as this lack of cost-recovery may indicate that there is no formal mechanism for ensuring routine operation and maintenance of these sources. The end-line assessment found a significant increase in the proportion of households using bottled water as their main source of drinking water, from 16.5% during the baseline to 29.8% during the end-line. Considering the investments that were made in the Haiyan-affected areas to restore improved water sources, both under the Haiyan PhATS program and other humanitarian response programs, this increase is unexpected, especially since the vast majority (91.8%) of households using bottled water as their main source of drinking water had access to another improved water source. During focus group discussions, participants reported concerns over the quality of water coming from their improved water sources, which may help explain the increase in bottled water consumption. It should be noted however, that we do not have data on pre-Haiyan use of bottled water, so cannot determine whether or not this increase is a result of increased concerns since the emergency or if people are returning to their pre-emergency behaviors.

While the end-line assessment found an overall decrease in the proportion of households treating their drinking water, this can be partly explained by the larger proportion of households choosing to drink bottled water. Indeed, when households drinking bottled water are excluded from the analysis, there is no significant difference in the proportion of households treating their drinking water between the baseline and end-line. Among the households that do treat their drinking water, there has been a shift towards boiling and straining it through a cloth, and a reduction in use of chlorine-based products. While this finding shows an understanding among households of the need to treat the water, the majority of these (88.7%) rely on filtering water with a piece of cloth without any disinfection method, indicating a clear need for ongoing awareness raising on adequate household treatment and safe storage methods.

There was a significant increase in the proportion of households having their own (non-shared) improved sanitation facility, from 63.7% up to 76.3%. This can be seen as a positive outcome of the Haiyan PhATS program, as implementing partners have been promoting construction and use of latrines in assessed areas, as well as providing subsidies for latrine construction for poorer households. This increase in non-shared facilities is also important as the use of shared facilities can be problematic over time: they are less likely to be kept clean and may not be regarded as sufficiently private, both of which are commonly cited reasons for people continuing or returning to practicing open defecation. A significant decrease in the proportion of households reporting no toilets could be detected in three of the six provinces, with no discernable change observed in the other three.

Overall, no significant change was found in the proportion of households practicing open defecation, with 15.2% of households across the Haiyan PhATS program areas reporting at least one member still practicing open defecation. This is among the more surprising findings of the end-line assessment, and highlights a clear opportunity for further improvement. Similar to the baseline assessment, the most commonly reported reasons for this were related to a lack of available toilets or a lack of household toilet ownership, with access to shared toilet facilities considered an undesirable solution. It is also important to note that some households that have access to improved, non-shared toilet facilities reported that at least one household member is still practicing open defecation. FGDs indicated other factors that might contribute to this, such as a lack of water availability, perceptions that open defecation by small children is acceptable, and the lack of sanitation facilities when people are not at home.

The frequency of handwashing was reported to have increased since the baseline at household-level. There was also a notable increase in understanding of when it is important to wash hands with soap, and in the proportion of schools where children bring water from home or where communities provide water for the school to enable handwashing. These increases indicate an improved commitment to handwashing on the part of students, schools and communities in Haiyan PhATS program areas.

Several results suggest that awareness campaigns related to water, sanitation and hygiene have been successful. While awareness of the link between drinking unsafe water and diarrhea was already high, the end-line assessment found an increased understanding of the link between unsafe water and several other illnesses, including cholera, dengue fever and sickness in general. These results might be a positive outcome of both the Haiyan PhATS program and ongoing Department of Health (DOH) efforts. While there seems to have been an increase in messaging on solid waste management and safe disposal of excreta (corresponding to recommendations of the Haiyan PhATS baseline report), results indicate that further work is required to improve understanding of certain issues. Future behavior change campaigns should continue to reinforce the importance of having a zero open defecation community and ensuring handwashing with soap at critical times; as well as strengthen understanding of how to ensure safe disposal of child stools and safe water treatment and storage at household level. With households living further away from water points generally found to be less likely to exhibit improved water, sanitation and hygiene practices, there is also a need to ensure households on the outskirts of communities are also fully engaged in future messaging and outreach campaigns.

5.2 Water, sanitation and hygiene in schools

The end-line data highlighted a number of improvements to the situation of WASH in schools. Findings showed a net increase in the proportion of schools having the necessary structures in place to improve the water and sanitation situation of schools, as well as a strong increase of leadership on WASH issues on the part of individual schools and the Department of Education. For example, 86.6% of schools in Haiyan PhATS program areas had at least one WASH activity in the last six months, compared to 48.0% during the baseline.

With a significant increase in the proportion of schools with access to water (from 33.5% to 55.0%), inconsistent water availability was now increasingly identified as a barrier to properly functioning handwashing facilities and to accessing drinking water in schools. However, more schools reported alternative mechanisms for ensuring water availability (such as students or teachers bringing from home), indicating that strategies are being identified to cope with the situation in the immediate term. The proportion of schools not having any handwashing facilities decreased from 25.3% during the baseline to 11.7% during the end-line assessment. Coupled with a significant increase in the proportion of schools using a locally made facility, from 2.2% to 12.6%, these findings indicate that the “Three-Star Approach to WASH in Schools”, which promotes school-based management and the use of locally made or available solutions, has positively influenced the way schools are addressing ongoing WASH challenges.

Ensuring that school toilets are functioning and sufficiently comfortable for students to use them is also an important factor to reduce open defecation. Indeed, when school toilets are not functioning, key informants in 10.1% of schools reported that the main coping mechanism was to defecate openly, either inside or outside of the school compound. Focus group discussions highlighted the significant role played by teachers in enabling or discouraging open defecation, pointing to the importance of continued efforts on the part of school governance and leadership to create an enabling environment for improved sanitation and hygiene practices.

6 Annexes