ASSESSMENT OF DOMESTIC WATER SOURCES IN SAMINAKA AREA, LERE LOCAL GOVERNMENT, KADUNA STATE

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ABSTRACT

The study assessed domestic water sources in Saminaka, Lere Local Government Area, Kaduna State.. A total of 124 copies of questionnaire were administered to the respondents through random sampling and analyzed using simple percentages and mean score values. The study found that 63 respondents representing 63% agreed that there is a poor water source in the study area. It also revealed that there is a poor water management in the study area as agreed by 52% of the respondents. The study revealed that the main water source in the study area is borehole with 37%, well 27% water, tap water and stream water with 19% and 11% respectively. The study analysed the challenges of water supply in the study area, using an average mean score value of (3.00) to rank the significance of the items, the study revealed that; large population affects water supply in the study area with a significant mean score value of 5.00. The paper recommends that there should be awareness programme by government and non-profitable organizations on water management, its supply and utilization in the study area. Government should release funds for water projects so as to curtail water scarcity in the study area and expanding the scope of domestic water supply to adjoining rural areas along Saminaka, Lere Local Government, and Kaduna State.

Key words*:* Assessment, Domestic water, Sources, Saminaka

1. INTRODUCTION

Human Geographers, especially the determinists, believe that the elements of nature also determine the social nature of human beings (John et al., 2019). Water is a precious natural resource and one of the most essential requirements for all living being. Many regions in the developing world with the highest population growth rates do not have adequate access to safe water both in terms of quality and quantity. Water is a key resource and thus the available water deserves priority in the development and preservation phases across the globe. (Jethoo & Poonia, 2017).

The water utilization and consumption pattern is higher in urban than rural areas. In rural area people depend on pool, tube well, bore well etc, but people living in urban areas fully depend on the municipality water supply (Bhadari, 2018). It is certain that societies have to confront, among other things, demographic transitions, geographical shift of population, technological advancement, growing globalization, degradation of the environment and emergence of water scarcities, this is because of the great threat posed as a result of population explosion ad higher demand for potable water for domestic consumption (Steven, 2016).

Globally, most households in the developed world depend on pipe borne water mostly in and this reduces the uneven distribution of water and connects areas that have difficulties in accessing water to be adequately available (Paugh, 2017). Access to safe drinking water has improved steadily and substantially over the last few decades in almost every part of the world keeping in line with the Sustainable Development Goals (UN,2021).

Sridhar et al., (2020) analyse the attitudes, practices of water sanitation and hygiene in some selected LGA's of Kaduna State. The results revealed that Lere (Saminaka) among other local governments have low water quality index of 47, this is below the global water quality index of 80 in 2020. The study also noted that water borne diseases like cholera, typhoid among others are predominant in the study area. The study only analyses the attitudes and practices of water sanitation and hygiene in the study area without evaluating the sources and methods of utilization of water in the study area.

NESPAK (2020) evaluated the availability of water and water storage facilities in Nigeria. The study revealed that Saminaka water supply project completed in 1982 cost about $15 Million and the land area covered was about 12Km^2. This shows that between the periods of 1982 to 2021, there had been no

recent water expansion project to connect the teeming urban expansion in the area and thus supplying portable tap water for domestic consumption in the study area.

Another study by Ajibola (2003) examined the service delivery performance of water utilities in Kaduna State Water Board. The study adopts a survey research approach and the findings reveal that there is a very low performance by the Saminaka Water Works, Lere in providing potable water in the area. This is due to the poor condition of the pumping and water sanitation machines in the area. The study also found out that the frequency of water distribution is very low compared to other water works in Kaduna state like the Zaria water work and Kaduna metropolitan water works. The study only assesses the performance of water distribution agencies without emphasis on the availability of the water, its utilization and facilities for water distribution in the study area.

Going through the above and the existing literature, no specific study was carried out on the sources of water, its utilization and consumption pattern in Saminaka area of Lere Local Government, Kaduna State. Thus, this study intends to fill the gap in literature in Saminaka Area of Lere Local Government, Kaduna State.

2. THE STUDY AREA

Saminaka is the headquarters of Lere Local Government, located between Latitude 10° 39”24’N to 10° 44”8’N of the equator and Longitude 8° 6”41E’ 8° 7”6’E of Greenwich Meridian. The town is bordered to the North by Rahama Town, to the East by Yankaji, to the south by Unguwan Bawa and to the west by Sabon Birni. Saminaka experiences a typical tropical continental climate with district seasonal tegument, oscillating between cod to not to hot and human to wet. There two seasons reflect the influences of tropical continental and equatorial maritime air masses which sweep over the entire state. the seasonality is pronounced with the cool to hot dry season Bering longer, than the rainy season (Ojiha, *et a.,l* 2021).The distribution of rain varies in the vast land area of the area, decreasing from an average of about 607mm in the southern part of the area to 540mm in the northernmost part of the area. High storm intensities (ranging from 60mm hr 1 to 99mm hr 1) plus the nature of surface run- off build up the good network of medium seized river system (Middle Belt Forum Com. 2012).Soil and vegetation in Saminaka Area of Kaduna State is very fertile and conducive for cultivation. Most of Saminaka land soil has a fertile soil which encourages plant growth by providing plants with nutrients, acting as a water holding tank, and serving as the substrate to which plants anchor their roots (Kojiri, 2008).

3.MATERIALS AND METHODS

The materials and methods used for this research are shown on Table 1.

Table 1: Sampling Frame

S/N	Variables	Sampled population	Percentage %
1	Community members	39	32
2	Water managers	26	21
3	Community leaders	34	27
4	Youth	25	20
	TOTAL	124	100

Source: Author's Analysis, 2021

Table 2: Determination of Sample size

Study Area Lere LGA	Population Projected 2021	Approximate Sample size at 0.02%
TOTAL	623, 455	124

Source: Author's Analysis, 2021

3.1 Data Collection

Questionnaire and interview were the two methods used to get data. A total of 124 copies of questionnaires were administered to the respondents (see Table 2). 100 questionnaires were retuned and were analyzed using simple percentages and mean score values using SPSS 23.0 version.

The questionnaire was purposively administered to residents of the study area. This is because the household/community members who only pay for the domestic water were identified and issued most questionnaires. This is followed by the water managers who were chosen because they are staff of the water board as such they have adequate knowledge and experiences of the water sources in the area.

3.2 Data Analysis

Data collected from the field was analyzed and presented using simple percentages and mean score values. Two sets of questionnaires were used to obtain the required information on the sources and utilization of domestic water supply in Saminaka, Lere Local Government Area of Kaduna State.

The questionnaire was designed using likert scale of five (5); Strongly Agreed (5), Agreed (4), Undecided/Somehow Agreed, Disagreed (2) and Strongly Disagreed (1). The mean score value used for the study is (5+4+3+2+1/5) = 3.00,

therefore, 3.00 is the mean score, any calculated value below 3.00 in this study have low significance and thus, the acceptance level is low and any calculated mean score in this study above 3.00 have high significance and thus, it will have high acceptance level.

4. RESULTS AND DISCUSION

The study assesses water supply, its utilization and consumption pattern in Saninaka area of Lere Local Government, Kaduna State. And found out that 63 respondents representing 63% agreed that there is a poor water source in the study area while 37 respondents disagreed to that. With mean score value of 3.63 which is above the average mean score value (3.63), is shows that there is a high significance and thus, water sources in the study area is poor. It also revealed that there is a poor water management in the study area a s agreed by 52% of the respondents and opposed by 48% of the respondents. With mean score value of 3.52, it shows that there is a moderate significance level and thus it could be accepted that the study area lack adequate water management. The study revealed hand dug wells to be the main source of water in the study area with mean score of 3.78, therefore hand dug wells are the major water sources in the study area. Boreholes and tap water sources also have significant amount in the study area as they serve as modern water sources in the study area.

The study also reveals the main usage of water in the study area to be domestic as agreed by 85% of the respondents, whereas, irrigation and industrial usage have moderate and low significance level respectively in the study area. This could be attributed to the fact that there is a large population proportion in the study area and thus, the demand for domestic water would be high.

The study also assessed the management and utilization of domestic water in the study area and found out that there is a low and poor management and utilization of water in the study area. This is due to lack of awareness, governments support and modern water management technique .The study also reveals the impact of population on water supply. It found out that large population means there will be less supply of water due to high demand and poor management. It also reveals the impact of population on water pollution which affects many people in the study area.

The questionnaire dealt with bio-data of the respondents. The personal information of the respondents on sex, age, marital status, education level and occupation were analysed.

Table 2 Socioeconomic characteristics of the respondents

Gender	Frequency	Percentage%
Male	73	73
Female	27	27
Age	Frequency	Percentage%
10-15 years	10	10
16 – 20 years	25	25
21- 25 years	35	35
26 and above	30	30
Education	Frequency	Percentage %
B. Ed/ B. Sc	15	25
NCE	30	30
Senior Secondary	27	27
Junior Secondary	10	10
Primary	8	8
Marital Status	Frequency	Percentage %
Single	42	42
Married	58	58
Divorced	-	-
Widowed	-	-
Total	100	100

Source: Author's Analysis, 2021

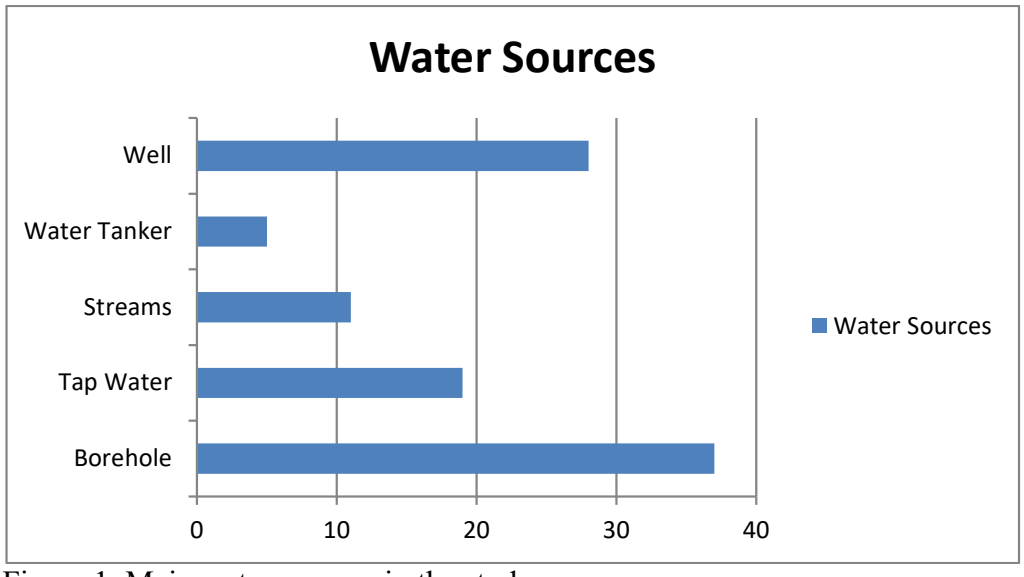

Figure 1. Main water sources in the study area
Source: Author's Analysis, 2021

From figure 1 revealed that majority of the respondents 27% use Well as their main water source, 37% of the respondents uses borehole as their main water source which includes both hand-pumped and electric powered boreholes. About 19% of the respondents uses Tap Water as their main water source while Streams and Water Tanker had 11% and 5% respectively. This shows that although there is less distribution of boreholes in the study area, majority of the respondents uses a combination of borehole and other water sources in the study area. This corroborates with the findings of (Sridhar, *et al.,* 2020) and also a report by (UNICEF, 2009) noted that these water sources are believed to have caused several water-borne diseases in developing counties.

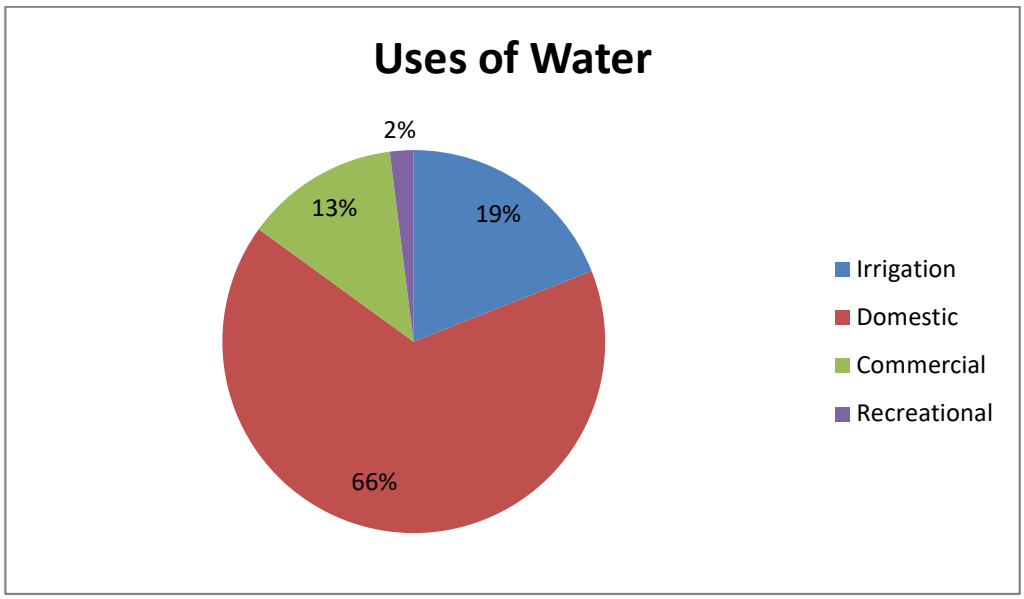

Figure 2. Uses of water
Source: Author's Analysis, 2021

From Figure 2, 66% of the respondents in the chart represent majority of water users in the study area as they mainly uses water for domestic activities such as cooking, washing and drinking. 19% of the respondents uses water for irrigation activities while 13% uses water for commercial activities such as construction, sachet water production and water vending. 2% of the respondents use water for recreational activities such as swimming pools. Water usage like this was entail in a study by (Muhammed *et al,* 2021).

Table 3. Challenges of water supply and distribution in the study area.

Challenges	S. A	%	S. D	%	Total	Mean Score	Rank
Poor water sources	63	63	37	37	100	3.52	6
Poor water management board	52	52	48	48	100	3.08	7
Poor knowledge of water maintenance by community	64	64	36	36	100	3.56	5
Inadequate support from governments for water management.	73	73	23	23	100	3.88	4
Large population affects the supply of water in the study area.	81	81	19	19	100	4.24	3
Large population pollutes water sources in the study area.	100	100	00	00	100	5.00	1
Lack of adequate water supply to meet the demand of the population affects water supply	82	82	18	18	100	4.82	2

Source: Author's Analysis, 2021

Table 3 showed the response of the respondents on the challenges of water supply in the study area. 63% agreed that there is a poor water source in the study area. This could be attributed to the condition of the major water sources in the study area as a field survey by the researcher shows that majority of the hand-pumped boreholes are located close to or near a unhygienic environment. The traditional wells in the study area are mostly open all day and the water quality is relatively low as noted by (Abdulrahman, 2021). With mean score value of 3.52 above the average mean score value (3.00), is shows that there is a high significance and thus, water sources in the study area is relatively poor. This is also similar to the findings of (Sirdhar, *et al,* 2020).

The findings also showed that there is a poor water management by the water board in the study area with a mean score value 3.08 this shows that there is a moderate significance level and thus it could be accepted that the study area lack adequate water management. This corroborate with the findings of (Ajibola, 2013).

The awareness of water management in the study area is average as revealed by the respondents with a mean score value of 3.56 which shows a high significance level for the item, this is supported by the findings of (Ojha *et al,* 2009) on the sustainability of water resources in an oasis of the Tamil desert. The study area is characterized under the savannah vegetation and the availability of water is relatively low, this has prompted the need to utilize the water resources adequately.

The influence of population on water supply in the study area is highly significant as the item has a mean score value of 4.24, these influence of population on water supply in the area has been outlined in a similar study by (Felix, Oginni, Olusola and Fadipe, 2016) among the factors that hinders the adequate supply of domestic water. Although Saminaka is not highly populated as other cities in Nigeria, there is a high concentration of people in the city as it is characterized with various functions such as administrative and commercial as noted by (Ajibola, 2013).

The demand for potable water supply to meet the demand of the teeming population affects the supply of water in the study area with a significant mean score value of 4.82, this supports the findings of (Gabriel, Kingsley, Ezra and Ali, 2015), they highlighted population growth and water resource facilities are indirectly proportional to each other, as one increases, the other expands. This is very significant in this study as there are limited water facilities in the study area, this will mount more pressure on the existing water sources in the study area.

CONCLUSION AND RECOMMENDATIONS

Research could be concluded that water supply, utilization and consumption in Saminaka of Lere Local Government, Kaduna State have moderate status with an average mean score of 3.2, it shows that the significance level is moderate and the quality of water, its management and consumption pattern is low in the study area. The study also assesses the management and utilization of domestic water in the study area and found out that there is a low and poor management and utilization of water in the study area. This is due to over population, inadequate water supplies, lack of awareness, governments support and modern water management techniques. The study also reveals the impact of population on water supply, it found out that large population means there will be less supply of water due to high demand and poor management. It also reveals the impact of population on water pollution which affects many people in the study area.

From the findings of this research, the study recommends the following in order to have portable water supply, utilization and adequate consumption in the study area;

i. There should be more water supply sources such as non-solar powered boreholes, hand dug wells and motor powered boreholes to carter for the teeming population in the study area.
ii. There should be awareness programme by government and non-profitable organizations on water management and its utilization in the study area.
iii. Government should release funds for water projects so as to curtail water sacristy in the study area and expanding the scope of tap water supply to adjoining rural areas along Saminaka, Lere Local Government, Kaduna State.

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