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The sources of water supply, sanitation facilities and hygiene practices in oil producing communities in central senatorial district of Bayelsa state, Nigeria

Abstract

Background: It has been estimated that 100million Nigerians still lack basic sanitation facilities and 63 million also do not have access to portable drinking water and as many as 80% of all diseases worldwide are related to unsafe water as well as poor environmental hygiene. Most infectious, diseases are caused by living organisms, such as bacteria, viruses, or parasitic worms, and a disease is transmitted by the passing of these organisms from one person's body to another or through intermediate hosts. The World Bank reports that 30% of the total disease burden in developing countries results from contamination at the household level and that 75% of life years lost within this 30% are due to lack of good water supply and sanitation and the prevalence of risky hygiene behaviour. This study aimed to assess the sources of water supply, sanitation facilities and hygiene practices in oil producing communities in Central Senatorial District of Bayelsa State.

Materials and method: The study designs adopted for this research work were quantitative analysis and descriptive research method. The study population covered all housing units in the randomly selected communities in the central senatorial district of Bayelsa state. The 400 sample size for housing units was determined using the Taro Yamane formula, and systematic sampling method was used with a sampling interval of three. A 26-item administered closed-ended structured questionnaire was used. Data was collected from 296 out of 400 questionnaires and analysed using descriptive statistics with frequency counts and simple percentages using SPSS.

Results: The result identified multiple sources of water supply which includes rain, river/stream, pipe borne, borehole and hand-dug well with borehole being the major source (91%). The major toilet facility used was the flush toilet (45%) and majority of residents clean their toilet once weekly (60%), however, about half of the residents (51%) practice unsafe excreta disposal. Hygiene practices such as bathing occurred among all resident at least once daily and hand washing was frequent after toilet visit (73%) but not before eating (35%).

Conclusion: Water supply was seen to be relatively adequate, but its quality was poor, necessitating treatment. Unsafe excreta disposal is still widely practiced. Critical hand washing practice was still poor amongst residents. The State and Local Government including Oil companies in oil producing communities in Central Senatorial District should provide adequate portable water and sanitation facilities in public places with hygiene enlightenment campaign.

Keywords: environmental sanitation, water supply, excreta, health, houses, hygiene, critical

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Introduction

Although the world has progressed in the area of water and sanitation, more than 2.6billion people still live without access to sanitation facilities and some are unable to practice basic hygiene WHO[1] & Raimi et al.,[2] It is known that water covers 71% of the Earth's surface and is vital for all known forms of life and about 96.5% of the planet's water is found in oceans, 1.7% in ground water, 1.7% in glaciers and the ice caps of Antarctica and Greenland, a small fraction in other large water bodies and 0.001% in the air as vapour, clouds and precipitation. The role of water in carrying out standard sanitary and hygiene practices cannot be over emphasized; hence a good knowledge of its source(s) will be of great benefit improving sanitation and hygiene practices. Hence, many people in developing countries, including Nigeria, are without safe water supply, adequate sanitation and lack good hygiene practices; which according to Tebutt[3] & Raimi et al.,[4] can result in water related diseases in these areas with far reaching consequences. This is further aggravated by trace concentrations of impurities found in drinking water and may lead to long term health hazards which has raised concern, with particular attention to potentially carcinogenic compounds.[4–6] According to United Nations Children's Fund,[7] as at 2004, 54% of the Nigerian population lack access to adequate drinking water sources, of which, 69% are from the rural population and 33% are from the urban areas.

This will translate to about 73million people not having access to portable drinking water source out of the approximately 189million people living in Nigeria. Also, only 44% of the population had access to improved sanitation facilities, which on the other hand, is 36% in the rural areas. However, access to water supply increased to 67% while that of sanitation facilities remained at about 41% as at 2013. About 63 million Nigerians do not have access to portable drinking-water while about 100 million lack basic sanitation facilities which has resulted in open defecation being practiced by about a third of rural dwellers and about 12% of the urban settlers.[8]

Current outbreaks of cholera and other water related diseases in some parts of Nigeria has again brought to the forefront the need for appropriate methods to tackle and prevent the spread of such diseases. Even though efforts are being made by government agencies, local organizations and NGOs, the safe water supply and basic sanitation in many schools in Ibadan and other major cities in Nigeria remains poor.[9] Large numbers of both urban and rural schools and health centres and houses lack access to adequate sanitary facilities like latrines and hand washing facilities. It is believed that if the local communities are aware of the dangers and threat posed by waterborne and sanitation related diseases, they will be more equipped both technically and morally to mitigate the spread of such diseases. This will also enhance a common front to fight against the outbreaks of such disease as cholera, dysentery and diarrhoea as knowledge gained from this project can be shared by households, communities and local levels Raimi et al.[4] Being an oil producing area, there is the possibility of oil pollution of the water ways which in itself is a major contributor to health-related issues because of hydrocarbons entering the drinking water sources.[10]

Some of the recent water quality studies include: health risk assessment on heavy metal ingestion through groundwater drinking pathway for residents in an Oil and Gas producing area of Rivers State, Nigeria by Raimi et al.,[5] a survey of hand washing behavior and awareness among health care workers in health care facilities in Kubwa District of Bwari Area Council, F.C.T Abuja, Nigeria by Raimi et al.[5] Corporate civil liability and compensation regime for environmental pollution in the Niger Delta by Premoboere & Raimi.,[6] an assessment of trace elements in surface and ground water quality in the Ebocha-Obrikom oil and gas producing area of Rivers State, Nigeria by Raimi & Sabinus,[2] Morufu & Clinton,[10] water-related problems and health conditions in the oil producing communities in central senatorial district of Bayelsa State by Raimi et al.[4] In most parts of the Niger Delta region of Nigeria, the major challenge of survival is the provision of good quality (potable) water because of environmental pollution and degradation.[11] In most cities, towns and villages in this region, valuable man-hours are spent on seeking and fetching water of doubtful quality to meet specialized needs.[12,13] So therefore, the objective of this study is to identify the different sources of water supply in oil producing communities in Central Senatorial District; determine the types of sanitation facilities in oil producing communities in Central Senatorial District and assess the effectiveness of personal hygiene practices in oil producing communities in Central Senatorial District of Bayelsa State, Nigeria.

Materials and methods

Description of the study area

The study was conducted in the oil producing communities in Central Senatorial District of Bayelsa State. It is one of the three senatorial districts, after East and West Senatorial Districts. Of the eight local government areas that make up Bayelsa State, Central Senatorial District has three (Yenegoa, Southern Ijaw and Kolokuma-Opokuma). East Senatorial District has two L.G.As (Sagbama and Ekeremor), while the West Senatorial District has three L.G.As (Ogbia, Nembe and Brass). The Central Senatorial district, which is the area of the present study lies between latitudes 4° 321' and 5° 331' North of equator and longitudes 7°251' and 8°251' East of the Greenwich Meridian. The Central Senatorial district has a total landmass of 27,241 square kilometers. It is bounded by Rivers State on the North; East Senatorial district on the East, West Senatorial district on the West, and the Atlantic Ocean on the south. It has a population of 750,049 people based on the 2006 National Population Census Report.[14,15] Oil drilling operations are extensively carried out in Southern Ijaw Local Government area by Shell, Sephron and Agip Companies. The communities affected by oil operations in Southern Ijaw include Oporoma, Agiama, Agiama-gbene, Onyoma, Peremabiri, Olugbobiri, Olugbo-uboro, Ogboinbiri, Oki-ama, Koliama 1 and 11, Kemebiama, Azuzuama, Ondowari, Koro-korosei, Ikebiri, Tebidaba and Igbematoru. In Yenegoa Local Government Area, the communities where oil operations are carried out are Bisani, Okordia, Zarama, Ogboloma, Okolobiri, Agudama –Ekpetiama, Tombia, Akaibiri and Polo-aku. In Kolokuma-Opokuma local Government area, the communities affected by oil operations are Opokuma, Sabagreia, Sampou and Kaiama. Within the Central Senatorial District, there are hospitals (Federal Medical Centre, Yenegoa; General hospital, Oporoma in Southern Ijaw L.G.A.); Primary Health Care Centre in Oporoma Local Government Area; and Health Centre in Opokuma. These offer health care services to patients of water related health problems (Figure 1).

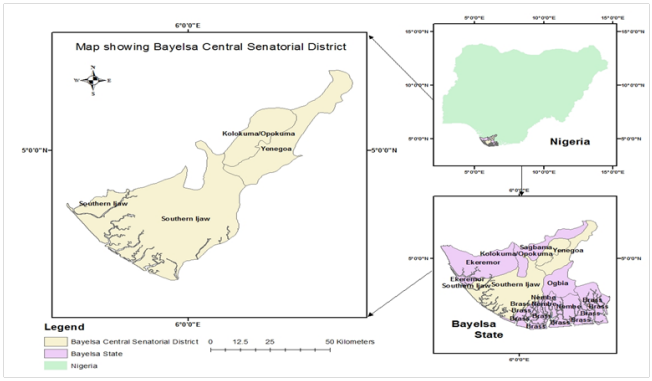

Figure 1 Map of Bayelsa state showing the study area.

Research design

The study designs adopted for this research work were quantitative analysis and descriptive research method. Aggregate data were analyzed for the purpose of this research. The data were used to determine the sources of water supply, sanitation facilities and hygiene practice in oil producing communities in Central Senatorial District of Bayelsa State. Structured questionnaires were used for collection of primary data.

Target population

The population of the study 750,049 residents of Central Senatorial District comprising of 398,396 males and 351,653 females[16] and the population was projected to 2018 using annual exponential growth

rate of 2.9% as population growth rate as at the 2006 National Census (Federal Republic of Nigeria Gazzete, 2007). This gave a projected population of 105, 6998 people. The breakdown is shown in Table 1 below. The study population covered all the randomly selected housing units as represented by an adult member in that unit, regardless of the level of education, and has live for at least two years in oil producing communities in Central Senatorial District of Bayelsa State and are using the facilities within the Central Senatorial District.

Table 1 Components of the study population
Source Author's compilation (2018)

Local government at central senatorial district of bayelsa state	2018 projected population
Southern Ijaw	450129
Yenagoa	497,946
Kolokuma/Opokuma	108,923
Total	105,6998

Sample size determination

A sample size of 400 was estimated using Taro Yamane formula as presented below:

$$n = \frac{N}{1+N(e)^2}$$

Where, N = population size = 1056998, e = level of significance = 0.05.

$$n = \frac{1056998}{1+1056998\left(0.05\right)^2}$$

$$n = \frac{1056998}{1+1056998\left(0.0025\right)}$$

$$n = \frac{1056998}{1+2642.495}$$

$$n = \frac{1056998}{2643.495} = 399.8486852$$

Hence, the sample size was approximated to 400.

Sampling methods

To enhance the reliability of the research work and achieve the desired goal, simple random sampling techniques were used in selecting the communities. The systematic sampling method was used in selecting the housing units while respondents were randomly selected. The sample size was distributed evenly among the proposed oil producing rural communities. Eight (8) major areas were visited in oil producing communities in Central Senatorial District of Bayelsa State (Table 2).

Study procedure/data collection process

The data for this study was gathered from the questionnaire. Out of the 400 questionnaires distributed, 104 were not useful due to improper filling, difficulty in retrieving some of the questionnaires due to the recent flooding being experience in Bayelsa State and damage from rain water. Thus, 296 questionnaires were finally used for the analysis in this study.

Data analysis

Data obtained from the research instrument (questionnaire) was analysed using descriptive analysis and inferential statistics. Data was analysed descriptively using frequency and percentage with statistical package for social science (SPSS) version 21. This was used to analyse the demographic variables and the research questions while result was presented in tables.

Table 2 Sample distribution of oil producing rural communities
Source Researcher's computation (2018)

Oil producing rural community	Sample size
Southern Ijaw	
Angiama	50
Peremabiri	50
Azuzuama	50
Igbematoru	50
Yenagoa	
Okolobiri	50
Polaku	50
Kolokuma-Opokuma	
Sampou	50
Kaiama	50
Total	400

Results and discussion

Response Rate/ Completeness of Data

The response rate was 100%, however, out of the 400 questionnaires administered and retrieved, 104 were not useful due to incomplete filling, difficulty in retrieving some of the questionnaires due to the recent flooding being experience in Bayelsa State and damage from rain water, therefore only 296 were used, leading to incomplete data (74% complete). The 296 questionnaires were finally used to analyse the demographic variable (information) and research questions.

Socio-demographic characteristics

The Table 3 above expresses the demographic information of respondents in frequencies and simple percentages. Among the age brackets, 31-40 had the largest proportion (49%), followed by 41 & above (27%) and 18-30(21%) while 10 respondents did not fill their age which constitute 3%. The sample of respondents with the highest percentage (49%) are within the age brackets of 31-40 and the age bracket of 18-30 is 21%, however it can be seen that majority (70%) of the respondents are young people. The marital status was grouped into single, married, separated, divorced, widow/widower and cohabiting. 38% of the respondents are single, 34% are married, 12% are separated, 9% are cohabiting, 4% are divorced and 3% widow/widower as at the time of the study. However, the study discovered that over two-thirds of the participants are either single or married.

In the gender distributions, 60% of the respondents in the sample are females while 40% are males, showing female predominance in the population. This can be explained by the fact that most chores relating to water, sanitation and hygiene are carried out by females. In the respondents' level of education, the highest in the sample survey is the secondary school leavers (secondary level) with 56% followed

by those who possess higher degree of any form, either B.Sc., B.Ed., M.Sc. etc (tertiary level). In Table 4 regarding the respondents' occupation, trading (which covers any kind of legal business ranging from photocopying to selling of other items) and civil servants were the highest at 33% and 25% respectively. The high percentage of the two occupations is as a result of the presence of government hospitals and oil companies in the study area. Fishing (23%), is the third highest and was the predominant occupation of the people before the establishment of government hospitals and oil companies in the central senatorial districts.

Table 3 Socio-demographic information of respondents showing age, gender, marital status and level of education attained

Demographic information	Frequency=296	Percentage (%)
Age		
18-30years	61	21
31-40years	145	49
41years & above	80	27
No response	10	3
Total	296	100
Gender		
Male	119	40
Female	177	60
Total	296	100
Marital status		
Single	112	38
Married	101	34
Separated	34	12
Divorced	13	4
Widow/Widower	10	3
Cohabiting	26	9
Total	296	100
Level of education attained		
Primary	16	5
Secondary	166	56
Tertiary	106	36
None	8	3
Total	296	100

Table 4 Socio-demographic information of respondents showing occupation, family size and ownership of house

Demographic information	Frequency=296	Percentage (%)
Occupation		
Fishing	69	23
Farming	33	11
Trading	96	33
Civil Servant	75	25
Others	23	8
Total	296	100
Family size		
2-Jan	58	20
4-Mar	101	34
6-May	109	37
7 & Above	28	9
Total	296	100
Ownership of house		
Own	228	77
Rented	68	23
Total	296	100

In terms of family size, the category of family size 3-4 (34%) and 5-6 (37%) represents the highest group; and together with the group of 7 & above (9%), are mostly native of the community. The relatively high percentage of the family size of 1-2 (20%) is as a result of the student population in the community and those having businesses around. As regards ownership of the house, 77% of the houses are owned by respondents while 23% of respondents are living in rented apartments and they could either be oil workers or non-natives residing in the community because of their business. Table 5 above shows multiple responses on sources of water. Majority of the respondents use water from borehole (91%) mainly because it is of good quality, followed by rain water (61%) which is not bought but only available during the rainy season. Pipe borne water is at 33%, although it is of good quality, it is not readily available since it is poorly managed by the state government. River/stream is only 13% even though it is readily available. This could be because of its poor quality. In Table 6 above, some respondents had multiple answers. Drinking borehole water constitute the highest frequency of 156(53%) followed by rain water at 56(19%). It is clear to say that most of the respondents depend on borehole water for drinking, but almost equal number of respondents utilise borehole (38%) and rain water (35%) for cooking. This can be attributed to the fact that cooking is already a form of treatment for the rain water leading to almost equal use as borehole water for cooking. For bathing, borehole water is by far the most utilised, due to the fact that the other sources, apart from pipe borne water, will need treatment to prevent skin diseases. Except rain water (33%) and borehole water (25%), the other sources of water are almost equally utilised for washing as respondents do not bother much on treatment before use. Table 7 shows multiple responses and almost half (45%) of respondents do not treat their water before use. This can be attributed to the fact that most of these respondents source their water from boreholes that are already treated. However, it can be noted that some others treat their water by filtering (24%), boiling (20%), use of chemical (21%) or a combination of either.

Table 5 Sources of water in oil producing communities in Central Senatorial District of Bayelsa State

Sources of water	frequency	Percentage (%)
Rain	182	61
River/stream	37	13
Pipe borne	98	33
Borehole	268	91
Hand dug well	10	3

Table 6 Uses of water by respondents in Central Senatorial District of Bayelsa State

Use	Rain	River/ Stream	Pipe-borne	Borehole	Hand dug well
Drinking	56(19%)	1(0%)	23(8%)	156(53%)	2(1%)
Cooking	103(35%)	7(2%)	59(20%)	111(38%)	7(2%)
Bathing	47(16%)	23(8%)	38(13%)	107(36%)	2(1%)
Washing	97(33%)	31(10%)	44(15%)	73(25%)	5(2%)

Table 7 Water treatment methods used by respondents in Central Senatorial District of Bayelsa State

Water treatment methods	Frequency	Percentages (%)
None	134	45
Filtering	72	24
Boiling	59	20
Use of Chemical	62	21

In Table 8 there are complains of colour (20%), taste (13%), particles (14%) and odour (4%) amongst respondents, however majority of the respondents (59%) have no complains about their water which is from borehole or pipe borne water.

Table 8 Perception of water quality by respondents in central senatorial district of Bayelsa state

Perception of water quality	Yes(%)	No(%)
Coloured	58(20)	238(80)
Taste	38(13)	258(87)
Particles	42(14)	254(86)
Odour	11(4)	285(96)
None	174(59)	122(41)

In Table 9 above, the highest category of water usage is 61-80L at 28% which is not significantly different from the 27% of 41-60L and 81-100L categories. The other categories are between 1% and 8%. The high usage of water can be attributed to the flush type toilet facility that utilizes more water. In Table 10 compares the average amount of water used per capita per day in this study (64) i.e. between 61-80 to recommended amount by some organisations. Table 11 indicates that most of the respondents use close storage container (81%) as opposed to open container (19%). Table 12 above shows that all respondents wash their storage container.

Table 9 Amount of water used by respondents per capita per day (Litres) in Central Senatorial District of Bayelsa State

Amount of water used	Frequency	Percentages (%) per capita per day(Liters)
≤ 20	21	7
21-40	23	8
41-60	81	27
61-80	84	28
81-100	80	27
101-120	5	2
> 120	2	1
Total	296	100

Table 10 Amount of recommended water usage against index study

Amount of water used	Organisation	per capita per day(Liters)
64	Index study	
20	WHO/UNICEF	
20-40	WHO/World Bank	
30	National Rural Water Supply and Sanitation Strategic Framework	
120	NWSSP	

Table 11 Storage container used by respondents in Central Senatorial District of Bayelsa State

Storage container used	Frequency	Percentages (%)
Open	57	19
Close	239	81
Total	296	100

Table 12 Washing of storage container in central senatorial district of Bayelsa state

Do you wash your storage container?	Frequency	Percentages (%)
Yes	296	100
No	0	0
Total	296	100

It is shown in the table above Table 13 that 52% of the respondents wash their storage container weekly, while 36% do same every two weekly and 12% do it monthly. No respondent was found to be involved in daily washing of their storage container. From Table 14 above, 45% of the respondents in the study area uses flush toilets, while 32% use pier/jetty, 19% defecate in the open and 4% use VIP latrine. In Table 15 above, 60% of the respondents in the study area wash their toilet once weekly, while 36% does so twice in a week. The two extremes of cleaning daily and occasionally had the least at 2% each. In Table 16, 56% of the respondents in the study area dispose their refuse in the river, while 20% burn their refuse. Disposing by bush and pit dump constitutes 19% and 5% respectively. Table 17 above shows participants multiple responses to hand washing. Majority of respondents wash their hands after toilet visit (73%) but only less than half do so after cleaning baby's buttocks (48%) and before eating (35%). However, only a few do so before feeding children and before cooking as reflected by 28% and 21% respectively. The significant difference between hand washing after toilet visit (73%) and after cleaning baby's buttocks (48%) is due to the belief that most people do not see a baby's faces as a contaminant. The Table 18 highlights the use of bathroom by a large portion of the respondents (74%), while open type bathing and bathing in the river are 8% and 18% respectively. The low rate in the last two types can be attributed to influx of oil companies' workers changing the possibly preferred river bathing popular amongst riverine communities to the bathroom type. In Table 19 majority of respondents take their bath either once daily (46%) or twice daily (48%), on the other hand 6% take their bath thrice daily, while for bathing once every two days, there was no respondent.

Closed place of cooking (57%), as seen in Table 20, is only slightly higher than the open type (43%). This goes to show that there are still many housing units of the older model that do not have inbuilt kitchen leading to the marginal difference. The food preservation methods in Table 21 above depict multiple preservation methods, although almost evenly distributed amongst the three; steaming (65%), refrigeration (62%) and smoking/drying (58%).

Table 13 Frequency of washing storage container in Central Senatorial District of Bayelsa State

Frequency of washing	Frequency	Percentages(%) storage container
Daily	-	0
Weekly	154	52
Two weekly	106	36
Monthly	36	12
Total	296	100

Table 14 Type of toilet used by respondents in central senatorial district of Bayelsa state

Type of toilet	Frequency	Percentages (%)
Bush/field(Open defecation)	55	19
Pier/jetty	95	32
VIP latrine	13	4
Flush toilet	133	45
Total	296	100

Table 15 Frequency of cleaning toilet in central senatorial district of Bayelsa state

Frequency of cleaning toilet	Frequency	Percentages (%)
Daily	7	2
Twice weekly	106	36
Once weekly	177	60
Occasionally	6	2
Total	296	100

Table 16 Place of refuse disposal in central senatorial district of Bayelsa state

Place of refuse disposal	Frequency	Percentages (%)
River	167	56
Burning	59	20
Bush	55	19
Pit dump	15	5
Total	296	100

Table 17 Hand washing practice by respondents in central senatorial district of Bayelsa state

Hand washing	Frequency	Percentages (%)
After toilet visit	271	73
After cleaning baby's buttocks	142	48
Before eating	105	35
Before cooking	63	21
Before feeding children	83	28

Table 18 Place of bathing in central senatorial district of Bayelsa state

Place of bathing	Frequency	Percentages (%)
Bathroom	219	74
Open type	23	8
River	54	18
Total	296	100

Table 19 Frequency of bathing by respondents in central senatorial district of Bayelsa state

Frequency of bathing	Frequency	Percentages (%)
Once every 2 days	-	0
Once daily	136	46
Twice daily	142	48
Thrice daily	18	6
Total	296	100

Table 20 Place of cooking in central senatorial district of Bayelsa state

Place of cooking	Frequency	Percentages (%)
Open(outside)	127	43
Closed(kitchen)	169	57
Total	296	100

Table 21 Food preservation methods in central senatorial district of Bayelsa state

Food preservation	Frequency	Percentages (%)
Refrigeration	184	62
Steaming	192	65
Smoking/drying	172	58

Discussion

The study showed various sources of water supply in the study area. However, the most frequently used are borehole, rain water and pipe borne water, and are amongst those listed by Raimi et al.,[4] that communities depend on; indicating that access to water is not the problem as majority of residents (58%) in the Central Senatorial District use at least 61 litres of water per capita per day. This is lower than the 120 litres recommended by the national water supply and sanitation policy but higher than the 20 litres defined by WHO and UNICEF as reasonable access.[17] This result (58%) is less than the UN[18] survey in Nigeria showing that access to water supply was 67% as at 2013. There is however problem with the quality of some of the sources of water which is indicated by the presence of colour, particles, odour and taste as perceived by respondents, since water of satisfactory quality should in addition to its chemical and microbiological qualities be colourless, odourless and tasteless.[5,10,20] The poor quality of a few of this water sources may be due to the presence of high sodium (due to saline intrusion from the sea), iron and manganese in boreholes drilled in some communities in the Niger delta as proposed by Ordinioha.[20] The presence of poor water quality as perceived by a few residents in the Central Senatorial District would have also necessitated the fewer

percentage of water treatment amongst them, as compared to the 45% that do not use any form of treatment who, on the other hand, have good water quality (59%). This is similar to the work done by Miner et al.,[21] in a community in Plateau state which showed that 54% (55% in this study) of respondents practiced at least one method of purification in their household, the commonest of which was the addition of alum (43.3%), while the commonest treatment option in this study is filtering (24%) and is probably due to fewer percentage of water with particles (14%). However, the treatment options of boiling, filtering and use of chemical are similar to those described by Ordinioha.[20] The study showed that all residents wash their water storage container at least weekly (52%) or two-weekly (36%).

From the result of the study, about half of the residents in the Central Senatorial District use flush toilet (45%) and VIP latrine (4%) as a means of safe excreta disposal, while the other half still make use of the unsafe methods like the pier/jetty (32%) and bush/field (19%), and this is higher than both WHO[22] survey that says, about 15% of the Nigerian population did not have access to safe excreta disposal facilities; and UN[18] which indicated 36% in rural areas. However, this is not expected for a Central Senatorial District hosting a oil companies but can be attributed to many house owners having buildings without toilet facilities. However, the bush/field (19%) excreta disposal type is less than UNICEF[7] report which indicates that open defecation is still practiced by about a third of the rural population but almost similar to WHO/UNICEF[23] report that 22% of Nigerians are estimated to defecate in the open. The study also showed that most residents who use safe excreta disposal facilities wash their toilets at least twice weekly (36%) or weekly (60%). Refuse disposal method is also very poor in this Central Senatorial District as 56% of residents dispose off their refuse in the river, which happens to be one of the sources of water for 13% of residents and which one out of 296 respondents drink. The others either burn (20%) or dump their refuse in the bush (19%) or pit dump (5%). This poor sanitation habit can counteract the effect of potable water supply as preventable diseases such as cholera, typhoid, diarrhoea, guinea worm and schistosomiasis can result from contaminated water and poor sanitary conditions.[24] It can affect recreational activities like swimming, fishing etc.

As regards personal hygiene, bathroom facilities are mostly used by residents (74%), other residents however either bath in the river (18%) or bath in the open (8%). Similarly, most residents of the community wash their hands after toilet visit (73%) and this is similar to the study done on hand washing amongst mothers of under five children in Nigeria by Aigbiremolen AO et al.,[25] and India by Datta et al.,[26] with figures of 79.6% and 73.18% respectively. However, lesser number of persons does so after cleaning baby's buttocks (48%) and this is less than the 63.91% in India.[26] Furthermore, far less people wash their hands before cooking (21%), before eating (35%) and before feeding children (28%), similar to the 20.92%, 21.44% and 29.98% respectively in the Indian study[26] and this indicates poor compliance of hand washing at critical times as stated by Raimi et al.,[5] Ordinioha.[20] The similarity between the three studies could be attributed to the fact that all study areas were rural. All residents in the community bath at least once daily with just under half of them bathing either once (46%) or twice (48%) daily.[27–50] This study also identified a close margin between those cooking in the kitchen (57%) and those cooking outside (43%). This may be as a result of the type of old buildings present in the Central Senatorial District that lacked inbuilt kitchens in the apartments. Food preservation was mainly by steaming (65%) and refrigeration (62%), although more than half of the residents also smoke or dry(58%) to preserve food.[51–82]

Conclusion

The most frequently used water sources are borehole, rain water and pipe borne water. It was observed that water supply was adequate, since it is higher than the 20 litres defined by WHO and UNICEF as reasonable access, but its quality was poor in some instances as perceived by respondents, necessitating treatment. Unsafe excreta disposal is still widely practiced despite the presence of oil companies in the Central Senatorial District. Critical hand washing practice was still poor amongst residents; however, bathing at least once a day is common to all.

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None.

Conflicts of interest

Author declares that there is no conflicts of interest.

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