



THE MAJOR CHALLENGES OF QUALITY WATER SUPPLY IN PORTHARCOURT METROPOLIS RIVERS STATE

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ABSTRACT

The study focuses on the major challenges of quality water supply in Port Harcourt Metropolis River State. The study, using a sample size of three hundred of ninety (390) respondents revealed that man's activities on the environment often results in pollution and degradation of the water bodies. Water bodies must be critically guided and protected against pollution; which will affect water quality and availability for desired usage. The study took critical data analyses to reveal the impact of quality water impairment causes using variables such as socio-economic characteristics of respondents, perceived challenges of portable water supply in Port Harcourt Metropolis and as well as pointing out ways of achieving quality water supply in the study area. The result obtained from the analysis, revealed that oil production plays a significant role in water pollution. To curb this, strict environmental laws regarding oil production and other human activities should be put in place. It is recommended also that our water bodies and the environment in general should be protected through appropriate legislation and guidelines, public literacy campaign and mass education. This will help sensitize and inculcate the people to make a fully environmentally literate society. When these steps are taken on international, national and local levels, quality water supply for our today society and the future generation is ensured.

INTRODUCTION

The need for quality water supply is self evident; this is because water is next to air in order to importance to human existence. Reference is frequently made on the interdependence amongst water, health and economy (NEST, 1991). Akpabio (2018), was of the view that inadequate access to quality water supply can

contribute to health challenges and poverty. Globally, the most common index of poverty level in any economy is income. The US dollar upper day criterion for instance has been widely used. However, socio-economic development goes beyond the income criterion to involve a multiplicity of factors. Most scholars are of the view that one of the basic causes of underdevelopment is inadequate access to quality water supply (Aryabandu & Aheega, 2012).

Quality water may be defined as water that contains no pathogenic organism and is free from biological forms that may be aesthetically objectionable (Ayoola, 2011). It does not contain concentration of chemical that may be physiologically harmful or economically damaging. According to Effiong (2017), quality water is determined by the concentration of biological, chemical and physical contaminants. Hence standards have been developed for all grades of water use by world health organization and other bodies. These standards strive to prevent adverse consequences of water use by defining the quality of water for various uses. Among the uses of water include; domestic industrial, agricultural, tourism etc. water is among the most essential elements that nature provides to sustain life of plants, animals and man, hence the assertion by Rigveda (2003), "Oh sacred waters, be our protection, satisfy our thirst, give us happiness which is higher than any treasure, higher than all world rulers. Oh waters, give us blessed consolation"

Water is essential for life, yet millions of people especially in the developing nations like Nigeria are faced with water shortage and a daily struggle to secure quality water for their basic needs. As a result, millions of people especially children die every years from preventable water-borne diseases. Most water pollution occurs as a result of human activities such as biological



contaminants from human and animal waste, plus some industrial processes and agricultural activities. Physical contamination stems from erosion and disposal of solid waste (Effiong, 2017). United Nations Children Education Fund (2010), human health is dependent on quality and reliable supply of water. These water services are largely taken for granted in the developing nations hence, about half of her people are suffering from water related diseases caused directly by infections or indirectly by disease carrying organism that breed in water. Many scholars have reported that water related problems are responsible for a large number of illness and death, poor socio-economic development in developing countries. (Olumba & Onwuzuruike, 2013).

Statement of Problem and Objectives

The socio-economic, environmental and health consequences of poor quality water supply are severe. Bhatia (2011) noted that poor quality water supply is one of the major problems plaguing Port Harcourt Metropolis. Its adverse effects have been noticed in various manifestations in the city in terms of water borne diseases, sanitary implications, children's educational attainment etc. Despite the fact that port-Harcourt Metropolis is surrounded by well known water bodies and research conducted on improving water quality in Nigeria, Port Harcourt Metropolis like other cities in Nigeria has continued to grapple with poor quality water supply and this problem continued to exacerbate with the passage of time. It therefore becomes very imperative to have an indebt look into the challenges of quality water supply in the area in order to take appropriate steps to improve the quality of water supply in the study area. However, the study has the following objectives;

- i. Ascertain the level of contribution of the factors challenging quality water supply in Port Harcourt Metropolis

- ii. Examine ways of improving potable water supply in the study area

Theoretical Framework

There are some schools of thought associated with poor quality water supply in Nigeria. Among them include; the infrastructural school which is of the opinion that poor quality water supply can be attributed to inadequate infrastructures, as facilities whose design capacities cannot be attained due to malfunctioning equipment and plants. Maintenance is frequently underperformed due to financial constraints. There is inadequate spare parts and expertise. There is equally, low reliability of power supply from PHEDC. The regular power outage requires standby power generator which is every expensive (Oyebode, 2015).

The second school of thought is named the dearth of finance. They believe that the water sector is in critical need of funds to finance the required investment in water supply facility development and rehabilitation. Such funds are usually not available. Most of the investments in the last decade mostly came from international finance and donor agencies and are by far below funds required by the sector. Counterpart fund from government is usually in short supply.

Thirdly is the commercial school of thought, which stated that most of the water agencies are not commercially oriented due to the subvention they enjoy from government. They tend to treat water users as consumers instead customer with the adverse consequences. This condition is exacerbated by dearth of accurate consumers' data by most agencies which limit their operations to billing and collection that are based on inaccurate customers' data. Finally is the institutional school of thought. They are of the opinion that the legal and regulatory framework



that would provide appropriate environment for potable water supply is still lacking. There are problems relating to sector coordination, monitoring and evaluation at the federal government level, while at the state level, where they are supposed to operate as autonomous entities in practice, they operate like government departments. This is due to their dependence on subvention from the state government and hence they are subjected to administrative bottle neck experienced in the ministries. At the local government level, they lack competent staff in the sector. Hence these factors work together to create challenges in potable water supply in the study area.

METHODOLOGY

The Study Area

The study was carried out in Port Harcourt Metropolis, Rivers State. Geographical coordinates of the study area are 4°49'27"N and 7°21'E. The climate of Port Harcourt Metropolis falls within the sub equatorial belt. Temperature and humidity are high throughout the years. The area is marked by two distinct seasons-the wet and the dry seasons, with 70 percent of the annual rains falling between April and August, while 22 percent is spread in the three months of September to November. Rainfall is adequate for all year round crop production in the state. In Port Harcourt Metropolis, maximum monthly temperature ranges from 28°C to 33°C, while the mean minimum monthly temperatures are in the range of 17°C to 24°C. The mean monthly temperature is in the range of 25°C to 28°C. Relative humidity is high throughout the year but decreases slightly in the dry season. The area predominantly lies in a flat terrain consisting of levels of gently undulated sandy plains but without areas of isolated depression. The soil type consists mainly of poorly-drained silt clays mixed with sand, which is geologically classified under the Benin formation. This soil is organic in nature. There is also

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mangrove swamp alluvial soil found north to the coastal sediments zone and they are brownish on the surface

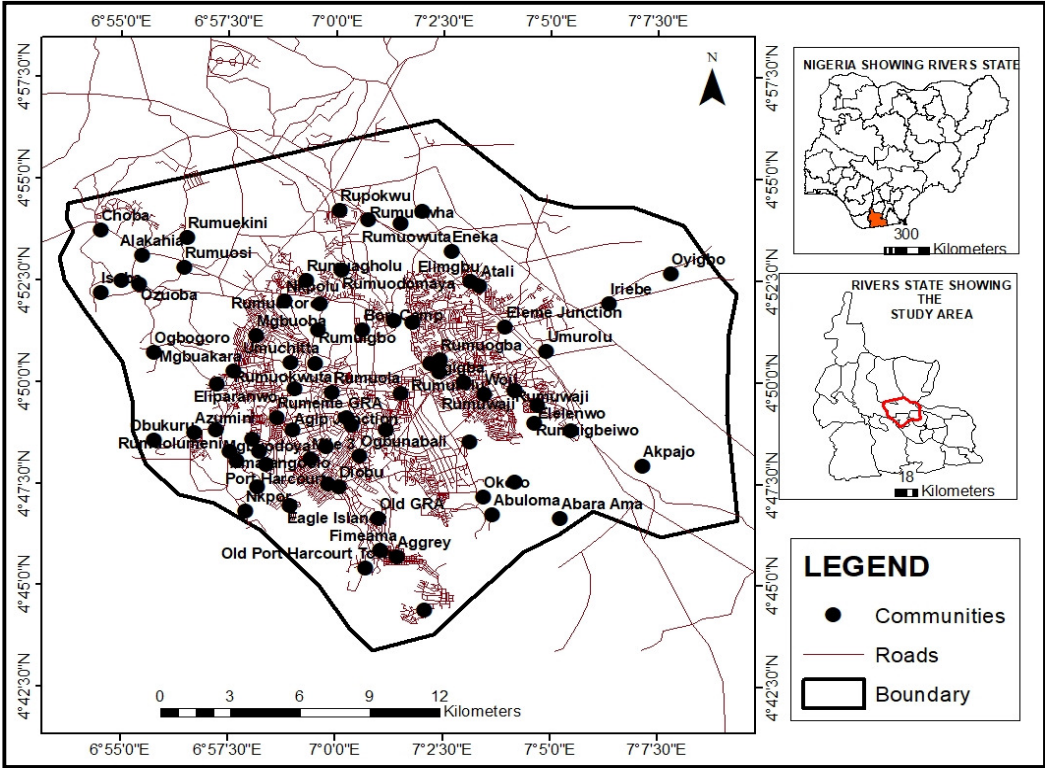


Figure 1: Map of the Study area
Source: Nigeria Local Government Administrative Map, 2021

Port Harcourt Metropolis is influenced by urbanization and urban sprawl, where by smaller communities are beginning to merge together to form a megacity. This has continued to add pressure on water supply in the area. As at the year 2020, her population was about 2,667,435 persons (National Bureau of Statistics, 2020). All the households in Port Harcourt Metropolis from 18 years and above and staff of the Ministry of water resources constituted the target population of the study. A multi-stage sampling technique was used to select respondents. The first stage involved the delineation of the study area into 13 zones. The second stage was the selection of 3 communities from each



of the 13 zones. Finally, was the selection of 10 respondents from each of the communities, giving a total sample size of 390 respondents, while 6 respondents were interviewed from the Ministry of Water Resources. Three hundred and forty two respondents correctly filled the questionnaire used for the study. The study adopted the descriptive survey research design. The instrument for data collection was structured questionnaire. Information in the questionnaire were analyzed using a 4 -point Likert scale type of which; Strongly Agree=4, Agree=3, Disagree=2 and Strongly Disagree=1. The mean was calculated thus; $4+3+2+1 = 10/4 = 2.50$. In decision rule, any variable with mean score of 2.50 and above were considered constraining factors whereas, variables less than 2.50 were not considered.

RESULTS AND DISCUSSION

Socio-Economic Characteristics of Respondents

Table 1: Demographic /Social-economic Characteristic of the Study Area.

Variables	Categories	Frequency	Percentage
Gender	Male	224	65.50
	Female	118	34.50
	Total	342	100.00
Age structure	18-30	32	9.36
	31-45	103	30.11
	46-60	137	40.06
	>60	70	20.47
	Total	342	100.00
Marital status	Single	105	30.70
	Married	193	56.43
	Widow	20	5.85
	Divorce	25	7.30
	Total	342	100.00
Educational status	F.S.L.C	55	16.08
	W.A.S.C	84	24.56
	OND/NCE	83	24.27
	B.SC/HND	93	27.19

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	PG	27	7.90
	Total	342	100.00
Religion	Christianity	316	92.40
	Islam	14	4.09
	Others	12	3.51
	Total	342	100.00
OCCUPATION	Student	16	4.67
	Farming	56	16.37
	Civil service & other	151	44.15
	employed job	93	27.19
	Business	26	7.60
	Others	342	100.00
	Total		

Source: Researcher's Compilation, 2021

Gender

Gender and age are important demographic variables and the primary basis of demographic classification. Table 1 above (gender) shows the distribution of interviewed respondents by gender at the time of survey. There is the preponderance of males over females. Thus approximately 65.50% of the respondents are males while 34.50% are females. The dominance of male stems from the fact that males are the heads of household and could not be there while female attend to issues like this. Hence there were more male than female to participate in the survey. This is in line with the findings of other researchers on demographic and socio economic characteristic of the study area (Nwachukwu, 2016; Amadi, 2014).

In terms of age structure of the respondents, there are more people between the ages of 46-60 (40.06%) followed by those between ages 31-45(30.11%) and those above 60 ranked third while those aged between 18-30 are the least. The frequencies



and percentage distribution are as shown in Table 1 (age). As a matter of fact, the age ranges 31-60 is more active in every society and are more involved in water usage. The studies of Okoro (2014) indicated similar age composition of 30-60 in a related work. This was also corroborated by the research conducted by Egwuogu, C.C., Okeke, H.U., Emenike, H.I & Abayomi, T.A. (2016).

Table 1 further shows the percentage distribution of respondents by marital status. The predominance of married people as respondents may not be unconnected with the fact that marriage is one of the primary indicators of being a responsible person in the society and that makes them partake in programmes that will improve their family life and well being. Table 1 also indicates that over two third of the respondents are married, less than 3 in 10 are single while less than in 20 are widows. The respondents' religion indicates that Christians constitute the largest percentage (92.40) of the survey. This is because the study area is predominantly dominated by Christians, followed by Islamic religion (4.09) while other religion is the least.

The result of the educational status as shown in table 1 above indicates that about 16.08% of the respondents have First School Leaving Certificate (FLSC) and 24.56% possess West African School Certificate (WASC), 24.27% had either Ordinary National Diploma (OND) or National Certificate of Education (NCE). The remaining 27.19% and 7.90% obtained Higher National Diploma (HND) or Bachelor's degree (B.SC /A/ED) and above Bachelor's degree respectively. This implies that majority of the respondents are literates since they can read and write and are likely to adopt innovations on water management all things being equal. From the Table 1 on occupation, 16.37% of the respondents are farmers, civil servants and other paid jobs are 44.15% while

27.19% have business as their occupation. Students constitute 4.67% of the respondents while 7.60% engage in other forms of occupation. This result is in agreement with the finding of Ayoola (2012).

Perceived Challenges of Potable Water Supply in Port Harcourt
Data in Table 2 shows the perceived challenges of ecotourism development in Imo State



Table 2: Mean Distribution of Challenges of Potable Water Supply as Perceived by Respondents

S/N	VARIABLES	SA (4)	A (3)	DA (2)	SDA (1)	TOTAL (10)	MEAN 2.5	REMARK
A	Institutional challenges	106 (31.1)	119 (34.8)	63 (18.4)	54 (15.8)	342	2.81	Accept
B	Commercial challenges	45 (13.2)	74 (21.6)	88 (25.7)	135 (39.5)	342	2.07	Reject
C	Operational challenges	119 (34.8)	101 (29.5)	86 (25.1)	135 (39.5)	342	2.89	Accept
D	Environmental pollution	158 (40.2)	106 (30.1)	51 (14.9)	27 (7.1)	342	3.15	Accept
E	Financial Challenges	145 (42.4)	112 (32.7)	52 (15.2)	33 (9.6)	342	3.07	Accept
	TOTAL	573	512	340	384	1710	2.80	

Source: Researcher's Compilation, 2021

Even though Rivers State is endowed with enormous water resources that can be harnessed for portable water supply, the various factors in Table 2 have contributed to hindering quality water supply in the metropolis. The data gathered from the survey and interview with staff of Ministry of Water Resources are similar. Therefore, according to the respondents, the remarkable challenges hindering improved quality water supply are as stated in Table 2 above. These factors are also evident in the findings of many research conducted all over the nation relating to challenges quality water supply (Asiabaka, P.I. & Mbukwem, J. 2008; Okoro, 2014; Etu-Effeotor, J.O. & Odigi, and M.I.1983).

In summary, the overall average of 2.80 shows that the respondents agreed that the factors mentioned are hindering quality water supply in the area. In other words; they perceived poor quality water supply as the consequences of these factors in the study area. The effect of these factors will continue to hinder quality supply if nothing is done to check them.

Ways of Achieving Quality water supply in Port Harcourt Metropolis by Respondents

Entries in Table 3 shows the perceived distribution of respondents on the ways of achieving quality water supply in Port Harcourt Metropolis



Table 3: Mean Distribution of Respondents Based on the Perceived Ways of Achieving Improved Quality Water Supply in Port Harcourt Metropolis

S/N	SOLUTIONS	SA (4)	A (3)	DA (2)	SDA (1)	TOTAL (1.0)	MEAN 2.5	REMARK
A	Enforcing strict compliance to environmental law	196 (57.3)	111 (32.5)	30 (8.8)	5 (1.5)	342	3.45	Accept
B	Provision of adequate infrastructure by government.	137 (40.1)	142 (41.5)	52 (15.6)	11 (3.2)	342	3.18	Accept
C	Adequate funding of water resources management agencies	121	94	84	43	342	2.85	Accept
D	Promoting co-operation among the agencies at the tiers of government involved in water mgt	27 (7.11)	51 (14.9)	106 (31.0)	158 (46.2)	342	1.84	Reject
E	Incorporating standard treatment method using international guideline	95 (27.8)	126 (36.8)	68 (19.9)	56 (16.4)	342	2.75	Accept

Source: Researcher's compilation (2019)

Table 3 contains information on the ways of achieving quality water supply in the study area. These were also rated on the 4-point Likert scale of strongly agreed, agree, strongly disagreed and disagree. Among the ways of attaining quality water supply in the metropolis include enforcing strict compliance to environmental laws (3.45) which is the major contributor to poor quality water supply in the area, hence the most viable solution. The respondents also agreed that provision of adequate infrastructures (3.18) will go a long way in improving quality water supply as most of the infrastructures are in a state of disrepair, while adequate funding of water resources management agencies (mean=2.85) is very vital to quality water supply. The respondents did not see promoting cooperation among the tiers of government involved in water resources management as part of the ways of achieving potable water supply in the area. This seems to be biased but authentic and reliable, since the respondents did not see it as major way of attaining quality water supply in the study area. Incorporating standard treatment method using international guideline was acknowledged as a way forward in achieving quality water supply in the area as corroborated by Egwuogu, C.C., Okeke, H.U., Emenike, H.I & Abayomi, T.A. (2016). This is because respondents as in other developing nations normally look up the international standards.

CONCLUSION

The importance of quality water supply in any society cannot be over emphasized. Water play vital role in the health and socio-economic development of any society. Poor quality water supply has been a major problem to the residents of Port Harcourt Metropolis hence this study was carried out to analyze the major challenges of quality supply in Port Harcourt metropolis. Although, the study covered only Port Harcourt Metropolis, it was able to identify the major problems affecting the provision



of quality water in the area. From the study, environment pollution is one the major factors affecting quality water supply in the area among others. This could be as a result of uncontrolled and illegal oil production activities in the area. Quality water supply in the area can only be achieved through strict enforcement of environmental laws especially those pertaining to oil production and other human activities in the state. However, this alone cannot work in isolation hence there is the need to involve other identified solutions if sustainable quality water is to be achieved in the state.

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