
Household Access to Sanitation and Hygiene in Small Towns in Tanzania: A case of Three Satellites Towns in Mwanza CityBenedict M. Kilobe¹; Zilihona. J. Innocent²; Bonamax Mbassa¹¹Institute of Rural Development Planning, Lake Zone Training Centre, P.O. Box 11957, Mwanza.²Institute of Rural Development Planning, P.O. Box 138, Dodoma.**ABSTRACT**

The present study examined household access to sanitation and hygiene in small towns of Misungwi, Magu and Lamadi in Northwestern Tanzania. Specifically, the study envisaged to: (i) assess the availability of toilet facilities in the study towns, and (ii) assess hand washing practices at households level. The study used both primary and secondary data of quantitative and qualitative nature, collected through questionnaire survey, key informant interviews, observation and documentary review. A sample of 417 households was involved in this study. Survey data were analyzed for descriptive statistics such as frequencies and means. Qualitative data were analyzed using qualitative content analysis technique. The study found that majority of households had toilets/latrines, with highest proportion in Lamadi (98%), followed by Magu (94%) and Misungwi (92%). Most of them were using private toilet facilities (96%) and only 4% used public toilet facilities. In Misungwi, a large majority of households had pit latrines (87%), and more than half in Magu (56%) and Lamadi (53%) had the same. In Lamadi 47% of respondents had flush toilets compared to 44% in Magu and only 13% in Misungwi. The main type of flush toilet was 'flush to septic tank' which was reported by 68%, 83% and 68% of the respondents in Misungwi, Magu and Lamadi, respectively. Pit latrines without slabs were the most common in all study towns: 88% in Misungwi, 79% in Magu and 84% in Lamadi. Although availability of toilet facilities appeared to be high in all towns, most of the households had latrines with no slabs which could be viewed as temporary since are likely to be destroyed by rains. The results further indicate that the main source of financing for construction of latrines or septic tanks was self-savings as reported by 63%, 79% and 81% of the respondents in Misungwi, Magu and Lamadi, respectively. Most of the surveyed households had their toilets located in the household, mostly in Lamadi (88%), followed by Magu (79%) and Misungwi (75%). The findings further show that most of the respondents washed hands with soap before and after meals as reported by 86%, 88%, and 71% of the respondents in Misungwi, Magu and Lamadi, respectively. This shows that most of the respondents wash hands with soap at most of the critical times, suggesting that urban dwellers have high level of awareness on the importance of and, therefore, practice hand washing at critical time. It is recommended that outreach campaigns should be designed to reach all target groups with clear user friendly and culturally appropriate messages to impart knowledge and advocate for change of hygienic knowledge and practices.

Key words: Household; Hygiene; Improved latrines; Sanitation.

1.0 Introduction

Sanitation is one of the critical aspects, which if not well addressed can accelerate the problem of poverty as it intensifies the rate of disease infections. Inadequate sanitation and hygiene results in morbidity and mortality due to endemic infections resulting in diarrhoea and other illnesses. Globally, diseases caused by inadequate water, sanitation and hygiene (WASH) result in 4.2% of deaths and 90% of that burden are born by under five children (Bartram and Cairncross, 2010). In Tanzania, 9% of all mortality in under five children is due to diarrhoea (WHO, 2010). Approximately 80% of Tanzania's poor live in rural areas. Their access to water, sanitation and hygiene (WASH) facilities is very low. In 2012, only 12% of all Tanzanians had access to these services (7.5% in rural areas and 20.5% in urban areas). This situation forced women and children to walk hours a day to fetch water and many people fall ill, suffering from diarrhoea, malaria, typhoid and worm and skin diseases (MoHSW, 2011).

The sixth Sustainable Development Goal (SDG) aims to ensure availability and sustainable management of water and sanitation for all. One of the targets under this goal is to achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.

A review of the literature identifies the links between mortality and inadequate sanitation and hygiene in Tanzania. In Tanzania, improved sanitation is defined as a sanitation/latrine facility that hygienically separates human excreta from human contact, such as latrines with clean, washable slab; a vent pipe; shelter with roof; and a door that provides privacy. Improved latrines include flush toilets; piped sewer systems; septic tanks; flush/pour flush to pit latrines; ventilated improved pit latrines (VIPs); pit latrines with slab; and composting toilets (MoHSW, 2011). A study conducted by Urassa *et al.* (1995) in the Ilala District in Dar es Salaam looking at the causes of maternal mortality reported that lack of access to a latrine, long distances to a water point, as well as poor general living standards and associated hygiene were all linked to increased rates of maternal mortality. There are a number of sanitation and hygiene factors that have been linked to diarrhoea in Tanzania. The risk factors for diarrhoea include unsafe disposal of faeces and wastewater and the quantity of water used for cleaning (Tumwine *et al.*, 2002). Similarly, distance from the household to a water source is linked to instances of diarrhoea (Gascon *et al.*, 2000).

Health benefits of provision of adequate sanitation and drinking water can be quickly eroded if poor hygiene practices are present in the household (Jacqueline *et al.*, 2013). Hand washing at critical times in Tanzania has been shown to be a rapid and reliable indicator of general hygiene behaviour in households (Almedom, 1996). Critical times are determined to be after defecation, after handling children's faeces, before handling food, before feeding young children and before eating (Almedom, 1996). Studies conducted in Dar es Salaam and the rural districts of Mpwapwa and Rufiji indicated that only 4% of mothers and 5% of children wash their hands with soap after using the toilet (Hooks, 2008). A study conducted by Ministry of Health and Social Welfare (MoHSW) reported that only 31% of latrines had hand washing facilities (MoHSW, 2011). Additionally, although soap is found commonly in the household, it is more frequently used for bathing and laundry than hand washing (Hooks, 2008). In Tanzania there is a lack of accurate data on latrine coverage (World Bank *et al.*, 2011). Moreover, there is less literature available about the current hygiene status compared to sanitation (Jacqueline *et al.*, 2013). In part this could be due to the fact that is easier to collect data on hardware (number of toilets) rather than

reported behaviour (frequency of hand washing). This create the need of carrying more research on hygiene practices at a national level in both urban and rural areas in order to be able to design and evaluate effective hygiene promotion programs. The present study therefore examined household access to sanitation and hygiene in small towns of Misungwi, Magu and Lamadi in Northwestern Tanzania. Specifically, the study envisaged to: (i) assess the availability of toilet facilities in the study towns, and (ii) assess hand washing practices at households level.

2.0 Study Area and Methodology

2.1 The Study Area

The study was conducted in three selected towns of Misungwi, Magu and Lamadi along the shores of Lake Victoria. Misungwi is one of eight districts in Mwanza Region, which is located along the Mwanza-Shinyanga highway with a population of 30,728 people. Magu township is located 61 km from Mwanza City along the Mwanza-Musoma road and has a population of 23 822. Lamadi is a small but fast growing township in Busega District in Simiyu Region about 70 km from Magu town along the Mwanza – Musoma road. The present population of Lamadi is estimated to be 22 062 people (URT, 2013).

2.2 Study Design

The study adopted a cross sectional design, using mixed methods of data collection. Data were collected at a single point in time, which is one of the characteristic features of a cross sectional design (Kothari, 2009). Both primary and secondary data of quantitative and qualitative nature were collected so as to adequately address the study objectives. Primary data were collected from households and key informants including district officials and community leaders. The household was used as the unit of analysis. Secondary data were gathered from relevant documents at district councils to complement the primary data.

2.3 Sampling and Sample Size

This study employed multistage sampling techniques using a combination of purposive and random sampling methods. The first stage involved purposive sampling of villages and *mitaa* within the urban centres of the study towns. In Misungwi, the villages selected were Misungwi, Iteja, Ng'wambola, Mapilinga and Nange. In Magu, Ilungu, Kipeja, Isandula 'A', Isandula 'B' and Isandula 'C' while in Lamadi, Kalago, Makanisani, Lamadi and Sokoni were selected. Most of the selected villages and *mitaa* were located along the water supply network from the water intakes to town centres and distribution tanks. The second stage entailed simple random sampling of at least 30 households within each village/*mtaa* for the survey. Simple random sampling technique was used because it provides equal chance for households to be involved in the study, thus, reducing biasness and enhancing reliability of the findings (Kumar, 2005).

Since the population of the study towns was large to have an optimum sample size which is manageable and meets the requirements of efficiency, representativeness, reliability and flexibility (Kothari, 2009), a sample size calculator using the Creative Research System (2012) was used to determine the sample size. A confidence interval of 5 was used because the higher the confidence interval the higher the accuracy of the answers to be picked and 95% confidence level was used as is commonly used by researchers (Creative Research System, 2012). Based on this, a sample size of 417 households was selected (Table 1). From each village or *mtaa*, a minimum of 30 households were surveyed, which is a reasonable sample for statistical analysis and comparison between variables as are larger enough for scientific conclusion (Grinnell, 2001; Stutely, 2003; Saunders *et al.*, 2009).

Table 1: Household sample size

Town	Total Population	Number of Households	Sample size
Misungwi	30 728	5 179	169
Magu	23 822	4 326	121
Lamadi	22 062	5 391	127
Total	76 612	14 896	417

2.4 Data Collection Methods

As indicated earlier, this study used mixed methods of data collection from multiple sources of evidence to get deeper insights and contribute to reliability and validity of the findings. Mixed methods are data collection strategies that combine elements of quantitative techniques such as surveys and elements of qualitative methods such as key informant interviews, either simultaneously or sequentially. This study used the following data collection methods: questionnaire survey, key informant interviews, documentary review and observation.

A structured questionnaire with closed and open-ended questions was used for the household survey. The questionnaire aimed at collecting data on household socio-economic characteristics and access to domestic water supply including the payment arrangements for water services. The questionnaire was designed and inputted into a web based mobile application (Poimapper). Compared to paper work, using the mobile application resulted into more accurate and reliable data, made it faster to train enumerators and data entry was done directly during interviews. Key informant interviews were organized with relevant stakeholders, including ward and *mtaa*/village leaders, district council staff and water utilities officials. Non-participant observation, which involved visiting and observing water sources and intakes, was also used.

2.5 Data Processing and Analysis

Quantitative data collected using the questionnaire survey was exported from the mobile platform application (Poimapper) into the Statistical Package for Social Sciences (SPSS) to make them amenable for analysis. Most of the household survey data were analyzed for descriptive statistics such as frequencies and means. The qualitative data obtained from observation, key informant interviews and the open-ended questions in the questionnaire were transcribed and analyzed using qualitative content analysis technique. This involved transcribing and reading through the field notes and transcripts to identify key themes and patterns relevant to the study objectives and questions.

3.0 Results and Discussion

3.1 Household sanitation

The study findings show that majority of households had toilets/latrines, with highest proportion in Lamadi (98%), followed by Magu (94%) and Misungwi (92%). Most of them were using private toilet facilities (96%) and only 4% used public toilet facilities. In Misungwi, a large majority of households had pit latrines (87%), and more than half in Magu (56%) and Lamadi (53%) had the same. Close to half of the households in Lamadi (47%) had flush toilets compared to 44% in Magu and only 13% in Misungwi. The main type of flush toilet was 'flush to septic tank' which was reported by 68%, 83% and 68% of the respondents in Misungwi, Magu and Lamadi, respectively. Pit latrines without slabs were the most common in all study towns: 88% in Misungwi, 79% in Magu and 84% in Lamadi (Table 2 and Plate 1). Although availability of toilet facilities appeared to be high in all towns, most of the households had latrines with no slabs which could be viewed as temporary since are likely to be destroyed by rains (Tanzania National Bureau of Statistics, 2009). This problem was also mentioned during the discussion with Busega District Council Management Team, that most households construct temporary pit latrines as a 'show cases' to avoid penalties by district authorities.

Table 2: Households with access to toilet/latrine

Variable	Response	Misungwi	Magu	Lamadi	All
Household has toilet/latrine (n=417)	Yes	156(92.3)	114(94.2)	125(98.4)	395(94.7)
Type of toilet facility used (n=395)	Private	148(94.9)	109(95.8)	121(96.8)	378(95.7)
	Public	8(5.1)	5(4.2)	4(3.2)	17(4.3)
Type of toilet facility (n=378)	Flush	19(12.8)	48(44.0)	57(47.1)	124(32.8)
	Pit latrine	128(86.5)	61(56.0)	64(52.9)	253(66.9)
	Others	1(0.7)	0(0.0)	0(0.0)	1(0.3)
Type of flush toilet (n=124)	Flush to septic tank	13(68.3)	40(83.3)	39(68.4)	92(74.2)
	Pour flush to an off pit	6(31.6)	8(16.7)	18(31.6)	32(25.8)
Type of pit latrine (n=253)	Ventilated Improved Pit Latrine (VIP)	4(3.1)	2(3.3)	3(4.7)	9(3.6)
	Pit latrine with slab	12(9.4)	11(18.0)	7(10.9)	30(11.9)
	Pit latrine without slab	112(87.5)	48(78.7)	54(84.4)	214(84.6)

Note: Figures in brackets are percents.





Plate 1: Types of toilet facilities in the Misungwi, Magu and Lamadi

3.2 Use of toilet facilities

With regard to the use of toilet facilities, the finding indicates that a large majority of the households in Misungwi (82%) and Magu (81%) reported that their toilets were used by only household members compared to slightly above half in Lamadi (51%). For households sharing toilets with other households, most of them indicated that such toilets were shared by less than ten households: 84%, 90% and 92% in Misungwi, Magu and Lamadi, respectively (Table 3).

Table 3: Households using the same toilet facility

Variable	Response	Misungwi	Magu	Lamadi	All
Toilet used by only household members (n=377)	Yes	122(81.9)	87(80.6)	61(50.8)	270(71.6)
Number of households using same toilet facility (n=104)	Less than ten households	21(84.0)	18(90.0)	54(91.5)	93(89.4)
	Ten or more households	4(16.0)	2(10.0)	5(8.5)	11(10.6)
Frequency of using a public toilet facility	Several times a day	4(80.0)	4(100.0)	4(100.0)	12(92.3)
	Once a day	1(20.0)	0(0.0)	0(0.0)	1(7.7)

Note: Figures in brackets are percents.

Most of the respondents in Lamadi (62%) and Magu (57%) felt safe to use their toilet facilities at night compared to 47% in Misungwi. Contrastingly, more than half of the respondents in Misungwi (53%) felt unsafe using their toilet facilities at night (Table 4), partly because most of the toilet facilities in this town were either located in the yard of the house (75%) or within less than 200m (20%) as shown in Table 4

Table 4: Feels safe at night to use the toilet facility (n=406)

Response	Misungwi	Magu	Lamadi	All
Yes	75(46.6)	68(57.1)	78(61.9)	221(54.4)
No	86(53.4)	51(42.9)	48(38.1)	185(45.6)

Note: Figures in brackets are percents

With regard to the location of the toilet, most of the surveyed households had their toilets located in the household, mostly in Lamadi (88%), followed by Magu (79%) and Misungwi (75%). One in ten of the households surveyed in Magu had their toilets in the house (10%), but very few households had such facilities in their house in Misungwi (1%) and Lamadi (2%) as shown in Table 5.

Table 5: Distance from the house to the toilet facility (n=401)

Response	Misungwi	Magu	Lamadi	All
In the house	2(1.3)	12(10.1)	2(1.6)	16(4.0)
In the yard of the house	117(74.5)	94(79.0)	110(88.0)	321(80.0)
Less than 200m	32(20.4)	9(7.6)	11(8.8)	52(13.0)
Between 200m and 500m	5(3.2)	4(3.4)	1(0.8)	10(2.5)
Between 500m and 1km	0(0.0)	1(0.8)	0(0.0)	1(0.2)
More than 1km	0(0.0)	0(0.0)	1(0.6)	1(0.2)

Note: Figures in brackets are percents

3.3 Source of financing for latrine/septic tank construction

The study investigated the costs that were incurred during construction of toilet facilities in the study areas. The findings showed that average construction cost was highest in Magu (TZS 315,809), followed by Lamadi (TZS 236,800) and lowest in Misungwi (TZS 155,071). This is equivalent to USD 158, USD 118 and USD 78 in Magu, Lamadi and Misungwi, respectively. The variation in the construction costs across the towns could partly be due to the different types of latrines reported above and cost of construction materials in the respective towns.

The main source of financing for construction of latrines or septic tanks was self-savings as reported by 63%, 79% and 81% of the respondents in Misungwi, Magu and Lamadi, respectively. About one third of the respondents in Misungwi (30%) and one fifth in Magu (20%) and Lamadi (19%) obtained loans or support from microfinance services to construct their latrines or septic tanks (Table 7).

Table 7: Source of financing for latrine/septic tank construction (n=209)

Source	Misungwi	Magu	Lamadi	All
Self-savings	38(63.3)	61(79.2)	58(80.6)	157(75.1)
Family or friend support	18(30.0)	15(19.5)	14(19.4)	47(22.5)
Loan or support from MFI / rural bank	0(0.0)	0(0.0)	1(1.7)	1(0.5)
Partial subsidy from government institution/NGO/charitable donation	1(1.7)	1(1.3)	0(0.0)	2(1.0)
Full grant subsidy from government institution/NGO/charitable donation	0(0.0)	0(0.0)	2(3.3)	2(1.0)

Note: Figures in brackets are percents.

3.4 Hand washing practices

The findings on this aspect show that most of the respondents washed hands with soap before and after meals as reported by 86%, 88%, and 71% of the respondents in Misungwi, Magu and Lamadi, respectively. Another critical time for washing hands with soap was after using toilet, which was reported by 78% of the respondents in Misungwi and Magu, and 80% in Lamadi. This shows that most of the respondents wash hands with soap at most of the critical times, suggesting that urban dwellers have high level of awareness on the importance of and, therefore, practice hand washing at critical times. About 43% of the respondents in Lamadi washed hands with soap after holding dirty substances, compared to 13% in Misungwi and 26% in Magu who did the same. One quarter of the respondents in Misungwi (25%) washed hands with soap after touching oily or greasy substances, compared to 22% and 13% in Magu and Lamadi, respectively. The proportion of respondents washing hands with soap before cooking was generally low: 24% in Misungwi, 22% in Magu and 15% in Lamadi (Table 9). The low proportion of respondents who reported to be washing hands with soap in before cooking, before feeding children, after touching greasy or dirty substances, after working in a farm and after doing household cleanliness raises the need to sensitive community members to consider these critical times as well.

Table 9: When do you usually wash hands with soap (n=417)

Critical times to wash hands	Misungwi	Magu	Lamadi	All
At prayer times	0(0.0)	1(0.8)	4(3.1)	5(1.2)
Before and after meals	145(85.8)	106(87.6)	90(70.9)	341(81.8)
Before cooking	40(23.7)	26(21.5)	19(15.0)	85(20.4)
After using toilet	132(78.1)	94(77.7)	101(79.5)	327(78.4)

Before feeding children	31(18.3)	13(10.7)	18(14.2)	62(14.9)
After changing baby diapers	22(13.0)	6(5.0)	1(0.8)	29(7.0)
After touching oily and greasy substances	42(24.9)	26(21.5)	16(12.6)	84(20.1)
After working in the farm or garden	33(19.5)	17(14.0)	13(10.2)	63(15.1)
After holding dirty substances	22(13.0)	32(26.4)	54(42.5)	108(25.9)
After doing household cleanliness	25(14.8)	14(11.6)	3(2.4)	42(10.1)

Note: Figures in brackets are percents

3.5 Hand washing facilities

With regard to hand washing facilities, almost all respondents indicated that were using jerry cans to wash hands individually: 96%, 95% and 98% in Misungwi, Magu and Lamadi, respectively. The findings in Table 10 further show that few households were dipping hands in common washing utensils, as reported by 11% of the respondents in Lamadi, 7% in Magu and 3% in Misungwi. Washing hands on taps with running water was reported by very few respondents in Misungwi (5%) and Magu (1%). This shows that most of the households in the study towns practiced appropriate hand washing practices that are likely to ensure hygiene of household members.

Table 10: Hand washing facility used by households (n=417)

Hand washing facility	Misungwi	Magu	Lamadi	All
Using a jerry or cup to wash hands individually	163(96.4)	115(95.0)	125(98.4)	403(96.6)
Dipping hands in a common washing utensil	5(3.0)	9(7.4)	14(11.0)	28(6.7)
Tap with running water	8(4.7)	1(0.8)	0(0.0)	9(2.2)

Note: Figures in brackets are percents

When asked why they think hands should be washed with soap, the findings in Figure 2 show that 81%, 80% and 69% of the respondents in Misungwi, Magu and Lamadi, respectively, mentioned to avoid spread of diseases. Hygiene and personal cleanliness was reported by over three quarters of the respondents in Magu (77%), about one quarter in Lamadi (75%) and more than half in Misungwi (57%). This shows that most of the respondents were generally aware about the reasons of hand washing with soap.

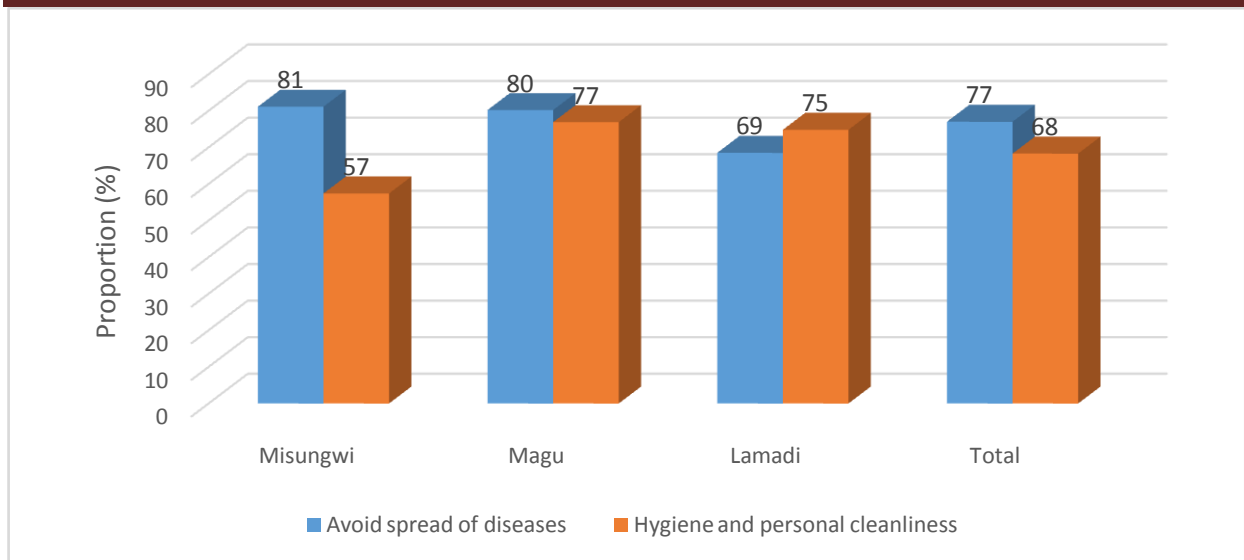


Figure 2: Reasons for washing hands with soap

However, very few respondents reported to have participated in any educational campaigns on water, sanitation and hygiene: 8% in Magu, 5% in Misungwi and 2% in Lamadi. Although most of the households are practicing proper hand washing practices, these findings show that there is limited access to information on water, sanitation and hygiene, which could contribute to increased awareness and improved practices at household level.

4.0 Conclusion

The findings of this study indicate low level of improved sanitation coverage in the three towns. At household level, traditional toilets which do not meet the standards are commonly used. It was noted that in most cases, these kinds of toilets are built just to avoid penalties of “not having a toilet”. Hand washing was also noted to be one of the issues given low weight by the community in all towns. At household level, hand washing was mainly done before and after eating. Another critical time for washing hands with soap was after using toilet suggesting that most of the households in the study towns practiced appropriate hand washing practices that are likely to ensure hygiene of household members. Hygienic issues at households level is one of critical issues which need to be addressed seriously in order to avoid eruption of water related diseases, which can culminate into a healthy worsening situation. Outreach campaigns should be designed to reach all target groups with clear user friendly and culturally appropriate messages to impart knowledge and advocate for change of hygienic knowledge and practices.



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