Endline Study of Improving Access to WASH for Levi's RMG Workers in Bangladesh Project



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WaterAid

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Abbreviations

CIPL	Cosmopolitan Industries PVT Ltd.
EPB	Export Promotion Bureau
FGD	Focus Group Discussions
HH	Household
HDRC	Human Development Research Centre
ICDDR,B	International Centre for Diarrhoeal Disease Research, Bangladesh
JMP	Joint Monitoring Programme
KII	Key Informant Interviews
MHM	Menstrual Hygiene Management
PSM	Propensity score matching
RMG	Readymade Garments (RMG)
SDG	Sustainable Development Goal
TVC	Television Channel
USD	US Dollar
WASH	Water Sanitation and Hygiene

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Executive Summary

Background: The ready-made garments (RMG) makes a significant contribution to the national economy. Most workers reside in and around Dhaka in urban and peri-urban slums or 'worker colonies' with lack reliable access to clean water, proper sanitation facilities, and drainage systems, leading to the rapid spread of water-borne illness. WaterAid Bangladesh provided technical and financial support to Sajeda Foundation to implement a project titled "Improving Access to WASH for RMG Workers in Bangladesh" in three garments including their families living in the three union at Savar upazila of Dhaka district for increasing the access to WASH services for a period of three-year from April 2016 to March 2019. The present assignment is an endline study of improving access to WASH for Levis's RMG workers in Bangladesh project.

Objectives: The broad objective of the end line study is mainly to understand the outcome level changes against project specific result indicators. The specific objectives were (i**)** to assess changes in WASH accessibility of the workers both at community and factory level. (ii) to explain with evidence the changes visible towards integration of WASH in health and education and (iii) to assess improvements in hygiene knowledge and practices among the workers.

Methodology: The study adopted a mixed method approach where data was primarily collected through survey on garment workers in intervention as well as control group. Qualitative techniques included Focus Group Discussion (FGD) and Key Informant Interview (KII). Moreover, structured observations (water point, toilets, and hand washing facilities) were made at factories and random households. Hand washing behavior at factories during lunch break were also observed. Water quality testing was performed at factories and random households. The sample size of households for quantitative survey was determined applying multi-indicator approach. Baseline survey report was used to collect baseline value of different indicators to determine the sample size using a probabilistic approach. The sample size of households for intervention and control was equal. The survey covered 370 intervention and 370 control household. The sample households were proportionally distributed across target unions and selected randomly. Qualitative information was collected through 8 focus group discussions and 10 key informant interviews.

Propensity score matching was performed using selected socio-economic indicators to ensure comparability. Apart from basic descriptive statistics, hypothesis testing (z-test and t-test) was conducted for comparative analysis. Regression analysis with principal component analysis was performed to assess impact of project activities. For impact assessment an iterative process was applied. Content analysis was accomplished using qualitative information to ensure validity of impact assessments. The quantitative data and qualitative information was analyzed separately and their findings were synthesized.

Access to water: The source of drinking water both in intervention and control areas was submersible pump piped directly to their rooms/houses where 87 percent of the households in intervention and 97.6 percent in control areas had overhead water tank ensuring the readily reach and use of water when needed. Most of the drinking water sources in intervention (79%) and control (99.7%) areas were owned by the house owner. In case of service level water sources, most of the improved water sources in intervention (65.8%) and control (85%) areas were at basic service level. Almost all (99.7% in intervention; 99.4% in control) water sources in both intervention and control areas were found functional.

All intervention garments had improved sources of drinking water and it was managed safely. Irrespective of intervention and control garments, main source of drinking water was supply water (56.1% in intervention; 74% in control), followed by filtered water (43% in intervention; 25.1% in control). In intervention garments, it is also observed that water taps for drinking water were available in each floor and the water taps were wall mounted and marked as "pure drinking water".

In addition, each and every garment workers in intervention areas have the facility to collect water in their water bottle from the tap and supplied water was purified by using ultra violate ray emitting machine in each intervention garments.

Access to Sanitation: The sanitation facilities used by the garment workers living in intervention (76.6%) and control (84.4%) were mostly classified as having a limited services i.e**.,** shared with other households. However, use of sanitation facilities classified as having a basic sanitation service by the garment workers in intervention were nearly 3 times higher than that were used by the garment workers living in control areas (17% vs. 6.2%) and difference is highly significant statistically. Use of unimproved sanitation facilities among the garment workers in the control (9.4%) were also fairly higher than in intervention area (6.4%).

All the intervention RMG factories have single sex based latrine facility. Two-third workers (66.7%) of intervention factories have reported that cleaning condition of their latrines are good while 56 percent of control factories have reported something like this. In addition, as high as 77 percent workers of intervention factories which is more than double of control factory workers (33%), have confessed that there are available soap within the toilets.

Access to hand washing facility at household and factory level: As categorized by SDG ladder, basic service level for hand washing at the household level included 36.7 percent of the intervention areas which was nearly four times higher than the control group (8.3%). Secondly, limited service level of SDG ladder includes 30.9 percent intervention households which was slightly higher than the control group (28.3%). Lastly, 63.4 percent control households, doubly higher than the intervention households (32.4%), had no facility for hand washing.

Most of the intervention garment workers (99.7%) reported that separate hand washing places with soap and water were available within the factories. On the other hand, 97 percent of control garment workers mentioned that hand washing places were available within the factories; of them 86.7 percent ensured the availability of soap or liquid soap at hand washing places.

Menstrual Hygiene Management at household and factory level: According to the study findings, at the household level most of the women of reproductive age within intervention (68.3%) and control areas (78.9%) used reusable cloth for MHM. On the other hand, 30.7 percent of the intervention household women were habituated with practicing the disposable sanitary napkin as compared to 20.1 percent of control group.

Among our intervention factories, more than one-third of the female workers (34.8%) use sanitary napkin which is significantly higher than the control group (19.2%). On the other hand, the mostly used MHM material is reusable cloth with 66.4 percent in control which is higher than intervention (57.6%). Additionally, it is to note that, 13.9 percent of control factories which is doubly higher than intervention (6.7%) use garment leftovers known as "jhoot" as MHM materials.

Solid Waste Management at household and factory level: Most of the households of intervention (96.7%) and control areas (92.6%) disposed the household waste in the dustbin or public trash. According to findings in intervention garments, many drums and dustbins were placed for waste disposal. Furthermore, big or medium plastic bins were also available on every floor of the factories.

Chapter 1
Introduction and Methodology

1.1 Introduction

The ready-made garments (RMG) makes a significant contribution to the national economy. It has the largest contribution in export earnings. According to recent data by Export Promotion Bureau (EPB), Bangladesh's export earnings from the RMG sector stood at USD 30.61 billion (83.5% of total export earnings), with 8.76% growth in the fiscal year 2017-18[1]. The garment industry employs more than 4 million workers in 4,500 factories mostly concentrated around the capital. Most workers reside in and around Dhaka in urban and peri-urban slums or 'worker colonies' with lack reliable access to clean water, proper sanitation facilities, and drainage systems, leading to the rapid spread of water-borne illness.

WaterAid Bangladesh provided technical and financial support to Sajeda Foundation to implement a project titled "Improving Access to WASH for RMG Workers in Bangladesh". Improving Access to WASH for Levi's RMG Workers in Bangladesh Project was undertaken as means of increasing adequate and safe water supplies, sanitation facilities and hygiene management as well as awareness to the workers of three garments including their families living in the three union at Savar upazila of Dhaka district.

This was a three-year project that initiated in April 2016 and closed in March 2019. A total of 12,000 garment factory workers (around 4,000 workers from the three targeted factories and 8,000 workers from other factories) and their families (around 21,000 people) living in the three union at Savar upazila were reached. The RMG workers and their families were reached with water, sanitation and hygiene services at community level and with hygiene messages particularly on Menstrual Hygiene Management and handwashing in the factories.

1.2 Objectives of the Assignment

Broader objective:
The broad objective of the end line study is mainly to understand the outcome level changes against project specific result indicators.

Specific objectives:
Specific objectives of the endline study are as follows:

- To assess changes in WASH accessibility of the workers both at community and factory level.
- To explain with evidence the changes visible towards integration of WASH in health and education.
- To assess improvements in hygiene knowledge and practices among the workers.

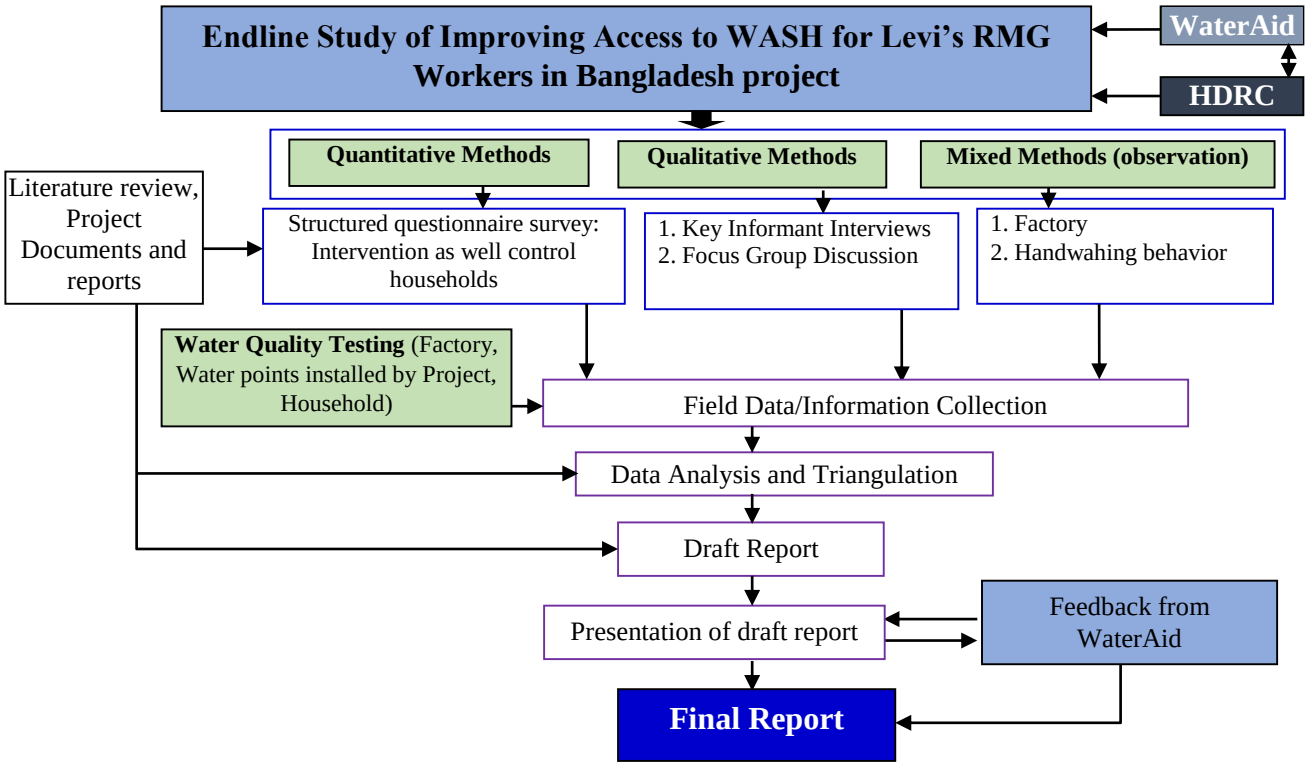
1.3 Methodology

The study design was a combination of quantitative and qualitative techniques. Data was primarily collected through garment worker's survey (intervention and control group[2]) for quantitative survey. Qualitative techniques included Focus Group Discussions (FGD) and Key Informant Interviews (KII). Besides, structured observations (water point, toilets, and handwasing facilities) took place at factories and random households. Observations regarding handwashing behavior

[1] Source: http://www.bgmea.com.bd/home/pages/tradeinformation
[2] Intervention Group = Workers working in Levi's Garments who live in target area
Control Group = Workers not working in Levi's Garments who do not live in target area but in close proximity

took place at factories during the lunch break. Water quality testing was performed in Factories, Water points installed by Project, and Households.

Figure 1.1: Overall research approach and methodology of the survey



1.3.1 Impact Assessment Method (Quantitative Assessments)

Simply examining changes in outcomes before and after the implementation of the project was not a particularly credible approach as 'before-and-after' differences may be due to other reasons and may not be assigned entirely to the project. This impact assessment attempted to address this *attribution challenge* by comparing project beneficiaries with non-beneficiaries. Such comparisons to be valid, on average, the group of project beneficiaries and non-beneficiaries (the counterfactual) was matched based on selected observable criterion (household dwelling status, demographics, household asset, communication, availability of drainage facility, occupation etc.) applying propensity score matching (PSM). Also the selection of control areas was made on the basis of similarity of service availability (road, pavement, distance from highway, drainage facility, garbage disposal etc.) after physical observation of those areas by the team member accompanied by concerned personnel of WaterAid. Besides, field level facilitators of WaterAid provided necessary support by sharing necessary information of locality.

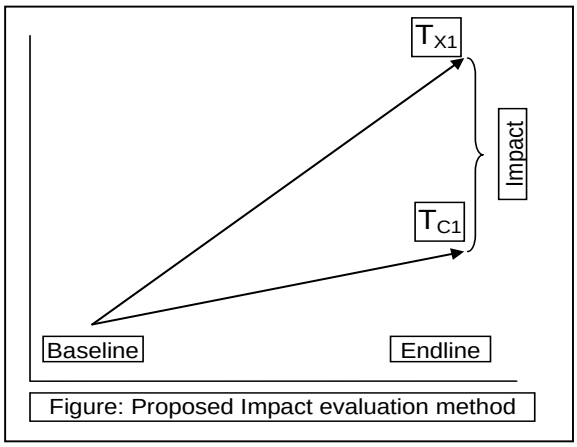


Figure: Proposed Impact evaluation method

However, this assignment faced a challenge. Credible baseline estimate was not available for the impact assessment. Hence, this assignment assumed that the observable factors in control was similar to intervention during baseline and adopted a cross sectional approach with the limitation that this approach is more susceptible to

selection bias as compared to a panel data approach and observable as well as time-invariant unobservable traits that may influence the outcomes in a natural manner cannot be identified.

Change/Impact= (T_{X1}-T_{C1}) where,

T_{X1}= status of intervention unit in endline

T_{C1}= status of control unit in endline

Control area was identified in consultation with WaterAid Bangladesh keeping in mind above mentioned observational factors. Structured observation formats were prepared to observe the handwashing behavior of factory workers. This technique was administered during lunch hours at factories focusing on random workers.

1.3.2 Quantitative Survey Design

The key purpose of the endline survey was to understand the impact against project specific result indicators. Multi-stage sampling strategy were used to collect data. The sample was determined using standard statistical formula, assuming 95% confidence interval and 5% level of precision, and adjusted with 1.2 for design effect and probable non-response. The sampling strategy applied data for 3 selected indicators: 1) soap and water facility within 10 steps of latrine, 2) washing both hands with soap after defecation, and 3) sandal usage while using toilet. The estimated sample size was 370 for both intervention and control area. Hence, 30 garment workers from 13 clusters in each area were interviewed. However, to ensure homogeneity between the intervention and control households, finally 330 households from intervention and 339 from control area were considered for analysis.

On the other hand, structured observation has been approached at the 3 intervention factories, 12 intervention schools and households of both treatment and control areas for assessing the existing status of WASH like water points, latrines, and handwashing facilities. Water quality testing was also adopted for detection of arsenic and bacteria level at the water points of intervention factories and schools including household levels.

Lastly, as a part of qualitative survey, 8 Focus Group Discussions (4 with men and 4 with women group) and 10 Key Informant Interviews were also conducted at time of this study survey.

1.4 Data Analysis

Propensity score matching was performed using selected socio-economic indicators to ensure comparability. Apart from basic descriptive statistics, hypothesis testing (z-test and t-test) was performed for comparative analysis. Regression analysis with principal component analysis was performed to assess impact of project activities. The impact assessment adopted an iterative process. Content analysis was performed from qualitative information to add validity to impact assessments. The quantitative data and qualitative information was analyzed separately and their findings were synthesized.

1.5 Study Limitations

1. Credible baseline estimate was not available for the impact assessment. Hence, this assignment assumed that the observable factors in control was similar to intervention during baseline.
2. Due to high employee turnover rate at factories the study had to adopt cross sectional approach instead of panel approach.

Chapter 2
Study Findings

2.1 Access to Water

2.1.1 Access to Water at Household level

Types of drinking water sources and services

Access of the Levi's garment workers in Bangladesh to drinking water has been measured in terms of updated JMP ladders on the criteria of new global SDG indicator "Proportion of population using safely managed drinking water services".[3] The figure 2.1 shows that all the garment workers living in intervention and control areas used improved water source for drinking purpose. The source of drinking water both in the intervention and control areas was submersible pump piped directly to their rooms/houses where 87 percent of the households in intervention and 97.6 percent in control areas had overhead water tank confirming the readily reach and use of water when needed (Figure 2.1, and Table 11, Annex 1). Availability of water when need cannot be made certain in the households in intervention and control areas without water tank. Considering the services level, majority of the improved water sources in intervention (65.8%) and control (84%) areas were at the level of basic services. Nonetheless, safely managed water sources in the intervention area was more than two-fold higher than that of control area (34.2% vs. 15%) and the difference is statistically significant (Figure 2.2).

Figure 2.1: Distribution of households by source of drinking water sources (in %)

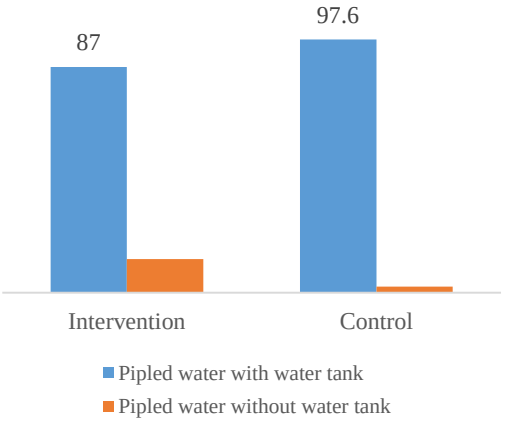
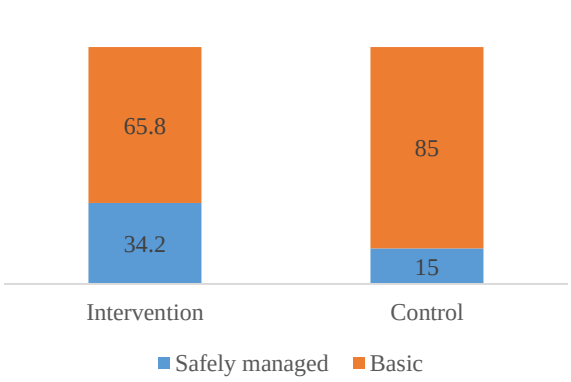


Figure 2.2: Distribution of households by access to SDG service level of water sources (in %)



Functional status of the drinking water sources and availability of water at source

Irrespective of intervention and control areas, almost all (over 99%) the water sources in both the areas were found functional and except in little variation, virtually water was available throughout the day and night round the year. Other than 20 percent water sources installed by WaterAid in the intervention area, most of the drinking water sources in intervention (79%) and control (99.7%) areas were owned by the house owner (Table 14, Annex 1).

[3] Updated JMP ladders of water sources
Safely managed: Drinking water from an improved water source that is located on premises, available when needed and free from faecaland priority chemical contamination
Basic: Drinking water from an improved source, provided collection time is not more than 30 minutes for a round trip, including queuing.
Limited: Drinking water from an improved source for which collection time exceeds 30 minutes for a round trip, including queuing.

Improved drinking water sources are those which that are potentially capable of delivering safe water by nature of their design and construction include piped water, boreholes or tube wells, protected dug wells, protected springs, and packaged or delivered water.
Unimproved drinking water
Drinking water from sources that are not capable of delivering safe water by their design and construction include unprotected dug well, unprotected spring and surface water (directly from river, dam, lake, pond, stream, canal or irrigation canal),

As the water sources piped to almost all the room/house, distance of water point from household, average water collection time were not considered for analysis. On top of this, according to the respondents, more than 99.7 percent households in intervention and over 99.4 percent in control area did not experience any problem in collecting adequate amount of water for drinking and other household chores as well (Table 2.1).

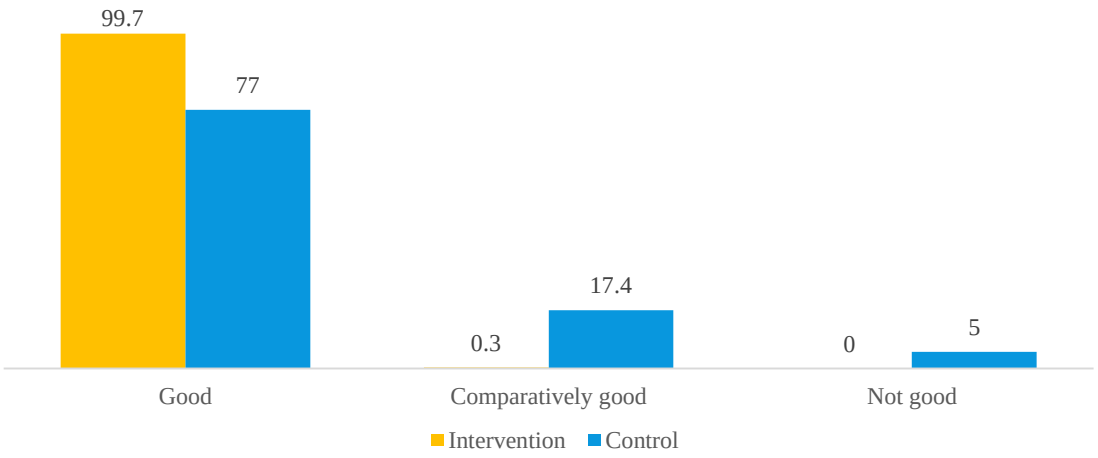
Table 2.1: Percentage distribution of water source by functionality and availability of water

Functionality and availability	Intervention	Control
Functionality	99.7	99.4
Availability of water source (Month average)	12.00	11.99
Availability of water (Hours average)	23.93	23.89
n	330	339

Physical quality and household intervention of drinking water prior to consumption

Physical quality of the drinking water had also been assessed for acceptability on the basis clarity, colour, smell, and taste. Reportedly, drinking water of the surveyed water sources was good to 77 percent, comparatively good to 17.4 percent, and not good to 5 percent respondents in control area as compared to good to nearly all (99.7%) respondents in intervention area (Figure 2.3, Table 15, Annex 1). Primary reasons for disliking the drinking water in control area were bad smell (67.1%), skeptical to existence of germ (50%) and non-clarity (31.7%) of water. Presence of excessive iron and salty in taste was stated by a few (Table 16, Annex 1).

Figure 2.3: Distribution of households by physical quality of drinking water (in %)



Findings further reveals that household intervention of drinking water before consumption was not a common practice in control area and not at all in intervention area. Among the few households in control areas who are likely treat drinking water before consumption water, 65 percent of them did that by boiling, followed by 30 percent through filtering. Details are in Table 17, in Annex 1.

Water safety plan

Water safety plans are an orderly approach to safeguarding drinking-water safety from source to consumer. A water safety plan emphasizes the effective process control in water supply as the principal means of ensuring water safety. Reportedly, 53.3 percent respondents in intervention and 24.5 percent in control area cleaned their pot with drinking water before water collection from supply source. However, most of the respondents in intervention (88.5%) and majority in control (58.1%) area

covered the water pot with lid at the time storing. Lastly, 60.9 percent respondents in intervention and 27.7 percent in control area used cleaned glass/mug and not dipped their finger inside the glass or reservoir while drinking water. Thus estimated percentage of respondents followed the WSP step effectively was 32.7 percent in intervention and 15.3 percent in control area (Table 2.2).

Table 2.2: Distribution of household by water safety plan (in %)

Indicators	Intervention	Control
Water pot is cleaned during water collection	53.3	24.5
Water pot is covered during water preservation	88.5	58.1
Water glass/mug is cleaned during drinking or serving water	60.9	27.7
Steps maintained effectively	32.7	15.3
n	330	339

Status of the adjacent area, platform and drainage system of the water tap

By and large, status of water taps/standpoints in intervention area is better than the status observed in control area. More than half (58.6%) adjoining area of water taps/standpoints was unclean in control areas. Corresponding situation was noticed in one-fourth of the water taps/standpoints in intervention area. A little less than half (48.3%) of the connecting pipe of the tap/stand point were either cracked/broken or blocked by filth/garbage and equal proportion of platform of water taps/standpoints were water lodged in control area. Analogous situation of the connecting pipe and platform of the water tap/stand point was observed in less than 20 percent of the cases in intervention area. Additionally, existence of exposed pipe and crack in the platform of water tap was reported by 58 and 32.3 percent the respondents in control area against 28.8 and 19.8 percent in intervention area. The water taps on the other hand were largely fixed to the concrete wall almost equally both in intervention (94.7%) and control (90.9%) area. However the overall condition of more than half the platform and the drainage system of the water tap in intervention and close to fourth-fifth in the control were not good or environmentally safe (Table 2.3).

Table 2.3: Status of the adjacent area, platform and drainage system of the water tap (in %)

Indicators	Intervention	Control
Unclean environment/condition around the water tap	25.1	58.6
Cracked/broken (or blocked by filth/garbage) connecting pipe	18.0	48.3
Water lodged on the water tap platform	17.0	48.3
Cracked water tap platform	19.8	32.3
Fixed Water tap with a concrete wall	94.7	90.9
Exposed Water tap pipe	28.8	58.0
Meter attached with water Tap	2.5	3.6
Overall condition of the water tap platform was observed bad	52.6	78.2
Overall condition of the drainage system of the water tap platform was observed bad	51.4	77.6

2.1.2 Access to Water at Work place

All the intervention garments had improved source of drinking water and managed safely. The main source of drinking in the intervention garments was supply (56.1%) water, followed by filtered (43%) water. Similarly in the control garments, main source of drinking water was supply (74%) water followed by the filtered (25.1%) water. Types of water sources available in the intervention garments are as follows:

Table 2.4: Distribution of drinking water sources in the intervention garments factory by types

Sources	RMG factory-1	RMG factory-2	RMG factory-
Supply water after filtering			√
Directly from tap water	√		√
Tube well			
Ultraviolet water purification	√	√	

Observation note on drinking water facilities in the intervention garments

It had been seen that water tap(s) for drinking water was present in each floor of all the three intervention garments observed. The water taps were wall mounted and marked as "pure drinking water". The quantity of water taps however, not unique and varied from 1-3 in number across the intervention garments. A wash basin fixed to the wall under each of the water tap had also been noticed. Supplied water was purified in each garment by means of ultra violet ray emitting machine. Each and every garment workers were found to collect water from the taps in her/his own bottle. The results of water analysis reports from ICDDR,B were found hanged serially beside the drinking water tap in all the three garments. It indicated periodical analysis of the supplied drinking water were undertaken by the observed garments for faecal coliform and priority chemicals (arsenic and iron). Apart from these, several (ranged from 18-20) water taps together with a platform covered by glazed tiles were also seen in the dining room for the worker of all the garments.

2.2 Access to Sanitation

2.2.1 Access to Sanitation at Household level

Types of sanitation facilities and its use

Similar to drinking water, access of the Levi's garment workers in Bangladesh to sanitation has been measured in terms of updated JMP ladders on the criteria of new global SDG indicator

Figure 2.4: Distribution garment worker by access to sanitation facilities (in %)

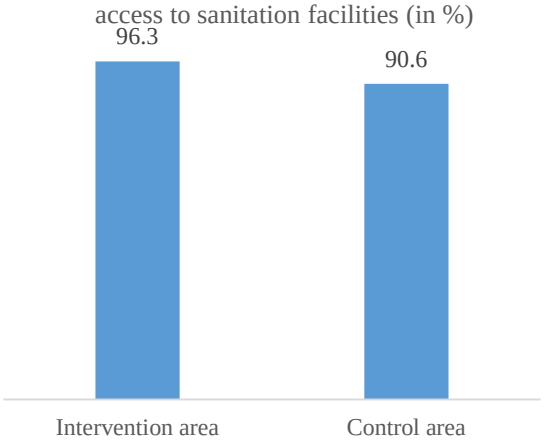
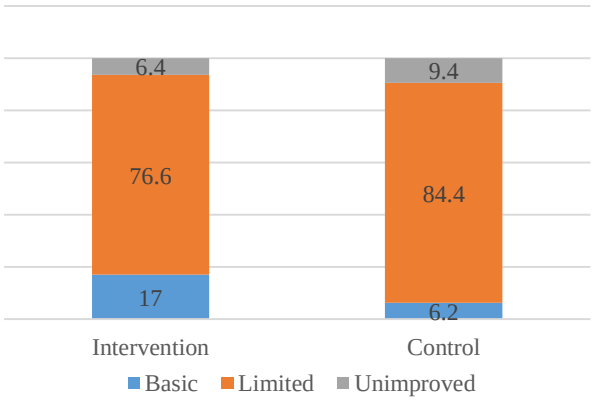


Figure 2.5: Access to improved facilities by updated JMP Sanitation ladder (in %)



"Proportion of population using safely managed sanitation services including handwashing facility with soap and water."[4] Regardless of intervention and control area, majority of the garment workers used improved sanitation facilities but none of these sanitation facilities meet the criteria

[4] Updated JMP ladders of sanitation services
Safely managed: Use of improved facilities that are not shared with other households and where excreta are safely disposed of in situ or transported and treated offsite
Basic: Use of improved facilities that are not shared with other households
Limited: Use of improved facilities shred between two or more households
Improved sanitation facilities are those designed to hygienically separate excreta from human contact include flush/pour flush to piped sewer systems, septic tanks or pit latrines; ventilated improved pit latrines, composting toilets or pit latrines with slabs
Unimproved: Use of pit latrines without a slab or platform, hanging latrines or bucket latrines
Open defecation: Disposal of human faeces in fields, forests, bushes, open bodies of water, beaches or other open spaces, or with solid waste

for having a safely managed sanitation service. The sanitation facilities, used by the garment workers living in intervention (76.6%) and control (84.4%) were largely classified as having a limited services i.e., shared with other households. However, use of sanitation facilities classed as having a basic sanitation service by the garment workers in interventions were nearly 3 times higher than that were used by the garment workers living in control area (17% vs. 6.2%) and difference is highly significant statistically. Use of unimproved sanitation facilities among the garment workers in the control area (9.4%) was also fairly higher than in intervention area (6.4%).

Analysis by type of sanitation facilities, most the garment workers in intervention (93%) and control (88.8%) areas used latrine flush to septic hole/tank. Use of latrine flush to septic tank, open space, drain and pit latrine without slab were reported by a very few both in intervention and control area (Table 22, Annex 1). Of the latrines used by garment workers, 81.2 percent were shared jointly with other households in intervention area and 91.7 percent in control area. Average number of households shared a single latrine was 5.85 in intervention area as compared to 15.9 households in control area.). Average number of person per latrine was 11.28 in intervention area 28 in control area. The above stated differences of sharing a latrine by household or by person between the intervention and control areas were highly significant statistically ($p = 0.0001$).

Table 2.5: Percentage distribution of the respondents by status sharing latrine

Shared latrine statistics	Intervention	Control
Household doesn't share latrine with others	17.6	8.3
Latrine jointly used with other HH	81.2	91.7
Latrines are open for all	1.2	0.0
n	330	339
Average Number of HH use a Latrines	5.85	15.90
Average number of person use a latrines	11.28	28.00
N	272	311

N= Number of total respondents interviewed

Ownership of latrines and maintenance

Most of the latrines in intervention (93.6%) and control (97.6%) area were owned by the house owner. According to the respondents most of the latrines in intervention (98.2%) and control (92.9%) area did require any repair and maintenance service (Table 27, Annex-1). Among the few, where repair of latrine was done, average cost of repair was Taka 29.8 in intervention and Taka 102.2 in control area primarily for evacuation of faeces from the tank/pit or to set up new latrine (Table 24, Annex 1).

Table 2.6: Percentage distribution of the latrines by ownership

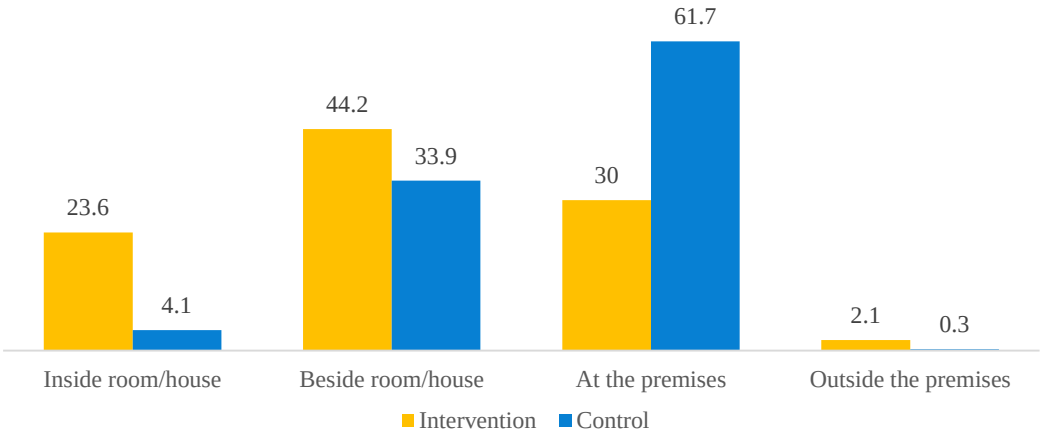
Ownership Types	Intervention	Control
Self	0.6	0.6
Owner of the house	93.6	97.6
Joint ownership	0.3	0.9
Community	3.3	0.9
Others	2.1	--
N	330	339

Location of the latrines and distance from the household

Location of the latrines were not alike in intervention and control area. Relatively such variation was more evident in the intervention area than so in the control area. In the control area, more than three-fifth (61.7%) latrines were situated the household premises, followed by beside the

living room (33.9%). On the other hand, a little less than one-fourth (23.6%) of latrine were attached to their living room, 44.2 percent beside the living room and 30 percent at the household premises.

Figure 2.6: Distribution of the latrine by location (in %)



Average distance of the latrines from household was 8.9 feet in intervention and 19.68 feet in control area. Percentage of households located within 20 feet of the latrines was 94.8 in intervention and 85.8 percent in control area. Availability of water inside the latrine was noted in 95.8 percent latrine in intervention and 91.4 percent in control area. However, availability of soap inside the latrine was significantly higher (P = 0.0001) in intervention area (51.5%) as compared to 17.7 percent in control area.

Table 2.7: Percentage distribution latrines by distance from household and availability water

Status of latrine characteristics	Intervention	Control
Distance of latrine from HH (Average) in feet	8.90	19.68
HH has latrine within 20 feet	94.8	85.8
Soap inside latrine	51.5	17.7
Availability of water inside latrine	95.8	91.4
N	330	339

Status of cleanliness of the latrines and usability

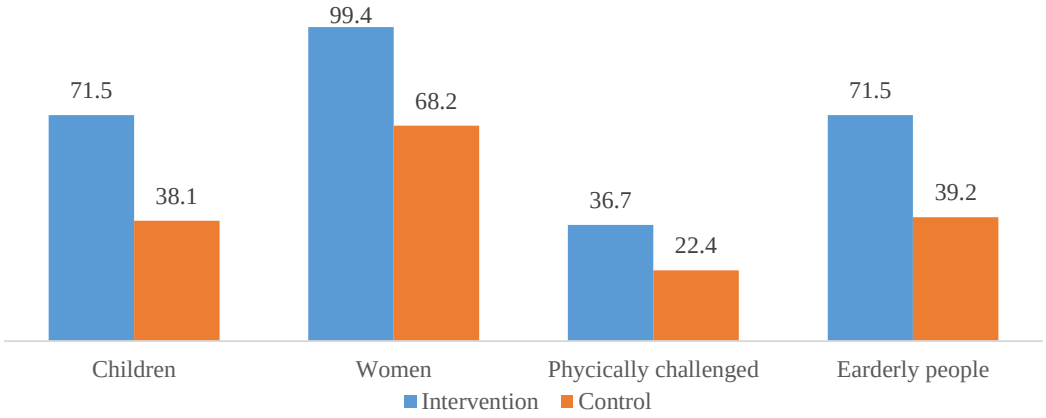
In general cleanliness of the latrines were somewhat better in the intervention area than so in the control area. Faeces was visible on the pan and/or on the platform of the latrine in 8.9 percent of the latrines in intervention area as compared to 19.7 percent latrines in control area. Mosquito/insect noticed inside latrine in 15.5 percent latrine in intervention area against 21.5 percent in control area. Bad smell was felt in 21.5 percent latrines in intervention area as compared to nearly half (48.1%) of the latrines in control areas.

Table 2.8: Distribution of latrines by status of cleanliness and usability

Condition of latrines	Intervention	Control
Visibility of feaces inside latrines or pan on slab	8.5	17.7
Visibility of mosquito/insects	15.5	21.5
Bad smell from latrines	21.5	48.1
Latrines are open or attached to canal/pond/ditches/river/open space	2.4	5.9
Others	25.5	12.1
N	330	339

Regarding usability, latrines were user-friendly to majority of women in intervention (99.4%) and control (98.2%) area. On the other hand, although 71.5 percent of children could use the latrines located in intervention area but 61.9 percent children could not do so in control area. Likewise, 71.5 percent of elderly people and 36.7 percent of physically challenged persons could use the latrines in intervention area. Corresponding figures in control area were 39.2 and 22.4 percent respectively in control area.

Figure 2.7: Distribution of the latrines by usability (in %)



Disposal of child faeces

According to Annex Table 33, more than half of the under-5 children in intervention (52.1%) and control (58.1%) area used latrine, followed by 33.3 percent in intervention area and 33.6 percent in control area used pot for daefecation. Some, 14.6 percent of the children in intervention area and 11.3 percent in control area had no specific place for defaecation. Among under-5 children who were not using latrine for defaecation, faeces was largely disposed in the household latrine both in intervention (95.7%) and control (84.6%) area. A few both in intervention and control areas disposed the child faeces randomly surrounding the premises (Table 34, Annex 1). Cleaning of faecally soiled clothes/langot of the children in intervention (78.6%) and control (72.3%) area was largely washed inside latrine, followed by the water tap at the washing place (Table 35, Annex 1).

Table 2.9: Percentage distribution of faecal matter by place of disposal

Disposal place	Intervention	Control
Use HH latrines	56.3	52.1
Dispose in the HH latrine	41.6	44.5
No specific place/in the premises	2.1	1.6
Washed with tubewell/tap water	0.0	1.8
N	48	56

2.2.2 Access to Sanitation at Factory Level

Cleaning of latrines

In general, study findings revealed that cleaning status of the latrines in intervention factories is fairly better than that of the control factories. According to majority of garment workers in intervention (66.7%) and control (56%) factories, the cleaning status of the latrines at their workplace were good. On the other hand, a few workers in intervention garments factories and nearly two-fifth (39.2%) in control factories felt cleaning status of the latrines as considerably well to bad.

Table 2.10: Cleaning Status of the latrines

Status	Intervention	Control
Very good	25.8	4.7
Good	66.7	56.0
Considerably well	7.6	34.8
Bad	0.0	4.4
N	330	339

2.2.3 Hygiene facilities in the latrines

The improvement of hygiene status was assessed on the basis on the availability of soap, towel/cloth, tissue papers and bin within the latrines. The Table 00 depicted that most (93.3%) of the respondents of intervention factories reported the availability of waste disposal bin within the latrines which was reported by 44 percent respondents of control factories. Again, 77 percent respondents of the intervention factories reported the presence soap within the latrines while presence of soap within the latrines were reported by 33 percent respondents in control garments factories. Availability of towel/cloth within the latrines of intervention factories reported by 34.8 percent respondents of intervention factories as compared to 9.4 percent respondents of control factories.

Table 2.11: Percentage distribution of garment factories by availability of hygienic facilities within the latrines.

Types of improvements	Intervention	Control
Arrangement of soap	77.0	33.0
Availability of tissue papers	13.0	.6
Availability of towel or cloth	34.8	9.4
Availability of bin for waste disposal	93.3	41.6
Others	0.6	44.0
N	330	339

Findings of observation of the intervention garments

All the latrines of the observed garments were improved type and safely managed and located at each floor the factory buildings. Most of the latrines were cleaned and freed from bad smell. Furthermore, there were adequate light and ventilation facility. Latrines of all the intervention factories were cleaned daily. In addition, latrines were demarcated by writing "toilet for women" and "toilet for men" at the doors of all latrines. A poster for "using process and necessity of slipper in the toilet" has also been fixed on the wall just in front the door of the latrines.

2.3 Access to Handwashing

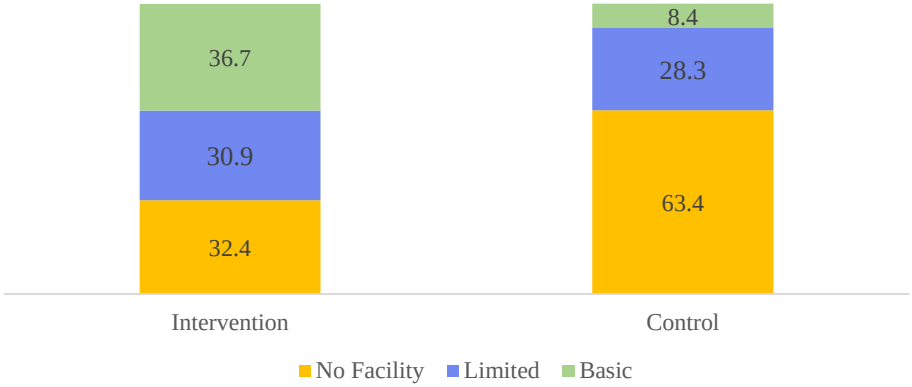
2.3.1 Handwashing Situation at Household level

SDGs include measurement indicators concerning the availability of hand washing facilities with soap and water, professing this as a top priority in all settings. The new global SDGs have classified these facilities in three categories on the basis of service level.[5] As one of the important measures of hygiene status, facility for handwashing was assessed at household level of the garment workers residing in intervention and control areas. The Figure 2.8 depicts that household

[5] SDG Definition for Handwashing Facility
Basic: Availability of a hand washing facility on premises with soap and water
Limited: Availability of a hand washing facility on premises without soap and water
No Facility: No hand washing facility on premises

handwashing facilities 36.7 percent respondents in intervention area were at basic service level which was more than four times higher than the handwashing facilities of the households of respondents in control area (8.3%) and the difference is statistically significant. Limited service of handwashing facilities were reported in 30.9 percent households in intervention area which is slightly higher than the households in control area (28.3%). Last but not least, close to one-third (32.3%) households in intervention area had no facility for handwashing as compared to 63.4 percent households in control area and the deference was almost double and statistically significant.

Figure 2.8: Handwashing Facility



Availability status of separate handwashing places within or outside the latrines was also explored to measure the standard of hygienic practice among the households. According to the Table presented below, the facility of separate handwashing places was available in 67.6 percent households in intervention which is significantly higher than households in control area (36.6%). Among the available handwashing places, handwashing facility/place within the latrines in intervention (99.6%) area was reportedly higher than the handwashing facility within the latrines in control (91.9%) area. As high as, 93.7 percent handwashing places in intervention area are within 10 feet of latrines which were 91.1% percent in control area.

Table 2.12: Availability of separate Handwashing places, within the latrines and outside the latrines

Time/occasion	Intervention	Control
Handwashing place	67.6	36.6
N	330	339
Handwashing place within latrines	99.6	91.1
Handwashing place within 10 feet of latrine	93.7	75
N	223	124

In order to understand the hygiene practice among the study areas, it was necessary to understand what kinds of handwashing agents especially soap including others, were available at the handwashing places of their households. The table shows that soap or liquid soap or powder was available among 54.3 percent handwashing places in intervention area which is significantly higher than the control (22.6%) area.

Table 2.13: Availability of handwashing agents

Handwashing agents	Intervention	Control
Soap/liquid soap/powder	54.3	22.6
Nothing	45.7	77.4
N	223	124

Most of the respondents in both intervention and control (99.4) areas reported that everyone should wash hand with soap after defecation. As high as 80.3 percent respondents in intervention area had knowledge on handwashing with soap before eating, which was known to 62.5 percent respondents in control area. The Table further showed that the handwashing knowledge among the respondents in intervention area was higher than the knowledge of respondents in control across the indicators of handwashing at critical times.

Table 2.14: Knowledge of Handwashing at critical times

Time/occasion	Intervention	Control
After defecation	99.4	99.4
After rinsing child's excreta	64.2	45.7
Before eating	80.3	62.5
Before cooking	23.0	18.6
Before Feeding Child	13.0	3.2
N	330	339

As high as 75.2 percent respondents in intervention area which is significantly higher than the control (62.8%) area washed their hands with soap after defecation. The other notable (35.2%) practice of handwashing of the respondents in intervention area was washing hands before eating which was reported by 19.8 percent respondents in control area. Handwashing practice of the respondents both in intervention and control areas at other critical times reported less frequently.

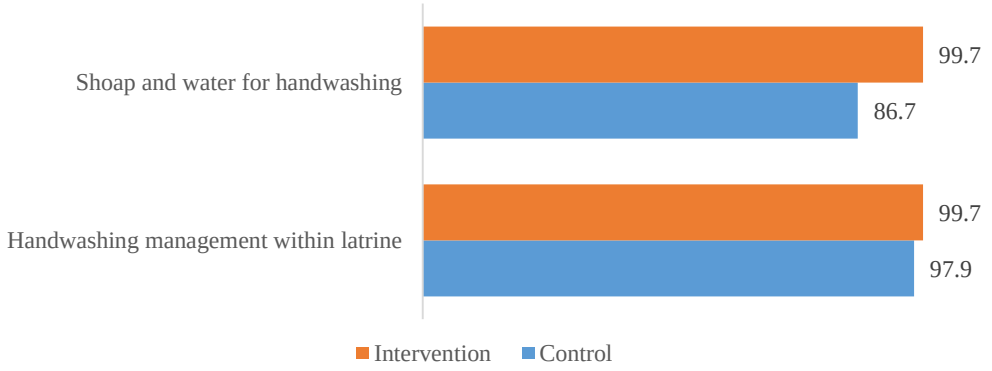
Table 2.15: Handwashing Practice at Proper time of necessary Occasions

Time/occasion	Intervention	Control
After defecation	75.2	62.8
After rinsing child's excreta	11.8	9.4
Before eating	35.2	19.8
Before cooking	10.9	14.5
Before Feeding Child	7.0	3.8
N	330	339

2.3.2 Handwashing Situation at Factories

Among all intervention garments, handwashing facility including water and soap was available in almost all (99.7%) latrines as compared to 97.9 percent latrines of control factories. On the other hand, as compared to availability water and soap in 99.7 percent handwashing places in intervention factories, 86.7 percent of the handwashing places in control factories reported to have water and soap.

Figure 2.9: Handwashing management within latrines and availability of soap and water at handwashing places



All the respondents of control factories (100%) reported that they used sandal or slipper at time of using latrines while such practice was reported by 92.6 percent respondents in intervention factories. Additionally, nearly half of the respondents of intervention factories reported that they washed both hand with soap and water always while only 7.1 percent of the respondents in control factories followed this practice. On the other hand, 81.4 percent of the respondents in control factories and 54.5 percent of intervention factories informed that they washed only one hand with soap and water.

According to the observation findings, handwashing places with three to four wash basin were found on the every floor of all the intervention factories for both male and female separately. Even there were towel or cloth available. It is to note that electric hand drier machines were also available in at least two of our three surveyed intervention factories. Further, according to the observation findings, both water and either soap or liquid soap were available at handwashing places.

Table 2.16: Hygiene Practices at time of using Latrines

Indictors	Intervention	Control
Use Sandal/slipper in latrine	100	92.6
Hand washing practice after defecation		
Wash with water only	2.4	11.5
Wash only one hand with soap and water	54.5	81.4
Wash both hands with soap and water	43.0	7.1
n		

2.4 Menstrual Hygiene Management (MHM)

2.4.1 Menstrual Hygiene Management at Household

At the household level among the women of reproductive age, the mostly used MHM materials were reusable materials like cloth (68.3%) in the intervention area which was significantly higher than those of control (78.9%). On the other hand, 30.7 percent of intervention households used disposable sanitary napkin whereas 20.1 percent of control household use such disposable MHM material.

Table 2.17: Proportion of use of MHM Materials at household level

Types of MHM materials	Intervention	Control
Reusable Materials (Cloth)	68.3	78.9
Disposable sanitary napkin	30.7	20.1
Cotton/Tissue paper	0.0	0.7
Presently menstruation is off	1.0	0.3
n	300	303

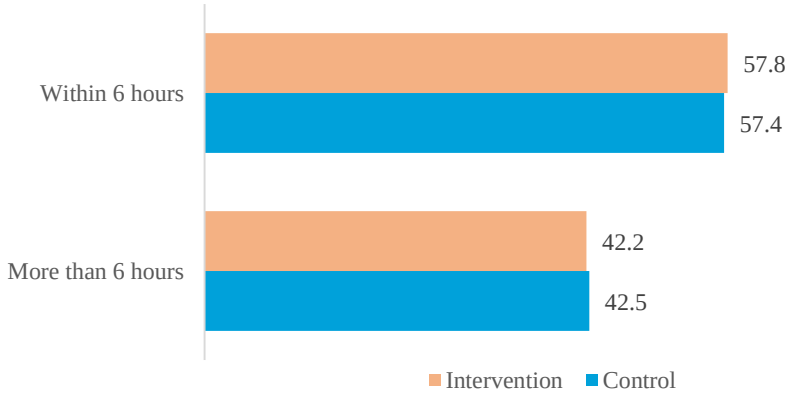
As highest as 85.6 percent of the intervention households washed their reusable MHM materials with soap and water while 78.2 percent of the control household followed this process. But, 19.5 percent of the control area washed their reusable MHM materials with only water while only 5.2 percent of the intervention reported to do that.

Table 2.18: Cleaning and drying of the Reusable MHM materials

Indicators	Intervention	Control
Cleaning of Reusable MHM Materials		
Wash with water, soap and Antiseptic	8.7	3.3
WASH with soap and water	85.6	78.2
With water only	5.2	19.5
n	208	243
Drying of Reusable MHM Materials		
Direct Sun dry	11.1	3.3
Dry keeping under other cloth	48.7	33.9
Inside the room with other cloth	40.2	62.8
n	77	91

Again, in case of drying the reusable MHM materials, 11.1 percent of intervention areas, higher than the intervention (3.3%) followed the process of direct sun dry. Most of intervention areas (48.7%) dried their MHM materials keeping under other cloths while 33.9 percent follow took this facility. Lastly, more than three-fifth of the control 62.8%) areas got dried their materials keeping inside the room with other cloth while 40.2 percent of intervention followed it.

Figure 2.10: Duration of changing MHM materials



All same proportion of HH within the intervention (57.8%) and control (57.4%) change their MHM materials within six hours or after every alternate six hours. In addition, less than half of the respondents (intervention 42.2% and control 42.5%) have reported that they changed their MHM materials after more than six hours.

A larger percentage of HH from intervention group (41.3%), significantly higher than control group (25%), used dustbin for disposal of MHM materials. In addition, 48.5 percent of intervention group disposed their MHM materials with HH waste while 54.5 percent of control group followed this step.

Table 2.19: Disposal of MHM Materials

Disposal Places	Intervention	Control
With HH waste	48.5	54.5
Toilet	0.7	0.3
Dustbin	41.3	25.0
Open place/drain	0.7	0.6
Do not know	8.9	19.5
n	77	91

2.4.2 Menstrual Hygiene Management at Factory

Most of the workers of intervention factories (92.4%) have reported that the factory latrines have the facility of MHM while 80.5 percent of control factories have opined like this. On the other hand, 92.1 percent of intervention facilities which is higher than control (79.4%) thought that the factory latrines are user friendly for MHM.

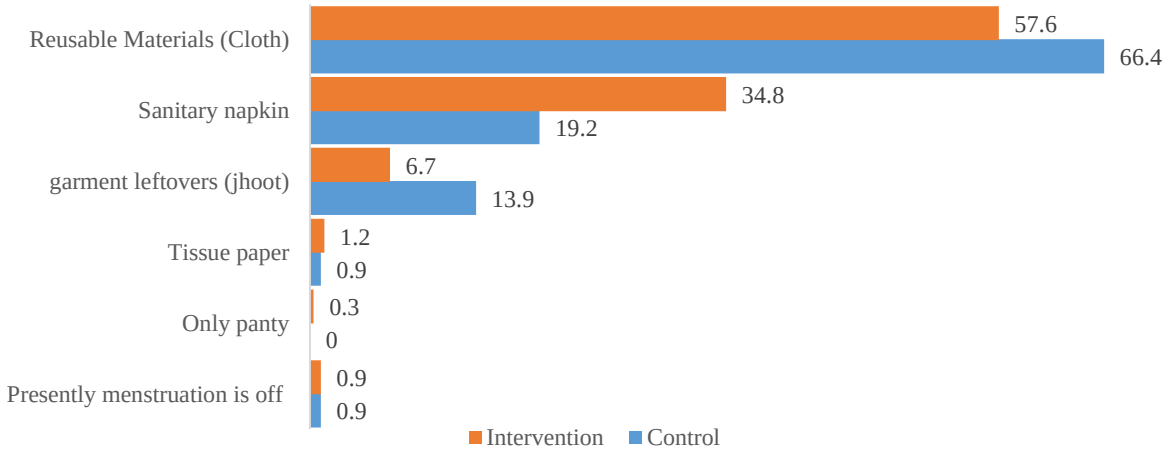
Table 2.20: MHM Facility at RMG factory latrines

MHM Facility	Intervention	Control
Facility of MHM service	92.4	80.5
User friendliness of factory latrines for MHM	92.1	79.4
n	77	91

Use trend of MHM materials among the factory workers

Among our intervention factories, more than one-third of the female workers (34.8%) use sanitary napkin which is significantly higher than the control group (19.2%). On the other hand, the mostly used MHM material is reusable cloth with 66.4 percent in control which is higher than intervention (57.6%). Additionally, it is to note that, 13.9 percent of control factories which is doubly higher than intervention (6.7%) use garment leftovers known as "jhoot" as MHM materials.
At time of changing MHM materials, more than half of the respondents (53.9%) of the intervention

Figure 2.11: Use of MHM Materials among the Factory Workers



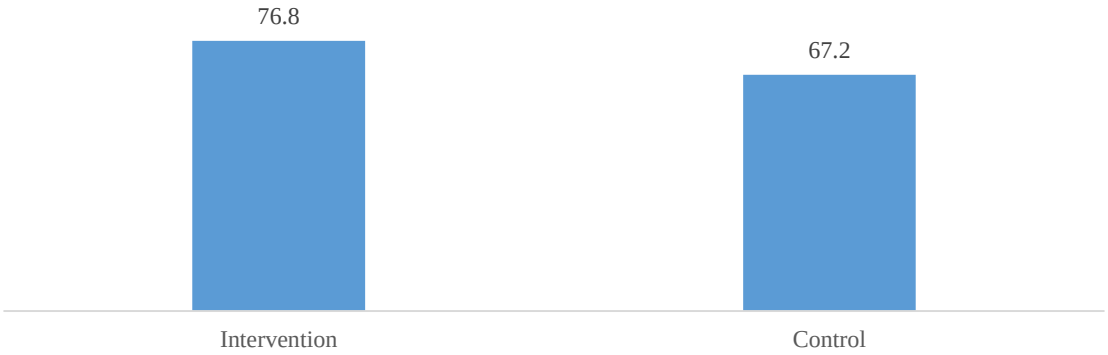
group which is significantly more than control (44%), disposed their MHM materials in the factories. On the other hand, 22.1 percent of intervention group got opportunity to wash the reusable materials in the factory and brought back home for further use while 34.5 percent respondents of the control factories took the same facility. Additionally, 15.5 percent of intervention group and 16.2 percent of control group did not take any step instantly though they need to change their MHM materials.

Table 2.21: Steps taken in case of need to change the used MHM materials at factories

Steps	Intervention	Control
Washed in factory and bring home	22.1	34.5
Bring it home without washing	8.5	5.3
Dispose of	53.9	44
Do nothing	15.5	16.2
N	77	91

Most of the female respondents of the intervention factories (76.8) have reported that they have specific place for safe disposal of MHM materials while 67.2 percent of the intervention factories have this facility.

Figure 2.12: Availability of Specific Place for MHM disposal



2.5 Solid Waste Management

Most of the households of the intervention group (96.7%) disposed there household waste Dustbin/ public trash service/waste disposal van while 92.6 percent of control group practiced the same. A very few of control group (2.7%), significantly higher than intervention (0.3%), still disposed just beside road or open place. In addition, 4.7 percent of the intervention threw the waste in the ditches or pond nearby while 1.8 percent of the intervention had this tendency.

Table 2.22: Places for HH waste disposal

Place	Intervention	Control
Own land	0.3	0.0
Beside the road/open place	0.3	2.7
Dustbin/ public trash service/waste disposal van	96.7	92.6
Burn	0.9	0
Throw in ditch or pond nearby	1.8	4.7
N	330	339

Observation about Waste Management at Factories

The observation findings inform that in very intervention factories, drums or dustbin are available for safe management of waste disposal. Most importantly big and medium plastic bins with lid are available to dump the floor waste on every floor of the surveyed factories. A very few of the plastic bins don not have any lid.

2.6 Participation in Promotional Activities of WaterAid

2.6.1 Exposure to WASH Advertisement

Findings unveiled that over three-fourth of the respondents in both intervention and control area watch television (intervention: 78.8%, control: 76.7%). Exposure to WASH advertisement was higher in intervention than control area. In last one month before the day of survey, 63 percent respondents in intervention watched WASH advertisement, which was 49.7 percent in control area. Again in last one week 50.4 percent of them in intervention against 33.9 percent in control had exposure to WASH advertisement.

Figure 2.13: Percentage of Levis workers watched WASH advertisement in last one month (in %)

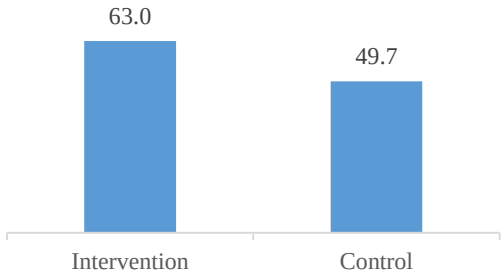
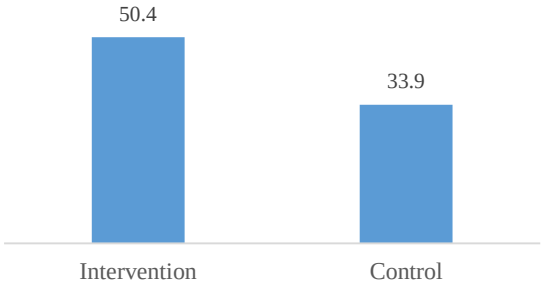


Figure 2.14: Percentage of Levis workers watched WASH advertisement in last one week (in %)



A large portion of this exposure to the households of the intervention area was attributable to TVC channel. As high as 62.2 and 60.3 percent respondents watched WASH advertisement in TVC based channel in last one month and last one week respectively. In addition, 32.6 and 25.1 percent of control areas had watched TVC in the last month and week respectively.

Figure 2.15: Distribution of Levis workers by exposure of WASH advertisement TV Channel in last one moth (in %)

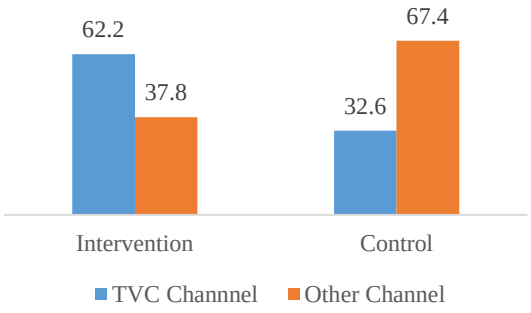
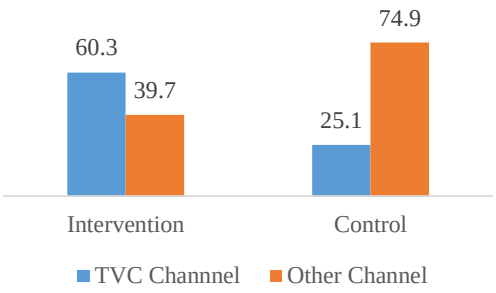


Figure 2.16: Distribution of Levis workers by exposure of WASH advertisement TV Channel in last one week (in %)



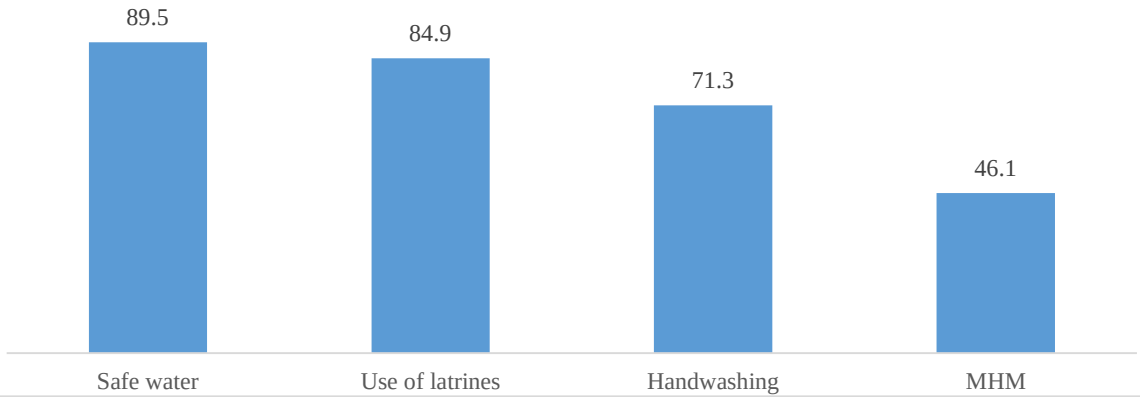
2.6.2 Participation in WaterAid Evening Sessions

About three-fifth (63.3%) of the respondents in intervention factories participated in at least one WaterAid evening sessions. However, in last 6 months this participation was 47.9 percent. Majority of these participants (74.1%) attended in 1-2 sessions. Details are in Annex Table-5.

2.6.3 Contribution of Peer Educators

According to the response provided by the intervention garment workers, 78.2 percent of them were familiar with the peer educator. Most of the respondents learned about safe water (89.5%) and use of latrine (84.9%) from the peer educators. Safe water topics mostly covered 'drinking safe water' (84.4%), 'water borne diseases' (73.6%), and 'covering of water pot' (61.9%). Some 28.1 percent respondents reported 'water intervention' as a learning topic. On the other hand toilet usage topics covered 'importance of using toilet' (73.1%), 'use of slipper in toilet' (83.1%), and 'hand washing after toilet use' (59.8%). Nearly three-fourth of the respondents (71.3%) learned about hand washing practices. In this matter respondents reported that they learned 'issues of hand washing' (73.4%), 'Critical times of hand washing' (84.8%), and 'necessity of hand washing' (58.2%) from the peer educators. 46.1 percent of the respondents also learned about Menstrual Hygiene Management. Details are in Annex Table 75-78.

Figure 2.17: Distribution of respondents by learning topics from peer educators (in %)



2.7 WASH in Schools

WASH in Schools improves attendance, health and cognitive development, increases girls' participation, establishes positive hygiene behaviors, offers the opportunity to introduce better WASH practices in families and communities and addresses issues of inequity and exclusion.[6]

However, hardware installation at schools, supported by WaterAid, were an effective corridor which had helped the 12 schools to have access to improved water sources, sanitation and hygiene. And so observation method with a structured guideline had been applied to get clear picture of WASH situation and improvements of those WaterAid supported schools.

All the surveyed schools have available and functional water sources which provide water round the year without any interruption. Further, all the schools have tapped water sources. On the other hand, Ultraviolet water purifiers have been fixed with the water pipeline to ensure the availability of safe water among all the observed schools. According to our observation findings, water quality is absolutely pure and good as water is free from arsenic, e-coli and any other contamination.

Table 2.23: Overall status of the safe water in terms of availability, functionality and types of water sources

Indictors	Status
Availability of water sources	Yes
Functionality of water sources	Yes
Availability of water for round the year	yes
Types of water sources	Tap or piped water
Water intervention process	Ultraviolet water purifier

All the schools had facility of improved latrines which are attached with septic tank through sewerage pipes. Single sex latrine facility is available in all the observed schools. Average latrines for female students is 2.6 per schools while average 2.1 latrines are available for male students per school. In addition, ramps or rails have been attached for making the toilets user-friendly for the physically challenged students.

[6] Report on "WASH for School Children" Developed and Published by UNICEF Regional Office for South Asia

Table 2.24: Status of toilets and availability of single sex based toilets at schools

Indicators	**Status**
Types of Latrines	Improved toilet attached with septic tank
Total toilets for male students in 12 schools	25
Total toilets for female students in 12 schools	31
Average latrines for male students per school	2.1
Average latrines for female students per school	2.6
Availability of ramp or rail within the bathroom	yes

In addition, more than half of the schools are cleaned every day while rest of the schools follow the cleaning process twice or thrice in a week. Further, all the latrines are observed neat and clean, insects free, bad smell free with adequate light and air. Furthermore, piped water is available within the latrines with available handwashing places and bins for waste disposal. In addition, two-third of the handwashing places were equipped with soap and water on the day of observation.

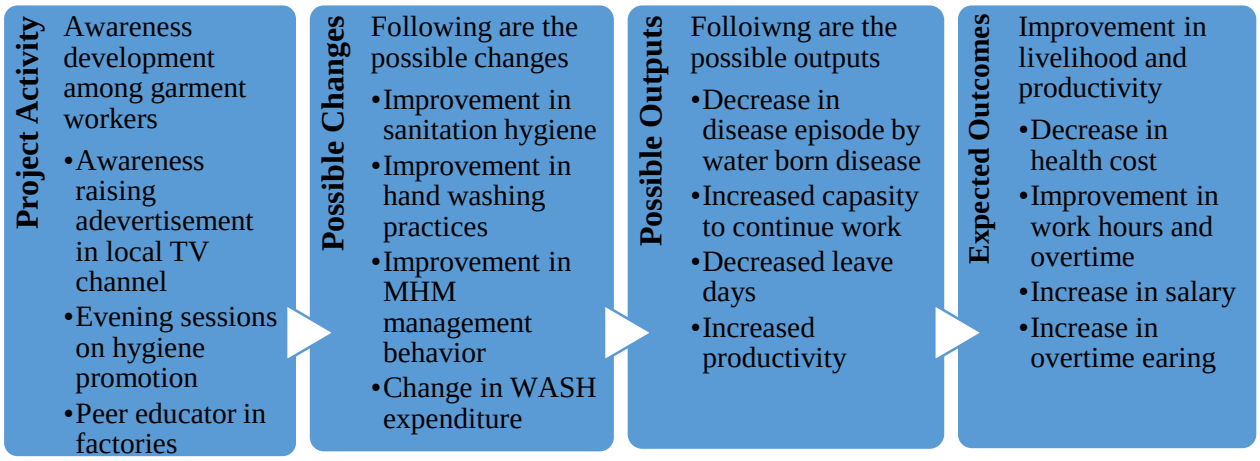
Chapter 3
Impact Assessment

Data suggests that improving Access to WASH for Levi's RMG Workers in Bangladesh Project has been significantly successful both in its execution and outcome and has had significant impacts on RNG workers and the lives of those households living in the surveyed areas compared to the control groups.

3.1 Impact assessment Framework

This framework focuses on monetary indicators rather than non-monetary indicators (i.e., happiness, sense of relief) as the monetary indicators are easily measureable and the data collection is easier with possibility of lesser response bias. The impact of the interventions was assessed through the following framework:

Figure 3.1: Framework for impact assessment

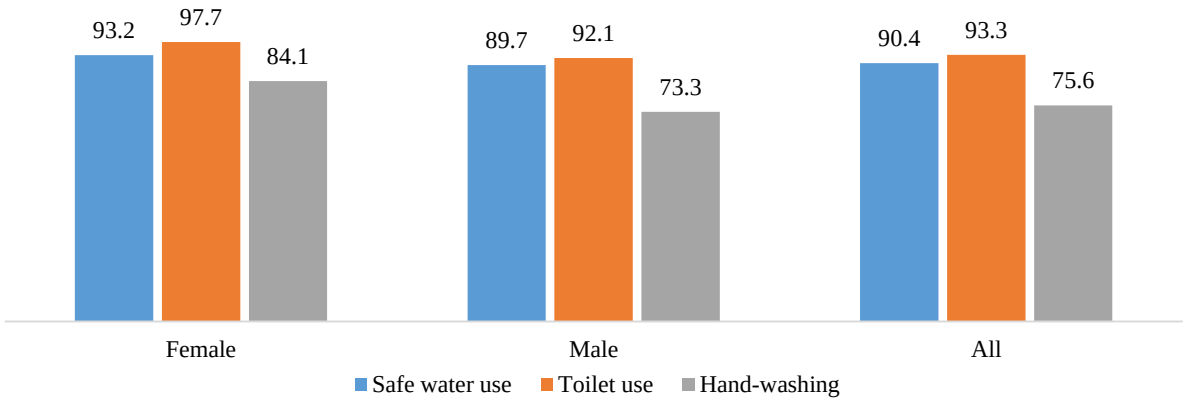


It is foreseen that the knowledge will enact change in hygiene behavior resulting decrease in disease episodes contributing to decrease in health expenditure. Also, the decrease in disease episode is expected to enable the workers to continue work more efficiently and effectively with the possibility of increase in salary and overtime payments. The increase in salary and decrease in health cost creates the possibility of better livelihood.

3.2 The Impact Indicators

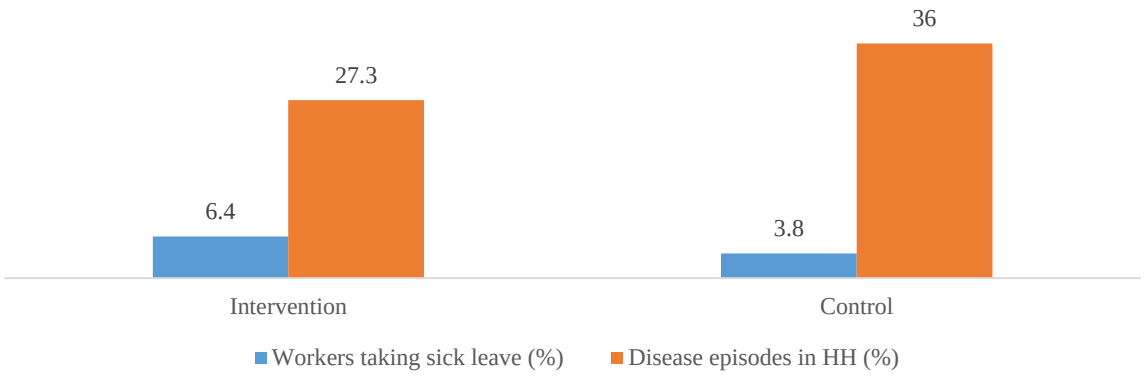
We already know that the hygiene messages and behavioral change motivations in took place in communities. 93.3 percent of the workers from intervention garments mentioned that they learned about using latrine safely and another 90.4 percent mentioned that they learned to use water safely. Also 75.6 percent workers learned about appropriate hand washing. These messages were also delivered in factories through peer educators (Chapter 2). Data suggest that the workers who received messages at community as well as at factory (73.0%) were more motivated in WASH behavior change.

Figure 3.2: Messages learned from evening sessions by target workers (intervention)



Among workers in intervention factories, 3.8 percent had sick leave in the month preceding survey which was 6.4 percent among workers in non-intervention factories. Disease episode was reported in 27.3 percent households of workers in intervention factories which is significantly lower compared to such incidence (36.0%) in households of workers in non-intervention factories. Additional information available in Annex Table 86-87.

Figure 3.3: Differences in disease episodes at households and sick days between intervention and control



There is noticeable difference in income and overtime hours. The income among intervention workers and control workers are significantly different and it is higher in among intervention workers. A key contributing factor to the overall income is the earnings from overtime. The time spent for overtime among intervention workers in the month preceding survey is 47.1 hours (in 21 days) which is significantly higher compared to control workers 41.6 hours (in 16 days). The average salary of intervention workers is 3.6 percent higher and earning form overtime is 30.2 percent higher. Additional information available in Annex Table 81-85.

3.3 Overall Impact of the Project activities

After project intervention, 34.2 percent of intervention households, which is more than double than the control areas (15.0%), have access to safely managed water sources. The groups of basic services in terms of water sources includes 65.8 percent interventions households which is lower than those of control areas. It is assumed that the reason for the decrease of access to basic water services among the intervention household is for the access of higher number of intervention households than the control group to safely managed water services.

Improving Access to WASH for Levi's RMG Workers in Bangladesh Project has played a vital role for a significantly successful change in sanitation facilities within the intervention areas compared to the control areas. After the project is over, 17.0 percent intervention households have

access to basic sanitation facility while only 6.2 percent control household have this facility. The limited sanitation service includes 76.6 percent intervention households which is lower than the control households (84.4%). Still, 9.4 percent control households, higher than the intervention households (6.4%), exist in unimproved sanitation facility.

The percentage of satisfaction for water quality among the intervention and control groups is noted with 99.7 and 77.6 respectively with a significant difference. The intervention household have access to available water for round the year (average 12 months), which is nearly same for the intervention groups (average 11.9 months) with a significant difference. Both the intervention and control households have available water access for almost round the clock. Almost all the intervention households (99.7%) have the facility to get necessary water while 98.1 percent have this opportunity as all the households of both the intervention and control have either safely managed or basic water services and there is no unproved water sources.

Our study findings shows that for the case of safe water collection and storage, 19.1 percent intervention households, significantly higher than control groups (4.4%), have followed proper measures. On the other hand, there also exists a significant difference for following water consumption process between intervention and control group. In this regard, 91.1 percent intervention households know the safe and proper process while only 65.8 percent of control group can track this process.

Average 5.9 households of intervention areas use a latrine while average 11.3 households of control areas have only a latrine to use. On the other hand, average 15.9 persons of the intervention areas, expressively lower than the control (average 28.0), use only a latrine. Our study shows that, soap is available within 51.5 percent latrines which is significantly higher than control (17.7%). The feaces is safely managed in 98.8 percent intervention latrines and 93.8 percent control latrines.

As high as 92.4 percent RMG workers have expressed their satisfaction about the cleanliness of factory latrines, which is significantly higher than control factories (60.8%). Again, 67.7 percent RMG workers, significantly higher than control (39.8%), have reported that they have no problem for using the factory latrines. Separate slippers are available within 99.4 percent intervention latrines which is higher than control (94.7%). Further, soaps are available within 87.6 percent latrines of intervention factories which is significantly higher compared to those of control (65.5%) for hand washing. Our findings also shows that 32.7 percent control household face the water logging problem while only 22.1 percent of intervention face this problem.

According to the findings, there is significantly higher facility of handwashing places among the 67.6 percent intervention households than control (36.6%). Among them, 54.3 percent intervention households have their available soap or liquid soap at the hand washing places, which is significantly higher than that of control (22.6%). As high as 42.7 percent intervention households wash both hand after defecation, which is significantly higher than the practice trend of control (6.5%).

The project has also achieved a significant success in decreasing the incidents of water borne diseases especially in the intervention areas. The findings show that incident of water borne diseases has taken places for 27.3 percent household members which is significantly lower than the control (36.0%). Further, only 0.08% household members have reported that they have taken day off because of illness while this percentage is 0.12 for control. On the other hand, the monthly average payment received by intervention household was 2,429.4 BDT which is higher than the control (1,866.5 BDT).

The significant improvement of access to water, sanitation and hygiene including handwashing practices and availability of soap at handwashing places among the intervention areas for both

household and factory level might be a direct effect of so many activities executed at the time of project implementation.

Firstly, TVC based WASH advertisement has contributed to increase awareness among the intervention areas at the household level. At the intervention household level, 30.9 percent which is significantly higher than control (12.4%) have reported that they have watched the TVC exposure. As high as 57.3 percent of intervention households have mentioned that they have learned about safe water management from the evening sessions. About 59.1 percent have learnt about using toilet appropriately and 47.9 percent have learnt about handwashing from the evening session.

At RMG factory level, the engagement of peer educator for awareness build up have played a vital role to achieve significant success. At intervention factory level, 78.2 percent RMG workers have reported that they have received WASH awareness from peer educators. Among them 89.5 percent have opined that they have got knowledge about safe water management and 84.9 percent about using toilets appropriately from peer educator. At last, 71.3 percent have received knowledge on handwashing. Importantly, 46.1 percent RMG female workers have got knowledge on menstrual hygiene management from peer educator while control factories do not have this facility for the RMG workers.

Table 3.1: Summary of Indicators

Indicator	Measurement	Intervention	Control	Hypothesis	p-value
Contributing factor					
Exposure to TVC based WASH advertisement (in last month)	Percentage	30.9	12.4	-	0.0001
Exposure to TVC based WASH advertisement (in last week)	Percentage	23.9	6.5	-	0.0001
Expenditure on cleanliness	Average	102	72	Higher in intervention	0.0001
Participation in evening sessions by WaterAid	Percentage	63.3	0.3	Higher in intervention	0.0001
Learned about safe water and water safety from evening sessions	Percentage	57.3	0.3	Higher in intervention	0.0001
Learned about appropriately using toilet from evening sessions	Percentage	59.1	0.3	Higher in intervention	0.0001
Learned about handwashing from evening sessions	Percentage	47.9	0.0	Higher in intervention	0.0001
Learned about MHM (only females) from evening sessions	Percentage	52.2	0.4	Higher in intervention	0.0001
Water quality is satisfactory	Percentage	99.7	77.6	Higher in intervention	0.0001
Adequate knowledge about hand washing*	Percentage	67.9	42.8	Higher in intervention	0.0001
Adequate practice of hand washing*	Percentage	16.6	14.1	Higher in intervention	0.0001
Problem of waterlogging	Percentage	22.1	32.7	-	-
Households do not dispose solid waste openly	Percentage	3.3	7.4	lower in intervention	0.0093
Outcome Indicators					
Days of overtime (last month)	Average	21.4	16.5	Higher in intervention	0.0001
Hours of overtime (last month)	Average	47.1	41.6	Higher in intervention	0.008
Months of water access	Average	12.00	11.99	Higher in intervention	0.212

Indicator	Measurement	Intervention	Control	Hypothesis	p-value
Hours of water access	Average	23.63	23.86	Higher in intervention	0.512
HHs have necessary water	Percentage	99.7	98.1	Higher in intervention	0.0244
HHs follow all safety measures for water storage/collection	Percentage	19.1	4.4	Higher in intervention	0.0001
HHs follow appropriate methods for water consumption	Percentage	91.1	65.8	Higher in intervention	0.0001
The feaces is concealed safely	Percentage	98.8	93.8	Higher in intervention	0.0003
Availability of soap in latrine	Percentage	51.5	17.7	Higher in intervention	0.0001
HH use a latrine	Average	5.9	11.3	Lower in intervention	0.0001
People use a latrine	Average	15.9	28.0	Lower in intervention	0.0001
Handwashing place available in HH	Percentage	67.6	36.6	Higher in intervention	0.0001
Cleaning agent available in handwashing place	Percentage	54.3	22.6	Higher in intervention	0.0001
Proportion of workers reporting no problem in latrine usage in factory	Percentage	67.7	39.8	Higher in intervention	0.0001
Satisfactory cleanliness in factory latrine	Percentage	92.4	60.8	Higher in intervention	0.0001
Separate slippers available for latrine in factory	Percentage	99.4	94.7	Higher in intervention	0.0004
Soap for handwashing available in latrines of factories	Percentage	87.6	65.5	Higher in intervention	0.0001
Wash one hand with soap and water after defecation	Percentage	54.5	81.4	Higher in intervention	0.0001
Wash both hands with soap and water after defecation	Percentage	42.7	6.5	Higher in intervention	0.0001
Learned awareness from peer educator	Percentage	78.2	0.0	-	-
Learned about safe water and water safety from peer educator	Percentage	89.5	-	-	-
Learned about appropriately using toilet from peer educator	Percentage	84.9	-	-	-
Learned about handwashing from peer educator	Percentage	71.3	-	-	-
Learned about MHM (only females) from peer educator	Percentage	46.1	-	-	-
Impact Indicator					
Expenditure on health	Average	99	117	Lower in intervention	0.589
Payment received for overtime (last month)	Average	2429.4	1866.5	Higher in intervention	0.0001
Day off for illness (self or HH member)	Average	0.08	0.12	Lower in intervention	0.406
Incidence of water borne disease to self/ HH members	Percentage	27.3	36.0	Lower in intervention	0.0155

*Knows about at least 3 or more critical handwashing time
**Always washes hand in at least 3 or more critical handwashing time

3.4 Impact Assessment

We considered the following as impact indicators from different outcome indicators:

- Expenditure on health (as a result of improved access to WASH facilities and hygiene behavior incidence of disease is expected to decrease resulting decrease in health expenditure)
- Income (the improved access to WASH facilities and hygiene behavior is expected to enable the workers to take lesser sick days and greater overtime resulting increase in income)

Linear regression was performed to see the impacts of selective outcome and impact variables on the impact indicators- 'expenditure on health', 'payment received for overtime', 'day off for illnesses', and 'number of disease incidence in household'. For this regression model, 'watched TVC ad on water, sanitation and hygiene in last one month'; 'attended sessions on water, sanitation and hygiene arranged by WaterAid'; and 'received knowledge on water, sanitation and hygiene from peer educator' were considered as independent variable or predictor variable.

Assuming, Y as the dependent variable or response variable and $X_i (i = 1, 2, 3)$ as the independent or explanatory variables for the regression model which can be defined as follows (Table 3.2).

Table 3.2: Notation of dependent and explanatory variables used in the regression model

Dependent variable	Exploratory Variable		
Y	X_1	X_2	X_3
Expenditure on health (in taka)/ Payment received for overtime (in taka)/ Day off for illness (in days)/ Number of Disease Incidence in household	Watched TVC ad on water, sanitation and hygiene in last one month	Attended sessions on water, sanitation and hygiene arranged by Water Aid	Received knowledge on water, sanitation and hygiene from peer educator

Here, Y is a continuous variable and X_i are categorized as

X_1= 0= do not watch ad
1= watch ad from other channels
2= watch ad on TVC channels

X_2= 0=no
1=yes

X_3= 0=no
1=yes

So, the regression model is-

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \text{ ----------(1)}$$

Using this regression model, impact as well as statistically significant contribution of the outcome variables on the impact indicators has been explored. Results found are explained below:

Expenditure on health

'Watched TVC ad' had a statistically significant contribution on expenditure on health. On average those who watch TVC ad on water, sanitation and hygiene expenses 100.1 taka more than those who watch ad on other channels; those who watch TVC ad on water, sanitation and hygiene expenses 200.2 taka more than those who did not watch ad related to water, sanitation and hygiene

in last one month (Table 3.3). This is due to their increased concern on health. Other two outcome variables had no statistical significant contribution on health expenditure.

Table 3.3: Regression coefficients of expenditure on health

Explanatory variable	Constant (α)	Coefficient (β_i)	P-value
Watched TVC ad on water, sanitation and hygiene in last one month	42.573	100.051	0.000
Attended sessions on water, sanitation and hygiene arranged by Water Aid	42.573	-10.738	0.826
Received knowledge on water, sanitation and hygiene from peer educator	42.573	9.174	0.841

Payment received for overtime

All of the outcome variables had a positive impact on payment received by the respondent for overtime (Table 3.4). However, only peer educator had a statistically significant contribution on the overtime payment. On average those who had a peer educator earned 308.4 more taka than those who did not have a peer educator.

Table 3.4: Regression coefficients of payment received for overtime

Explanatory variable	Constant (α)	Coefficient (β)	P-value
Watched TVC ad on water, sanitation and hygiene in last one month	1890.6	107.2	0.156
Attended sessions on water, sanitation and hygiene arranged by Water Aid	1890.6	67.5	0.687
Received knowledge on water, sanitation and hygiene from peer educator	1890.6	309.7	0.049

Day off for illness

'Watched TVC ad' had a statistically significant contribution on day off for self-illness or illness of other household members. On average those who watch TVC advertisement took .058 more days off than those who watch ad on other channels; those who watch TVC ad expenses 0.12 more days off than those who did not watch advertisement related to water, sanitation and hygiene in last one month (Table 2). Other two outcome variables had no statistical significant contribution on day off for illness.

Table 3.5: Regression coefficients of day off for self-illness

Explanatory variable	Constant (α)	Coefficient (β)	P-value
Watched TVC ad on water, sanitation and hygiene in last one month	.061	.058	.036
Attended sessions on water, sanitation and hygiene arranged by Water Aid	.061	.016	.793
Received knowledge on water, sanitation and hygiene from peer educator	.061	-.009	.874

Number of Disease Incidence

Though no statistically significant contribution was seen of the outcome variables on number of disease incidence, all of the outcome variables was found to have a negative impact on number of disease incidence in household (Table 3.6).

Table 3.6: Regression coefficients of number of disease incidence in household

Explanatory variable	Constant (α)	Coefficient (β)	P-value
Watched TVC ad on water, sanitation and hygiene in last one month	1.247	-.001	.975
Attended sessions on water, sanitation and hygiene arranged by Water Aid	1.247	-.032	.826
Received knowledge on water, sanitation and hygiene from peer educator	1.247	-.111	.423

3.5 Effect Size of Envisioned Impact

Linear regression was fitted to see the effect size of the selective outcome variables on the impact indicators- 'expenditure on health', 'payment received for overtime', 'day off for illnesses', and 'number of disease incidence in household'. For this regression model, 'watched TVC ad on water, sanitation and hygiene in last one month', 'attended sessions on water, sanitation and hygiene arranged by wateraid', and 'received knowledge on water, sanitation and hygiene from peer educator' were considered as independent variable or predictor variable separately.

Let, Y be the dependent variable or response variable and X_i be the independent or explanatory variables for the regression model which can be defined as follows (Table 1).

Table 1: Notation of the dependent and explanatory variables used in the regression model

Y	X_1	X_2	X_3
Expenditure on health (in taka)/ Payment received for overtime (in taka)/ Day off for illness (in days)/ Number of Disease Incidence in household	Watched TVC ad on water, sanitation and hygiene in last one month	Attended sessions on water, sanitation and hygiene arranged by Water Aid	Received knowledge on water, sanitation and hygiene from peer educator

Here, Y_i is a continuous variable and X_i are categorized as

X_1= 0= do not watch ad
1= watch ad from other channels
2= watch ad on tvc channels

X_2= 0=no
1=yes

X_3= 0=no
1=yes

So, the regression model can be written as-

$Y= \alpha+\beta_1 X_i$ ----------(1) where, i=1,2,3

Using this regression model, effect size as well as statistically significant contribution of the outcome variables on the impact indicators has been explored. Results found are explained below:

Expenditure on health

None of the outcome variables had significant effect on expenditure on health. However, the effect size was positive for all the outcome variables e.g. those who watch tvc ad related to WAS had more expenditure on health than those who watched other channels or did not watch any ad. This may due to their increased concern on health.

Explanatory variable	Constant (α)	Coefficient (β_i)	P-value
Watched TVC ad on water, sanitation and hygiene in last one month	117.3	26.46	0.439
Attended sessions on water, sanitation and hygiene arranged by Water Aid	113.8	28.38	0.560
Received knowledge on water, sanitation and hygiene from peer educator	113.5	23.40	0.612

Payment received for overtime

All of the outcome variables had statistically significant effect on 'payment received for overtime' at 5% level of significance. On average those who watch TVC ad on water, sanitation and hygiene earned 173.05 taka more than those who watch ad on other channels; those who watch TVC ad on water, sanitation and hygiene expenses earned 346.1 taka more than those who did not watch ad related to water, sanitation and hygiene in last one month. Those who attended sessions on water, sanitation and hygiene arranged by Water Aid earned 339.28 taka more than those who didn't attend such sessions. Those who received knowledge on water, sanitation and hygiene from peer educator earned 399.93 taka more than those who didn't receive such knowledge.

Explanatory variable	Constant (α)	Coefficient (β_i)	P-value
Watched TVC ad on water, sanitation and hygiene in last one month	2050.9	173.05	0.027
Attended sessions on water, sanitation and hygiene arranged by Water Aid	2037.7	339.28	0.007
Received knowledge on water, sanitation and hygiene from peer educator	1985.1	399.93	0.001

Day off for illness

None of the outcome variables had statistically significant effect on 'day off for illness'. Marginally positive effect size was found for all the outcome variables in taking day off for illness.

Explanatory variable	Constant (α)	Coefficient (β_i)	P-value
Watched TVC ad on water, sanitation and hygiene in last one month	0.108	0.011	0.724
Attended sessions on water, sanitation and hygiene arranged by Water Aid	0.087	0.041	0.369
Received knowledge on water, sanitation and hygiene from peer educator	0.089	0.027	0.534

Number of Disease Incidence

None of the outcome variables had statistically significant effect on 'number of disease incidence'. However, effect size was negative for e.g. on average those who watch TVC ad on water, sanitation and hygiene had less disease incidence than those who watch ad on other channels or who did not watch any ad.

Explanatory variable	Constant (α)	Coefficient (β_i)	P-value
Watched TVC ad on water, sanitation and hygiene in last one month	1.232	-0.017	0.787
Attended sessions on water, sanitation and hygiene arranged by Water Aid	1.233	-0.120	0.201
Received knowledge on water, sanitation and hygiene from peer educator	1.245	-0.135	0.134

3.6 End Remarks

Results suggest that the interventions made significant positive changes in access to WASH and hygiene behavior resulting change in income amount (increase) and expenditure patterns (i.e., less expenses on health, greater expenditure on hygiene products). This is expected to increase the living standards of factory worker in target factories compared to other factories. Among interventions, promotional activities in factory reveal greater results compared to promotional activities at community level. However, the promotional activities at community level complemented and supplemented the promotional activities in factories for factory workers. In addition, since the promotional activities at community level was not limited to workers in intervention factories, it contributed to overall behavior change in community, reaching people beyond target group.

Annex: Data Tables

Tabulation for Endline Study of Improving Access to WASH for Levi's RMG Workers in Bangladesh Project

Respondents Characteristics/Background of Information

Table 1. Demographic indicators for surveyed household

Indicators	Intervention	Control
Surveyed HH Number	330	339
Members of HH	839	870
Household size (average)	2.53	2.54
Sex ratio (Female:Male)	1.18	1.25
Female headed household	23.3	26.8
Households with members having disability (% among HHs)	1.5	0.3
n	330	339

Table 2. Age distribution of the surveyed respondents

Age Range	Intervention			Control		
	Male	Female	All	Male	Female	All
15-19	0.8	13.0	3.6	0.8	14.3	4.4
20-24	11.9	14.3	12.4	8.9	31.9	15.0
24-29	21.3	39.0	25.5	23.4	22.0	23.0
30-34	29.2	15.6	26.1	27.8	15.4	24.5
35-39	19.4	13.0	17.9	14.1	4.4	11.5
40-44	10.3	1.3	8.2	14.9	7.7	13.0
45-49	3.2	1.3	2.7	5.6	2.2	4.7
50-54	1.2	1.3	1.2	2.8	1.1	2.4
55-59	1.6	0.0	1.2	0.8	1.1	0.9
60+	1.2	1.3	1.2	0.8	0.0	0.6
n	253	77	330	248	91	339

Table 3. Marital Status of the respondents

Marital Status	Intervention			Control		
	Male	Female	All	Male	Female	All
Unmarried	7.9	24.7	11.8	5.6	31.9	12.7
Married	92.1	64.9	85.8	94.0	44.0	80.5
Widow	0.0	1.3	0.3	0.4	5.5	1.8
Divorced/Separated	0.0	9.1	2.1	0.0	18.7	5.0
n	253	77	330	248	91	339

Table 4. Literacy/education status of the surveyed respondents

Literacy Status/Education	Intervention			Control		
	Male	Female	All	Male	Female	All
Can put sign only	15.8	15.6	15.8	22.6	20.9	22.1
Read and write only	3.2	1.3	2.7	7.3	2.2	5.9
Primary	13.8	16.9	14.5	12.9	23.1	15.6
Passed primary	24.5	31.2	26.1	28.6	22.0	26.8
Secondary	20.6	28.6	22.4	16.1	22.0	17.7
Passed Secondary	12.6	5.2	10.9	5.6	5.5	5.6
Passed Higher Secondary	5.9	1.3	4.8	4.4	3.3	4.1
Nurani/Arabic	0.0	0.0	0.0	0.4	0.0	0.3
No formal education	3.6	0.0	2.7	2.0	1.1	1.8
n	253	77	330	248	91	339

Table 5. Primary Occupation of the HH members

Type of occupation	Intervention			Control		
	Male	Female	All	Male	Female	All
Garments Worker	9.6	0.2	4.5	10.9	0.0	4.8
Salaried employee	4.9	0.2	2.4	5.7	1.9	3.6
Government/Non-government employee	0.5	0.0	0.2	0.3	0.0	0.1
Rickshaw/Van/Push Cart Driver	0.5	0.0	0.2	1.6	0.0	0.7
Mechanical Vehicle Driver	1.0	0.0	0.5	0.8	0.0	0.3
CNG/auto rickshaw driver	0.8	0.0	0.4	0.5	0.0	0.2
Transport Worker	0.3	0.2	0.2	0.0	0.0	0.0
Day Labourer	50.5	68.6	60.3	47.3	68.3	59.0
Mechanic(Rickshaw/Van /Push Cart	0.5	0.0	0.2	0.0	0.0	0.0
Electrical Mechanic	0.3	0.0	0.1	0.0	0.0	0.0
Mason/Carpenter	3.4	0.0	1.5	2.8	0.0	1.3
Helper of Mason/Carpenter	1.0	0.0	0.5	3.4	0.0	1.5
Night Guard/Darwan	0.0	0.0	0.0	0.3	0.0	0.1
House Wife	0.0	9.9	5.4	0.0	9.3	5.2
Student	13.5	11.6	12.5	11.4	10.6	10.9
Maid Servant	0.0	0.2	0.1	0.0	0.6	0.3
Handicraft/Cottage industry	0.0	0.0	0.0	0.5	0.0	0.2
Tailor	0.3	0.0	0.1	0.0	0.2	0.1
Small/Medium business	3.4	0.0	1.5	3.1	0.0	1.4
Unemployed/Do nothing	1.6	1.1	1.3	2.8	1.9	2.3
Retired/Old man/Old woman	0.3	0.0	0.1	0.0	0.0	0.0
No secondary occupation	1.0	1.1	1.1	0.8	1.0	0.9
Others	6.5	6.8	6.7	8.0	6.2	7.0
n	384	455	839	387	483	870

Table 6. Primary Occupation of the HH members (categorized)

Type of occupation (categorized)	Intervention			Control		
	Male	Female	All	Male	Female	All
Government/Non-government employee	15.0	0.4	7.1	16.9	1.9	8.5
Rickshaw/Van/Push Cart Driver	0.5	0	0.2	1.6	0	0.7
Mechanical Vehicle Driver	1.8	0	0.9	1.3	0	0.5
Unskilled Labour	51.8	69	61.1	50.7	68.9	60.8
Skilled labor	4.2	0	1.8	2.8	0	1.3
House Wife	0	9.9	5.4	0	9.3	5.2
Student	13.5	11.6	12.5	11.4	10.6	10.9
Small/Medium business	3.7	0	1.6	3.6	0.2	1.7
Unemployed/Do nothing	2.9	2.2	2.5	3.6	2.9	3.2
Others	6.5	6.8	6.7	8.3	6.2	7.1
n	384	455	839	387	483	870

Table 7. Structure of the living houses of the respondents

Structure	Intervention	Control
Building	17.9	11.2
Semi-building	66.7	64.3
Tin House	15.5	24.2
Bamboo/mud wall with tin roof	0.0	0.3
Bamboo House	0.0	0.0
n	330	339

Table 8. Dwelling status of respondents by sex

Living status	Intervention			Control		
	Male	Female	All	Male	Female	All
Alone	22.1	12.3	14.5	28.6	14.5	17.1
Together With my several friends	5.2	1.6	2.4	1.6	.4	.6
Only Husband and wife	40.3	43.5	42.7	27.0	38.0	36.0
Husband/wife and other family members	20.8	30.8	28.5	34.9	32.2	32.7
With relatives	10.4	11.1	10.9	7.9	12.7	11.8
Others	1.3	.8	.9	0	2.2	1.8
n	253	77	330	248	91	339

Table 9. Assets ownership of the Households Level

Asset	Intervention	Control
Electricity/solar power	99.1	99.1
Almirah (wood/steel)	24.5	11.8
Sofa set	0.6	0.9
Chair/table	68.5	51.0
Cot/Bedstead	96.4	96.5
Radio	0.3	1.8
Mobile	98.5	96.5
Television	56.1	47.8
Fridge	24.8	17.1
Water filter/Dispenser	0.3	1.5
Bicycle	1.8	0.6
Motorcycle	0.3	0.6
Average number of asset ownership	4.71	4.25
n	330	339

Table 10. Availability of Mobile phone and smart phone

Availability	Intervention			Control		
	Male	Female	All	Male	Female	All
Mobile Phone	98.7	90.1	92.1	96.8	88.0	89.7
Smart Phone	51.3	24.1	30.9	37.7	18.9	22.7

Access to Water (household):

Table 11. Percentage distribution of key drinking water source

Source of Drinking water	Intervention	Control
Pipeline water inside room/house without water tank	13.0	2.4
Pipeline water inside room/house with water tank	87.0	97.6
n	330	339

Table 12. Access to water in terms of SDG service

Type	Safely Managed	Basic	Total	n
Intervention	34.2	65.8	100	330
Control	15.0	85.0	100	339

Table 13. Functionality and availability of water from sources

Functionality and availability	Intervention	Control
Functionality	99.7	99.4
Availability of water source (Month average)	12.00	11.99
Availability of water (Hours average)	23.93	23.89
n	330	339

Table 14. Responsible person/organization for setting up the water sources

Types of ownership	Intervention	Control
Self	0.6	0.3
Owner of house	79.4	99.7
WaterAid	20.0	0.0
n	330	339

Table 15. Standard of water quality

Standard	Intervention	Control
Good	99.7	77.6
Comparatively Good	0.3	17.4
Not good	0.0	5.0
n	330	339

Table 16. Reasons for not having good water quality (%)

Reasons	Intervention	Control
Existence of Arsenic	*(0)	0.0
Excessive iron	*(1)	7.9
Salty		7.9
Contaminated/not transparent	*(1)	31.6
Bad smell		67.1
Germs exists in water		50.0
Others		1.3
n	1	76

*Brackets contains number

Table 17. Water Intervention for safe drinking water

Indicators	Intervention	Control
Water Intervention (%)	0.0	5.9
n	330	339
Water Intervention Process		
Boiling water	-	65.0
Adding Bleaching/ chlorine	-	0.0
Through cloth setting stones	-	0.0
By filtering	-	30.0
By settling down water	-	5.0
n	0	20

Table 18. Availability of water at water source, Water Source distance, time required to collect water, and adequate water collection

Indicators	Intervention	Control
Average distance of water point (in feet)	2.17	3.10
Water point within 20 feet (%)	97.0	99.7
Require less than 30 minutes to collect water	100.0	100.0
Can collect adequate drinking water	99.1	98.2
Can collect adequate water for other chores	99.7	98.2
n	330	339

Table 19. Procedure maintained at time of drinking water collection, storage and consumption

Indicators	Intervention	Control
Water pot is cleaned during water collection	53.3	24.5
Water pot is covered during water collection	40.3	10.6
Water pot is covered during water transportation	51.2	16.2
Water pot is covered during water preservation	88.5	58.1
Preserve water in a high place	27.0	11.2
Water glass/mug is cleaned during drinking or serving water	60.9	27.7
Steps maintained	19.1	4.4
n	330	339

Table 20. Table 36: Status of Water Tap

Status	Intervention	Control
There is unclean environment/condition around the water tap	25.1	58.6
The drain connected to the water tap is cracked/broken or accumulated filth/garbage	18.0	48.3
Water accumulates on the platform of water tap	17.0	48.3
There is crack in the platform of the water tap	19.8	32.3
The water tap is fixed with a concert wall	94.7	90.9
The pipe of the water tap is exposed	28.8	58.0
Meter attachment with water Tap	2.5	3.6
The overall condition of the platform of the water tap is bad	52.6	78.2
The overall condition of the drainage system of the water tap platform is bad	51.4	77.6
n	330	339

Access to Sanitation (household)

Table 21. Access to Sanitation according to SDG Services

Type	Basic	Limited	Unimproved	n
Intervention	17.0	76.6	6.4	330
Control	6.2	84.4	9.4	339

Note: If feaces is disposed in open space (ditch, open drain etc.), we consider it as unimproved

Table 22. Types of household latrines

Types of Latrines	Intervention	Control
Flush to septic tank	0.6	1.8
Flush to septic hole/latrine	93.0	88.8
Pit latrine with slab	1.2	0.3
Improved latrines/Total	94.8	90.8
n	330	339
Flush to other place	1.5	6.8
Flush to drainage system	3.3	2.1
Pit latrine without slab	0.3	0.3
Unimproved/Total	5.2	9.2
n	330	339

Table 23. Status of Shared Latrine Use

Shared latrine statistics	Intervention	Control
Household doesn't share latrine with others	17.6	8.3
Latrine jointly used with other HH	81.2	91.7
Latrines are open for all	1.2	0.0
n	330	339
Average Number of HH use Latrines	5.85	15.90
Average number of person use latrines	11.28	28.00
N	272	311

Table 24. Ownership of the Latrines

Ownership Types	Intervention	Control
Self	0.6	0.6
Owner of the house	93.6	97.6
Joint ownership	0.3	0.9
Community	3.3	0.9
Others	2.1	
Total	100.0	100.0
N	330	339

Table 25. Responsible person/organization for Latrine set up

Ownership Types	Intervention	Control
Self	0.6	0.6
Ownership of the house	80.6	97.6
Pourashava/Municipality	0.0	0.6
Union Parishad (UP)	0.0	0.3
NGO	0.3	0.0
WaterAid	18.5	0.9
N	330	339

Table 26. Types of Latrine Maintenance

Maintenance	Intervention	Control
Repairing/maintenance	0.0	0.3
Tank filled up with feaces/Tank clean	1.2	6.2
Set up new latrines	0.3	0.6
Not necessary	98.2	92.9
Others	0.3	0.0
Total	100.0	100.0
N	330	339

Table 27. Average Latrine maintenance Cost Average

Ownership Types	Intervention	Control
Cost Average (Take)	29.80	102.17
N	5	24

Table 28. Location of Latrines

Ownership Types	Intervention	Control
Inside room/house	23.6	4.1
Beside room/house	44.2	33.9
Inside house area/premises	30.0	61.7
Outside house area/premises	2.1	0.3
Total	100.0	100.0
N	330	339

Table 29. Attachment status of Latrine pipeline

Location of feaces disposal	Intervention	Control
Open Space (river/canal/pond/open space)	1.2	5.0
Safe/septic hole/septic tank	95.5	92.9
Swearage line through pipeline	3.3	0.9
Others	0.0	1.2
Total	100.0	100.0
N	330	339

Table 30. Latrine status in terms of distance, availability of soap and water

Status of latrine characteristics	Intervention	Control
Distance of latrine from HH (Average)	8.90	19.68
HH has latrine within 20 feet	94.8	85.8
Soap inside latrine	51.5	17.7
Availability of water inside latrine	95.8	91.4
Total	100.0	100.0
N	330	339

Table 31. Overall condition of latrines

Condition of latrines	Intervention	Control
Visibility of feaces inside latrines or pan on Slab	8.5	17.7
Visibility of Mosquito/insects	15.5	21.5
Bad smell from latrines	21.5	48.1
Latrines are open or attached to canal/pond/ditches/river/open space	2.4	5.9
Others	25.5	12.1
N	330	339

Table 32. Usability status of latrines by children/women and physically challenged persons

Usability status	Intervention	Control
For childern	71.5	38.1
For women	99.4	98.2
Physically challenge persons	36.7	22.4
For elderly people	71.5	39.2
N	330	339

Table 33. Defecation place of Under-5 children of households

Defecation place of Under-5 children	Intervention	Control
Use HH latrine	52.1	58.1
Use Specific pot	33.3	30.6
No specific place/inside the HH premises	14.6	11.3
n	48	62

Table 34. Disposal place of faeces of Under-5 children

Disposal place	Intervention	Control
Dispose in the HH latrine	95.7	84.6
No specific place/in the premises	4.3	11.5
Washed with tubewell/tap water	0.0	3.8
n	23	26

Table 35. Cleaning Places for the Children used cloth/ Nappies /Langot

Cleaning Places	Intervention	Control
Tube-well	4.8	0.0
Piped water inside the latrine	78.6	72.3
Piped water for household use	16.7	27.7
No specific place	4.8	0.0
n	42	47

Water and Sanitation Status in Factories

Table 36. Main sources of drinking water at RMG Factories

Sources	Intervention	Control
Supply water	56.1	74.0
Tube-well	0.9	0.3
Filter water	43.0	25.1
Others	0.0	0.6
N	330	339

Table 37. Improvement types of drinking water at RMG Factories

Steps for Safe drinking water	Intervention	Control
Increase number of filter water or availability of water	67.9	23.6
Set up new tube-wells	3.3	
Management of drinking water on every floor	69.7	36.9
Arrangement of free arsenic water	33.6	11.5
Others		44.2
N	330	339

Table 38. Type of Sanitary latrines at factories

Types of latrines	Intervention	Control
Latrines with septic tank	100.0	99.1
Others	0.0	.9
N	330	339

Table 39. Improvement types of Sanitation at RMG Factories

Improvements	Intervention	Control
Number of latrines has increased	18.2	5.3
Arrangement of single sex based latrines	40.3	25.7
Regular toilet cleaning	41.5	25.1
Others		44.0
N	330	339

Table 40. Status of Single sex latrines (for women)

Status	Intervention	Control
Availability of female toilets	99.4	97.9
Total number of toilet chambers for female use	39.1	635.9
Average Number women use these chamber in a shift	29,0	424.5

Table 41. Problems faced by respondents

Types of Problems	Intervention	Control
Need to wait for using toilet	19.8	46.1
Soap is not always available	15.5	41.6
Water is not always available	2.7	21.4
Slipper is not always available	4.9	28.6
Face problem at time of MHM	9.1	19.9
It gets late to repair anything	3.0	19.3
No problem	67.7	39.8
Others	0.3	0.3
N	328	332

Table 42. Cleaning Status of the latrines

Status	Intervention	Control
Very good	25.8	4.7
Good	66.7	56.0
Considerably well	7.6	34.8
Bad	0.0	4.4
Very bad	0.0	0.0
N	330	339

Table 43. Frequency of cleaning the latrines

Frequency	Intervention	Control
Daily	86.4	91.2
Twice in a week	12.1	4.4
Three times in a week	0.9	2.4
Four time in a week	0.3	1.2
Others	0.3	0.3
N	330	339

Table 44. Availability of slipper for using in latrines

Indicators	Intervention	Control
Availability of slipper	99.4	94.7
n	330	339

Table 45. Hygiene Improvements in the toilets

Types of improvements	Intervention	Control
Arrangement of soap	77.0	33.0
Availability of tissue papers	13.0	.6
Availability of towel or cloth	34.8	9.4
Availability of bin for waste disposal	93.3	41.6
Others	0.6	44.0
N	330	339

Table 46. Latrine status with availability of various hygiene facilities

Types of improvements	Intervention	Control
Use of Sandal/slipper	100.0	92.6
Availability of soap	87.6	65.5
Availability of water	99.4	99.4
Handwashing management within 10 feet of latrines	99.7	97.9
Availability of soap and water	99.7	86.7
N	330	339

Table 47. Sanitation practices by respondents of the factories

Practices	Intervention	Control
Use of Sandal/slipper	100.0	88.7
Handwashing after defecation		
Do not wash hands	1.2	6.7
Wash hands only with water	13.5	36.7
Only one hand with soap and water	67.8	46.8
Both hands with soap and water	17.5	9.8
N	330	339

Hygiene Facility and Practice (household)

Table 48. Handwashing facility among HH in terms of SDG service level

Ownership Types	Basic	Limited	No Facility	n
Intervention	36.7	30.9	32.4	330
Control	8.3	28.3	63.4	339

Table 49. Handwashing Knowledge among at Proper time/Occasions across

Time/occasion	Intervention	Control
After defecation	99.4	99.4
After rinsing child's excreta	64.2	45.7
Before eating	80.3	62.5
Before cooking	23.0	18.6
Before Feeding Child	13.0	3.2
N	330	339

Table 50. Handwashing Practice at Proper time/Occasions

Time/occasion	Intervention	Control
After defecation	75.2	62.8
After rinsing child's excreta	11.8	9.4
Before eating	35.2	19.8
Before cooking	10.9	14.5
Before Feeding Child	7.0	3.8
N	330	339

Table 51. Handwashing Practice at Proper time/Occasions across

Time/occasion	Intervention	Control
Special handwashing place at HH	67.6	36.6
N	330	339
Handwashing place within latrines	99.6	91.1
Handwashing place within 10 feet of latrine	93.7	75.0
N	223	124

Table 52. Availability facility of handwashing place

Handwashing place	Intervention	Control
Basin with tap	78.0	87.1
Bucket with full water	21.1	8.9
Jar with/vessel full water	0.9	1.6
Other	0.0	2.4
N	223	124

Table 53. Availability of handwashing agents

Handwashing agents	Intervention	Control
Nothing	45.7	77.4
Soap	50.7	21.8
Powder/ soap dust	1.8	0.8
Liquid soap	1.8	0.0
N	223	124

Table 54. Overall Knowledge of the respondents by the consequence of unhygienic practice

Consequence of unhygienic practice	Intervention	Control
Diarrhea/dysentery	73.3	64.0
Spread out of water borne disease	26.1	13.3
Spread out of germs of diseases thorough flies or mosquito	38.5	29.2
Epidemic of disease	4.5	4.1
Financial loss due to medical intervention if fallen ill	9.7	3.2
Work day loss if fallen ill	10.9	4.1
Environment of the area polluted	26.4	21.2
Bad smell spreads all around	49.1	33.6
Others	13.0	20.9
N	330	339

Waste Management

Table 55. Places for HH waste disposal

Place	Intervention	Control
Own land	0.3	0.0
Beside the road/open place	0.3	2.7
Dustbin/ public trash service/waste disposal van	96.7	92.6
Burn	0.9	
Throw in ditch or pond nearby	1.8	4.7
N	330	339

Table 56. Status of waste disposal places

Time/occasion	Intervention	Control
Cost for waste disposal	89.7	91.2
N	330	339
Average cost for waste disposal	51.13	49.27
N	296	309
Dustbin within 100 feet	63.3	79.6
Water logging within 100 feet of HH	22.1	32.7
Drain available nearer the HH	17.0	16.5
Drain with cover	81.4	77.2
Drain packed with dirty water and waste	44.1	84.2

Menstrual Hygiene Management (Household)

Table 57. Use of MHM Materials among the HH female segregated by Adolescent and Women

Type	Adolescent (10-19)					Women (20-49)					
	Reusable Materials (Cloth)	Disposable sanitary napkin	Cotton/Tissue paper	Nothing	n	Reusable Materials (Cloth)	Disposable sanitary napkin	Cotton/Tissue paper	Nothing	Others	n
Intervention	53.2	46.8	0.0	0.0	47	70.6	28.2	0.0	0.0	1.2	255
Control	63.3	36.7	0.0	0.0	60	81.8	17.0	0.4	0.4	0.4	247

Table 58. Cleaning and drying of the Reusable MHM materials

Indicators	Intervention	Control
Cleaning of Reusable MHM Materials		
Wash with water, soap and Antiseptic	8.7	3.3
WASH with only soap and water	85.6	78.2
With water only	1.4	17.3
Nothing	3.8	1.2
Don't Know	0.5	0.0
n	208	243
Drying of Reusable MHM Materials		
Direct Sun dry	11.1	3.3
Dry keeping under other cloth	48.7	33.9
Inside the room with other cloth	40.2	62.8
n	199	240

Table 59. Changing duration among the reproductive women segregated by adolescents and women

Type	Adolescents(10-19)				Women (20-49)			
	Within 6 hours	More than six hours	All	n	Within 6 hours	More than six hours	All	n
Intervention	68.1	31.9	100.0	47	47.5	52.5	100.0	255
Control	55.0	45.0	100.0	60	59.9	40.1	100.0	247

Table 60. Disposal of MHM Materials

Disposal Places	Intervention	Control
With HH waste	48.5	54.5
Toilet	0.7	0.3
Dustbin	41.3	25.0
Sewerage line	0.7	0.3
Open place	0.0	0.3
Do not know	8.9	19.5
n	303	308

Menstrual Hygiene Management (Factory)

Table 61. MHM Facility at RMG factory latrines

MHM Facility	Intervention	Control
Facility of MHM service	92.4	80.5
n	303	308
User friendliness of factory latrines for MHM	92.1	79.4
N	280	248

Table 62. Use trend of MHM materials among the factory workers

MHM Materials	Intervention	Control
Cotton	57.6	66.1
Tissue paper	1.2	0.9
Rag/old cloth	0.0	0.3
Sanitary napkin	21.8	15.6
Only panty	0.3	0.0
Presently menstruation is off	0.9	0.9
Others	19.7	17.4
N	330	339

Table 63. Cost about MHM materials

Cost of MHM Materials	Intervention	Control
Average cost for sanitary napkin	73.96	78.69
Average Cost for Cotton	72.21	75.03
Average Cost for tissue paper	72.82	73.46
N	142	119

Table 64. Disposal of Sanitary napkin at factories

Disposal of MHM Materials	Intervention	Control
Specific place for disposal of sanitary napkin	76.8	67.2
Alternative ways if no place is available for napkin disposal		
Dust bin	3.0	12.8
Drain	0.0	2.6
Others	97.0	87.2
N	33	39

Table 65. Steps taken in case of need to change the used MHM materials at factories

Steps	Intervention	Control
Washed in factory and bring home	22.1	34.5
Bring it home without washing	8.5	5.3
Dispose of	33.6	25.7
Do nothing	15.5	16.2
Others	20.3	18.3
N	330	339

Participation in Promotional Activities of WaterAid

Table 66. Trend of Watching Television among household members

Television watching status	Intervention			Control		
	Male	Female	All	Male	Female	All
Yes	75.3	79.8	78.8	85.7	74.6	76.7
No	24.7	20.2	21.2	14.3	25.4	23.3

Table 67. Exposer to TV Channel based WASH advertisement (in last month)

Exposure	Intervention			Control		
	Male	Female	All	Male	Female	All
TVC channel	32.8	41.1	39.2	16.7	16.0	16.2
Other Channel	17.2	25.7	23.8	27.8	35.0	33.5
No	50.0	33.2	36.9	55.6	49.0	50.4

Table 68. Exposer to TV Channel based WASH advertisement (in last week)

Exposure	Intervention			Control		
	Male	Female	All	Male	Female	All
TVC channel	25.9	31.7	30.4	7.4	8.7	8.5
Other Channel	17.2	20.8	20.0	16.7	27.7	25.4
No	56.9	47.5	49.6	75.9	63.6	66.2

Table 69. Distribution of workers ever participated in WaterAid Evening Session

Indicators	Intervention			Control		
	Female	Male	All	Female	Male	All
Participation	57.1	65.2	63.3		0.0	0.0
n	77	253	330	63	276	339

Table 70. Distribution of workers participated in WaterAid Evening Session (within six months)

Incidence of participation	Intervention			Control		
	Female	Male	All	Female	Male	All
0	63.6	48.6	52.1	100.0	100.0	100.0
1	13.0	17.0	16.1			
2	16.9	20.2	19.4			
3	2.6	9.1	7.6			
4 or more	3.9	5.1	4.8			
n	77	253	330	63	276	339

Table 71. Familiarization of peer educators

Steps	Intervention	Control
Familiar with peer educators	78.2	2.4

Learning/Knowledge from Peer Educator

Table 72. Leaning topics from peer educators

Leaning topics from peer educators	Intervention	Control
About Safe water	89.5	-
About use of latrines	84.9	-
About handwashing	71.3	-
About MHM	46.1	-

Table 73. Learning topics about safe drinking water from peer educator

Learning about safe drinking water	Intervention	Control
About drinking Safe water	84.4	-
About water borne diseases	73.6	-
About covering water pot	61.9	-
About water treating	28.1	-

Table 74. Learning topics about use of toilets from peer educator

Learning about use of toilet	Intervention	Control
About related issue of using toilets	73.1	-
About use of slipper in toilets	83.1	-
About handwashing after toilet	59.8	-

Table 75. Learning topics about handwashing from peer educator

Learning about use of handwashing	Intervention	Control
About handwashing issues	73.4	-
About times/occasions of handwashing	84.8	-
About necessity of handwashing	58.2	-
Others	1.6	-

Table 76. Learning topics about MHM from peer educator

Learning about MHM	Intervention	Control
Menstrual management	68.9	-
About changes of napkin	53.8	-
About the wash of MHM materials	87.4	-
About general knowledge on MHM	42.9	-

Impact Assessment

Table 77. Learning issues from the sessions in society

Indicators	Intervention			Control		
	Female	Male	All	Female	Male	All
Safe water use	93.2	89.7	90.4	-	-	-
Toilet use	97.7	92.1	93.3	-	-	
Hand-washing	84.1	73.3	75.6	-	-	-
MHM	11.4	63.0	52.2	-	-	-
Other cleanliness	15.9	11.5	12.4	-	-	-
n	44	165	209	-	-	-

Table 78. Average expenditures by sectors and type of area

Sectors	Intervention	Control
Intervention and Medicine	147.31	98.92
Water bill/expenses	0.21	0.32
Toilet expenses	7.16	7.37
Waste management expenses	45.47	45.04
Hygiene expenses	72.01	101.55
Total expenditure	272.16	253.21
n	330	339

Table 79. Average working hour at factories

Indictor	Intervention	Control
Average working hour	9.06	8.80
n	330	339

Table 80. Average Overtime days and hours (in a month)

Overtime	Intervention	Control
Average overtime days	20.86	16.35
Average Overtime hours	47.11	41.59
n	330	339

Table 81. Monthly salary and income from overtime hours

Income source	Intervention	Control
Average salaly amount	11042.45	10656.63
Average income from Overtime	2429.41	1866.47
n	330	339

Table 82. Distribution of workers according to the salary range

Salary range	Intervention	Control
Less than 7000	1.5	1.8
7000-9999	27.0	42.2
10000-12999	56.4	44.2
13000-15999	13.6	9.1
16000+	1.5	2.7
Average salary	11042.45	10689.08
n	330	339

Table 83. Distribution of workers according to the income from Overtime

Income range	Intervention	Control
Less than 2000	29.4	51.9
2000-2999	45.2	27.1
3000-3999	17.3	10.9
4000-4999	5.8	6.8
5000-5999	1.2	2.4
6000-6999	0.0	0.9
7000 or more	1.2	0.0
Average income from overtime	2429.41	1866.47
n	330	339

Table 84. Distribution of workers having sick leave in the last month

Sick leave	Intervention			Control		
	Female	Male	All	Female	Male	All
Workers with sick leave (%)	1.6	4.3	3.8	3.9	7.1	6.4
Average sick leave days	0.02	0.10	0.08	0.06	0.13	0.12
n	63	276	339	77	253	330

Table 85. Distribution of household members suffered from any diseases in the last three months

Disease Episode	Intervention	Control
At least one household members suffered from any Disease (%)	27.3	36.0
Average no. of household members suffered from disease	0.32	0.44
n	330	339
Types of waterborne diseases suffered by household members		
Hepatitis A	0.0	0.0
Jaundice	2.1	1.5
Typhoid	0.0	0.0
Dysentery	3.1	8.4
Diarrhea	5.2	13.0
Cholera	0.0	0.0
Flu-like symptoms	0.0	0.8
Malaria	0.0	0.0
Dengue	0.0	1.5
Arsenicosis	0.0	0.0
Skin disease	1.0	0.8
n	96	131

Table 86. Types of Health care/Service received

Health Care source	Intervention	Control
MBBS Doctor	15.6	15.3
Hospital/clinic	3.1	5.3
NGO clinic	0.0	0.0
Quack/village practioneer	14.6	2.3
Pharmacy	61.5	72.5
Homeopathic doctor	1.0	1.5
Ayurvedic practioner	0.0	0.0
Thana/Upazilla Healthcare centre/comple	1.0	0.0
Others	1.0	2.3
No health care services received	2.1	0.8
n	96	131

Table 87. Effects for suffering from diseases (among household members affected from disease)

Effects	Intervention	Control
Average suffering days	5.00	5.62
Average expenses for disease	606.01	860.27
Loss of working days	0.66	1.11
Economic loss	229.14	284.83
n	96	131

Table 88. Effects for suffering from diseases (among all household members)

Indicators	Intervention	Control
Average suffering days	0.59	0.78
Average expenses for disease	77.24	120.57
Loss of working days	0.06	0.14
Economic loss	18.59	33.19
n	839	870