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Impact of Rural Water Supply and Health on Community Development in Bayelsa State

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Abstract: This study was designed to determine the impact of rural water supply and health on community development in Bayelsa State. To achieve the purpose of this study, five research questions were raised and answered. The descriptive survey research design was employed for this study. The population of this study includes three thousand eight hundred and twenty-seven (3,827) adult indigenes in six (6) communities in Bayelsa State while a total sample of three hundred and seventy-nine (379) respondents was used as a sample for the study. The instrument for data collection was a structured questionnaire which was validated and pre-tested to determine its reliability. Data generated were analysed with Frequency count, percentage and mean score analyses. Findings from the study revealed that sources of potable water supply available in Bayelsa State include rivers, streams, boreholes and wells. The most common water-related diseases associated with the level of water supply in rural communities of Bayelsa include cholera, typhoid, dysentery, skin infections, diarrhoea, and guinea worm and water-related diseases affect active participation of the community people in rural development efforts or activities by affecting the health of [1]community people, making people indisposed to community activities. It also prevents people from interacting properly with others and more strength is devoted to the search for cure than community matters. Based on the findings and conclusions from the study, it was recommended that government authorities should make adequate provision for accessible water to the community people. In addition, community education practices should include issues such as water treatment procedures and environmental sanitation activities to avoid the prevalence of water-related diseases. Finally, relevant agencies and organisations should make efforts to educate community members on the disadvantages of open defecation and the harmful effects of contaminated water as well as methods of purifying water

Keyword: Rural water supply, Health, Community development, Water-related diseases, Environmental sanitation

Introduction

Water and sanitation remain the major primary drivers of public health. Access to potable water supply and sanitation remain basic human needs that should be satisfied in adequate quantities that meet at least minimum

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health standards. Modern environmental sanitation requires a large quantity of water, particularly for sewage as well as industrial waste. Water supply and sanitation lead to welfare improvement because it is not only an important sector in its rights but is also cross-cutting affecting infant mortality, maternal mortality, nutritional values, environmental hygiene, etc. Therefore, the type of access and quantum of water supply as well as the quality of sanitation facilities available to a household or community determines the quality of life of the people and the potential for poverty alleviation.

Water is essential for all socio-economic development and for maintaining healthy ecosystems. As population increases and development calls for increased allocations of groundwater and surface water for domestic, agricultural and industrial sectors, the pressure on water resources intensifies, leading to tensions, conflicts among users, and excessive pressure on the environment. The increasing stress on freshwater resources brought about by ever-rising demand and profligate use, as well as by growing pollution worldwide, is of serious concern. Despite considerable humanitarian endeavour over the last three decades, almost 900 million people continue to suffer water scarcity (One World, 2017).

Water scarcity affects all social and economic sectors and threatens the sustainability of the natural resources base. Addressing water scarcity requires an inter-sectoral and multidisciplinary approach to managing water resources to maximize economic and social welfare equitably without compromising the sustainability of vital ecosystems (Okafor, 2020). Integration across sectors is needed. This integration needs to consider development, supply, use and demand, and to place the emphasis on people, their livelihood and the ecosystems that sustain them. It refers to the point at which the aggregate impact of all users impinges on the supply or quality of water under prevailing institutional arrangements to the extent that the demand by all sectors, including the environment, cannot be satisfied fully. Water scarcity is a relative concept and can occur at any level of supply or demand. Scarcity may be a social construct (a product of affluence, expectations and customary behaviour) or the consequence of altered supply patterns – stemming from climate change (Burne, 2019). Symptoms of water scarcity includes severe environmental degradation (including river desiccation and pollution, declining groundwater levels, and increasing problems of water allocation where some groups win at the expense of others). Adequate drinking water, sanitation, and hygiene are all essential ingredients to ensure human health. The same is true for proper wastewater management, which is a basic prerequisite for environmental health. Improving upon these services will bring economic gains to the community while also helping to build resilience given increasing climate variability. Many developing countries today are already struggling to cope with chronic water shortages and the inadequacies of their existing water infrastructure. They are also facing unprecedented population growth, rapid urbanization, and increased economic activity. According to Burne, (2019), basic needs remain unmet, and the human right to water and sanitation remains unrealized for billions of people worldwide.

Even when water is available, it is contaminated. This introduces another dimension to the issue of availability of water, which is how safe is the available water. A recent study commissioned by the World Health Organization (2019), estimates that at minimum 1.8 billion people around the globe use contaminated drinking water. This is more than twice the official figure from the WHO/UNICEF Joint Monitoring Programme of 748 million lacking access to an improved drinking water source. WHO (2019) also posited that approximately 90% of wastewater in developing countries is discharged directly into rivers, lakes, and seas. This situation leads to major negative health impacts on communities and the environment at large and goes ahead to hamper the level of community development. To realize sanitation's health benefits, and promote the country's development, there is a need to consider measures to provide community people with unhindered access to portable and safe drinkable water.

It is obvious from the foregoing that healthy community living and transformation is a product of good portable water supply and hygiene or good sanitation. Hence, there is the need to consistently and systematically examine the state of portable water supply and sanitation or hygiene at the community level in an attempt to ensure or promote healthy community living. This is important in the fight or struggle to promote community or rural transformation and development.

Statement of the Problem

Bayelsa State is surrounded by water; nevertheless, access to clean water has remained a problem despite the

abundance of water. To make matters worse, there are little efforts by government, NGOs and private entities to make clean water available to the populace. The most visible of these initiatives are those undertaken by the SDG's office which is often hardly completed. Even when completed, they do not last long. Hence most persons who can afford it tend to rely on personal boreholes or water vendors which are not well-treated for consumption. In the region, the occurrence of some waterborne diseases (Typhoid, dysentery, diarrhoea) collected in a time series between 2011 and 2018 shows that such diseases have continued to increase following the inability of the state's water corporations to extend their services to cover the entire urban areas. Thus, the people drink from unwholesome sources.

Water is essential to life and accessibility remains a crucial factor for human existence and development. Identifying factors impacting water supply will enable relevant water service providers to improve the water sector by formulating policies that will ensure accessibility and sustainability. Identifying correlates affecting health will also provide relevant health information and enable health authorities to formulate appropriate policies to carry out appropriate interventions

There are several empirical evidence showing the connection between safe water and good health. However, there seems to be little or no investigation into the role of water and health in advancing rural community development. This may be one of the reasons behind the poor attitude of authority towards the provision of safe drinkable water. It is based on this gap in the literature that this study seeks to examine the issue of rural water supply and health as correlates of community development in Bayelsa State.

Research Questions

The following research questions are raised to guide the study:

1. What are the sources of water supply available in Bayelsa State?
2. To what extent is potable water available in rural communities in Bayelsa State?
3. What are the most common water-related diseases associated with the level of water supply in rural communities of Bayelsa?
4. How do water-related diseases affect the active participation of the community people in rural development efforts or activities?
5. What steps can be taken to prevent water-related diseases in the area?

Purpose of the Study

The study is embarked upon to determine ways by which rural water supply and the health of the rural dwellers affect community development activities in Bayelsa State. In specific terms, the study seeks to:

1. find out the extent of potable water available in rural communities in Bayelsa State
2. examine the most common water-related diseases associated with the level of water supply in rural communities of Bayelsa
3. find out how water-related diseases affect the active participation of the community people in rural development efforts or activities.
4. determine steps that can be taken to prevent water-related diseases in the area

Methodology Research Design

The descriptive survey research design was employed for this study

Population of the Study

The population of this study includes three thousand eight hundred and twenty-seven (3,827) adult indigenes in six (6) communities in Bayelsa State.

Sample and Sampling Techniques

A total sample of three hundred and seventy-nine (379) respondents was used for the study. The sample was selected using a multistage random sampling procedure. In the first stage, three local governments were selected from the existing seven local governments based on the severity of the problem of water supply and sanitation or health services in the area. In the second stage, six wards were selected from the three local government areas

using a simple random sampling technique. This consists of two wards to be chosen from each of the three local government areas. Thereafter or finally, six communities which comprise two communities each from the three wards were chosen using a simple random sampling procedure. Table 1 shows the sample selected and how the sample was obtained.

Table 1 Sampled Distribution by Local Government Areas in Bayelsa State.

S/N	Sampled Local Government Areas	Sampled Districts	Sampled Communities and Population		Sampled Respondents (10%)
1	Sagbama L.G.A	Kolo, Ayama	Angalabiri	(732)	73
			Angiama	(621)	62
2	Yenagoa L.G.A	Epie-Atissa	Ogbogoro	(641)	64
		Ekpetiama	Polaku	(551)	55
3	Ogbia L.G.A	Tarakiri,	Emakalakala	(632)	63
		Kunbowei	Emayal	(650)	65
Total	**3**	**6**	**6**	**3827**	**379**

Source: Researcher's field survey (2017)

Research Instrument

The instrument for data collection was a structured questionnaire which was designed based on the research questions raised. The questionnaire is divided into two sections, A and B. Section A focuses on the demographic or personal data of the respondents such as age, sex, marital status etc. while section B contains information that borders on the issue under study.

Validity of the Instrument

The face and content validity approach was used to determine the validity of the instrument. In this case, the instrument was given to three experts. Two of them were in community development in the Department of Adult and Non-formal Education while one of them was in Measurement and Evaluation in the Faculty of Education, University of Benin for scrutiny.

Reliability of the Instrument

A test re-test reliability method was used to ascertain the reliability of the research instrument. The instrument was administered twice within two weeks on a pilot test which involved a total of thirty (30) respondents from the area under study and thereafter the responses obtained was correlated using Pearson product Moment Correlation Statistics. A correlation index of 0.71 was obtained which shows that the instrument was very reliable

Method of Data Analysis

Data analyses were done using frequency count, percentage and mean score analyses.

Results

Research Question One: To what extent is potable water available in rural communities in Bayelsa State?

Table 2: Distribution of responses on the extent to which potable water is available in rural communities in Bayelsa State

Level of Responses	Frequency	Percentage
High Extent	109	28.76

Moderately	200	52.77
Low Extent	70	18.47
Total	**379**	**100**

In Table 2, it can be seen that 28.76% of the sampled respondents indicated that the extent to which potable water is available in rural communities in Bayelsa State is high, 52.77% of them stated that portable water was moderately available while 18.47% opined that portable water was poorly available. This means that portable water was moderately available.

Research Question Two: What are the most common water-related diseases associated with the level of water supply in rural communities of Bayelsa?

Table 3: Distribution of responses on the most common water-related diseases associated with the level of water supply in rural communities of Bayelsa

S/N	Responses	Weighted Mean	Mean Score	Remark
1.	Cholera,	1181	3.11	Accepted
2.	Typhoid,	1151	3.04	Accepted
3.	Dysentery	1091	2.87	Accepted
4.	Skin infections	997	2.63	Accepted
5.	Eye infections	871	2.29	Not Accepted
6.	Diarrhea	1051	2.77	Accepted
7.	Infectious hepatitis	809	2.13	Not Accepted
8.	Guinea Worm	1001	2.64	Accepted
9.	Nausea	509	1.34	Not Accepted

Data in Table 3 revealed that items 1, 2, 3, 4, 6 and 8 met the mean score standard and so were accepted while items 5, 7 and 9 were not accepted. This means that the respondents thought that the most common water-related diseases associated with the level of water supply in rural communities of Bayelsa include cholera, typhoid, dysentery, skin infections, diarrhoea, and guinea worm.

Research Question Three: How do water-related diseases affect the active participation of the community people in rural development efforts or activities?

Table 4: Distribution of responses on how water-related diseases affect the active participation of the community people in rural development efforts or activities

S/N	Responses	Weighted	Mean Score	Remark
1.	Contaminated water affects the health	1051	2.77	Accepted

of community people			
2. Water-related diseases make people indisposed to community activities	982	2.59	Accepted
3. People will not be able to interact properly with others	998	2.63	Accepted
4. More strength is devoted to search for cure than community matters	1151	3.04	Accepted

Analysis of data in Table 5 shows that all the items met the mean score and were accepted. This means the respondents thought that water-related diseases affect the active participation of the community people in rural development efforts or activities by affecting the health of community people, making people indisposed to community activities, preventing People from interacting properly with others and that More strength is devoted to searching for cure than community matters.

Research Question Four: What steps can be taken to prevent water-related diseases in the area?

Table 5: Distribution of response on the steps that can be taken to prevent water-related diseases in the area

S/N	Responses	Weighted Mean	Mean Score	Remark
1.	The community people should be taught methods of water purification	989	2.61	Accepted
2.	Community members should stop disposing of waste in streams	991	2.61	Accepted
3.	Open defecation should be discouraged	983	2.59	Accepted
4.	The community people should be educated on the harmful effects of contaminated water.	1079	2.85	Accepted

Analysis of data in Table 5 shows that all the items met the mean score and were accepted. This means the respondents thought that the community people should be taught methods of water purification, community members should stop disposing of waste in streams, open defecation should be discouraged and the community people should be educated on the harmful effects of contaminated water.

Discussion of Results

The analysis of data collected based on all the issues raised and examined in the course of this study has revealed several findings. The findings are quite instructive and embracing. In the first place, findings revealed that portable water was moderately available. In support of this finding, Lee, & Schwab, (2018) opined that many existing water distribution systems in rural communities are inefficient and unmaintained and lead to the overall decrease in water access. The deterioration of the old pipes for instance leads to increases in water loss, which in turn leads to decreases in the availability. Also, many pipe systems designed for continuous, or constant water flow are used for intermittent water flow instead. This finding however negates that of Marine (2019), who studied the level of availability of potable water for rural dwellers and found that 80 per cent of the people that lack access to potable water live in rural areas.

Secondly, findings showed that the most common water-related diseases associated with the level of water supply in rural communities of Bayelsa include cholera, typhoid, dysentery, skin infections, diarrhoea, and guinea worm. In line with this finding, Lee & Schweb (2018) reported that some of the organisms remarkable for their role in the outbreak of waterborne disease include Cholera, Amoebic dysentery, Bacillary dysentery (shigellosis), Cryptosporidiosis, Typhoid, Giardiasis, Paratyphoid, Balantidiasis, Salmonellosis, Campylobacter enteritis, Rotavirus diarrhoea, coli diarrhoea, Hepatitis A, Leptospirosis and Poliomyelitis.

Furthermore, it was discovered that water-related diseases affect the active participation of the community people in rural development efforts or activities by affecting the health of community people, making people indisposed to community activities, preventing people from interacting properly with others and that more strength is devoted to searching for cure than community matters. This finding is in consonant with that of Okafor (2020), who found that fresh portable water can reduce the use of medication and prevent illness. It is good healthcare and dietary practice and the right thing to do, providing fresh water also demonstrates the care of patients in a way that relatives and friends can see and enjoy. Similarly, Slukhai, (2021), opined that encouraging the drinking of fresh water makes good economic sense for healthcare professionals on tight budgets. By helping to reduce incidences of some of the more common ailments, better hydration improves well-being and can reduce the volumes of medicines that are required It can also take away many hours of extra care time associated with illnesses and remove some of the higher cost professional involvement needed to prescribe and administer treatment.

Finally, on the steps that can be taken to prevent water-related diseases in the area findings revealed that the community people should be taught methods of water purification, community members should stop disposing of waste in streams, open defecation should be discouraged and the community people should be educated on the harmful effects of contaminated water. In support of this finding, Diwe (2021) opined that authorities should make adequate provisions for portable water in line with properly educating the people on proper sanitation and water treatment practices to avoid frequent illness due to waterborne diseases.

Conclusion

Based on the analysis of data obtained and results that emanated from it, the researcher concluded that portable water was moderately available which brings about water-borne diseases such as cholera, typhoid, dysentery, skin infections, diarrhoea, and guinea worm. These diseases affect the active participation of the community people in rural development efforts or activities by affecting the health of community people, making people indisposed to

community activities, preventing People from interacting properly with others and that more strength is devoted to the search for cure than community matters. Steps that can be taken to prevent water-related diseases as perceived by community members include enlightenment on water purifications, curbing waste disposal on streams and open defecation and educating communities on the harmful effects of contaminated water

Recommendations

Based on the conclusions from the study, the following recommendations are offered:

1 Clean water should be made available in every community in other to improve the health of the community dwellers.

2 Community education practices should include issues such as water treatment procedures and environmental sanitation activities to avoid the prevalence of water-related diseases.

3 Health centers should be brought closer to the people and also equipped to handle health issues in communities to reduce the breakdown of community activities due to ill health.

4 Relevant agencies and organizations should make efforts to educate community members on the disadvantages of open defecation and the harmful effects of contaminated water as well as methods of purifying water.

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