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Analysis of Mode of Access to Quality Public Water Supply in Jalingo Metropolis, Taraba State

Ezekiel BB*, Yushau AM, Nicodemus JB, James CN, Tijani A, and Usman EJ
Department of Geography, Taraba State University, Nigeria

***Corresponding author:** Benjamin Ezekiel B, Department of Geography, Taraba State University, Jalingo, Nigeria, Tel: +2349035604668; Email: bwadiben@gmail.com

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Abstract

This study analyse the mode of access to safe public water supply in Jalingo Metropolis. The study applied both survey and experimental research designs. The survey design involves sampling consumers' modes of accessing the public water supply, whereas the experimental approach involved laboratory investigation of water quality. A cross-sectional study carried out among 348 consumers who had access to public water supply and seven supply points each served by the three (3) production units of the Taraba State Water and Sewerage Corporation (TAWASCO) in Jalingo metropolis were selected. The standard procedures for water sample collection was done, which were analysed using the Wagtech Water Quality analysis machine in the World Health Organization Modern Laboratory located within Rural Water Supply and Sanitation Agency (RUWASA) office in Jalingo. Whereas, the questionnairs elicited information on the mode of access to water by the residents. The questionnaire data were analysed using frequency count and simple percentage. The result revealed that both the physical and chemical characteristics of public water supply in Jalingo metropolis are within the permissible limits of WHO and NSDWQ. The coliform count for the water samples were in trace amount and within the standard limits of WHO/NSDWQ. On the mode of access to safe water supply, the result revealed that majority of the respondents (80%) in Magami and ATC production channels do not have direct connection to the main water supply from RUWASA but gain access through indirect connection from neighboring houses/compounds. It was only from the Mile Six production channel that majority of the respondents (70%) reported that they access water from taps located within the house. This implies that most of the residents in the study area do not have connection to the main supply, which delivers water directly to their homes. The study therefore recommended that the government should ensure equitable distribution of portable water to the generality of the public.

Keywords: Analysis; Accessibility; Direct and Indirect Mode; Safe; Water Supply

Introduction

Access to sufficient quantity and suitable quality water is fundamental for sustaining community life. Various household and industrial activities are dependent on the accessibility of water. Water supply, specifically, is a significant aspect in public health and economic growth of a nation [1].

The standard of living for residents of a place is lowered as a result of Nigeria's rapid population expansion without proportionate provision of essential infrastructure and services including access to healthy water supply and sanitation, particularly in rural communities. Over time, the inaccessibility of clean water in rural communities across Nigeria has considerably increased the incidence of

infectious diseases and is responsible for a sizable portion of death and morbidity in the nation [2]. Despite significant financial investments made in assuring access to potable water by previous Nigerian governments at the federal and state levels, this appears to have been either inadequate or nonexistent [3].

Infrastructure for providing clean drinking water includes everything that is constructed to pump, drain, distribute, store, treat, and provide it [4]. If proper quality measures are not adequately taken into consideration, both boreholes and pipe-borne water delivery systems have the potential to deliver contaminated water [5].

Following large disasters (floods, crises, etc.), the collapse of water supply and/or public sewage infrastructures causes an immediate risk of acute outbreaks of waterborne diseases, some of which can be fatal [6]. The majority of network pipe connections are routed along dirty gutters to homes. Many of the study area's residents who have access to piped water experience poor or extremely bad service.

Water supply service quality has many different aspects, including continuity (almost everyone in Taraba State who gets water from public utilities only gets it occasionally), water quality (drinking water sources may contain pathogens, dangerous metals, or other hazardous chemicals), and pressure (water pressure varies in various parts of the distribution system). Water users, particularly car washers and other users for commercial purposes, connect to the water mains despite the fact that water mains operate at greater pressures.

Modes of access to public water either directly or indirectly to the household have it consequences. In the pass, indication shows that having piped water delivered directly to the home has been linked to better hygiene and a decline in diseases caused by contaminated water [7]. Individual families prefer to have their water pipe directly connected to their houses instead of going outside the home to fetch water for household uses. Women and children are most of the people saddled with the responsibility of getting water for the family. In a situation where access to water is far from the home it takes this group time from their schedule to get this commodity. Men's preference for pipe water being directly connected to individual home fall in line with the concern about status and modernity, where the introduction of individual water connection assist in transforming the life style of a woman from the traditional to the modern [8].

The challenges of accessing water outside the home in Jalingo, is becoming a source of concern. Mode of accessibility and reduction in quality of water are the potential threat to the health and lives of the people in the Jalingo metropolis.. Inadequate infrastructures for direct access to clean water and sanitation causes household to seek for water outside the home where people defecated indiscriminately may have detrimental health effects like typhoid, cholera, and diarrhea [9]. The existing body of literature has documented similar studies on the water in Taraba State, notable among them are the studies by Abubakar & Ibrahim [10]; Adekola [11]; Bwadi [12]; Hassan [7]; Munta [13]; Oruonye [14]; Umahi [15]. None of these has documented anything on the mode of access to water supply in the area. Therefore this study investigates the mode of access to safe public water supply in Jalingo metropolis.

Material and Methods

Study Area

Jalingo is the capital city of Taraba State; it is located at latitude 8^0 47′ to $9^0$01′N of the equator and longitude $11^0$09′ to $11^0$30′E of the Greenwich Meridian. It is bounded to the North by Lau LGA, to the East by Yorro LGA, to the south and West by Ardo Kola LGA (Figure 1.1). It has a total land area of about 195.071 km2. According to National Population Commission Census, Jalingo LGA has a population of 140,318. Presently, it has a projected population of 266 841 with a growth rate of 3.2% in the year 2020 [14]. The LGA has 10 wards (Turaki 'A', Turaki 'B', Sintali 'A', Sintali 'B', Majidadi, Sarkin Dawaki, Kachalla Sembe, Barade, Kona and Yelwa). The major ethnic groups of Jalingo LGA are the Fulani, Jibu Kona and Mumuye. Other ethnic groups include Hausa, Jenjo, Wurkum and Nyandang. The Hausa language is widely spoken as a medium of communication for social and economic interactions [16].

Jalingo LGA is underlain by basement complex rocks. The outcrop of this rock could be seen in the heart of Jalingo town, popularly referred to as the Jalingo hill. Quartz, mica and feldspar crystals (in fairly equal proportion) are some of the constituent minerals that make up this rock. This rock is overlain by sandy-loam soil characterised by hydromorphic and ferruginous soils derived from the parent materials. Jalingo metropolis is drained by two rivers Mayogwoi and Lamurde which emptied their content into the Benue river system. The major ponds in Jalingo LGA are Vendu Nange, Vendu Ginnaji, Jeka Dafari, Wuro Sembe, Vendu Jodi and Vendu Lamurde. These ponds are potential sites of irrigation farming in the study area.

Jalingo LGA has a tropical continental type of climate characterised by well-marked wet and dry seasons. The wet season usually begins around late April and ends in October. The dry season begins in November and ends in March. The dry season is characterised by the prevalence of the northeast trade winds, popularly known as the harmattan

wind, which is usually dry and dusty. Jalingo has a mean rainfall of about 1,200mm and an annual mean temperature of about 29°C. Relative humidity ranges between 60 – 70 per cent during the wet season to about 35 – 45 per cent during the dry season [12].

In terms of the vegetation, Jalingo is located within the northern guinea savanna zone characterised by grasses interspersed with tall trees and shrubs. Some of the trees include locust bean, shea butter, eucalyptus, baobab and silk cotton tree.

Research Design

The analytical and survey research designs were applied to analysed the mode of access to safe public water supplied in Jalingo Metropolis. The analytical design involved laboratory testing of water quality, whereas the survey design involve sampling of public water supply consumers' accessibility to water and opinion on the quality of water supplied. This was done by selecting seven points each served by the three (3) major production units in Jalingo metropolis. Questionnaire and washed bottle water containers were used for data collection. The water samples were analysed using the Wagtech Water Quality analysis machine in the World Health Organization Modern Laboratory within the Office Complex of Rural-Urban Water Supply and Sanitation Agency (RUWASSA), FGGC Road, Jalingo. While the Questionnaire was analysed using frequency count and simple percentage.

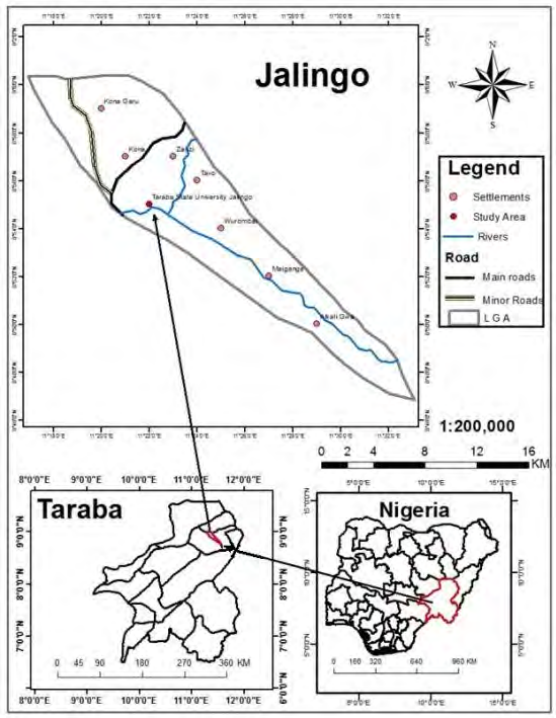

Figure 1: Map of Jalingo.

Population of the Study

The population of the study includes all public water supply points and tap water consumers in Jalingo metropolis. There are 3,345 registered tap water consumers in Jalingo Metropolis on the revenue chart of Taraba Water Supply Agency as at 27th May, 2021 (TAWASCO) [17]. Table 1 shows the number of registered consumers according to supply units as at 15th August, 2022.

Supply Unit	No. of Consumers	Sample Size	Percentage (%)
Magami		222	64
Santali	477		
Magami	574		
Jalingo Central	96		
Jalingo North	561		
Abuja	435		
	2,148		
Mile Six		180	5
Mile Six Area	180		
	180		
Lamurde		108	31
Kofai/ATC	373		
Lamurde	346		
Sabon Gari	307		
	1,027		
Total	3,358	348	100

Source: Taraba Water Supply Agency (TAWASCO) [17]

Table 1: Number of registered tap water consumers in Jalingo Metropolis.

Sample Size and Sampling Technique

The total of 348 out of 3,358 registered tap water consumers in Jalingo metropolis were randomly selected for the study according to Krejcie [18] table for the determination of sample size. Twenty one (21) water supply points were sampled from the three (3) water production units of the Jalingo Metropolis. Purposive sampling technique was applied to select the 21 water supply points. That is, seven (7) points from each unit.

Sources of Data

Data was obtained through Ground Truth Observations (GTOs) in the field. This involved collection of water samples from the seven (7) points each served by the three (3) major

production units; Magami, Lamurde and Mile six in Jalingo Metropolis. Other data were obtained from publications of the Taraba Water Supply Agency, World Health Organization (WHO) water standards, and online articles, published and unpublished theses.

Data Collection and Preparation of Samples

Water samples were collected in sample bottles with a capacity of one litre. The bottles and their coverings were thoroughly cleaned and sterilized. Before collecting the sample, the sanitized bottles were rinsed three times with the water to be sampled.

Water samples were obtained from taps using one-litre sterile bottles with covers. A moderate flow of water was used to fill the sample bottles. The bottles were then wrapped in plastic and tagged for easy identification. All water samples were kept in a chiller and brought to the laboratory where the analysis was performed within a few hours.

In this investigation, 21 pipe-borne water samples were obtained. The samples were gathered from twenty-one (21) points in three (3) different places in Jalingo.

Analytical Procedure

Data analysis involves analytical methods of sorting, scrutinizing, processing and translating data into research findings based on the set objectives of research. Measurements were made in a laboratory setting where water samples were collected, preserved, and analyzed in the laboratory.

Physical, Chemical and Biological Analysis

All parameters, physical, chemical and biological, were analyzed using Wagtech Water quality analysis machine in the World Health Organization's Modern Laboratory located within the Rural-Urban Water Supply and Sanitation Agency (RUWASSA) Office Complex, FGGC Road, Jalingo.

Method of Data Analysis

Simple descriptive analysis using frequency count and simple percentage was carried out with (SPSS version 23.0) statistical software to describe the physicochemical characteristics of water quality and the mode of access to public water supply in Jaingo Metropolis.

Results and Discussion

This section presents the results and the discussion of the study Table 2.

The Quality of Public Water Supply System in Jalingo Town

Sample	Colour	Temperature	pH	TDS	Conductivity	Turbidity
A	6	27	5.3	48	88.6	3.2
B	9	22.8	6.5	78	971	4.1
C	10	26.3	6.1	359	146.8	1.1
D	11	23.1	5.5	239	711	0.9
E	9	25.6	6.7	328	412	1.4
F	10	25.2	6.4	487	469	1.2
G	12	26.5	6.8	348	431	0.5
H	11	22.7	6.4	548	586	2.1
I	8	26.3	6.7	478	597	3.1
J	11	27.6	5.2	435	468	4.2
K	12	28.1	6.5	523	636	1.8
L	10	26.4	6.1	432	482	2.2
M	11	24.1	5.8	448	446	3
N	11	25.2	6.2	434	403	3.6
O	10	28.2	5.9	454	453	2.2
P	12	29.4	5.8	447	459	3.3
Q	11	28.4	6.2	443	546	2.4
R	10	28.8	6.9	452	563	3.1
S	11	29.2	6.8	483	488	3.4
T	11	28.4	6.2	464	544	4.3
U	10	28.1	7.1	471	540	4.1
Average	10.3	26.5	6.2	400.0	497.2	2.6
*WHO	15	30	6.5-8.5	500	1000	5
**NSDWQ	15		6.5-8.5		1000	5

* World Health Organisation (WHO) [19].
** Nigerian Standard for Drinking Water Quality (NSDWQ) [20].
Table 2: Quality of Physical Characteristics of Public Water supply in Jalingo.

The result presented in Table 2 shows the physical characteristics of public water supply in Jalingo. The result shows that the colour of water supplied to residents ranges from 6 – 12 with an average of 10.3. This is within the permissible level of World Health Organization [19] and the Nigerian Standard for Drinking Water [20]. This means that the quality of water supply in Jalingo in terms of colour is safe for human consumption.

The result shows that the temperature of the water supply in Jaingo range from 22.7 – 29.4 and an average value of 26.5, which falls within the permissible limits for drinking water quality by the WHO and NSDWQ. The increasingly high values of temperature recorded in Table 4.1 could be attributed to the time of the day in which the samples were collected and the time taken to transport same to the laboratory for analysis.

For total dissolved substance (TDS), the values range from 48 and 78 at points A (Jauro Gana) and B (Runde) being the lowest to 548 at point H (Magami I) being the peak, with an average of 400.0. All of these are within the WHO standard of 500 TDS required for human consumption except for water samples at point H (Magami I) and K (Alhaji Lezuya) which recorded TDS values of 548 and 523, which are above the recommended limits of WHO and NSDWQ. The high values of TDS recorded in this study could be attributed to the storage facilities (reservoir) where water is temporarily stored for onward distribution to the consumers or the types of pipes used in channeling of the water to individual homes and/or streets in the case of public taps.

The conductivity of the public water supply in Jalingo ranges from 88.6 to 971 with an average of 497.2. The values obtained in the study are within the acceptable limits of 1000 by WHO and NSDWQ.

Turbidity of the water supply in Jalingo as revealed by the study range form 0.5 – 4.2. The lowest being 0.5 the lowest is 4.2 with an average of 2.6. All the above values are still within the standard limit of 5 set by the WHO and NSDWQ. The low turbidity recorded in some areas could be as a result of impurities or duration of water in the reservoirs or dirt along the distribution channels Table 3.

Samples	Chlorine	Iron	Fluorine	Manganese	Sulphate	Nitrate	TH	Copper	Chloride	SM
A	0.13	0.09	0.16	0.19	36	1.3	118	0.08	127	401
B	0.19	0.01	0.3	0.05	18	0.05	86	0.05	69	475
C	0.08	0.06	0.05	0.01	32	1.6	22	0.01	319	431
D	0.01	0.03	0.17	0.17	16	0.02	79	0.12	252	523
E	0.16	0.01	0.08	0.04	9	0.06	122	0.06	268	508
F	0.05	0.08	0.01	0.02	37	0.98	91	0.08	39	640
G	0.14	0.02	0.4	0.09	39	1.9	89	0.04	194	413
H	0.1	0.1	0.1	0.2	78	1.60	124	0.1	412	486
I	0.16	0.04	0.15	0.08	68	0.11	106	0.04	438	469
J	0.06	0.02	0.08	0.03	72	1.83	102	0.06	453	466
K	0.01	0.06	0.11	0.14	75	1.8	87	0.04	422	441
L	0.12	0.11	0.06	0.06	54	1.68	119	0.6	426	482
M	0.08	0.18	0.11	0.04	64	1.7	89	0.02	336	460
N	0.11	0.04	0.04	0.06	57	0.8	81	0.02	433	438
O	0.18	0.02	0.09	0.15	78	1.6	124	0.1	412	486
P	0.12	0.06	0.07	0.08	68	0.11	106	0.04	438	469
Q	0.08	0.01	0.14	0.03	72	1.83	102	0.06	453	466
R	0.11	0.03	0.08	0.14	75	1.8	87	0.04	422	441
S	0.06	0.08	0.02	0.06	54	1.68	119	0.6	426	482
T	0.04	0.11	0.04	0.04	64	1.7	89	0.02	336	460
U	0.02	0.14	0.13	0.06	57	0.8	81	0.02	433	438
Average	0.10	0.06	0.11	0.08	53.48	1.19	96.33	0.10	338.48	470.24
*WHO	0.02-1	0.3	1.5	0.2	250	50	150	1	500	2000
**NSDWQ		0.3		0.2	100	50			250	

Source: Field Survey, 2022

Table 3: Chemical Characteristics of Public Water supply in Jalingo.

Table 3 shows that result of the analysis of chemical characteristics of public water supply in Jalingo. The result shows that the values obtained for chlorine in the water samples range from 0.01 – 0.19. The average value for chlorine in the samples is 0.10. These values are within the permissible values of 0.02 – 1 set by the WHO. Looking at the table, there are two instances where the values recorded were lower (0.01) than the set standards.

The recorded values for Iron from the water samples ranged from 0.01 – 0.18 with an average of 0.06. These values are within the set limit of WHO and NSDWQ. Fluorine values recorded in the water samples range from 0.01 – 0.4, with average value of 0.11, which are within the permissible limit of WHO and NSDWQ which is 15. The Manganese values in the water samples collected ranged from 0.01 – 0.2 with an average of 0.08, which is within the 0.2 maximum limit set by the WHO and NSDWQ.

Table 3 also shows that the value of Sulphate in the water samples range from 9 – 78, with an average value of 53.48. Nitrate range from 0.02 – 1.9 and an average of 1.19 which fall within the permissible limit of WHO and NSDWQ. Total hardness (TH) has values ranging from 22 – 124, with average of 96.33, all falling within the set standard of WHO and NSDWQ. The result shows that Copper has values ranging from 0.02 – 0.6 with an average of 0.10, all are within the WHO and NSDWQ.

The result shows that Chloride has the lowest values of 39 and 69 at points B (Runde) and Points F (Star Exclusive) respectively. Similarly, Points A (Jauro Gana) and G (Green Farm) recorded low chloride values of 127 and 194 respectively. All these values within the set standard of drinking water by the WHO and NSDWQ. The low values recorded in these points could be attributed to the fact that the supply points are new and the pipes used in channeling the water are still new, thus, there are no rust in the pipeline which would have elevated the levels of chloride in the water. The rest of the chloride values recorded in the samples was within the WHO standard for drinking water but higher than the NSDWQ. The increased levels of chloride in the water samples may be attributed to the treatment processes in which chlorine or chloride is used. Another possibility for the high levels of chloride in the water samples could be as a result of the reaction of chloride with oxides of iron (metal ions) giving rise to soluble salts, thus increasing levels of metals in drinking water and elevating levels of chloride as well. Chloride in drinking water is not harmful, and most concerns are related to the frequent association of high chloride levels with elevated sodium levels, which increases risks of hypertension. In lead pipes, a protective oxide layer is built up, but chloride enhances galvanic corrosion. It can also increase the rate of pitting corrosion of metal pipes. Chloride also increases the electrical conductivity of water and thus increases its corrosivity [21].

Suspended matter was found to have values ranging from 401 – 640 with average value of 470.24. The presence of suspended matter could be attributed to the water production process and medium of water supply and materials used in the channeling of the water to the customers Table 4.

Sample	Total coliform count	E. coli
A	4.3	0
B	4.8	0
C	6.1	0
D	4.0	0
E	4.4	0
F	5.2	0
G	4.2	0
H	5.9	0
I	6.2	0
J	6.4	0
K	5.8	0
L	4.1	0
M	4.7	0
N	6.1	0
O	5.7	0
P	6.0	0
Q	6.1	0
R	5.6	0
S	4.2	0
T	4.4	0
U	5.8	0
Average	5.2	0
*WHO	10	
**NSDWQ 10		

Source: Field Survey, 2022

Table 4: Biological Characteristics of Public Water supply in Jalingo.

The result presented in Table 4 shows the result on biological characteristics of public water supply in Jalingo. The result shows that the coliform count of the sampled point range from 4.1 – 6.4 with an average of 5.2, which was within the permissible limit of 10 count set by the WHO and NSDWQ.

The Modes of Access to Public Water Supply System in Jalingo Town

Variable	SAN (%)	MAG (%)	JLN (%)	JLC (%)	ABJ (%)
How do you access tap water:					
Public tap outside the house	30 (66.7)	28 (60.9)	32 (80)	23 (51.1)	33 (73.3)
Tap located within the house	15 (33.3)	18 (39.1)	8 (20)	22 (48.9)	12 (26.7)
How do you access water from RUWASA:					
Connection from neighboring house/ compound	31 (68.9)	31 (67.4)	26 (65)	21 (46.7)	36 (80)
From main supply channels	14 (31.1)	15 (32.6)	14 (35)	13 (28.9)	9 (20)
I don't know	-	-	-	-	-
Duration of access to tap water supply (years):					
1 – 5	11 (24.4)	4 (8.7)	0 (0)	0 (0)	4 (8.9)
6 – 10	8 (17.8)	11 (23.9)	9 (22.5)	17 (37.8)	8 (17.8)
11 – 15	19 (42.2)	20 (43.5)	23 (57.5)	22 (48.9)	24 (53.3)
16 Above	7 (15.6)	11 (23.9)	8 (20)	6 (13.3)	9 (20)
Perception of tap water supplied:					
Good and portal	18 (40)	15 (32.6)	6 (15)	5 (11.1)	11 (24.4)
Good but needs improvement	19 (42.2)	20 (43.5)	25 (62.5)	23 (51.1)	26 (57.8)
Not good for consumption	8 (17.8)	11 (23.9)	9 (22.5)	17 (37.8)	8 (17.8)

Source: Field Survey, 2022

Table 5: Mode of access to public water supply in Magami.

Table 5 shows the result of mode of access to water by the respondents. The result shows that majority of the respondents represented by Jalingo North (80%), Abuja (73.3%), Santali (66.7%), and Magami (60.9%) respectively, served from the Magami production unit access water from public taps outside the house.

The result also shows that majority of the respondents do not have direct connection to the main supply from RUWASA but gain access through indirect connection from neighboring houses/compounds with Abuja having 80%, Santali 68.9%, and Magami 67.4%, respectively. This could be attributed to the cost of direct connection, which could be in terms of the connection fee or the cost of pipes to be laid.

Duration of access to tap water among the respondents shows that majority of the respondents have access to tap water for onward of 11 years. It follows that Jalingo north has 62.5%, Abuja (57.8%), and Jalingo central 51.1%. This implies that most of the respondents have either old and worn-out pipes which could be responsible for the variance as per the quality of the water as recorded in Table 3.

The perception of the respondents to the quality of water supplied by RUWASA shows that majority of the respondents especially from Jalingo north (62.5%) and Abuja (57.8%) reported that the quality of the water is good but need improvement.

Variable	Frequency	Percentage (%)
How do you access tap water:		
Public tap outside the house	5	29.4
Tap located within the house	12	70.6
How do you access water from RUWASA:		
Connection from neighboring house/compound	11	64.7
From main supply channels	6	35.3

I don't know	-	
Duration of access to tap water supply:		
1 – 5	6	35.3
6 – 10	3	17.6
11 – 15	7	41.2
16 Above	1	5.9
Perception of tap water supplied:		
Good and portal	14	82.4
Good but needs improvement	3	17.6
Not good for consumption	-	-

Source: Field Survey, 2022

Table 6: Mode of access to public water in Mile Six Unit.

Table 6 above majority of the respondents represented by 70.6% reported that they access water from taps located within the house. This implies that most of the residents in this area have connection to the main supply, which delivers water directly to their homes.

The mode of access to water supply as reported by the respondent's shows that 64.7% of the sampled population access water from neighboring houses/compound. The duration of access to tap water among the respondents shows that majority of the respondents represented by 35.3% have had access to tap water for 1 – 5 years, while another 41.2% reported 11 – 15 access to tap water. The result on the perception of tap water supplied, 82.4% of the respondents reported that the water quality is good and portable.

Variable	Kofai/ATC	Lamurde	Sabon Gari
How do you access tap water:			
Public tap outside the house	32 (80)	23 (51.1)	23 (73.3)
Tap located within the house	5 (20)	14 (48.9)	10 (26.7)
How do you access water from RUWASA:			
Connection from neighbouring house/compound	11 (65)	14 (46.7)	7 (80)
From main supply channels	26 (35)	23 (28.9)	26 (20)
I don't know	-	-	-
Duration of access to tap water supply:			
1 – 5	24 (64.9)	31 (83.8)	24 (72.7)
6 – 10	13 (35.1)	6 (16.2)	9 (27.3)
11 – 15	-	-	-
16 Above	-	-	-
Perception of tap water supplied:			
Good and portal	32 (80)	35 (94.6)	28 (84.8)
Good but needs improvement	5 (20)	2 (5.4)	5 (15.2)
Not good for consumption	-	-	-

Source: Field Survey, 2021

Table 7: Mode of access to public water in ATC.

The result presented in the Table 7 shows that for the ATC supply channel, the respondents reported that for Koffai (80%), Sabond Gari (73.3%), and Lamurde (51.1%) have taps connected outside the house. On the mode of access to

tap water, RUWASA reveals that majority of the respondents do not have direct connection to the main supply channel, but from neighbouring house/compound.

Findings based on the duration of access to tap water, shows that 31 respondents representing 83.8% of the respondents have had access to water for 1 – 5 years. This can be attributed to the recent laying of the new supply channels to A.TC. This resulted in the low connection to the supply channels especially to homes. Only few public taps are available along major roads in the area.

The perception of the respondents on the quality of water supplied shows that in Lamurde, 35 respondents representing 94.6%, reported that the water is good and portable. In Sabon Gari, 28 respondents representing 84.8% of the study population reported that the water is good and portable. For Kofai/ATC, 32 respondents representing 80% reported that the water is good and portable. This implies that the water is good and fit for drinking which agreed with the study by Munta [13] who carry out an analysis of water quality index of Jalingo Metropolis and concluded that the water quality fall within the permissible level for drinking water by the World Health Organization.

Conclusion

The study set out to appraise the existing public water system and water quality in Jalingo metropolis. The analytic and survey research designs were fund to be useful for the analysis of the mode of access to safe public water supplied in Jalingo Metropolis. . The quality of public water supply system in the study area shows that the water was good and portable for drinking being tasteless, odorless, and is been used for washing by public water supply consumers.

The mode of access to public water supply in the study area shows that majority of the respondents have access through taps outside the home. For those that have access to taps within homes, these are through neighboring houses/ compounds. The duration of access ranged from one (1) to fifteen (15) years, and the water is good and portable.

Recommendations

Based on the findings and discussion of the study, it was recommended: that:

The accessibility to public water supply is important in determining its usage by the majority of the populace. Therefore, water supply channels should be connected to both commercial and residential areas of the town alone. The government should ensure equitable distribution of portable water to the generality of the public.

Households are advised to utilise water carefully and maintain a good waste management approach and desist from irregular dumping of refuge, which affects water sources. Also, government water sources should be used properly, and maintenance culture should be encouraged in the study area.

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