The Perception of Ubeji Community Residents on the Quality and Effect of Ubeji River Water Quality for Domestic Use

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Abstract

This study investigates households' perception on the quality of water used for drinking and domestic purpose in residents living around Ubeji River, Warri South Local Government Area of Delta State, To achieve this a total of 564 questionnaires were administered to households in 3 strata's within the study area. The data for this research were collected and analyzed using descriptive statistics in the form of percentages and presented in tables and graphs. The result obtained revealed that the major sources of water used for drinking and domestic purpose were 53% Ubeji River in strata 1, 61% bored holes in strata 2 and 100% boreholes in strata 3. Despite the high level of education and awareness 89% of the respondents noted that the quality of water was at least good while 25.6% rated it poor. The respondents in all 3 strata's all claimed to have been affected by malaria, diarrhea, typhoid and catarrh at one time or the other with malaria (58%) having the highest prevalence and cholera (1%) having the least prevalence amongst the Ubeji residents. The respondents response were tested with ANOVA at 5% significant value and the results obtained revealed that there is no significant difference in the mean of the incidence of water related illnesses on the respondents within the 3 strata's under investigation. The study further recommends that the Local Government, State and Federal Government should be engaged in routine immunization programs of the vulnerable group of the population. This will ensure improved health and increase the resistance to contacting water related diseases. The Local Health Authority and the National Orientation Agency should set up an aggressive health education and enlightenment campaign in the Ubeji community. This will encourage the residents to inculcate a high level of personal and domestic hygiene and obtain their drinking and domestic water from a reliable source.

Introduction

When effluents are discharged into the environment, plant and animal communities may also be directly or indirectly affected (Olajire, 2014). Such changes may affect the health, growth, change in habitat, food and nutrient supplies, breeding areas, migration routes, vulnerability to predators or changes in reproduction patterns, which may then have a primary or secondary effect on the environment. (Andrew & Michael, 2009; Trierweiler, 2010; The Heinz Center, 2012). Reports have shown that water pollution by oil and gas exploration and exploitation activities have recorded great danger to wildlife especially seabirds.

According to Olalekan, Oladipupo, Habeeb and Oluwaseun (2012), as central as the river is to human activities, it is also a major site for waste deposits of all kinds, hence serving as a source of pollution and inaccessibility to safe water to dwellers in most developing countries. Idise, Ameh, Yakubu and Okuofu (2013) investigated the impact of refinery effluents on water quality of Romi Stream in Kaduna State Nigeria, revealed that the discharge of refinery effluents impacted negatively on the water quality of the receiving streams which is a source of water for drinking and irrigation. Marcus and Ekpete (2014), examined the impact of discharged process wastewater from an oil refinery on the physicochemical quality of Ekerekana Ama River in Rivers State Nigeria, and their findings revealed a significant concentration of process water in both sediments and water, and an increased toxicity burden on the entire ecosystem within the area.

Perception is mans predominant form of cognitive contact with his or her environment, and is of seminal importance when understanding behavior (Efron, 1969). Therefore a detailed understanding of how individuals perceive and behave, becomes imperative for policymakers and researchers, especially the ones seeking solutions that require behavioral change to manage natural resources (Larson et al., 2009; Hu & Morton, 2011).

The provision of a good environment and quality water in many part of the world especially developing countries has become an issue of serious concern and an unpleasant reality and Nigeria is not an exception. Morgan (1990) and Ofozie (2003) reported that adequate supply of a good environment and affordable water of suitable quality makes a major contribution to economic development of nations and reduces the risk of outbreak of diseases. The effect of lack of access to adequate portable water supply and safe environment cannot be overemphasized. Ojeifo & Kadiri (2008) reported that drinking water from polluted rivers is capable of affecting the health of individuals and communities. This paper, therefore, seeks to examine the Ubeji Community Residents Perception on the Effect of Ubeji River Water Quality for Domestic Use.

Materials and Methods
The Study Area

Ubeji community is located in Warri South Local Government Area of Delta State, Nigeria. Ubeji is situated between latitudes 5°34'29" and 5°34'21 orth of the Equator and longitudes 5°41'30" and 5°42'02" east of the Greenwich meridian. Ubeji covers a land area of $16km^2$ (Ministry of Land and Survey, Warri office 2001). The annual rainfall is averaged 2800mm with a double-peak at June/July and September which are separated by a relatively dry period in August. Ubeji community is traversed by numerous small dentric drainage pattern draining into River Ubeji. This flat and low relief area often encourage flooding after rain especially during the wet season. Petty trading, farming and fishing are the main stay of the majority of the inhabitants of Ubeji. Other activities are small scale manufacturing. The population of Ubeji community is projected at 2.8% geometric growth rate to reach 28, 168 by the end of the year 2024 comprising of Urhobos, Ijaws and the Itsekiris as the largest ethnic group.

Sample frame of study area

A total of 564 questionnaires (2.0% of the projected population) was divided equally into the 3 strata's (188) and systematically administered into the 3 strata's identified namely;

Stratum 1; Houses located within 20 metres from the river (having direct access to the river).

Stratum 2; Houses located 20-40 metres from the river (having partial access to the river).

Stratum 3; Houses located 40 metres and beyond from the river (having no access or interaction with the river).

The sampled number of household in strata 1, 2 and 3 were 392, 578 and 411 respectively. Each stratum was divided by the sample size of 188 to obtain 3, 2 and 3 as the intervals at which the questionnaires were between the households.

Methods of data presentation and analysis

Tables and charts were used to present and discuss the results of the finding. ANOVA was used to test the hypothesis formulated, which states that there are no significant difference in the incidence of water related diseases between the inhabitants of the 3 strata's identified in Ubeji community.

Result and Discussion
Results

From the questionnaire distributed the percentage retrieval from strata 1, 2 and 3 were 50.5%, 44.7% and 25.5% respectively. The gender of the respondents at strata 1, male 31and female 64, strata 2, male 34 and female 50 and in strata 3 male 16 and female 32. The majority of respondents in strata 1 were within the age group 41-50 (42%) and the minority was those with age 60 and above (3%). In strata 2, the majority was within the age group 41-50 (45%), and the minority was those within the age group 21-30 (5%). And in strata 3, the majority of the respondents were within the age group 41-50 (54%), and the minority was those with age 60 and above (8%). From the results obtained in strata 1, findings revealed that 6% of the respondents have no formal education, 13% had primary education while 54% and 27% had secondary and tertiary education respectively. Similarly in strata 2, 2.5% of the respondents have no formal education, 2% had primary education while 26% and 67% had secondary and tertiary education respectively. While in strata 3, 100% of the respondents claimed to have a tertiary form of education.

The sampled populations were asked how long they have lived in Ubeji community and the results shows that 29% of respondents in strata 1 have lived in the area for at least 11-15 years, this figure represents the majority. While those that have lived for 1-5 years represented 13%, 6-10 years (28%), 16-20 years (13%), 21-25 years (9%), 26-30 years (4%) and those that have lived for more than 30 years (4%). Similarly in strata 2, the results shows that 38% of respondents have lived in the area for at least 6-10 years and 38% have lived for 11-15 years. This result implies that 78% of the respondents in strata 2 have lived in the area for 6-15 years, this figure represent the majority. While those that have lived for 1-5 years represented 7%, 16-20 years (5%), 21-25 years (7%) and 26-30 years (5%). Finally in strata 3, the results reveal that 48% of respondents have lived in the area for at least 11-15 years, this figure represents the majority. While those that have lived for 6-10 years (38%), 16-20 years (6%), 21-25 years (4%) and 26-30 years (4%).

Sources	Boreholes		Public Tap		Wells		Ubeji River Water	
	No of respondents	%	No of respondents	%	No of respondents	%	No of respondents	%
Stratum 1	0	0	0	0	42	49	53	51
Stratum 2	51	61	22	26	11	13	0	0
Stratum 3	48	100	0	0	0	0	0	0

Table 1: Sources of Water for Domestic Use in Ubeji Community. *Source*: Field Survey, 2024.

From table 1 49% and 51% in strata 1 claimed to use well and Ubeji River water respectively for domestic purposes. Response in strata 2, 61%, 26% and 13% claim to use borehole, public tap and well water respectively for their domestic use. Similarly in strata 3, 100% of the respondents claimed to all use borehole water as their source of water for domestic purposes.
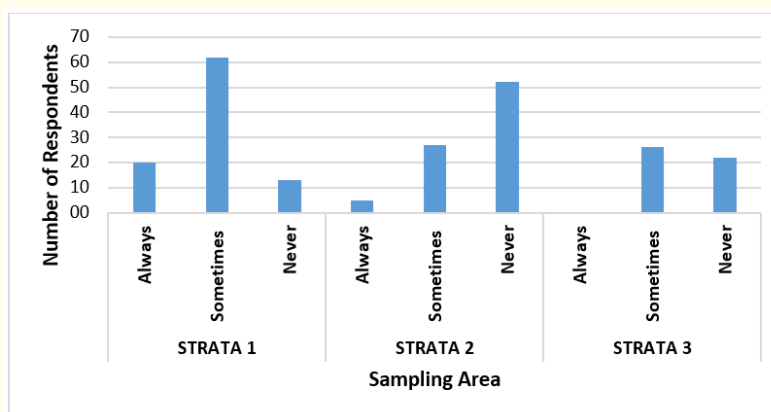
The result of the respondent's perception on quality of water for domestic use is presented in Figure 1.
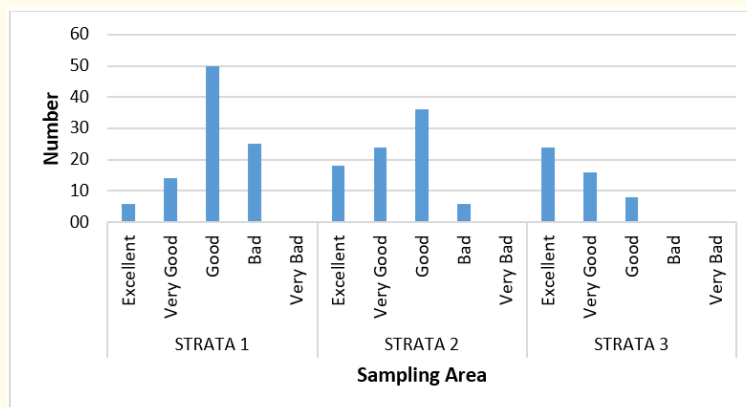
Figure 1: Respondents Perception on Quality of Water for Domestic Use.

The response from residents in strata 1 shows that 6% of the respondents claimed that the quality of water was excellent. While 15% reported the water to be very good, 53% reported it was good, and 26% reported it was bad. Reponses from strata 2 shows that 21% of the respondents claimed that the quality of water was excellent. While 29% reported the water to be very good, 43% reported it was good, and 7% reported it was bad. The responses obtained from strata 3, shows that 50% of the respondents claimed that the quality of water was excellent, 33% claimed the water was very good and 17% claimed that the water was good. This information shows that 74%, 93% and 100% in strata 1, 2 and 3 respectively have a perception that the water quality is at least good for domestic use. This implies that the majority of the respondents had confidence of the various sources of water as shown in Figure 1.

The result of the respondent's perception on quality of water for domestic use is presented in Figure 2.

Figure 2: Respondents Perception on Water Treatment.

Figure 2, presents the respondent's perception of water treatment before use. 21% of the respondents in strata 1 claimed that they always treat the water before drinking and domestic use. While 65% claimed that they treat the water sometimes and 14% claimed that they never treat their water before drinking and domestic use. Reponses from residents in strata 2 shows that 6% of the respondents claimed that they always treat their water before drinking and domestic use. While 32% claimed that they treat the water sometimes and 52% claimed that they never treat the water before domestic use. The responses obtained from residents in strata 3, shows that 54% of the respondents claimed that they treat their water sometimes before domestic use, while 46% claimed that they never treat their water before domestic use. These findings shows that the majority the respondents in all 3 stratas though having confidence in the source of their water, yet are doubtful on the quality of water they use for drinking and domestic purpose.

Common Illness of the Inhabitants of Ubeji Community

Figure 3, presents the common type's illness infected by the inhabitants living within the 3 strata's in Ubeji community.

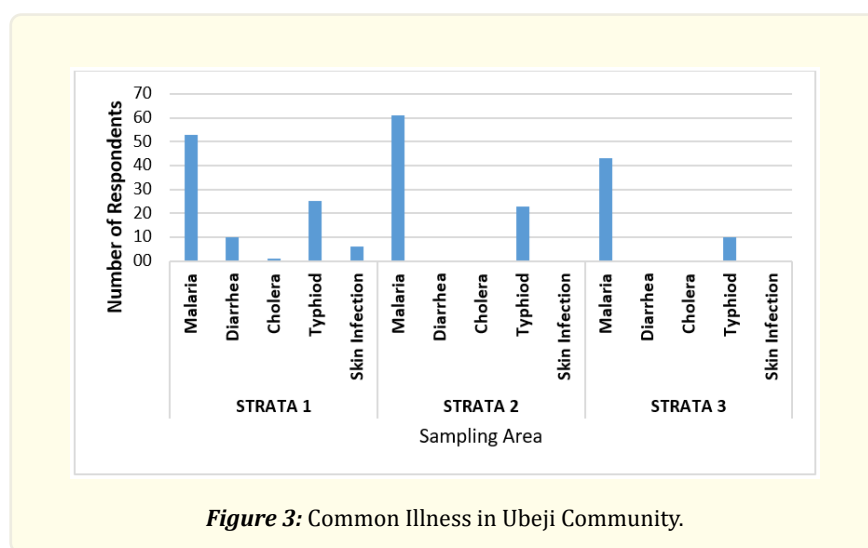*Figure 3:* Common Illness in Ubeji Community.

Figure 3 shows that 56%, 11%, 1%, 26% and 6% of the respondents in strata 1 identified malaria, diarrhea, cholera, typhoid and skin infection respectively as the most common infection known to them. The respondents were further asked about the type of illness they suffered from in the last three months. The respondents in strata 1 revealed that 48% suffered from malaria, 15% suffered from diarrhea, 28% suffered from typhoid and 9% suffered from catarrh. Respondents from strata 2 claimed that malaria and typhoid were the common illness suffered by the respondents which accounted for 73% and 27% respectively. The respondents further claimed that 46% suffered from malaria, 11% suffered from diarrhea, 33% suffered from typhoid and 11% suffered from catarrh within the last 3 months. The respondents in strata 3 claimed that the most common type of illness were malaria and typhoid which accounted for 90% and 10% respectively. The respondents in strata 3 claimed that in the last 3 months 58% have suffered from malaria, 15% have suffered from typhoid and 15% have suffered from catarrh, while 18% of the respondents in strata 3 claimed that they have not suffered from any of the kind of illness listed in the last 3 months.

Figure 4 presents the comparison of percentage of occurrence of illness suffered by respondents in the 3 strata sampled within Ubeji community.
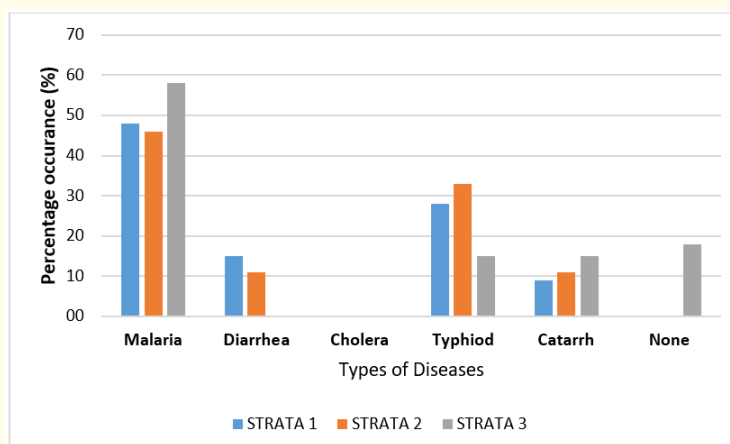
Figure 4: Percentage Comparison of Illness Occurrence.

Fig 4 reveals that strata 3 had more incidence of malaria as reported by the respondents accounting for 58% of the respondents. Respondents in strata 1 and 2 came next with 48% and 46% respectively. All responses from all strata's with the exception of strata 3 claimed to have suffered from diarrhea cases, with strata's 1 and 2 reporting incidence of 15% and 11% respectively. Responses from respondents in strata 2 reported more incidence of typhoid with incidence rate of 33% as compared to reports by the respondents from strata 1 and 3 with incidence rate of 28% and 15% respectively. Responses from respondents in all 3 strata's all reported incidence of catarrh with incidence rate of 9%, 11% and 15% for strata 1, 2 and 3 respectively. Responses from respondents in strata 1 and 2 claimed that they have suffered from one or more of the listed water related disease at one point in time or the other. While only 18% of respondents in strata 3 claimed that they have not suffered from any of the water related diseases listed in the past three months prior the study period.

Statistical Decision

The incidence of diseases investigated was subjected to ANOVA's analysis and the result proves that F_{cal} (0.004500973) is less than the *F*-critical (3.68232) at 0.05 level of significance. It can thus be concluded that the hypothesis which states that there is no significant difference in the incidence of water related diseases across the 3 strata's in Ubeji Community was accepted.

Discussion

From the results obtained the majority of the respondent in strata's 1, 2 and 3 were female which recorded 67%, 60% and 67% respectively. The high number of female respondents in all strata's was attributed to the fact that most of the female respondents were either house wives or those engaged in petty trading and were always within their homes. The lower frequency in male may be attributed to the fact that most men are within the working force and may have moved out during the time of survey in order to earn a living this is consistent with Ogunbode and Ifabiyi (2005) who reported that women are primarily responsible for domestic activities are more at home than men. Findings also reveals that a majority of the respondents were within the age bracket of 41-50 years and have lived in the area long enough to respond appropriately to the questions asked in the questionnaire. This implies that the respon-

dents are matured enough and can give accurate details of the events in the area. Further findings also reveals that a majority of the people in the study area can at least read and write. This suggests that the respondents can understand the questions posed and give appropriate responses.

From the information obtained findings shows that the majority of the respondent's perceived that the water quality was 74%, 93% and 100% at least good for strata 1, 2 and 3 respectively. This implies that the majority of the respondents had confidence of the various sources of water used for domestic purpose in Ubeji Community. Though they also claimed that the various anthropogenic activities have impacted negatively on the quality of water in recent times. This finding is consistent with the findings of Brewer & Stern (2005) were the degradation in water quality was attributed to human behavior such as habit or convenience and not ignorance. Findings also shows that though there exist some level of confidence in the quality of water, 86%, 48% and 78% of respondents in strata 1, 2 and 3 respectively still subject their water to a form of treatment at one point in time or the other before use. While 13%, 52% and 22% claimed they never treat their water before consumption. This results conforms with the findings of Samina et al (2018) where 33.3% and 66.7% of a sampled population treat their water before use. Both studies also revealed that the treatment involved only boiling and filtration processes. The sources of water identified for drinking and domestic purpose in Ubeji community were boreholes, public taps, hand dug well and Ubeji River. These identifies sources were similar to those reported by Ogunkolu et al (2023) where river, well and boreholes were the major sources of water for domestic use in Idahlga Kogi State. The findings revealed that in strata 1, 49% and 51% of the respondents use well and Ubeji River water respectively. This was attributed to the fact that they live close to the river and as such had easy access to the river. Studies by the Federal Ministry of Water Resources (FMWR), 2013 shows that about 54% of Nigerians do not have access to safe drinking water. This implies that more than 90 million people are exposed to non-potable water sources. This inadequacy of portable water will push people to seek other alternative water sources, where the most available are waters in streams, wells, and boreholes. The FMWR also reported that streams are easily accessible because of their surface flow, the waters in wells and boreholes are also accessed by boring a hole in the ground. This finding corroborates the findings of Oyebode, Adebanjo and Nd-Ezuma (2019) and Otene and Nnadi (2019) who reported that river water was the major source of water for domestic use in Abeokuta, Ogun State, Ado-Ekiti, Ekiti State and Port Harcourt, Rivers State respectively due to its proximity to the inhabitants.

In strata 2, 64%, 24% and 12% use borehole, public tap and well water respectively. While in strata 3, 100% of the respondents use only borehole water. This study revealed that all of the respondents claimed to have access to a water source that provides at least 20 liters per person per day within one 100m of the household. This finding is in line with the recommended distance by World Health Organization (WHO, 2000) which considered 200 metres as a convenient distance for fetching water. However it was also observed that not all the household obtain water from an improved water source.

Findings also shows that respondents using the Ubeji River water are only those residing in strata 1, this finding corroborates with the findings of Otene and Nnadi (2019) where it was reported that majority of the residents of Rumu-Kwurushi in Obio/Akpor Local Government Area of Rivers State residing along the river use water from the Minichinda Stream for drinking and domestic purpose. Personal interaction with the respondents using the Ubeji River water also shows that the respondents in strata 1 were of low income and cannot afford an alternative water source aside the Ubeji River water. The information shows that the respondents in strata 1 currently don't have a choice of source of water aside the Ubeji River as compared to respondents living within strata's 2 and 3 that were of a higher income that can afford to have other sources of water for drinking and domestic purpose that were presumed to be of higher quality than the Ubeji River water. This finding agrees to the findings of Nuratu (2018) that residents always make use water that is most accessible to them when pipe borne is not made available to them even if the quality of the water is low. This finding also agrees with Asif et al (2025) where education and lack of access to relevant information were a major factor in the selection of a water source. Responses from strata 1 showed that 65% of the respondents claimed that sometimes they treat the Ubeji River water before use. While 14% claimed that they were satisfied with the water quality and hence they don't treat the water before use. This result suggests that the residents in strata 1 have little or no knowledge about the dangers inherent in the consumption of river water with-

out treatment. This could be attributed to their low level of educational status as compared to the educational status of respondents in strata 2 and 3. Respondents in strata 2 and 3 claimed that they treat their water more often and don't make use of the Ubeji River water for drinking and domestic purpose.

The most common types of water related illness and their frequency according to the respondents were malaria (68%), diarrhea (4%), cholera (0.4%), typhoid (25%) and skin infection (2.6%). This finding reveals that respondents in strata's 1, 2 and 3 all claimed to have suffered from malaria, diarrhea typhoid and catarrh at one time or the other. This finding is in line with the findings of Asif et al (2025), where the public of Islamabad had suffered diarrhea, typhoid, hepatitis and skin ailment due to consuming water from Simly and Rawal dams. The respondents response from each strata were tested with an ANOVA at 5% significant value and the results revealed that there is no significant difference in the mean of occurrence in the incidence of water related illnesses of the respondents within the 3 strata's under investigation.

From the results obtained in the 3 strata's, malaria was recorded as the most prevalent water related sickness. This suggests that the Ubeji community is poorly drained, or perhaps the drains were poorly constructed and don't flow well. These poorly constructed drains will provide breeding grounds for mosquitoes. The least most prevalent water related sickness was cholera. The low cholera prevalence of residents in Ubeji community could be a reflection of the impact of intervention programs for the eradication of cholera by various private and government agencies as also suggested by Adesina, (1990) and Lawoyin, Ogunbodede, Olumide & Onadeko (1999) in previous studies. The results of this finding can be concluded that the different sources of water were not accountable for the incidence in the water related diseases in the study. This finding corroborating the findings of Akpan-Idok, Ibrahim and Udo (2012) that just like Okpauku, River Ubeji River may be regarded as a suitable source for drinking. This finding can be linked to the findings of Nyong and Kanaroglou (2000), which attributed the high incidence of water related diseases to poor sanitation and unhygienic water handling practices rather than the quality of the water. The findings of this study were contrary to the findings of Rim-Rukeh, Ikhifa and Okokoyo (2007) that concluded that using water for domestic purposes from natural water bodies in the rich Niger Delta could pose a serious threat to the health of the users.

Conclusion

In the light of the research findings, the following conclusions are drawn. The major sources of water for domestic use in Ubeji community were identified as Ubeji River, boreholes, public tap and wells. A majority of the respondents were satisfied with the quality of water used for their domestic activities. While others claimed they have to treat the water before using. Responses also shows that the Ubeji community residents have been all affected by similar water related health problems at one point in time or the other in the following decreasing order; malaria, typhoid, diarrhea, skin infection and cholera. The results subjected ANOVA analysis showed that there were no significant difference in the prevalence of water related diseases in the inhabitants of the 3 strata's identified in Ubeji community. A personal interview with the respondents also shows that the residents in the community are not aware of any environmental law and as such have not been able to organize themselves to control or check river pollution in the Ubeji River.

Recommendations

In the light of the research findings the following recommendations were made: The relevant environmental protection agencies need to intensify monitoring and mitigation exercises of Ubeji River as it serves as a source of water for domestic purpose. The Local Health Authority and the National Orientation Agency should set up an aggressive health education and enlightenment campaign in the Ubeji community. This will encourage the residents to inculcate a high level of personal and domestic hygiene and obtain their drinking water from a reliable source. The government and private enterprises in Ubeji community should be involved in community development by way of assisting in the provision of portable water and a well-equipped community health center. This will improve the health and social status of the residents in Ubeji community. The Local Government, State and Federal Government should be engaged in routine immunization programs of the vulnerable group of the population. This will ensure improved health and increase the

resistance to contacting water related diseases.

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