

ACCESS TO WASH SERVICES IN POOR URBAN SETTLEMENTS DURING HEALTH EMERGENCIES IN SRI LANKA**N. Patabendi****Abstract**

In 2019, 18.6% of Sri Lanka's total population lived in urban areas and cities¹. The COVID-19 disease outbreak affected the country's overall sustainable development negatively. In addition, Sri Lanka is also experiencing an economic crisis which is crippling access to basic services and needs including water, sanitation and hygiene (WASH) in urban settlements. The rapid assessment was conducted among selected poor low-capacity urban settlements in two districts to understand issues in accessing WASH services within the COVID-19 context. The household (HH) assessment is equipped with household surveys, focus group discussions and key informant interviews. A total of 1860 households were selected (2.2% of the total population) for the survey. The results revealed that the primary water source for all areas was through piped water supply into the house (94.6%). The sources of water during shortages are mainly supplied bowsers tractors/tankers (80%), and 11% From protected wells. The major problem with the existing toilets was that the pits were overflowing (36%), followed by bad smell (22%) and flooding of toilets during rains (17%). Hand washing before and after eating and after going to the toilet was reported to be always by 92% to 98% of the HH. The major problem faced by HH has blocked drains causing mosquito breeding and bad smell (65% of HH reporting), followed by improper disposal of waste (33%) and causing sickness (16%), sending wastewater into streets and common areas (28%), irregularity in the waste collection by LAs (25%), burning solid waste close to houses and sending toxic smoke to the area (12%) and throwing garbage from upper floors causing inconvenience to residents below (5.4%). The hand washing practice increased due to hygiene promotion programmes and fear of COVID-19 spread. Water, sanitation and environmental problems faced are mainly due to blocked drains, throwing of waste haphazardly, lack of operation and maintenance, and lack of continuation of services during crisis situations. Even though access to WASH services is satisfactory, there are emerging issues specific to poor urban settings which affect human health, the environment and the quality of life. Separate strategies are needed to address urban WASH issues within emergency situations.

Keywords: Water ; Sanitation ; Hygiene ; Urban Settlements

1. Introduction

Providing and maintaining Water, Sanitation and Hygiene (WASH) facilities to poor urban low-capacity settlements are challenged by multiple reasons. The objective of this study is to obtain a better understanding of the WASH facilities of the high-density communities living in urban settlements under the mandate of the Urban Settlements Development Authority (USDA), a Rapid Urban Assessment was conducted in 2019. The purpose of the study is to obtain a greater understanding of the prevailing conditions to plan and implement appropriate interventions and relief measures for this vulnerable population.

2. Literature Review

Sri Lanka's urban population experienced significant growth between 1960 (1,622,475) and 2015 (4,052,088) (Ellis *et al*, 2016). According to official statistics, 18.6% of Sri Lanka's population lived in urban areas and cities in 2019 (Household Income and Expenditure Survey (2016). According to the definition of the Department of Census and Statistics, the people who live in rural or urban local authority areas are considered as urban population. Many of the so-called rural Local Authorities are actually very urbanized and hence the proportion of the urban population may be an underestimate of the actual urban population. Many of Sri Lanka's cities are "under-bound", meaning that the real extent of cities extends beyond their administrative boundaries (Weerathne, 2016). The communities living in under-served

settlements and low-income households who live under poor living conditions, overcrowded houses, and use common spaces sometimes including households sharing common water facilities or latrines. These communities are the most susceptible to being infected by the highly contagious virus and pose the highest risk of falling into poverty due to the lockdown and consequent downturn in employment opportunities due to their dependence on day-to-day or casual work opportunities as most of these people are involved in informal employment.

3. Methodology

The research methodology followed a mixed approach, consisting of both quantitative and qualitative data collection. The data collection is instrumented with a household questionnaire, Focus Group Discussions (FGD) and Key Informants Interview (KII).

3.1 Sampling

The total number of households in the population to be surveyed is about 82,750. The sample was selected based on an error % of 5% at a 95% confidence limit and consequently, the sample size was varied according to the total population in each area. A total of 1,860 households were selected for the survey. An additional 100 households were selected to compensate for any missing households or for those not willing to participate. The overall sample size of 1,860 works out to 2.2% of the total population, while the sample size varied from 1.3% for the North Colombo area up to a maximum of

7.4% for Gampaha. The results obtained can be statistically valid at the selected error percentage of 5% and can be extrapolated to the total population with a 95% level of accuracy. A total of 380, 388, 392, 392 and 384 households were selected from North Colombo, Colombo Central, Borella, East Western Colombo and Gampaha.

Settlement Area	Total HH Population	No of HH Interviews Planned	No of HH Interviews Completed	Actual Sample Size (%)
Borella	26,474	392	403	1.5
Colombo North	28,236	400	393	1.4
Colombo Central	11,542	400	388	3.4
Colombo East / West	11,705	392	418	3.6
Gampaha	4,794	376	384	8.0
Total	82,751	1960	1986	2.4

Table 01: Number of Interviews Completed & the sample

3.2 Key Informant Interviews (KII)

Key Informant Interviews (KII) were held with officials and stakeholders, mainly with the field staff of the Urban Settlement Development Authority (USDA), Grama Niladharis (GN), and the local authority staff who may be involved in the implementation of the project. Further, a few Divisional Secretaries who have knowledge of the project, and health officials like the MOH, *Praja* Police were interviewed.

3.3 Focus Group Discussions

The Focus Group Discussions (FGD) were held with small groups of about 5-10 beneficiary households and leaders of housing societies or Community Based Organizations (CBOs) operating in selected areas.

3.4 Questionnaire survey

The questionnaire survey was conducted through face-to-face interviews with respondents using a paper based questionnaire. Data entry was undertaken using trained data entry operators. All precautions were taken in conducting the survey complying with all health protocols recommended by the health authorities. Experienced enumerators were hired and provided training at both desk and field levels in order to ensure quality data collection. Pilot testing was conducted using the enumerators in order to provide them with adequate skills and practice in conducting the survey. Only minor revisions were made to the questionnaire after the pilot test. Detailed methodology for the questionnaire survey is provided in the following chapters.

3.5 Data Analysis and Data Cleaning

The data obtained from the questionnaire was entered into a database prepared prior to the start of the survey. The data was cleaned of outliers and errors that cannot be rectified and the cleaned data was used for the analysis. Dummy tables were prepared prior to the start of the survey. These dummy tables have been prepared to reflect the type of analysis sought by the client.

4. Findings

4.1 Water Supply Facilities

Out of the total number of ???, 196 households reported obtaining piped water supply in the yard or compound of the house. A total of 2,051 households (98.6% of total

reporting) who had water supplied into the house or yard indicated that water was supplied by the National Water Supply & Drainage Board (NWS&DB). Local authorities and Community Water Supply Schemes provided water to just 20 households, while neighbours, friends and the public supplied five households and their own supply amounted to four households.

4.2 Distance Travel to Fetch the Water

Since 98% of water was supplied into the house or yard, the distance travelled to fetch water was very short. For those who had water supplied to their yards, the distance travelled to fetch water was less than 10 meters for 34% of the households and between 10-100 meters for 66% of the households. A total of 199 households were supplied water to their yards, of which 91% of households were from Gampaha. Water was fetched mostly by females (47%) and also by males (35%) and by both males and females equally (18%). About 92% of the HH who fetched water were from Gampaha, where the houses had yards.

4.3 Household Water Treatment Methods

The majority of the households (44%) drink the water as it is and a further 34% boil the water before drinking. About 15% either filter or boil and filter water before drinking. The rest (7%), add bleach, strain through muslin or keep in clay pots. Thus for all HH, a little over half (56%) of the households further purify water before drinking. The highest proportion of HH using some method of purification of

water prior to drinking was in Gampaha (64%), followed by Colombo East/West (62%), Colombo North (55%), Borella (48%) and Colombo Central (42%). Thus the households may perceive that water quality is poorer in places like Gampaha where more households obtain water from rivers, streams, tube wells and unprotected wells than locations in Colombo

Water Supply Source	% of HH Reported	Total No of HH Reported	Drinkable Without Boiling %	Drinkable After Boiling%	Drinkable after boiling & filtering %	Used for other uses than drinking %	Water Highly Polluted%
Water supply into house	86.3	1878	92.1	6.7	1.2		
Water supply into yard	9.1	199	98.5	0.5		1.0	
Public Tap / Stand	1.7	36	86.1	13.9			
Pipe	1.3	29	100.0				
Neighbour	1.3	29	100.0				
Tube Well / Borehole	0.2	5	80.0			20.0	
Protected Dug well	1.1	24	50.0			50.0	
Unprotected dug well	0.2	4	75.0				25.0
River, Pond, Tank etc.	0.3	7				71.4	28.6
Total %	100.2		91.8	6.0	1.1	0.9	0.1
Total Number		2182	2004	132	23	20	3

Table 02: Household Water Treatment Methods

4.4 Adequacy of Water

Over 95% of the households indicated that the water supplied was adequate, while the highest proportion (99%) was in Gampaha and the lowest proportion (91%) in Borella. The main reasons for inadequacy were, low water pressure (21%), poor water quality (17%), and no individual supply with only a common supply (17%), water supply limited to a few hours per day (14%) and water supply disrupted frequently (13%).

Inadequacy of Water Supply	No of HH	% of HH
Water Supply is not Adequate	87	4.5%
If not, why? (multiple responses of 87 HH reporting)		
Water supply is disrupted frequently	34	13.4
Water pressure is low	52	20.5
Water supply limited a few hours per day	35	13.8
Water quality is poor, bad colour and smell	44	17.3
Water is not treated	24	9.4
No individual water supply only common supply	42	16.5
No water supply, have to use wells or other source	4	1.6
Other	19	7.5
Total	254	100

Table 03: Reasons for inadequate water supply

4.5 Water Availability throughout the Year

Water was not available throughout the year in about 12% of the HH. About 38% of the HH reported this in Borella, followed by 12% of the HH in Colombo East/West, 5% of HH in Colombo Central, 3.5% in Gampaha and 2% of HH in Colombo North.

4.6 Sources of Water During Water Supply Shortages

The main source of water during shortages was the delivery of water by relevant authorities through bowsers, trucks or tankers (80%). Other sources were from protected wells (11%), tube wells (1.3%), unprotected wells (1%) and rivers, streams or tanks (0.4%). In Gampaha, water was obtained from protected wells (69%) and unprotected wells (15%) and from rivers, streams or tanks (8%). In other areas, water was provided by bowsers (68%-100%).

4.7 Sanitation facilities

About 15% of the households were connected to the sewerage system (they either have pour flush or automatic flush systems). A further 57% reported having pour-flush toilets, 11% improved closed pit

toilets, 4% open traditional pits and 12.5% with no toilets. The highest proportion with no toilets was in Colombo Central (22%), followed by Colombo North (17%), Borella (13%), Colombo East/West (7%) and Gampaha (3%). Thus Gampaha with households having more land area had the least proportion with no toilets. The highest proportions connected to the sewerage system were in Borella (35% of HH) and Colombo Central (24%). About 94% of households in Gampaha had pour-flush toilets and this proportion was 63% in Colombo East/West. The highest proportion with improved closed or traditional open toilets was in Colombo East/West (22%), followed by Colombo North and Colombo Central (19%), Borella (13%) and Gampaha (3%).

A total of 246 HH out of the 1986 households (12.4%) reported having no toilets in all areas. The majority of HH without toilets use common toilets (74%). About 13% use a neighbour's or friend's toilet and about 13% defecate in nearby bushes or secluded areas. Colombo Central has the largest number of households (86) without toilets, followed by Colombo North (67 HH), Borella (53 HH), Colombo East/West (29 HH) and Gampaha (29). The largest number of HH practicing open defecation was 12 HH in Colombo East/West, followed by Colombo North/Colombo Central (6 HH each), 4 households in Gampaha and 3 HH in Borella with a total of 31 households who practice open defecation. Thus open defecation is not widespread, with most

households without toilets using common toilets. However, some of the common toilets are not in good condition as observed during the survey.

The toilet is located within the house premises in 84% of the households and in the yard in 15% of the households. In Gampaha, about 50% of the toilets are within the house and the balance 50% in the own yards of the house. In the other areas in Colombo, over 90% of the toilets are located within the house premises. The major problem with the existing toilets was that the pits were overflowing (36%), followed by bad smell (22%) and flooding of toilets during rains (17%). Other problems reported by HH include damaged toilet seats and basins, lack of privacy (no doors/roofs) by 5% of HH, poorly or partly constructed (5%), mosquito breeding (4.6%) and non-availability of water for cleaning (2.4%). The worst affected areas for above problems were Borella, Colombo North, Colombo Central and to a lesser extent Gampaha.

4.8 Handwashing Practices

Generally, 90% of households washed their hands before eating, varying from 80% to 99.5% in the 5 areas. About 96% of households washed hands after eating, varying from 82% to 99% in the 5 areas. About 96% of households washed hands after going to the toilet, varying from 82% to 99% in the 5 areas. A further 94% of households washed their hands after handling dirt, varying from 82% to 99% in the 5 areas. About 69% of households washed hands before feeding children, varying from 61% to 83% in the 5 areas. A further 64% of

households reported handwashing after handling children’s faeces, varying from 51% to 87% in the five areas. About 93% to 95% washed hands before and after shopping as a part of COVID-19 prevention activity. This practice varied from 78% to 100% in the different areas as appropriate and references to publications.

Handwashing Practices	Borella	Colombo North	Colombo Central	Colombo East /West	Gampaha	Total
	% of Households Reporting					
HH Practicing						
Handwashing	100.0	100.0	100.0	100.0	99.2	99.8
Before eating	99.5	91.6	80.9	80.1	100.0	90.3
After eating	99.3	99.0	98.5	82.8	100.0	95.7
After going to toilet	99.0	99.0	98.5	82.3	100.0	95.6
After handling dirt	98.5	98.5	97.7	82.3	95.1	94.3
Before feeding children	63.0	61.3	61.1	77.5	82.8	69.2
After handling child faeces	55.1	55.7	51.5	75.1	86.7	64.9
Before Shopping / visiting (COVID practice)	95.0	94.1	96.9	78.2	100.0	92.6
After entering home from visit /shopping (COVID practice)	99.5	96.7	99.2	80.1	100.0	94.6
Total No of HH Surveyed	403	393	388	418	384.0	1986

Table 04: Handwashing Practices

4.9 Waste Management

Solid waste was collected by the Local Authorities (LAs) for most households (90%), burnt or buried (12%) and thrown in nearby areas (2%). However, the incidence of throwing solid waste appears to be higher than stated, when the surroundings were observed by enumerators. In Gampaha, only about 60% of the solid waste is collected by LA, and a further 56% of HH said that it is burnt or buried. Liquid waste was reported to be sent into wastewater drains (47%), while a further 37% of the households send wastewater into rainwater drains and 11% send it into low lying areas. Thus nearly 50% of households use unhygienic methods to dispose of liquid waste. In Gampaha, almost 100% of the households use improper methods to dispose of liquid waste, due to lack of wastewater drains.

Issues	% HH Reporting
Blocked drains causing mosquito breeding and bad smell	64.9
Garbage collectors do not come regularly	24.9
People dispose of garbage and waste water in improper manner causing unhygienic environment	32.9
Send waste water into streets and other common areas	28.4
Burn solid waste close to house and send toxic smoke to nearby houses	11.8
No garbage collection in the area and people dispose of waste in various ways	6.7
Improper disposal of waste causing sickness	16.4
Throwing garbage (liquid/solid waste) from upper floors to the ground causing inconvenience to people living below	5.4

Table 05: Waste Management Practices

5. Conclusions

The stormwater drains have been used to discard wastewater and that caused water pollution and smelling. Electricity and water services to the settlement are at a satisfactory level. However, infrastructure services such as drainage development, wastewater management, solid waste management and stormwater management have to be upgraded to resolve a number of challenges such as lack of maintenance and operation, lack of continuation of services, lack of funds for renovations and inappropriate behaviors of users in urban settlements. Even during the COVID-19 pandemic, the need for cleaning and proper use of facilities to avoid the disease spread was not observed. The hand washing practice increased due to hygiene promotion programmes and fear of COVID-19 spread. Even though access to WASH services is satisfactory, there are emerging issues specific to poor urban/low-capacity urban settlements. Neglecting of those aspects leads to adverse effects on human health, the environment and the quality of life. Separate strategies are needed to

address urban WASH issues within emergency situations.

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