HOUSEHOLD WATER ACCESSIBILITY IN SATELLITE TOWNS OF MWANZA CITY: IT'S IMPLICATION TO HEALTH OF PEOPLE

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ABSTRACT

The aim of this study was to investigate the current situation of water accessibility in three Satellite Towns of Mwanza City namely Misungwi, Magu and Lamadi. A cross sectional study design was employed in carrying out this study where a sample size of 417 respondents was choosen. Study results indicated that Protected dug wells were the main source of drinking water in Misungwi, accounting for 62% of sampled households while in Magu were public taps, stand pipes or communal taps (34%) and protected dug wells (31%). In Lamadi, households depended on public taps, stand pipes or communal taps (61%). Over half of respondents in Lamadi collected water from 'within 400m' (51%) compared to over one third in Magu (36%) and above a quarter in Misungwi (28%). This means that most of the households in the study towns did not access drinking water within the recommended national standard of 400m as per the national water policy. More than half of water drawers in Lamadi spent less than 15 minutes (58%), compared to one third in Magu (33%) and slightly above one quarter in Misungwi (26%). The findings also revealed high willingness to pay for water services at household level. The household average monthly expenditure on water services was highest in Magu (TZS 29,965) and lowest in Lamadi (TZS 12,325). This could mean that households in Magu, Misungwi and Lamadi spent about 15 USD, 7 USD and 6 USD, respectively, on water services per month. When affordability was determined using the affordability index as a percentage of the household income that is spent on water, it was found that households in Misungwi, Magu and Lamadi spent 8%, 12% and 5% of their monthly total incomes on water, respectively. Access to adequate water supply was the main challenge which was cited by 73% of respondents in Magu, 57% in Misungwi and 45% in Lamadi. Time spent on fetching water was also a challenge especially in Misungwi (72%) and Magu (63%). Close to half of the respondents in Lamadi (49%), more than one third in Magu (35%) and about 23% in Misungwi complained about frequent interruptions.

Keywords: Water accessibility, Water supply, Water sources, households,

1.0 INTRODUCTION

Water supply is vital for ensuring sustainable economic and social development for human welfare. Statistics indicate that more than 1.1 billion people in the world (eighty percent of them rural dwellers) are denied the right to access clean and safe drinking water, and 2.4 billion have no access to proper sanitation (Grey, 2006; UNICEF and WHO, 2012). As well, around 84% of the people who do not have access to clean water services reside in rural areas (DFID, 2011). As a result, every year 2.2 billion people die from water-related diseases and 1.87 million children die from diarrhea, ninety percent of which results from unsafe drinking water.

In Tanzania, as in many other sub-Saharan African countries, numerous people do not have access to safe water regardless of the establishment of National Water Policy of 2002, Water Resource Management Act of 2009 and Water Supply and Sanitation Act of 2009 to govern water resources in Tanzania (URT, 2009). Recognizing the importance of water resource, Tanzania Government further established National Water Sector Development Strategy of 2005 to 2015 and Water Sector Development Programme of 2005 to 2025 with the main goal of improving water service delivery to every citizen in Tanzania.

Water supply coverage in rural areas increased substantially, from 40% in 2013 to 67% in June 2015. Furthermore, water supply coverage in 19 regional headquarters increased from 84% in 2009 to 86% in 2015 (URT, 2015). However, large disparities persist between urban and rural areas, with regard to access and quality of water services. In rural areas, almost one in every two persons has no access to safe water supply service (Mwambuli, 2011). This has resulted rural Tanzanians to travel long distances, consuming over many hours to fetch water. This also has a huge negative impact on economic development and often results in girls dropping out of schools as they have to join their mothers in fetching potable water (Mwambuli, 2011). The national economy suffers because of inadequate water supply services to the urban and rural population (URT, 2002). Poverty is directly related to accessibility to clean water services, such that without it the chances of breaking out of the poverty trap are extremely slim. The social and economic consequences of lack of sustainable access to water services penetrate into realms of education, opportunities for gainful employment, physical strength and health, agricultural and industrial development, and, thus the overall productive potential of the community and the nation as a whole. With better water conditions, the burden on healthcare would be lessened bringing in a healthier workforce that would stimulate economic growth and pull many people out of poverty.

Lack of reliable and sustainable water supply services has often forced those living in water deprived areas to turn to unsafe water sources, which then contributes to the spread of water borne diseases including typhoid fever, cholera, dysentery and diarrhea. Additionally, water scarcity has caused many people to store water in their households which increases the risk of household water contamination and incidents of malaria and dengue fever spread by mosquitoes (URT, 2002; UNICEF and WHO, 2012). Water borne diseases are a leading cause of illnesses and deaths in Tanzania. While globally, 2.2 million people die each year from diarrhea-related disease, and at any given time fifty percent of all hospital beds in the world are occupied by patients suffering from water-related diseases, in Tanzania, more than 20,000 of children die each year due to diarrhea and other water-related diseases (UNICEF and WHO, 2012). When infected with these waterborne diseases, those suffering from water scarcity cannot contribute to the community's productivity and development because of a simple lack of strength. Additionally, economic resources are sapped by the cost of medicine to treat waterborne diseases,

which takes away from resources that might have been used for food, school fees and investment in development activities. Sustainable access to water services is of paramount importance to the local population, leading directly to improved health, opportunities in education and economic ability.

This paper aimed at investing the current situation of water accessibility in three Satellite Towns of Mwanza City namely Misungwi, Magu and Lamadi.

2.0 MATERIALS AND METHODS

2.1 Study Area

The present study was conducted in three satellite towns of Mwanza City, namely: Misungwi, Magu and Lamadi as shown in Figure 1. Misungwi is one of eight districts in the Mwanza Region. Misungwi Town is situated adjacent to the Mwanza-Shinyanga road about 40 km south of Mwanza. Magu Township is located 61 km from Mwanza City along the Mwanza-Musoma road. Magu district shares its borders with Ilemela district in the West, Bunda district in the North, Bariadi district in the East and Kwimba in the South. 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.

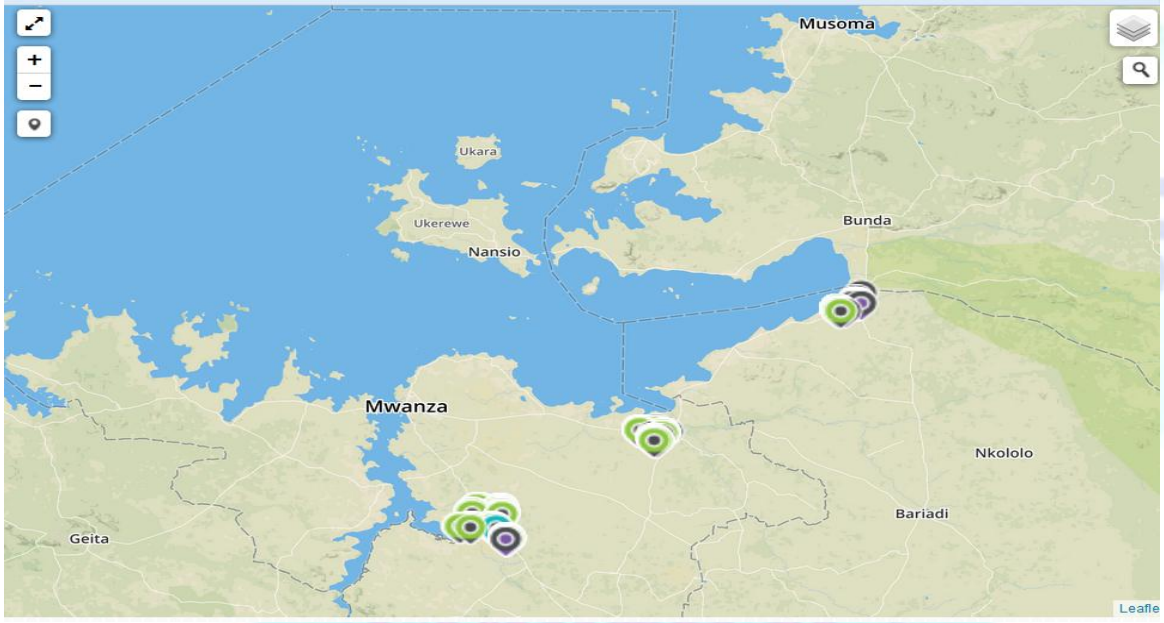

Figure 1: Study area

2.2 Study Approach and Data Collection

The approach adopted for conducting this study was participatory in nature aimed at maximizing the involvement of a variety of stakeholders. To enhance performance, the study team developed and applied a mobile based data collection system. This web based information management system was

preferred as it ensures better data quality through control "ex ante" (skip logic, formatting control, etc.); significant decrease of delay in data collection process; allows the collection of rich content information including GPS coordinates, pictures, track mapping, video recordings, among many advantages. Compared to paper work, using mobile phone resulted in more accurate data, faster to train enumerators and data entry during interviews. The mobile platform used was Android based phones with Poimapper programme. The study team recruited and trained six enumerators. Training of enumerators was necessary to build their capacity on how best they can handle the exercise in a participatory manner including the use of the mobile platform. Prior to the main fieldwork, a preliminary survey was conducted. The objectives of the survey were to test the suitability and relevance of the prepared tools and find out the most efficient way of carrying out the study

2.3 Study design

A cross sectional study design was used, which entailed collecting data at a single point in time which is one of the characteristic features of a cross sectional design. Validation and cross checking on the accuracy and relevance of the collected data was ensured as a result of using mobile platform which enabled checking quality of data entered by each enumerator. This helped to correct any abnormally sooner than later.

2.4 Sampling Procedures

According to Kothari (2009) sampling design is a plan for obtaining a sample from a sampling frame. Generally, it refers to the techniques or procedures used by the researcher in selecting sampling units from which inferences about the population is drawn. This study, therefore, employed multistage sampling techniques using a combination of random and purposive sampling methods. Purposive sampling was used to select villages and mitaa from Misungwi, Magu and Lamadi. Simple random sampling was used to select households from each village/mtaa for the household survey. This technique was favoured because it gives an equal chance to households to be involved in the study and, thus, reduced biasness and, hence, increased data reliability. On the other hand, purposive sampling was used to select key informants.

2.5 **Sample Size**

The sample size for this study was based on the total number of households according to the 2012 Tanzania population census. Since the population of the towns was large to have a sample size which is manageable and meets the requirement pointed out by Kothari (2009), a sample size calculator using a Creative Research System (2012) was used. This system is very useful in determining sample size in a situation where the population is large and, therefore, can be used to determine how many people need to be interviewed in order to get results that reflect the target population as precisely as needed (ibid).

For this assignment, 95% confidence level was used as this is the level which is commonly used by researchers (Creative Research System, 2012). Based on the aforesaid, a sample size of 417 households was selected as indicated in Table 2. From each village or mtaa, a minimum of 30 households were surveyed which is a reasonable sample for statistical analysis and comparison across the villages/mitaa (Grinnell, 2001).

Table 2: 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

2.6 Data Processing and Analysis

The collected data were analyzed using both quantitative and qualitative techniques. The quantitative data collected using the questionnaire surveys were exported from the mobile platform application (Poimapper) into the Statistical Package for Social Sciences (SPSS) to make them amenable for analysis. These data were analyzed for descriptive statistics such as frequencies and means. The qualitative data obtained from observation, KIIs and the open-ended questions in the questionnaire were transcribed and analyzed using qualitative content analysis technique.

3.0 RESULTS AND DISCUSSION

3.1.1 Main sources of drinking water

One of the targets of SDG 6 is to achieve universal and equitable access to safe and affordable drinking water for all by 2030 (United Nations, 2015). The source of water is an important indicator of the suitability of the water for drinking and other domestic uses. WHO and UNICEF (2012) define improved drinking water sources, which by nature of their construction or through active intervention are protected from contamination particularly faecal matter. These comprise piped water on premises such as piped household water connection located inside the users' dwelling, plot or yard. Other improved drinking water sources public taps or stand pipes, tube wells or boreholes, protected dug wells, protected springs and rain water collection. This definition is used by the Tanzania national water policy (URT, 2002) and national water sector development strategy 2006 – 2015 (URT, 2008).

The study findings show that a large majority of households in Misungwi were obtaining drinking water from protected dug wells (62%). The main sources of drinking water in Magu were public taps, stand pipes or communal taps (34%) and protected dug wells (31%). In Lamadi, close to two thirds of households depended on public taps, stand pipes or communal taps (61%). Household connections were generally few and accounted for only 7%, 10% and 4% of the respondents in Misungwi, Magu and Lamadi, respectively. Water vendors were also an important source of drinking water especially in Magu and Lamadi, each accounting for 5%of the water users in the respective towns (Table 3 and Pates 1and 2).

Table 3: Main sources of drinking water for the household (n=417)

Source	Misungwi	Magu	Lamadi	All
Piped into the house	2(1.2)	3(2.5)	0(0.0)	5(1.2)
Piped to yard/plot	10(5.9)	9(7.4)	5(3.9)	24(5.8)
Public tap/stand pipe/communal tap	13(7.7)	41(33.9)	78(61.4)	132(31.7)
Borehole	16(9.5)	0(0.0)	1(0.8)	17(4.1)
Protected dug well	105(62.1)	37(30.6)	1(0.8)	143(34.3)
Unprotected dug well	11(6.5)	3(2.5)	3(2.4)	17(4.1)
Unprotected spring	7(4.1)	11(9.1)	19(15.0)	37(8.9)
Protected spring	1(0.6)	0(0.0)	1(0.8)	2(0.5)
Rain water collection/harvesting	1(0.6)	0(0.0)	0(0.0)	1(0.2)
Lake/river/stream	1(0.6)	9(7.4)	13(10.2)	23(5.5)
Water tanker	0(0.0)	2(1.7)	0(0.0)	2(0.5)
Other sources	2(1.2)	6(5.0)	6(4.7)	14(3.4)

Note: Figures in brackets are percents

Plates 1 and 2: Main sources of drinking water in Misungwi, Magu and Lamadi

Considering the definition of 'improved sources' stated earlier (URT, 2008), the study findings in Figure 3 show that a significantly large majority of households in Misungwi obtained drinking water from improved sources (88%) compared to their counterparts in Magu (74%) and Lamadi (68%). About one third of households in Lamadi (32%) and slightly over one quarter of them in Magu (26%) relied on unimproved sources mainly unprotected springs, lake, rivers and streams.

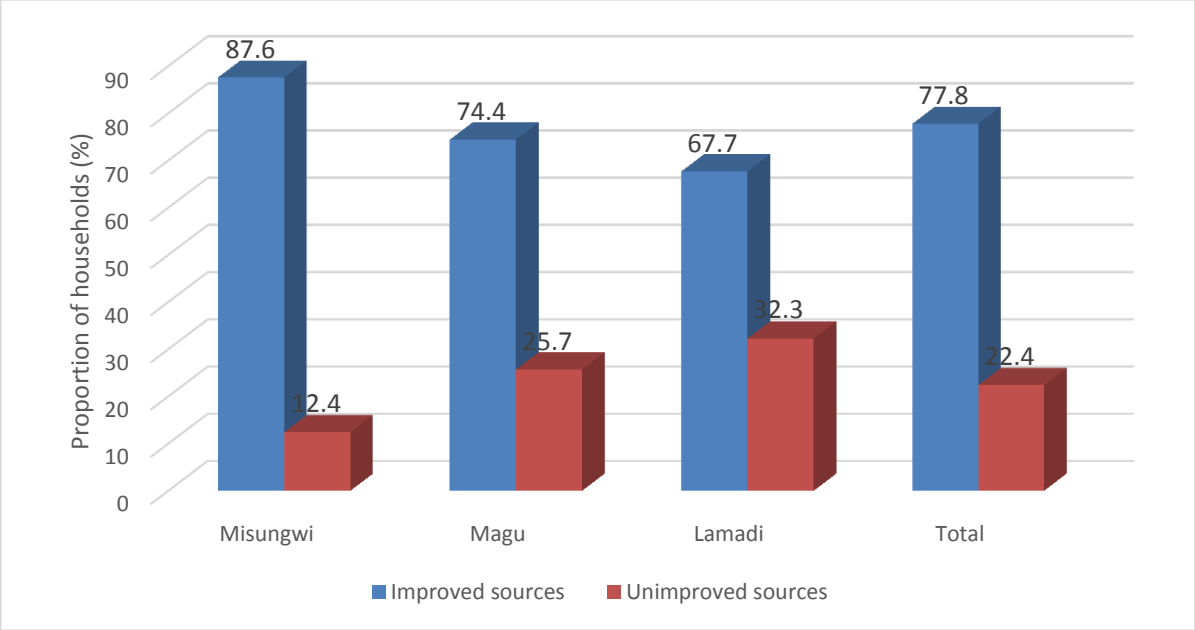

Figure 3: Main sources of drinking water (n=417)

To measure the reliability of water supply, household respondents that got water from household connections, public taps, stand pipe and communal taps were asked to indicate the frequency of water flow. Most of the respondents in Misungwi indicated 'twice per week' (44%) and another 24% said 'daily'. About half of the respondents in Magu stated water flow was 'very infrequent or there was no established pattern' (49%). A more or less similar picture was observed in Lamadi where 47% of the respondents reported 'very infrequent or no established pattern' of water flow (Table 4). This was due to the fact that water supply coverage in all towns was lower than the demand. Thus, there was water rationing in all towns.

Table 4: Frequency of water flow from taps (n=161)

Frequency	Misungwi	Magu	Lamadi	All
Daily	6(24.0)	11(20.8)	11(13.3)	28(17.4)
Fortnightly	2(8.0)	4(7.5)	3(3.6)	9(5.6)
Twice per week	11(44.0)	9(17.0)	9(10.8)	29(18.0)
Thrice per week	3(12.0)	3(5.7)	21(25.3)	27(16.8)
Very infrequent/no established pattern	3(12.0)	26(49.1)	39(47.0)	68(42.2)

Note: Figures in brackets are percents

Information from Water utilities in the three towns which are responsible for the supply of water services indicated that Water supply coverage for MAUWASA and MIUWASA was estimated at 23% and 31%, respectively. Currently, MAUWASA serves a population of 8000 with a future plan to serve a population of 38,000 by 2018. Population served by MIUWASA currently stands at 21,000. Population planned to be served by MIUWASA by 2018 is 41,224. Busega District Council has water supply coverage of 35% with a population of 203,597 (URT, 2012). The district has a total 564 water points, but only 215, which is equivalent to 38% are functional. The remaining 349 water points equivalent to 62% are non-functional ones. The district has four Community Owned Water Supply Organizations (COWSO) which are Lamadi, Nassa Ng'wamanyili, Nassa Nyang'hanga and Nyangili. Lamadi town, which is served by Lamadi COWSO, is one of the fast-growing centres in Busega District. Based on the 2012 national housing and population census, the town has a population of 22,062. The town is served by two water supply providers i.e. Lamadi COWSO and Bija Water Supply Company. According to data availed at Lamadi, water supply coverage in Lamadi town is 38%. Currently, Lamadi COWSO serves a population of 8,623 while Bija Water Supply Company serves 10,000 people.

3.1.2. Distance and time used to fetch water

The presence of an improved water source does not adequately measure whether households have access to water. The effort required to fetch water may favour some households and exclude others from using the water source. Thus, distance and time were used as indicators of the water collection effort. The study findings show that over half of respondents in Lamadi collected water from 'within 400m' (51%) compared to over one third in Magu (36%) and above a quarter in Misungwi (28%). Few respondents obtained water from more than 3km, and were mainly found in Misungwi (13%) than in other towns (Table 5). This means that most of the households in the study towns do not access drinking water within the recommended national standard of 400m as per the national water policy (URT, 2002).

Table 5: Distance to the main source of drinking water (n=417)

Distance	Misungwi	Magu	Lamadi	All
0-400m	48(28.4)	44(36.4)	65(51.2)	157(37.6)
401-1000m	32(18.9)	28(23.1)	43(33.9)	103(24.7)
1001-1500m	31(18.3)	27(22.3)	5(3.9)	63(15.1)
1501-2000m	30(17.8)	16(13.2)	3(2.4)	49(11.8)
2001-3000m	6(3.6)	2(1.7)	10(7.9)	18(4.3)
Above 3000m	22(13.0)	4(3.3)	1(0.8)	27(6.5)

Note: Figures in brackets are percents

In theory, the time spent on collecting water should be closely related to the distance from the source. However, distance does not truly measure the collection effort because in many cases users spend long times on queuing. Hence, household respondents were asked about the time it takes on a round trip to the water source. The findings in Table 6 show that more than half of water drawers in Lamadi spent less than 15 minutes (58%), compared to one third in Magu (33%) and slightly above one quarter in Misungwi (26%). Again, few respondents spent more than one hour on one trip and were mainly found in Misungwi (15%) and Magu (7%).

Table 6: Time to walk to and from the source of drinking water (n=417)

Time	Misungwi	Magu	Lamadi	All
0-15 min	44(26.0)	40(33.1)	73(57.5)	157(37.6)
16-30 min	41(24.3)	41(33.9)	29(22.8)	111(26.6)
31-45 min	37(21.9)	8(6.6)	10(7.9)	55(13.2)
46 - 60 min	22(13.0)	24(19.8)	15(11.8)	61(14.6)
Above 60min	25(14.8)	8(6.6)	0(0.0)	33(7.9)

Note: Figures in brackets are percents

Waiting time at the water point, partly because of queuing, was another indicator that was used to measure water access. Thus, respondents were asked to estimate waiting time at the water sources. In Magu, more than half of the respondents reported to be spending more than one hour waiting for water (55%) and 44% of the respondents in Lamadi spent the same (Figure 4). Waiting times in Misungwi were relatively short as more than one third of the respondents spent less than 15 minutes (37%). This shows that despite the seemingly short distances and time used for a round trip to water sources, waiting times at water sources were generally high. This was probably due to the limited number of domestic water points (DPs) and irregular flow of water at the DPs.

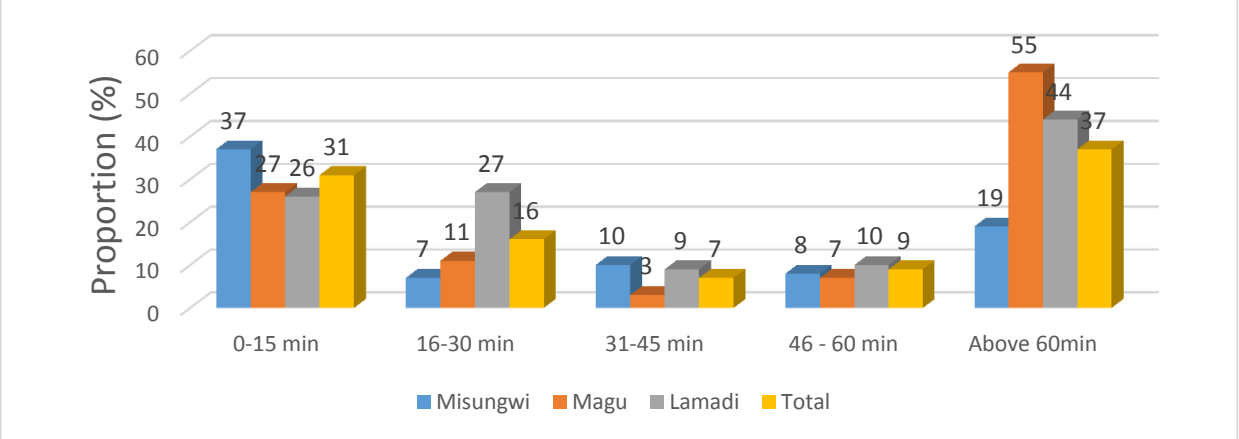

Figure 4: Waiting time at the water source

3.1.3 Modality of accessing water services

Water services in the study area are obtained from Water utilities and from vendors. Findings from the study indicate that over three quarters of the water users in Lamadi (76%) and close to two thirds in Magu (64%) were paying for water services. However, only one in five respondents in Misungwi (20%) paid for water services (Table 7). In Misungwi, 42% of the respondents paid monthly bills to the water utility and another 36% paid as they fetched water at communal/public taps. Majority of respondents in Lamadi (88%) and Magu (52%) paid as they fetched water. Buying water from water vendors was common in Magu (22%), and to some extent in Lamadi (7%) but less in Misungwi (3%). Plates 3 and 4 show the hand drawn carts used by water vendors in the study towns.

Table 7: Payment arrangements for water services(n=417)

Variable	Response	Misungwi	Magu	Lamadi	All
Pay for water services	Yes	33(19.5)	77(63.6)	97(76.4)	207(49.6)
Payment modality	Monthly bills to the water utility	14(42.4)	11(14.3)	4(4.1)	29(14.0)
	Pay as you fetch per bucket at communal taps	12(36.4)	40(51.9)	85(87.6)	137(66.2)
	Buying water from vendors	1(3.0)	17(22.1)	7(7.2)	25(12.1)
	Others	6(18.2)	9(11.7)	1(1.0)	16(7.7)

Figures in brackets are percents


Plates 3 and 4: Carts used by water vendors in Misungwi, Magu and Lamadi

The average amount paid by individuals who fetched water at communal/public taps per a 20 litres bucket of water was lowest in Lamadi (TZS 35) and highest in Misungwi (TZS 104). Water users in Misungwi who obtained water from water vendors paid an average of TZS 500 per a 20 litres bucket compared to their counterparts in Magu and Lamadi who paid TZS 277 and TZS 193, respectively. Household average monthly expenditure on water services was highest in Magu (TZS 29,965) and lowest in Lamadi (TZS 12,325). This could mean that households in Magu, Misungwi and Lamadi spent about 15 USD, 7 USD and 6 USD, respectively, on water services per month (Figure 7). High household expenditure on water services in Magu is possibly a result of the low water supply in the town, which necessitates most households to obtain water from water vendors at a relatively higher price.

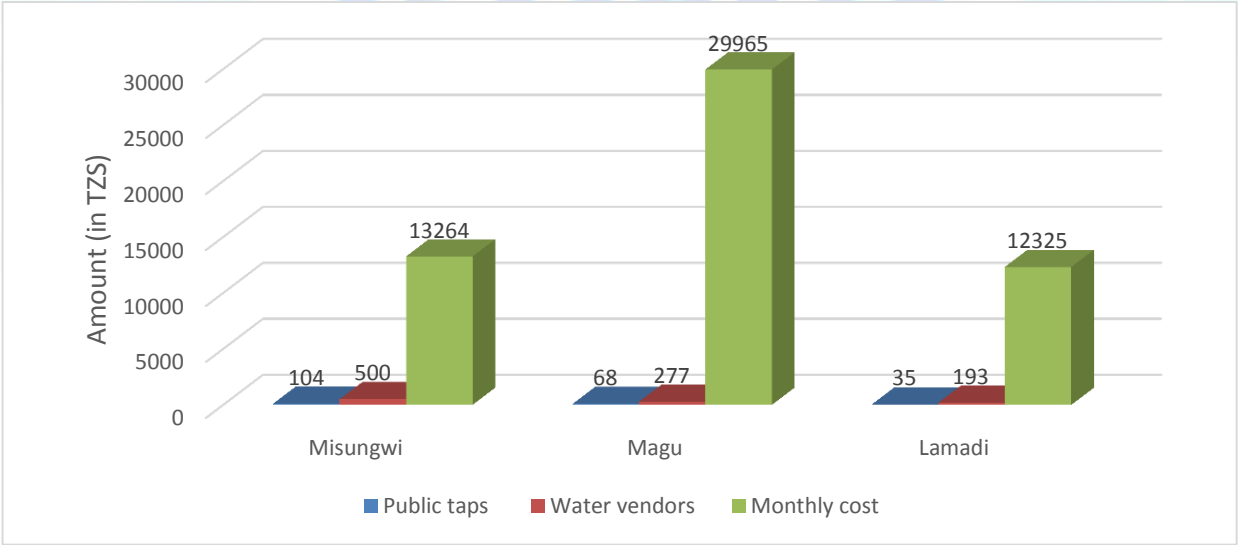

Figure 5: Average household monthly expenditure on water services (TZS)

The study findings show that majority of water users indicated that they were able to afford to pay for water services though with variations across the towns: 71% in Lamadi, 65% in Magu and 57% in Misungwi. When affordability was determined using the affordability index as a percentage of the household income that is spent on water, it was found that households in Misungwi, Magu and Lamadi spent 8%, 12% and 5% of their monthly total incomes on water, respectively. Using the threshold of up to 5% of household income (Smets, 2009; Hutton, 2012), these findings suggest that households in Misungwi and Magu had a high burden on water expenditures and could not afford to pay for water

services. Encouragingly, a large majority of respondents were willing to pay more for improved water supply. The level of willingness was highest in Magu (89%), followed by Misungwi (85%) and Lamadi (74%) as shown in Table 8. The high level of willingness to pay for improved water supply in the study towns implies that expansion of water supply services could be possible as many households are willing to pay for the services. This could also ensure operation and maintenance of the water utilities and, hence, sustainability of water supply services.

Table 8: Affordability and willingness to pay for water services

Amount paid	Misungwi	Magu	Lamadi	All
Afford to pay for water services	17(56.7)	49(65.3)	67(70.5)	133(66.5)
Willing to pay more than what you pay now for improved water supply	143(84.6)	108(89.3)	94(74.0)	345(82.7)

Note: Figures in brackets are percents

3.1.4 Water network system

Water transmission networks in Magu, Misungwi and Lamadi have a total length of 43.5km while distribution networks have a total length of 77kms. Table 9 presents length of transmission and distribution networks in the three towns. The water networks in Magu and Misungwi are quite old, as were designed for the project period of 20 years in 1974 for Magu. This means that the systems are beyond their project period. This could be a main reason as to why the water schemes cannot supply water services to the planned total population due to old network which results to leakages and bursts of the pipes. This situation poses a major challenge on its management and thus the utilities cannot operate efficiently and economically.

Table 9: Distance (in km) of transmission and distribution networks in Magu, Misungwi and Lamadi

Indicator	MIUWASA	MAUWASA	LAMADI COWSO	BIJA WATER SUPPLY
Transmission network	12.5	27.0	0.0*	26
Distribution network	24.0	10.0	4.00	8.0

*No available data

3.1.5 Users' satisfaction with water services

The study also assessed users' satisfaction with water services. The findings in Table 10 show that majority of respondents in all towns were either 'dissatisfied' or 'very dissatisfied' with water services. The highest proportion of dissatisfied water users was found in Magu (84%) where 43% of the respondents indicated that were 'dissatisfied' and 41% said were 'very dissatisfied'. In Misungwi, 63% of the respondents were dissatisfied (52% dissatisfied and 11% very dissatisfied). In Magu, 61% of the respondents were dissatisfied with water services. Only 18%, 17% and 3% of the water users in Lamadi, Misungwi and Magu, respectively, were satisfied with water services. The level of satisfaction with water services in the study towns is generally lower than the national average of 42% reported in 2009 (URT, 2009).

Table 10: Satisfaction with water services

Level	Misungwi	Magu	Lamadi	All
Very satisfied	1(0.6)	0(0.0)	4(3.1)	5(1.2)
Satisfied	27(16.0)	4(3.3)	19(15.0)	50(12.0)
Somewhat dissatisfied	34(20.1)	16(13.2)	25(19.7)	75(18.0)
Dissatisfied	88(52.1)	52(43.0)	39(30.7)	179(42.9)
Very dissatisfied	19(11.2)	49(40.5)	39(30.7)	107(25.7)
Neutral	0(0.0)	0(0.0)	1(0.8)	1(0.2)

Note: Figures in brackets are percents.

3.1.6 Scarcity of water and its Healthy implication

Diarrhoea was the most common water related diseases that affected children in the study, which was reported by almost all respondents: 99% in Misungwi, 94% in Magu and 95% in Lamadi. The same was also reported by the District Medical Officers in the three towns who cited diarrhoea as one of the top ten diseases in the towns. About one quarter of the respondents in Misungwi (23%) mentioned cholera, compared to 11% and 10% in Magu and Lamadi, respectively. Scabies was mentioned by 22% of the respondents in Lamadi, 21% in Magu and 9% in Misungwi (Table 11). This could mean that there is high incidence of water related diseases especially diarrhoea in the area, which can be attributed to scarce availability of water.

Table 11: Common water related diseases affecting children in the area (n=417)

Disease	Misungwi	Magu	Lamadi	All
Diarrhoea	167(98.8)	114(94.2)	121(95.3)	402(96.4)
Bloody diarrhoea /dysentery	6(4.7)	7(5.8)	11(6.5)	24(5.8)
Cholera	39(23.1)	13(10.7)	13(10.2)	65(15.6)
Schistosomiasis	3(1.8)	21(17.4)	12(9.4)	36(8.6)
Scabies	15(8.9)	25(20.7)	28(22.0)	68(16.3)
Trachoma/eye infection	17(10.1)	3(2.5)	2(1.6)	22(5.3)

Note: Figures in brackets are percents

3.1.7 Challenges facing water users

The main challenge affecting access to domestic water supply in the study towns was quantity of water, which was cited by about three quarters of respondents in Magu (73%), more than half in Misungwi (57%) and 45% in Lamadi. Time spent on fetching water was also a challenge especially in Misungwi (72%) and Magu (63%), although not serious in Lamadi (19%). Close to half of the respondents in Lamadi (49%), more than one third in Magu (35%) and about a quarter in Misungwi (23%) complained about frequent interruptions. Quality of water was cited by 41% of the respondents in Misungwi, 31% in Magu and 29% in Lamadi (Figure 6). This means that any interventions to improve access to domestic water supply in the study towns should focus on increasing the quantity of water, which can contribute to reducing time spent on fetching water. Similarly, problems related to frequent interruptions due to water supply systems breakdowns and quality of water need to be seriously addressed.

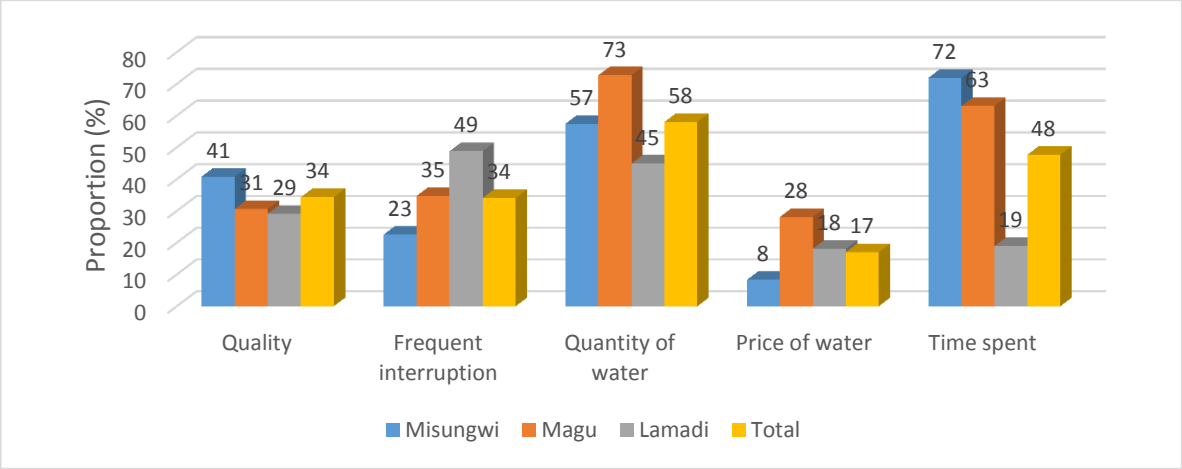

Figure 6: Main challenges affecting access to domestic water supply

4.0 CONCLUSION AND RECOMMENDATIONS

Based on the findings presented the study found that the three study towns have low water supply coverage, which is a result of low water production and supply compared to the actual demand. Water utilities of MAUWASA and MIUWASA, which are responsible for provision of water services in Magu and Misungwi towns, respectively, their water networks are of old age and, thus, pose maintenance challenges. Limited accessibility to clean and safe drinking water could be contributing to high prevalence of diarrhoea and other water related diseases in the study area. Thus, limited access to safe and clean water has serious implications on the health needs of the people. This means that interventions aimed at improving access to water supply are required so as to address this critical basic need and human right.

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