

Developmental Challenges of Water and Sanitation Among Residents in Rural Communities in Nigeria

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Abstract

The study focused on developmental challenges of water and Sanitation among Residents in Rural Communities in Nigeria. This research aimed at determining factors affecting quality portable water among residence in rural communities in Nigeria, to determine challenges facing water and sanitation among residence in rural communities in Nigeria and to find out ways of improving availability of portable water and sanitation among communities in Nigeria. Water as a concept is most essential for human existence. Sanitation deals with public health related conditions which are linked to clean water that is meant for drinking. Factors affecting quality portable water include: Climate change, natural disasters, geological factors and soil matrix. The researcher finds out challenges facing water and sanitation include: Water quality in distribution system, water scarcity, irrigation practices, low-cost sanitation approaches and levels of inequality in access to safe water and sanitation. It was concluded that water is regarded as a universal solvent meant to serve the needs of the general population. It was recommended that government of all nations are to make adequate provision for safe portable water in rural communities.

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Background to the Study

Water is regarded as a universal solvent that is meant to meet the needs of the general population especially those who live in rural communities. Water is something that can also serve negative purposes when it is not safe especially when it's very harsh to the skin and is also capable of causing cholera outbreak when those living in rural communities do not have access to portable water supply (Pimentel, Berger & Filiberto, 2004). We found out that water supply is quite poor in most communities in Nigeria and other parts of Africa which can be attributed to poor funding by government which we all know in Nigeria everything is boiled down to politics that has not helped in any way and is also a contributory factor whereby there are high chances of disease outbreaks which has led to thousands of morbidities and mortality rates (Pimentel, Berger and Filiberto, 2004).

Pollution of our streams and rivers has solely contributed to reasons why the health of so many individuals seem not to record significant improvement which is because of their negative attitudes due to incessant refuse dumping and other vices (Pimentel et al; 2004). Rainfall that is an easiest way of getting enough water for storage in many households has provided great relief in times of water scarcity is quite unfortunately polluted with some elements of heavy metals mixed with dusts from our roofing sheets which has continued to hamper their health because of the absence of proper water treatment by boiling in order to kill all the bacteria's that make it safe for drinking and other domestic purposes (Cepel and Ergun, 2003). Sanitation is pictured as a process whereby surroundings are kept clean at all times and sanitation should first of all start from the corners of our individual homes which is a way of riding our environment of all things that capable of having adverse negative effects on our health (WHO, 2018). This has served as a basis whereby essential efforts are to be made in order to solve the problem of proper sanitation and availability of portable water supply which is another way of making sure that our environment is being habitable for all to breathe good air that guarantees everyone the longevity of life (WHO, 2018).

Proper and regular sanitation activities go a long way in eliminating air, water, land and soil pollution in the environment which portray sanitation more essential (Singh, 2008). General improvement in one or more ways is by making sure that there are waste bins around our houses as well as incinerators which is a way of properly dumping refuse most especially gutters within our streets seriously need evacuation of waste causing offensive odour capable of hampering the health of residents within residential areas (Merchant, Jones, Kiure, Kupka and Fitz Maurice, 2003). Diseases which appear to be associated with poor sanitation and hygiene can be tied down to the non-challant attitudes and negligence of individuals who are fond of not cleaning their corners as well as washing their personal belongings which include: Clothing, towels and beddings giving room to skin infections as well as not taking their bath regularly and brushing their teeth is simply linked to their hygiene status (Pruss- Ustun, Boss, Gore and Bartram, 2008). At any specific given period, it has been ascertained that half of the urban populace of Africa, Asia and Latin America have recorded significant level of disease outbreak that are associated with poor sanitation hygiene and availability of portable water supply (WHO, 1999).

The researcher observed that potable water supply posed to be a challenge among residence in rural communities in Nigeria which is attributed to the absence of community participation and it also boiled down to the negligent of the Nigeria government which has contributed to cholera outbreak and deaths. The researcher noticed that individuals are in the habit of defecating inside river, streams and other sources causing water pollution and gradually harming the health of the community. This research aimed at determining factors affecting quality portable water among residence in rural communities in Nigeria, to determine challenges facing water and sanitation among residence in rural communities in Nigeria and to find out ways of improving availability of portable water and sanitation among communities in Nigeria. The questions that cut across researcher's mind are: what are the factors affecting quality portable water among residence in rural communities in Nigeria, what are the challenges facing water and sanitation among residence in rural communities in Nigeria and what is the way of improving availability of portable water and sanitation among communities in Nigeria. This study will enhance existing literature on developmental challenges of water and sanitation among residents in rural communities in Nigeria and contribute to academic debates on the study. Its findings may inform rural and urban communities in Nigeria, Nigerian government, and help identify the challenges of water and sanitation.

Conceptual Framework

Concept of Water

Water as a concept is the most essential for human existence in every continent of the world for without any element of water in the human body we find out that there is no life at all, which in turn is used for varying degree of purposes including that of agriculture and irrigation purpose (Pringle, 2003). But the case here is that most Nigerian and other African communities have continued to suffer cholera outbreaks due to the unavailability of safe and portable water for drinking, cooking, agricultural and industrial purposes in which it has adversely affected healthcare centers in rural settings making it very difficult for health workers to carry out their duties that has led to high rates of mortalities (Patterson, 2000). Water is one of the most essential ingredients that we cannot do without which includes plants and animals as well as the cultivation of crops which in turn reduces the incidence of skin diseases and is also one of the sustainable development goals (SDG, s) (Adukia, 2014).

It is well accepted that globally the use of improved drinking water sources increased from 76% in the year 1990 to 91% in the year 2015 (WHO and UNICEF, 2015). Water supplies have significantly recorded regional collapse for relative progress between the year 1990 and in the year 2015 which is a better way of showing some progress in adequate water supply but a lot still need to be done in a bid to improve the health status of the general population across the African continents (WHO and UNICEF, 2012). Research has proven that water supply sources have tremendously improved including the piped water do not serve as a guarantee that the safety or continuity of the supply of water in African communities in which a lot still needs to be put in for proper boreholes for there to be a significant sustainable growth and development (Ond, Lobuglio and Bartram, 2012).

Concept of Sanitation

Sanitation is one of the vital aspects of our daily lives which need to be taken very seriously for the good of our well-being and overall health in order to be freed from all forms of diseases and infections which include: Cholera outbreak and malaria (WHO, UNICEF and Joint Monitoring programme (JMP), 2017). Sanitation simply deals with public health related conditions which is linked to clean water meant for drinking and other industrial and domestic purposes including that of treatment and the disposal of human feces (Oxford Dictionary, 2017). Sanitation can also be seen as a process of preventing human contact with feces which is attributed to constant hand washing with soap and it aims at protecting the human health by making adequate provision for a clean and safe environment that will help in the reduction of disease transmission particularly through the fecal oral route (Oxford Dictionary, 2017).

WHO (2017) had earlier reported that the range or frequency at which sanitation technologies exist because of the pressure of the soil content that caused degradation on the environment in which its technological advancements have called for urgent health education intervention measures to put a permanent end of the crisis. Poor sanitation practices can as well lead to many other diseases which can be easily passed from one community to another most especially those who live in lowly areas where sanitation practices are not present such as ascaris i.e., it is a type of intestinal worm infection or helminthiasis, cholera, hepatitis, polio, schistosomiasis and trachoma (WHO, 2017). Sanitation and cleanliness go hand in hand for the good health of all and socio - economic development (Ubuntu, 2018). The availability of facilities and services for proper disposal of human urine and excreta is simply linked to environmental hygiene but areas filled with human excreta need to be kept clean at all times in order to keep flies and other vectors away (UNICEF and WHO, 2012). Sanitation is known as the ingredients that give birth to the cleanliness of the environment that has proven to be one of the greatest qualities of life in homes and communities which is a key reason why there is a very high rate of poor environmental sanitation (Harvery, 2008).

21st Century

The 21st century of today simply refers to the current globalization of technological advancements in our day to day lives which is also expected that the issues of water and sanitation are closely taken very seriously in order to enhance improvement on the health of individuals (Bialik and Fadel, 2015). It also has to do with the challenges of innovation when it comes to practicing environmental hygiene within the confines of the environment in which we live, also in a bid to search for ways in which we are better able to generate adequate portable water supply in the face of areas suffering from accessing quality water for the good health of all (Craig, 2012). The era of the 21st century could be approached by thinking critically, problem solving and delivery of health information i.e. passing on health messages on adopting positive health in the area of making use of water free from all forms of contaminants and on the other hand making sure that individuals clean their environment at all times in order to avoid varying degrees of diseases that hamper our lifespan (Bialic & Fadel, 2015; Cansoy, 2018; Geisinger, 2016; Kaufman, 2013; Larson & Miller, 2011; Partnership for 21st Century Skills, 2010).

Developmental Challenges

Developmental challenges are regarded as processes where the required resources are unavailable for problem solving (Wawira and Susan, 2019). Community participation here is seriously lacking simply because of negligence on the part of government authorities especially when it involves their health and well-being in the area of adequate water supply and sanitation exercises in which there have been increased rates of outbreak of diseases and deaths as a result of this menace which needs health development is in the area of sensitization programmes on awareness campaign to keep our corners clean at all times which is the leading causes of illnesses and in the area of portable water supply which we know we are to adopt more collaborative partners from other nations in order to improve water quality for safe consumption and the promotion of human health (Sung, 2014).

Methodology

The methodology approach employed quantitative research method. The quantitative method encompasses secondary data gathering through literature review and analysis of the collected data through statistical analysis. Sauders et al. (2012) opined that quantitative is a synonym being used for secondary or primary data gathering technique and/or analysis method involving numeric data. This particular research builds on existing researches which investigated the developmental challenges of water and sanitation among residents in rural communities in Nigeria. The reliability of quantitative data collected was ensured by collecting them directly from the database and annual reports of the Ministry of water resources and Nigeria Ministry of Health database. Overall, the research employed time series analysis to analyse the existing quantitative data.

Research Findings and Analysis

Factors Affecting Quality Portable Water

Water supply in the 21st century has continued to be a challenge to individuals most especially those who reside in rural communities across the African continents due to the supply which has negatively affected their health. Hereby, the following factors include:

- 1. Climate Change:** - Climate change does not only affect the ecological, hydrological and biological systems it also negatively affects the sources of livelihood and the economy which is tied down to their socio-economic status in which we all know that not everyone has a stable income which will give them the good quality of health that they long for but on this note we have the higher class, middle class and the lower class individuals in our society (Nan, Bao-Hui and Chum-Kun, 2011). Moreso, evapotranspiration simply involves other climatic factors that comprise of heat exchange, radiation and wind dynamics which all affects the water quantity and quality sources (Scardina, 2004).
- 2. Natural Disasters:-** With the presence of the large chunk of wastes within the confines of the environment which has continually caused natural disasters and it has in one way or the other adversely affected the health of populations across Africa and the entire globe which has caused severe scarcity of food, the following disasters include: Volcanic eruptions, earth quakes, hurricanes, tornados, flooding and Tsunami that hugely contributed to the challenges of water shortage as well as their

poor status of health (PAHO, 1998). It has been on account that about 5000 natural disasters that concerns water related injuries were put on record from the year 2001 to 2018 worldwide which represents 73.9% of natural disasters and about 1.7 trillion USD in the damage of economies and a sum of 300,000 deaths and injuries were caused by water related disasters which has given rise to the incessant skin infection because of water that has been contaminated over time and also negatively affected their quality of health rendering them as internally displaced persons (IDP,s) (Lee, Perera, Glickman & Taing, 2020).

3. **Geological Factors:-** Geological factors can also depend on the soil quality in the ground which is a sure way of knowing whether the ground where water is been drilled using drilling machines for boreholes are safe for human consumption i.e. whether it will cause harm to their health or not in which geological factors include the following soil types, topography slope, plant roots, dissolution of water with minerals/soils and radioactive decay of elements that are very important aspects for water resource quality (Schoonover and Crim, 2015). Water is known as a solvent which is better able to interact with organic and various types of bedrocks (Zaharescu et al; 2019). Radioactive contamination emanates from contamination once radioactive materials are currently available or deposited within the confines of the environment in a way that the radioactive decay has been deposited into the environment which gradually affects the health of the entire population in which radioactive decay can be detrimental to the environment through emissions of toxic ionizing radiation such as beta or alpha particles, gamma rays or neutrons (Wirt, 1994).
4. **Soil or Sediment Matrix: -** All the parental geological features have joined alongside the weathering impacts of change in climatic conditions which gradually involves the soil content level that best describes the grain, size, pore spaces and the existence of confined beds (Fookes, 1997). The state at which the soil texture solely determines the quality of water for populations across the African continent especially in the area of water consumption and whether it is safe for their health or not appears to be a serious concern simply because of the numerous cholera outbreak that has erupted over time which is also caused by pollution of water sources (Wali et.al; 2019).

Challenges Facing water and Sanitation

Everyone is faced with varying degrees of challenges as it regards to water supply and sanitation which is because of the unavailability of quality portable water supply and poor sanitation practices that negatively affects the health of individuals. The following challenges include:

1. **Water Quality in Distribution System:-** Provisions that have been made for boreholes have in one way or the other been associated with how to improve quality water supply for the safe health of the entire population and better growth and sustainability that has equally given birth to proper personal hygiene which is another way supposed to enhance the reduction of disease but today the reverse is the case which is because of negligence on the part of government of all nations especially the Nigerian government (Craun and Calderon, 2001). Distribution of water systems that were associated with contamination was the most essential cause of outbreak of

diseases in many rural communities which is caused either by open defecation and open dumping of refuse close to drinking water sources (Craun and Calderon, 2001).

2. **Water Scarcity:** - One of the leading causes of deaths as a result of drought in the northern part of Nigeria is simply caused by the scarcity of water supply in the areas which has solely contributed to poor primary health care services in most part of the world most especially where there is an absence of rainfall that has also affected the health of individuals of all ages (Howard et al, 2003). Water use in most advanced countries of the world have risen globally due to the growth expansion of diverse populations that demand both agriculture and irrigation for man's benefit but as we have it today water scarcity has negatively affected both agriculture and irrigation which has contributed to food shortages that contain certain nutrients that the body requires but because all these foods are lacking it has added to the number of malnourished patients that are on ground and have worsened their health conditions (Postel, 2000).
3. **Irrigation Practices:** - With the agricultural level we have today, it has made it easy for irrigation practices to thrive for man's growth and sustainability but it is a challenge because low financial resources to fund the agricultural scheme which is attributed to the absence of farming equipment due to insufficient manpower (SIWI, 2004).
4. **Low-Cost Sanitation Approaches:-** The rise in poor approaches when it comes to quality water and sanitation happens to be very discouraging due to the negligence of individuals especially in the areas of sanitation i.e. right from the corners of their immediate surroundings, you find out that there are dust particles as well as sachet water wraps and that of biscuits in which as time goes on we discover that in the environment it attracts flies and in the long run those dusty areas triggers sneezing which gradually leads to cold and from there it leads to illness (UNICEF et al, 2004). Sanitation is usually done in a dry way in areas where there is high level of water scarcity which makes it very difficult for sanitation units' carryout their jobs efficiently for everyone to breathe good air for the promotion of their health and prolonged lifespan (Winblad et al, 2004).
5. **Levels of Inequity in access to safe water and Sanitation:-** Levels of inequity to access to clean and portable water for all has continued to linger because of financial constraints in order to drill boreholes for communities to get water into their homes in which this menace has led to cholera outbreak which has resulted to water pollution through contamination from heavy metals has led to so many illnesses and deaths in the African setting which is also attributed to the negligence of government authorities (UNICEF et al, 2004). Ministries of water resources and environment have not done adequate monitoring exercise to areas in order for them to analyze the root causes in areas where poor access to water and why there is poor sanitation practices to seek ways of bringing lasting solution to the challenges of people living in such areas (Blackely et al, 2005).

Ways of improving availability of portable water and sanitation

There is a sense of urgency to make available portable water supply and thorough sanitation practices for people living in vulnerable areas. The following ways include:

1. **Safe and Affordable Drinking Water:** - There is a need to provide safe drinking water to individuals so that it enhances their longevity of life and improve their health status free from contamination of pathogens.
2. **End open Defecation and provide access to Sanitation and Hygiene:** - Another way of ensuring good water sources is to as much as possible avoid open defecation which is also a way of encouraging good environmental hygiene for all in order to avoid cholera outbreak.
3. **Expand water and Sanitation support to Developing Countries:** - It is necessary for all stakeholders to play their roles in the expansion of water and sanitation support to other developing countries so as to reduce the occurrence of illness and diseases.
4. **Support local Engagement in water and Sanitation Management:** - Support to local engagement in water and sanitation management is another way of providing quality health to rural communities so as to reduce the alarming rates of mortalities which is another way of providing sustainable growth and development.

Conclusion

Water is regarded as a universal solvent meant to serve the needs of the general population especially those who live in rural communities. Water is something that can also serve negative purposes when does not appear safe for drinking and especially when it is harsh to the skin which is capable of causing skin infections and cholera outbreak.

Recommendation

Based on the conclusions, the following recommendations were made:

1. Government of all nations are to make adequate provision for safe portable water in rural areas.
2. All stakeholders have a responsibility of making sure that all corners of their surroundings are neat at all times.
3. Ministries of environment have a role to play in the area of ensuring that regular sanitation practices are enforced in order for all to live in a conducive environment.
4. Ministries of water resources are to make sure that water is available in vulnerable areas in order to reduce the outbreak of cholera.

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