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Distribution and Management Constraints of Water Resources Users in Esit Eket Local Government Area, Akwa Ibom State, Nigeria

by

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Abstract

This study was carried out in eight villages in Esit Eket Local Government Area in an attempt to understand the experiences of water users given the deplorable state of water facilities. Both descriptive and quantitative methods of data analysis were employed. Four hundred copies of the structured questionnaire were distributed to the selected communities, together with personal interview, focus group discussion and key informant Interview to facilitate getting adequate information on the subject matter using simple random sampling technique. Findings showed that Esit Eket being a coastal part of Akwa Ibom State is not adequately provided with functional water facilities and that people find it difficult to secure safe drinking water as a result of either non-involvement of stakeholders, frequent damage of existing water facilities and long distance water users must cover before getting access to hygienic water. The study further noted that the cost of water from private sources has increased due to the increment in the price of fuel/diesel which culminate into water-borne diseases proliferation in the affected communities. It was subsequently recommended that improved water facilities involving solar powered pipe borne water can remedy the situation of power outage and rising cost of fuel/diesel so that affected water users could secure steady supply of hygienic domestic water and also in places where no public water facility are found, effort should be made to rescue rural dwellers from unnecessary water stress.

Key words:

1. Introduction

Water, a versatile liquid of considerable importance is one of the natural resources required for the survival of man and other earth components. Animals and

plants cannot survive without water. Utilisation of water by man is either surface or underground. About 70% of the earth surface is occupied by water but available percentage for man's consumption is minimal (Obeta 2017; Faith & Samuel, 2012). There are a lot of variations in terms of both quantity and quality of natural water whether surface or underground. Yet people and animals need clean potable water to survive. The major sources of clean water are either tap, bore hole, hand pumps and open wells. In the absence of good quality domestic water, people begin to use unsafe sources and encounter some health challenges as a result of poor sanitation (Ellen and Kellog, 2005).

Management of water resources in Nigeria is coordinated by the federal, state and the local authorities. The federal government is saddled with the greatest responsibility for water supply, while the local authority distribute water to rural communities (Abenu, Kenneth & Nasiru, 2016). Unfortunately, state and local government tend to shift responsibility and blames to one another. Such practices degenerate into water deprivation for low income users. Before the independence of Nigeria, particularly between 1955 and 1961, only 0.9% (around 1 million naira) of the total national expenditure was expended in the water sector. But during the First National Development Plan, a greater priority was given to water and development being that there was much need for water-driven economic development. Many industries sprang up that require sufficient water supply. Budget for water resources rose from 1 million in 1961 to over 49 million naira in 1966, and skyrocketed afterward to 82 billion in the fourth National development plan (Akpabio, 2008).

By 1976, the Development of 11 River Basins water management schemes came into existence following the promulgation of the Decree 25 by the Federal Military Government to expand water coverage. Nevertheless, the progression in expenditure did not match the distribution of water infrastructures and accessibility. Water coverage for most vulnerable areas was minimal due to management defect.

Domestic water is one of the sources that sustains life on earth and is a key element of sustainable water development initiative (Goni, 2006). It is for this reason that government the world over struggle to provide and maintain reliable water supply to meet the multifarious domestic, industrial and social needs of their citizenry. Domestic water use is water used for indoor and outdoor household purposes, it covers all the things done at home either by drinking, preparing food, bathing, washing clothes and dishes, brushing teeth and watering the yard and garden. Water generally gets to our homes in one or two ways. Either it is delivered by public or private company), or people supply their own water, normally from a well (Ogunbode, 2015). Self-supplied domestic water use is typically withdrawn from a private source, such as a borehole, well, or captured as rainwater. Whatever source water is drawn government, community and water users play a significant role in the area of drilling, maintenance and power supply.

The coastal part of Akwa Ibom State is facing water resources stress following the low level of investment on water supply projects. Challenges to domestic water distribution in Nigeria have been discussed previously by scholars including Nwankwoala, 2016 and Obute, 2010. These challenges stem from intermittent power supply, poor state of water equipment, logistic problems and lack of maintenance culture, poor water quality, lack of monitoring of water quality, bacteriological contamination during distribution and storage, poor governance and stakeholder engagement, inadequate financial outlay for effective operations, health education efforts and lack of skilled technical water personnel among others.

Water supply infrastructure consists of what is built to pump, divert, transport, store, treat, and deliver safe drinking water. Both the boreholes and pipe borne water supply facilities can deliver contaminated water, if adequate quality provisions are not effectively considered. Orubu (2006) noted that destruction of water supply or sewage disposal infrastructures after major catastrophes (floods, crises, among others.) poses the immediate threat of severe epidemics of waterborne diseases, and several of which can be life-threatening. However, distribution is a critical problem as far as the provision of safe and potable domestic water supply is concerned in Esit Eket Local government area (Udoh and Etim, 2007). Within the domain of Akwa Ibom State, domestic water by Akwa Ibom Water Board is the most secure source of safe drinking water. This is because the water is being provided by government and for that meet certain federal standards of hygiene. Unfortunately, its distribution is unevenly. Most of water treatment facilities do not deliver or meet the water requirements of the people due to government neglect, diversion of fund, corruption in the system, lack of maintenance culture and increase in population (Ezekiel & Dominic, 2014).

Available literature has shown that the distributions and management of domestic water especially in the rural areas is below satisfaction with many water supply systems showing extensive deterioration and poor utilisation of existing capacities, due to under maintenance and lack of funds for operation (Udoh and Etim, 2007).

Both economic and social development and the maintenance of human health are completely dependent upon ready access to adequate water supplies. All societies require water both for basic survival and for economic development (Galadima, Garba, Leke, Al-mustapha& Adam, 2011). Limited and inadequate access to water supply for productive uses such as livestock watering, crop irrigation, and small scale industries, constraints households and communities in a condition of vulnerability and poverty. The number of people who rely on the earth limited fresh water reserves is increasing every day. In fact, a scarcity of clean, pipe borne water is one of the world most pressing environmental problems. Water is life and its importance in the life of man, animals and plants cannot be overemphasized. However, the task of meeting domestic water needs in rural and urban areas in most developing countries, particularly in Nigeria, is enormous and falls mainly to women and children. Households also spend considerable time and effort fetching water from sources such as rivers, streams, ponds, wells and boreholes. In most cases, these sources of water may be one or two kilometres away from home, and may also be polluted. The total domestic water needs in homes with piped water and indoor sanitation is at least 115 litres per head per day. The actual amount used may be greater, depending on the ease and convenience of supply (Chukwu, 2015).

The goal six of the SDG aims to fulfil, particularly, all domestic water needs by 2030. In spite of the fundamental significance of water, poor management and under-utilization is continuing to undermine the optimum benefit individuals and government could have harness from water resources (Longe *et al*, 2010).

Numerous studies have been carried out to explore the management constraint facing water resources distribution. Braimah and Nicholas (2018) attempted to decipher some fundamental issues bordering rural water and sanitation in the Nadowli District of the Upper West Region of Ghana. From their investigation, they identified community participation, access to spare parts, effectiveness of water and sanitation related institutions, economic situation of the people, and availability of alternative sources of water. The functionality of water and sanitation facilities coupled with the degree of

response given to water issues especially when essential water facilities are not in good condition could determine whether water resources is effectively managed. Trippler *et al* (2022) avowed that the current state of natural ponds of North Unguja, Zanzibar is altered due to climate change and anthropogenic events resulting to the outbreak of water borne infections. From their studies, the northern Unguja ponds which serves multiple purposes are gradually decreasing in size following climate variability, settlement encroachment and change in vegetation cover. Amawa, Atiekum, Jude and Tata (2020) using River Meme in Cameroon noted that exploitation of water resources is threatened by inadequate capital, poor management approaches, the use of rudimentary tools and community conflict.

It is commonly agreed that many interrelated factors interact to generate problems on water resource usage. While climate change continually results to the change in the water level in most recognized rivers, human-induced constraint is a barrier that must be surmounted for effective water resources distribution. Studies have shown that the Lake Chad basin is shrinking and results to deterioration of the informal sector within the catchment area.

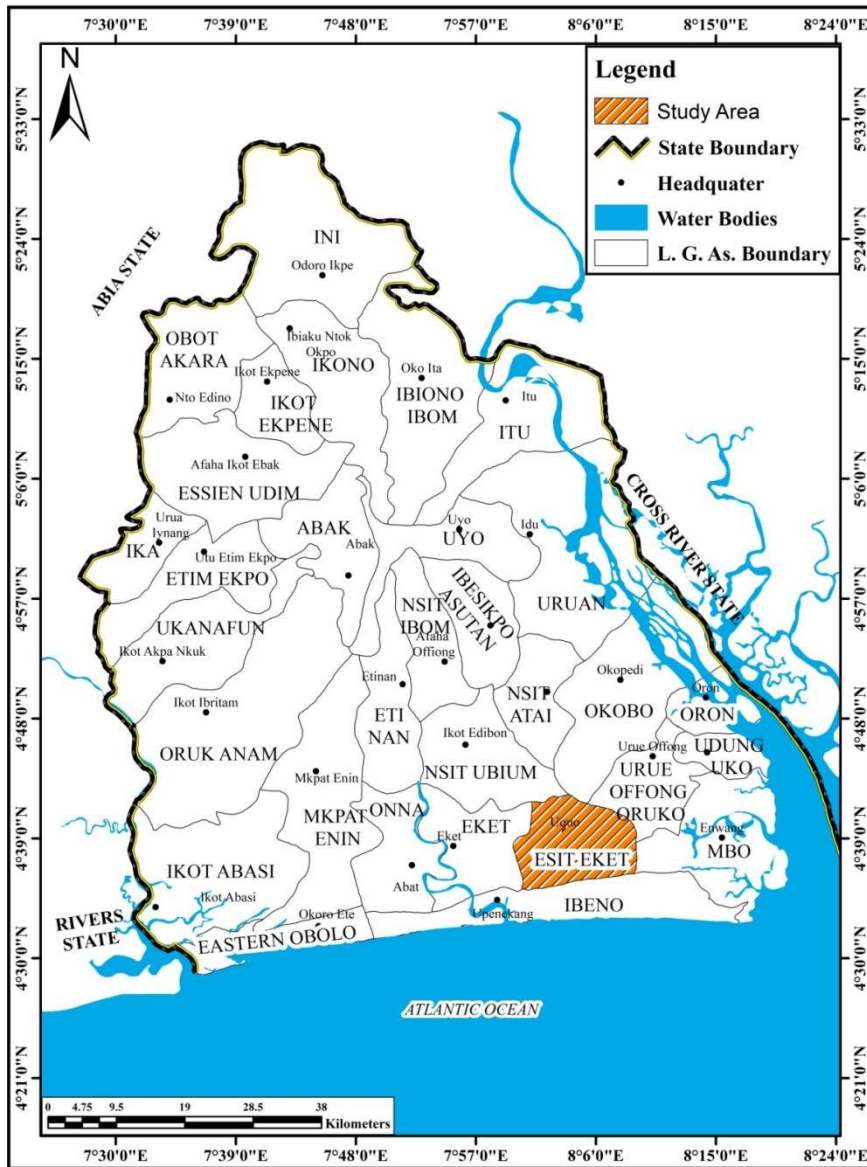
While aforementioned authors attributed the management constraint of water resources to insufficient facilities and scarce resources, Longe, Omole, Adewumi and Ogbiye (2010) reported that Water Resources Use and abuse is intricately linked to managerial gap. Galadima *et al* (2011) linked water supply constraint to pollution, Niyi & Felix (2007) identified water supply constraint in Oyo State and Olugbamila & Ogunyemi (2015) assessed water supply situation in Owo, Ondo State, Nigeria.

Shedrack, Wilson, David, Dziewulski and Kannan (2014) took up a comparative study on potable water accessibility and sustainability issues in developing countries using Uganda as a case study against water supply systems in the U.S., Latin America and the Caribbean. They evaluated the aspects of quantity, quality, treatment methods, infrastructure, storage and distribution of water for different water systems. The key constraint for management of water in their study was anthropogenic factor following disposal of sewage, industrial effluents, agricultural pesticides and fertilizers. Better information about the challenges facing water resources supply, combined with estimates of the land area over which water accessibility is not secured for both rural and urban areas, would allow us to explore solutions, but that information is currently lacking.

In the light of this, this study aimed at assessing the distribution and management constraint facing water resources in Esit Eket Local government area, Akwa Ibom State, Nigeria given the increasing level of petroleum related industries which affect both groundwater and surface water and associated water resources management.

2. Study Area

The study was carried out in Esit Eket LGA, Akwa Ibom State. Eight communities were selected for the study and they are: Etebi Nung Assan, Etebi Idung Ita, Etebi Mbak Uyo, Edida, Aba Ekpe, Odor Nkit, Ntak Inyang and Edor Atai.



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Fig 1.1: Map of Akwa Ibom State showing Esit Eket LGA

Source: Ministry of Lands and Town Planning, Akwa Ibom State

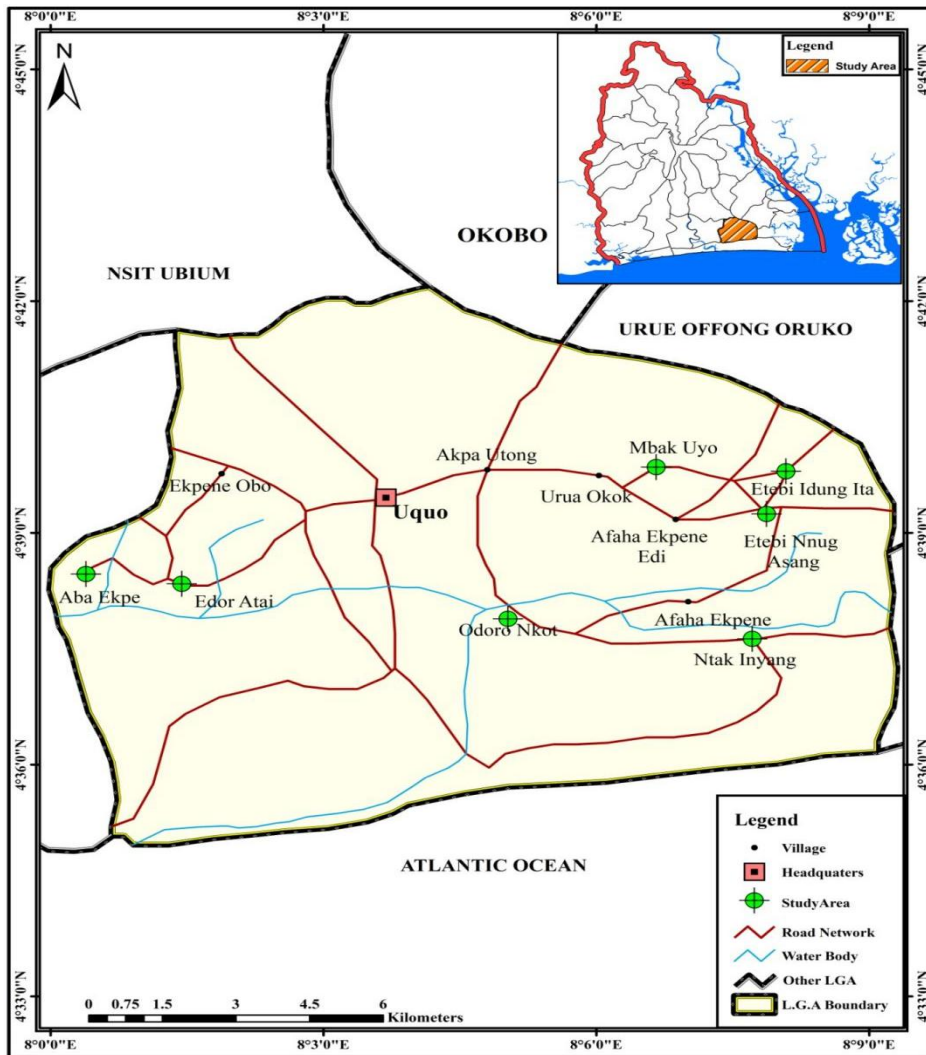


Fig 1.2 Map of Esit Eket showing Study Area

Source: *Ministry of Lands and Town Planning, Akwa Ibom State*

3. Materials and Method

The study adopted the survey design approach where the questionnaire was the major instrument employed for data collection using simple random sampling technique. However, the sample consists of domestic water users in Esit Eket. The survey was primarily based on vulnerable women, young/Adult men, teenagers and widows. Interview, key informant and focus group discussion were carried out to understand the challenges the various groups face in their daily struggle to harness water resources from different sources. Eight (8) villages were selected for the research and 400 respondents were sampled from the selected communities. In other to ascertain the unit of data collection for analysis within the selected communities, the total population of the 8 selected communities was projected from 1991 to 2022 with annual growth rate of 2.4% (as obtained from NPC 2006) using the exponential growth model. Key stakeholders interviewed included:

- a) The Executive chairman of Esit Eket Local Government Council
- b) The Leader, Esit Eket Legislative Council
- c) The Supervisor for Works Esit Eket Local Government Area.
- d) The Clan Head of Esit Eket

These personalities were carefully selected because of their relevance and how well informed they are by virtue of the offices they occupy.

4. Results and Discussion

Table 1: Survey of Rural Water Distribution in the study area

Name of villages	No. of public water	No. of private water	Approximate Distance from each water points (in meters)	Cost of water per container (in naira)
Etebi Nung Asang	2	7	8	20
Etebi Idung Ita	3	5	10	20
Etebi Mbak Uyo	1	9	4	20
Edida	-	11	4	20
Aba Ekpe	2	4	17	20
Odor Nkit	-	8	6	20
Ntak Inyang	2	7	9	20
Edor Atai	1	5	12	20

Source: *Authors' compilation, 2023*

From table 1, public water facilities is insufficient in most communities of the study area. For instance, where some communities like Etebi Idung Ita had 3 government-funded water projects, others like Edida and Odor Nkit did not have any functional public water facility. The implication is that water users find it difficult to access safe water for their domestic consumption and other purposes. The distance of one water point to the next was far. In the case of Aba Ekpe community, rural dwellers experience much stress in accessing clean water. They needed to cover a distance of 17m in Aba Ekpe, 12m in Edor Atai before securing safe water.

Table 2: Sample size and Questionnaire Distribution Determinant

Name of villages	1991 Population	2022 projected population	Sample size per community
Etebi Nung Asang	1636	4614	70
Etebi Idung Ita	1580	4456	65
Etebi Mbak Uyo	1296	3655	63
Edida	558	1574	38
Aba Ekpe	855	2411	42
Odor Nkit	843	2377	44
Ntak Inyang	539	1520	30
Edor Atai	968	2729	48
Total	8275	23,336	400

Source: *Authors' compilation, 2023*

As a result of power outage and high cost of diesel/petrol in Esit Eket, the cost of water has increased from N10 per container to N20. It means that people who could not afford the cost of safe drinking water must resort to any available water regardless of the level of toxic and risk associated.

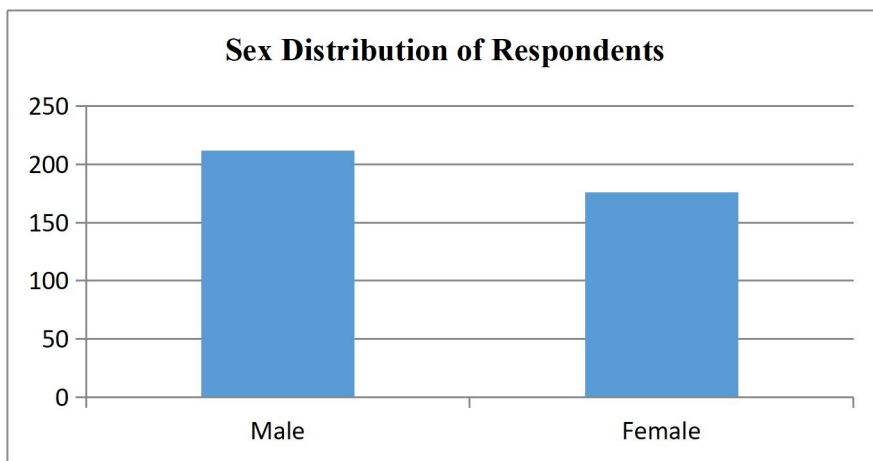


Figure 4.1: Sex Distribution of Respondents

Source: *Field Work (2023)*

Figure 4.1 shows that 212 respondents which constitute 54.6% of the respondents were male while 176 respondents comprising 45.4% of the respondents were female. All in all, the number of male respondents was higher than female.

4.1.3 Marital Status of respondents

Table 4.2 shows that 30.7% of the respondents (119 respondents) were single; 52.6% (204 respondents) were married; 5.4% (21 respondents) were divorce while 11.3% (44 respondents) were widows.

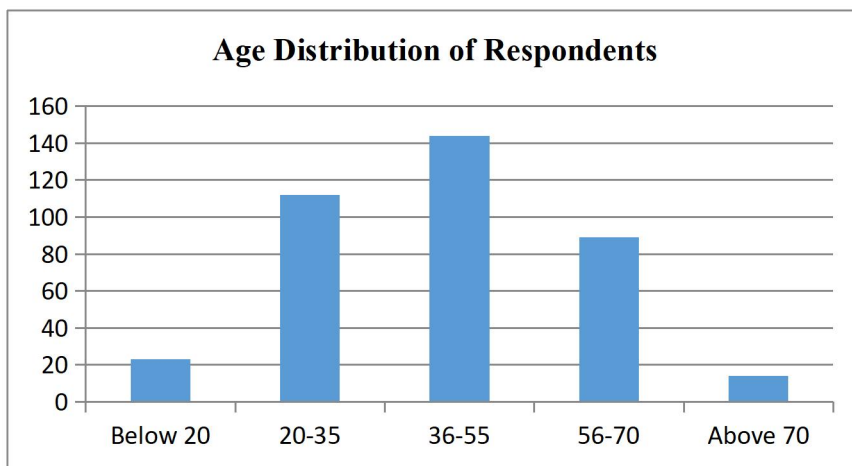


Figure 4.2: Age Distribution of Respondents

Source: *Field Work (2023)*

Culled from figure 4.2, 37.1% of the respondents were within the age of 36-55 years, 29.1% were within 21-35 years, 23.7% were within the age of 56-70 years. Similarly, respondents below the age of 20 years have 6.4% while only 3.6% of the respondents were above 70 years of age.

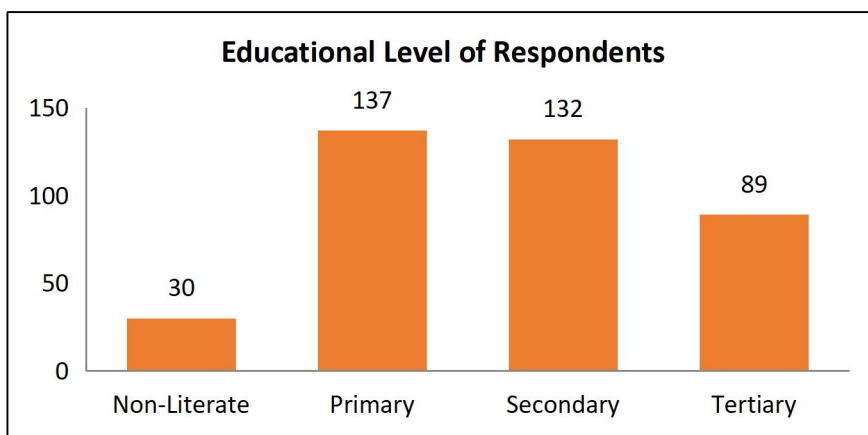


Figure 4.3: Educational Level of respondents

Source: *Field Work (2023)*

Figure 4.3 explained that 137 respondents (35.3%) attained primary education; 132 of them (34%) had secondary education; 89 respondents (23%) had access to tertiary education while only 30 respondents (7.7%) had no formal education.

4.1.4 Household size of respondents

The household size of respondents in table 4.3 shows that 128 respondents (33%) had household size less than 3; a greater proportion of the respondents (194) which constitute 50% had household sizes ranging from 3-6. Also, only 10.8% of the respondents (42) had household sizes of 7-9 while 24 respondents (6.2%) had household size above 9.

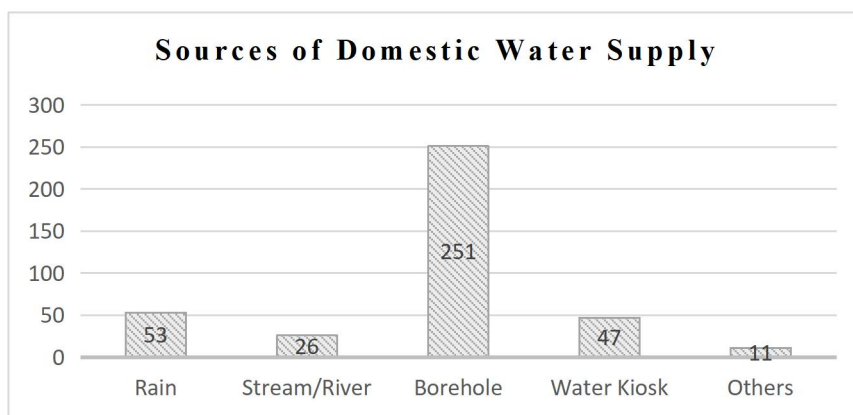


Figure 4.4: Sources of water supply in the study area

Source: *Field Work (2023)*

The main source of domestic water supply in the area as shown in figure 4.4 was borehole with 251 respondents (64.7%) nodded in affirmation to this fact (field work 2023). This is followed by rain with 53 respondents (13.7%). Also, the third major source of domestic water supply in the area was well with 47 respondents (12.1%) followed by stream/river and other respondents who affirmed that they received water from multiple

sources with 26 respondents (6.7%) and 11 respondents (2.8%) respectively (see features below).



Fig. 1: Local Stream



Fig. 2: Community Well Water at Emeroke

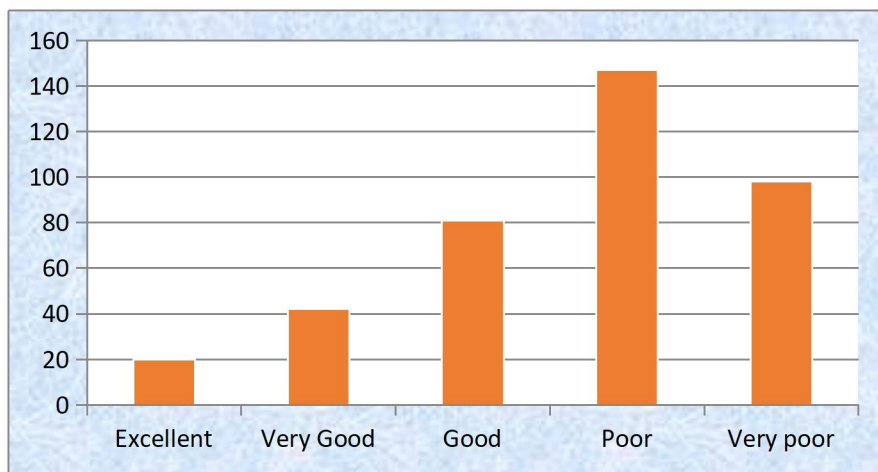


Figure 4.5: The Distribution of Domestic Water Supply in the Study Area

Source: *Field Work (2023)*

Figure 4.5 explained that the distribution of domestic water supply in the area was below expectation of the residents (very poor). Consequently, 37.9% of the respondents opined that the distribution of domestic water in the area is poor; 25.3% reported it is very poor. On the other hand, 20.9% believed it is good while only 10.8% and 5.2% opined that the distribution of domestic water in the area was very good and excellent respectively.

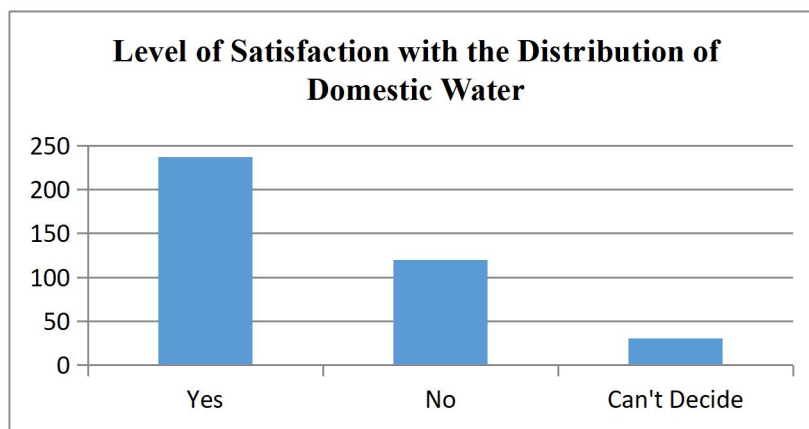


Figure 4.6: Level of Satisfaction with the Distribution of Domestic Water in the Area
Source: *Field Work (2023)*

On the general note, when asked about the level of satisfaction with the distribution of domestic water in the area, 61% of the respondents said they are not satisfied with it, 31% reported satisfied while 8% was undecided.

4.1.5 Respondents' proximity to water supply

Table 4.7 shows that the distance of the respondents from their different sources of water supply. The result shows that not less than 42% of the respondents lived less than 10 metres from the source of their domestic water supply. 29.1% lived within a distance of 10-15 metres, 14.5% of the respondents lived within a distance of 16-20 metres, 6.7% of them lives a distance of 21-25 metres while 5.4% of the respondents lived more than 25 metres away from their source of domestic water supply.

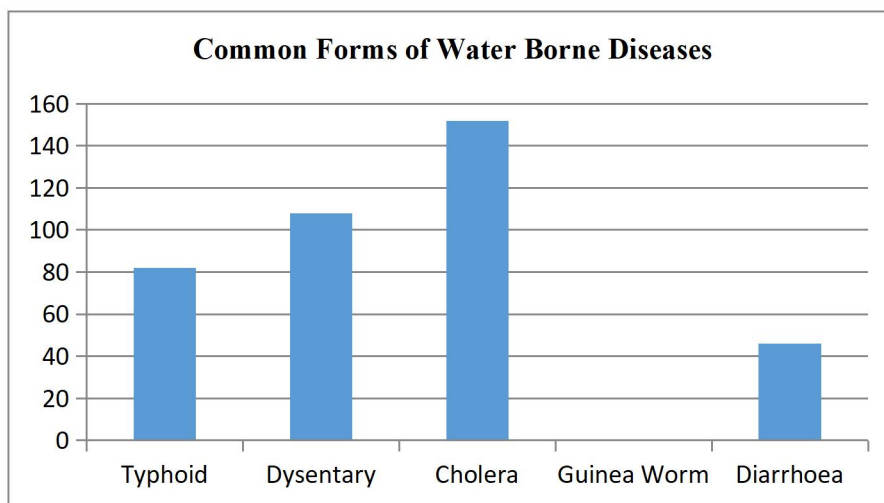


Figure 4.7: Common forms of water borne diseases in the area
Source: *Field Work (2023)*

From figure 4.7 above, the commonest form of water borne diseases in the area is cholera, followed by dysentery, typhoid and diarrhoea respectively, while there is no incidents of guinea worm in the study area.

4.3: Discussion of Findings

The findings of this study shows that boreholes are the major source of domestic water supply in Esit Eket Local Government Area of Akwa Ibom State apart from wells and streams. Also, the opinion of the respondents when asked about the distribution of domestic water in the area clearly shows that the rate of distribution of domestic water in the study area is poor. Consequently, a larger percentage of the respondents indicate that they are not satisfied with the pattern of distribution of domestic water in the area. The usefulness of their domestic water include: bathing, cooking, drinking, and washing, amongst other uses.

The poor state of power supply from the Power Holding Company of Nigeria, Plc. (PHCN), poses a serious problem to many water supply projects in rural areas. It is widely known that electricity supply is instrumental to adequate provision of domestic water to the masses. Esit Eket as well as other parts of the coastal region of Akwa Ibom State suffer problem of water stress among residences following fluctuating power distribution and rising cost of fuel/diesel. Places like Etebi Idung Assan, Etebi Mbak Uyo, Ntak Inyang and Etebi Idung Ita are experiencing the aftermath of fluctuating power distribution coupled with water stress in such a manner that some existing water facilities are non-functional and residences resort to alternative water sources like well and stream.

The cost of acquiring water drilling services affects potable water distribution in Esit Eket. Producing potable water for both public and household consumption involves huge finance which must consider the purchase of relevant materials, equipment and paying of bills-(chemicals, power, maintenance and overhead costs). Due to the predominance of low income earners in the area, water drilling projects are not frequently carried out resulting to over-dependence on fewer water facilities. This could be blame on the poor level of community participation in scaling up water facilities distribution. Community participation in water management in the study area is not adequately established except in the areas of the provision of private alternative sources such as wells and fewer boreholes. The resulting effect of this practice forces the poor people paying more for water as they have to depend upon water vendors who sell water at higher prices.

Moreover, administrative constraint manifest itself whenever policy makers fails in their respective statutory functions. The situation where projects are not adequately monitored by coordinating agencies is detrimental. Huge capital investment without corresponding financial discipline and accountability for performance, along with political interference in decisions about allocations and pricing are reflected in the inefficient operations, inadequate maintenance, financial losses and unreliable service delivery.

Hypothesis was tested to confirm if there are any significant challenges affecting domestic water distribution in the area. The result of the analysis (which was conducted using Chi-Square) shows a p-value of 0.000 ($p < 0.5$) which rejected the null hypothesis, meaning that there is a significant challenges associated with the distribution of water in EsitEket. These challenges include: inadequate water supply which in many cases, the available water is not enough for the residents, thereby leading to water scarcity in the area. Poor funding which denotes failure to release fund for the improvement in water supply is also highlighted as one of the challenges. Lack of proper monitoring as well as

poor management are also challenges facing domestic water distributions in the area. This emanated from neglect of the system as well as less commitment to proper monitoring to ensure efficient distributions of domestic water in the area. The outcome of the study is in agreement with earlier scholarly work carried out by Amawa, Atiekum, Jude and Tata (2020) in Cameroon who identified poor management approaches as a major setback for water resources accessibility in the region.

Furthermore, the emergence of water related diseases has been identified as one of the challenges facing the distributions of domestic water in the area. Typhoid, diarrhoea, cholera and dysentery are the commonest form of water borne diseases in the area. In a bid to address these challenges, several measures have been highlighted by the respondents. These among other measures include: adequate release of fund, proper management, manpower development, system monitoring and evaluation and sensitization campaign. During focus group discussion with residents of the area, it was gathered that multiple stakeholders' intervention including government agencies, well-meaning citizen of the area, religious organisation, Non-governmental organisation and oil multinationals can reverse the trend of water stress in Esit Eket. The respondents highlighted the need for solar powered pipe borne water given the rise in the cost of fuel which could reduce water accessibility.

5. Conclusion and Recommendations

The relevance of water in modern society including the rural areas in Nigeria cannot be over-emphasized. People depend on its good quality-and quantity-for drinking, recreation, and use in industry and for growing crops. This research has assessed the distributions and management constraint facing water users in Esit Eket local government area of Akwa Ibom State. Despite the considerable attention paid to water supply in the study area over the years, inadequate water supply remains one of the major problems.

Based on the findings, the following recommendations are made:

- i. There should be increased provision of water supply sources such as boreholes and public taps in strategic locations that are close to the residents in the study area. This will make it possible for the residents to easily have access to domestic water in their places. Solar technology in rural water supply should be prioritised to ensure steady access by the locals.
- ii. Strict implementation and management of the resources allocation to the Ministry of Water Resources needs to be adhered to for good quality water provision. This will prevent the diversion of the fund.
- iii. There should be constant repairs of damage pipes and taps in order to reduce leakages.
- iv. The provision of database for public water in rural areas is needed to detect areas that need to be scale up.
- v. There should be public enlightenment campaign in mass media against the reckless over-consumption and misuse of water.

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