



## ASSESSMENT OF POTABLE WATER ACCESSIBILITY IN IKOLE-EKITI, NIGERIA

A. O. Oloye<sup>1,\*</sup>, O. A. Ilesanmi<sup>1</sup>, B. A. Alabadan<sup>1</sup>, O. E. Omofunmi<sup>1</sup>, K. O. Oni<sup>2</sup>, and M. T. Ebong<sup>1</sup>

<sup>1</sup>Department of Agricultural and Bioresources Engineering, Federal University Oye-Ekiti, Nigeria.

<sup>2</sup>Department of Food Science and Technology, Federal University Oye-Ekiti, Nigeria.

\*corresponding author (Email: [abraham.loye@fuoye.edu.ng](mailto:abraham.loye@fuoye.edu.ng))

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### Abstract

Water occurred naturally and it is used widely for drinking, cooking, washing, agricultural activities, population expansion, urbanization, generation of power, and industrialization. Availability and accessibility are used to estimate the percentage of the population using safe water sources. However, potable water is inaccessible and unavailable for use in most of the communities in Nigeria. Therefore, this study assesses safe potable water sources available for use in three towns in Ikole LGA of Ekiti State, Nigeria. A random sampling approach was adopted by selecting households and respondents for participation in the study. Questionnaires were administered to 40 respondents in each of the three communities chosen giving a total of 120 respondents for this study. Data collected were analyzed using descriptive statistics. The results showed that available water sources were streams, rivers, rain, wells, boreholes, and lakes. 41.67 % of the respondents have access to safe water sources and also use water filters. There is the urgent need for Nigeria to invest more in accessing safe water sources for its citizens to achieve the Sustainable Development Goals.

**Keywords:** Accessibility, Domestic Use, Human Activities, Survey, Water.

### 1.0 INTRODUCTION

Water occurred in natural form for all living things on the planet, and it influences a wide range of human activities, including population expansion, development, urbanization, and industrialization. It is used for drinking, cooking, washing, agricultural activities, power generation, and other industrial processes, among other things. Water is life [1] and life will cease to exist without it [2].

The availability of good quality water for humans is a necessary precondition for good quality life and long-term development. About three-quarters of the earth's surface is covered by water with most of the water in oceans, ice caps, underground aquifers, and water vapour. Contamination with pathogens and toxic chemicals and metals are responsible for the non-accessibility of potable water [3]. Only a few parts of water accessible to the man on the earth's surface were from rivers, streams, rain, and springs. Rainwater aids

in the maintenance of plant life and the ecosystem's equilibration. Rainwater runoff from a network of rivers flows steadily into rivers, lakes, and the sea [4]. Surface and groundwater sources are the primary raw water sources for processing into potable and general residential applications. Many communities in Ekiti State, Nigeria rely on these sources for drinking since most government-provided potable water supplies are out of reach for many people.

The Nigerian National Water Sanitation Policy [5] defines rural water supply as a guaranteed minimum level of service of 30 litres per capita per day within a 250-meter radius for the end-user, with each water station servicing around 250 to 500 individuals in a community of 150 to 5,000 people. Domestic water is the water utilized by a household, and the amount consumed varies depending on the climate and the community's sophistication.

Safe water is defined by the World Health Organization as water of acceptable quality in terms of physical, chemical, and bacteriological criteria that can be safely used for drinking and cooking, with no substantial health hazards occurring during the scheme's lifespan from storage to end-user [6]. Water for cooking, personal cleansing, drinking, toilet flushing, gardening, lawn sprinkling, car washing, and basic house cleaning are all examples of domestic use. Access to improved water sources is hampered in areas where enhanced water sources are more than 1000 meters away from end-users.

Inaccessibility to safe water sources is one of the most fundamental problems that many African communities in rural areas face, as community participation in selecting and locating safe water sources is typically very low [7]. In addition, poor hygiene caused by a lack of appropriate home water supply is directly linked to the occurrence of water-borne diseases such as diarrhea, cholera, typhoid fever, and other diseases transmitted via the fecal-oral route have a severe influence on community members' health [8]. The consumption of poor-quality water and lack of proper sanitation and hygiene are responsible for an estimated 1.7 million deaths annually in the world [3]; [9]. [3] and [10] reported that about 70 million of Nigerians do not have access to safe drinking water.

However, Goal 6 of the Sustainable Development Goals ensures that everyone has access to safe drinking water and sanitation by 2030. The number of people who have a decent method of acquiring an acceptable amount of safe water for drinking, washing, and other basic household activities, expressed as a percentage of the total population, is used to determine access to safe water. Many people are still dependent on unprotected water sources such as rivers, streams, unprotected springs, and unprotected hand-dug wells, many of which are found where open field defecation is practiced [11]. It is critical to safeguard stored water against contamination because no matter how carefully safe water is produced at the source, it will be useless if contaminated afterward [12].

Therefore, the objectives of this study are to examine access to safe water supply, the water sources available to end-users, diseases noticed as well as the treatment of this water in Nigeria communities using some selected communities around the Federal

University Oye-Ekiti, Ikole-Ekiti Campus, in Ikole Local Government Area of Ekiti State, Nigeria.

## 2.0 MATERIALS AND METHODS

Ikole-Ekiti, the headquarter of Ikole Local Government Area of Ekiti State, Nigeria, is located between longitude 5° 31' East and latitude 7° 47' North. The Local Government covers an area of about 374,940 km<sup>2</sup> and has a population of 168,436 people [13]. The Local Government is primarily a homogeneous society populated by Yoruba-speaking people from Nigeria's South West Zone.

Ikole LGA is located in the State's deciduous forest area, with an annual rainfall of roughly 1,778 mm between March and November. The land's excellent drainage makes it ideal for agriculture. It is a regular occurrence for trees to drop their leaves every year during the dry season, which runs from November to February. The two seasons, Dry Season (December–February) and Rainy Season (March–November) are significantly different and vital to the people's agricultural interests. In 2011, the Federal Government of Nigeria established a campus of Federal University Oye-Ekiti, Nigeria in Ikole-Ekiti, which opened up the Igbona, Asin, and Otunja towns as the immediate communities surrounding the University. The University staff and students settled majorly within these areas.

The Igbona, Asin, and Otunja communities covered in this study were chosen because they accommodate more of the staff and students as the immediate environment of the University campus in Ikole-Ekiti. The study's respondents were randomly chosen and ensured that the respondents were represented fairly. In each of the three communities, 40 households were purposively and randomly selected for the study, giving a total of 120 households of which 1 respondent per household were chosen.

The information sought from the respondent using the structured questionnaires combined with interview schedule covered parameter such as age, sex, marital status, years of schooling, primary and secondary water supply and uses, processing experience, diseases noticed with water use, and water treatment methods used, sources of water for household drinking, washing, and cultivation used were collected. The data were collected through personal interviews using a standardized questionnaire because some of the respondents cannot fill the questionnaires themselves. The descriptive statistics were used to

analyse the data collected using the Statistical Packages for Social Sciences (SPSS Version 16.0) for analysis.

### 3.0 RESULTS AND DISCUSSION

The provision of good quality water is often regarded as an important means of improving human and animal health [14]. Gradual reduction of water quality is caused by increase in animal and human activities [15]. However, the consumption of unsafe water is one of the major causes of infectious diseases [16]. The assessment of potable water quality is needed to determine the quality of water for domestic and industrial purposes and uses, to prevent and reduce the incidence of water borne diseases. The demographic distribution of the households within the three towns chosen for this study and the percentage distribution of the socio-economic characteristics of the respondents from this research are as shown in Table 1.

**Table 1:** Percentage distribution of the socio-economic characteristics of the respondents

Characteristics	Frequency (N=120)	Percentage
<b>Town</b>		
Igbona	40	33.3
Asin	40	33.3
Ootunja	40	33.3
<b>Total</b>	<b>120</b>	<b>100.0</b>
<b>Sex</b>		
Male	37	30.8
Female	83	69.2
<b>Total</b>	<b>120</b>	<b>100</b>
<b>Religion</b>		
Christianity	75	62.5
Muslim	28	23.3
Traditional Worshippers	17	14.2
<b>Total</b>	<b>120</b>	<b>100</b>
<b>Educational attainment</b>		
None	16	13.3
Primary	17	14.2
SSCE	51	42.5
NCE/OND	11	9.2
HND/B.Sc	23	19.2
M.Sc/MBA	2	1.7
<b>Total</b>	<b>120</b>	<b>100</b>
<b>Age group</b>		
≤30	58	48.3
31-40	37	30.8
41-50	18	15.0
51-60	4	3.3
60 and above	3	2.5
<b>Total</b>	<b>120</b>	<b>100</b>

Source: Field Survey 2021

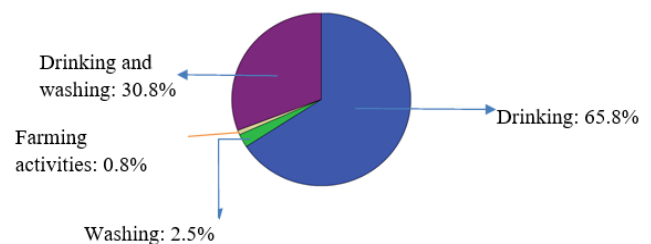
Table 1 revealed that men accounted for 30.8% of all the households while 69.2% were women, indicating that women have higher access to water in all of the localities where the survey was conducted. The Christians, Muslims and Traditional worshippers within the towns accounted for 62.5%, 23.3% and

14.2% respectively. The people in the areas were predominantly Christians.

The literacy status of the respondents as shown in Table 1 revealed that 14.2% had basic education, 42.5% had Secondary School Education, 9.2% had NCE/OND, and 19.2% had HND/BSC, and the remaining 1.7 % MSC/MBA. Table 1 shows that respondent age distribution was between ≤ 30 (48.3%), 31-40 (30.8%), 41-50 (15.0%), 51-60 (3.3%), and 60 and above (2.5%). The majority of the respondents fall between the age ranges of ≤ 30 (48.3%). The mean (average age) of respondents was 18.8 years which implies the majority of the respondent are young and agile. The respondents who stay in a private dwelling has more access to water, while those on rented apartments use mostly the public borehole or well, and private bore-well or wells from their neighbours.

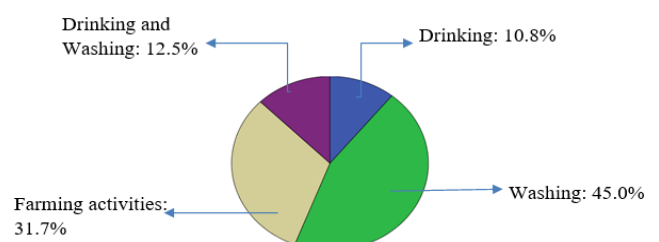
### 3.1 WATER SOURCES, SUPPLY AND USES

Water supply were broadly classified into primary and secondary sources. The primary source is from rain while secondary sources included borehole, well, river, stream, or pond. Figures 1 and 2 show the percentage distribution of water supply and uses from the primary and secondary sources.



**Figure 1:** Distribution of primary water supply and its uses

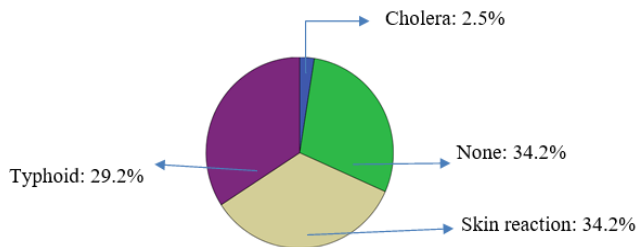
Rainwater is used for drinking, washing and farming activities in the study area as shown in Figure 1. Drinking of rainwater alone accounted for 65.8%, but it is rarely used for farming activities.



**Figure 2:** Distribution of secondary water supply and its uses

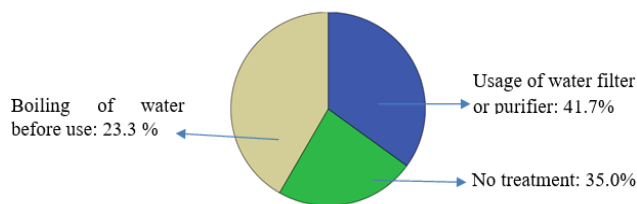
The secondary source of water is used for washing (45.0%), farming activities (31.7%), drinking and washing (12.5%) and drinking alone (10.8%). Private borehole or well water is used for drinking and washing, with none of the respondents utilizing it for cultivation.

Figures 3 and 4 show the percentage distribution of diseases noticed with water use and the distribution of water treatment methods used in the study area.



**Figure 3:** Distribution of Diseases noticed with the use of water in the study area

Only 34.2% of the households did not experience any water borne diseases indicating that water borne diseases were prevalent in the study area. The World Health Organization (WHO) [17] recommends that toilets should be placed at least 30 meters away from domestic groundwater sources because it is potential source of contamination. All the households that rely on public wells and rainwater should be encouraged to treat their water before use.



**Figure 4:** Distribution of methods of water treatment

The level of literacy of households impacts the water treatment procedure. Also, the observed negative impact of water without treatment on the health of the people corroborates with the reported findings by [18]. In this study, 86.7% of the respondents were literate and had at least a Secondary School Education. They have the requisite knowledge in the treatment of their water before consumption. This result agreed with the report observed in the study obtained by [19].

The findings showed that 41.67% of the 120 households surveyed in the communities have access

to safe water sources and use water filters. The results showed that households that rely on rainwater as their primary source do not have access to safe water. Perennial sources provide at least a basic level of domestic water supply throughout the year in the community.

#### 4.0 CONCLUSION AND RECOMMENDATIONS

This study identified the water sources, water supply and utilization by households in the three immediate towns around the University campus in Ikole-Ekiti. More households and inhabitants do not have access to potable water from safe water sources and thus prone to water borne diseases in the study area. Rainwater as the primary source should be well treated before use. Maintaining the functionality of rural water sources, continuous monitoring of already installed schemes and the increasing government investment in safe water sources are necessary to ensure that Nigeria meets the Sustainable Development Goals on water.

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