QUALITY OF LIFE IN NIGERIA: AN APPRAISAL OF ACCESS TO WATER AND SANITATION IN COASTAL AND WATERFRONT COMMUNITIES IN DELTA STATE

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ABSTRACT:
This paper examines the quality of life as it relates to access to water and sanitation in coastal and waterfront communities in Delta State. A total of 450 structured questionnaires were distributed to 30 selected coastal and water-front communities in Delta State. The study employed the Facility Condition Index and other statistical methods in accessing the quality of life through an appraisal of access to water and sanitation. The empirical findings of the study showed a dismay situation since respondents perception with key quality of life facilities was below par. The study also found that only a few in the sampled communities have access to portable water and sanitary facilities, with the vast majority practicing open defecation, thereby polluting water sources which are the main source of drinking water. The paper therefore recommends that both state and federal governments should enact more proactive policies that will ensure that both portable water and sanitation facilities are adequately provided for these fragile communities in order to boost the level of their quality of life.

Keywords: quality of life, coastal, facility condition index, sanitation, health, communities

1. Introduction

The issue of improving the quality of life has been always been a current issue in Nigeria. Meeting up with the World Health Organization's definition of Quality of Life (QOL) (1995) which involves "*the individual's perception of their position in life in terms of culture and value system in which they live and also in relation to their goals, expectation, standards and concern*", has continued to evade economic policies implemented in the economy, since quality

of life indicators focuses on all aspects of human endeavours (environmental, cultural, health, physical, and social among others).

Two aspects of the quality of life that have stimulated continuous interest in developing economies are accessibility to portable water and sanitation. These phenomena are recognized as fundamental human rights in the pursuance of a safe and healthy life as well as a safeguard of human dignity (United Nations, 2007). When these rights are breached, it impacts severely on the health of the individual, health of the community as well as the welfare of the environment, since both portable water and sanitation are vital for a good health. The two concepts are interwoven owing to the fact that sanitation involves sanitary living condition(s) coupled with access to safe drinking water.

An improved sanitation involves having a flush pour-flush to either a sewer system which is properly piped; a well-constructed pit latrine or septic tank; a well-ventilated improved pit latrine; pit latrine having a slab; or a composite toilet. It also involves having appropriate waste disposal system in an environment. In other words, it has to do with eradication of indiscriminate disposing of wastes (human or industrial).

In the same vein, an improved water supply system includes drawing water into dwelling, plot, or property via a well-secured pipe; public tap; borehole; protected spring, rainwater collection other than sources such as dams, ponds, lakes, rivers, stream, canals, or irrigation channels). It can also include a well-protected well which is dug (WHO and UNICEF, 2006).

Nigeria has implemented several economic policies to improve on the accessibility of portable water as well as sanitation. These policies include, National Policy on Environment (1989); Rural Water Supply & Sanitation (2000); National Water Sanitation Policy (2004); Sanitation Policy (2004); and Water Sanitation and Hygiene (WASH); among others. In spite of these economic policies, only 26.5 per cent of Nigerians utilize standard sanitation facilities and access improved drinking water. The World Health Organization (2015) reported that some 100 million Nigerians do not have access to basic sanitation facilities and an estimated 63 million Nigerians do not have access to safe drinking water. This estimates are further complicated with the practice of open defecation in rivers, streams and other sources of water available to residents. These have contributed to the high morbidity and mortality rates among children under the age of five. An estimated 70,000 children under that age of five lost their lives annually due to poor sanitary conditions and inability to access safe drinking water in Nigeria (UNICEF, 2018).

Several empirical studies on the impact of access to water and sanitation on quality of life have been undertaken in Nigeria. However, given the terrain and volatile environment of coastal and water front communities of the Niger Delta, it is imperative to investigate the level of access to portable water and sanitation facilities in the region. Thus, this paper addresses issues of access to safe water and sanitation as facets of the quality of life in coastal and water-front communities

in Delta State, Nigeria. Following the introductory section, section 2 briefly presents review of related literature; section 3 presents the methods employed in the study. Section 4 and 5 cover empirical findings/discussion and conclusion of the study respectively.

2. Literature Review

Several empirical studies have been carried out on the impact of access to water and sanitary facilities on the quality of life (Mudau, 2016; Majuru, 2015; Groce, Bailey, Lang, Trani, & Kett, 2011; Geere, Hunter,&Jagals, 2010). This is against the background that inadequate access to such facilities will result in higher risk of infection, diseases and poverty, as well as inability to fully participate in essential economic activities needed to improve the quality of life.

For instance, Adewumi and Olayinka (2017) drew data collected from a survey of 156 randomly selected residents of Ikeji-Arakeji, Osun State, Nigeria in accessing the quality of life of the resident. Using a subjective assessment technique, the study found that majority (52.6%) of the residents were living below poverty line. In addition, that residents were less satisfied with key quality of life indicators especially on availability of portable water, electricity, quality of recreational facility, cleanliness of the area and access to waste disposal facilities among others. Thus, the study recommended that government and community should collaborate in providing the basic amenities in improving the quality of life of the residents.

Yamauchi and Funamizu (2017) assessed the impact of sanitary facilities on the local population's health and quality of life (QOL) in three rural villages near Ouagadougou, the capital city of Burkina Faso. The study applied statistical methods (mean, mode and percentage) in analysis the impact of sanitary facilities on the quality of life in the sampled region. The study found that the availability and accessibility to the facilities has contributed positively to the QOL of the residents.

Wrisdale, Mokoena, Mudau, and Geere (2017) explored the occupational implications of accessibility to portable water among older adults and people living disabilities in rural South Africa. Employing a thematic analysis of semi-structured interviews, the study showed that accessibility to water contributes positively to the quality of life of individuals since they have the potential of living a healthy life, thus having the ability to fully participate in the labour market.

Sommer, Shandra, Restivo and Coburn (2015) examined the impact of access to an improved water source and sanitation facility on maternal and neo-natal mortality. The study analyzed data from a sample of 32 Sub-Saharan African nations between 1990 and 2005. Employing a two-way fixed effects regression model, the study find that access to both sanitation facilities and improved water contribute to quality of life captured by decreased neonatal mortality and maternal.

Blackett, Hawkins and Heymans (2014) carried a comparative study using primary data sources and descriptive statistics. The study reported that 34 percent of the populace in South Asia still

practice open defecation. While the figure stood at 23 percent in Sub Saharan Africa. This has drastically affected the quality of life of such individuals due to susceptibility to diseases.

Ashish and Amadi (2013) investigated the impact of water, sanitation and hygiene interventions on school children in developing countries including India, Kenya, and Egypt. Through analysis of collated questionnaires from the three countries, the study found that lack of access to portable drinking water and sanitary facilities adversely affect the life quality of the sampled children to the extent of impacting negatively on their educational performance.

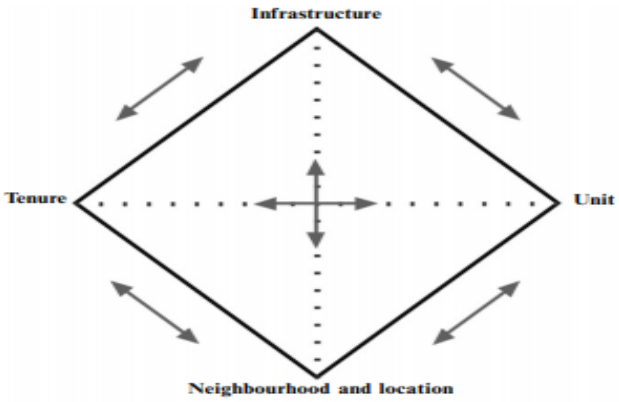
3. Methodology

3.1. Theoretical Framework

This study adopted the living conditions diamond theoretical framework proposed by Gulyani and Bassett (2010). The theory is focused on understanding relative levels of need and deprivation, identifying the aspects of living conditions that are unacceptable, and formulating context-specific interventions by which living conditions can be improved or altered. The theory argued that there four distinct dimensions in understanding the quality of life of an environment: tenure infrastructure, unit quality, and neighbourhood and location. These four dimensions interact with each other and collectively determine the overall quality of living conditions in any given environment.

The diamond presents a cross-sectional snapshot of settlement conditions using data associated with the four dimensions. The framework emphasizes interactions between the four dimensions and helps explain how changes in one area might impact on another. It is thus a useful diagnostic and planning tool as it help identify potential context-specific points of intervention and evaluate the appropriateness and viability of such interventions. The diamond is represented diagrammatically below:

Figure 1: The Living Conditions Diamond



Source: Gulyani and Bassett (2010)

Tenure, the first part of the vertex can be defined simply as the right of an individual to hold something (land, a structure). Infrastructure refers to infrastructure stock and services. These are determinants of living conditions or quality of life. The third vertex of the diamond is the housing unit itself. An appropriately designed, built, and adequately maintained housing unit is critical to living conditions.

The final vertex of the diamond is the neighbourhood - a settlement's location, quality, and amenities crucially influence the overall quality of living conditions. An important aspect of this vertex is the amenities that the neighbourhood offers, such as schools, open spaces, and community facilities, water, sanitation facilities. This highly shows the level of the quality of life of individuals living in the environment.

The theory opined that a properly combination of the vertices enumerated above will define in real terms the absolute quality of life of people residing in a location. It also argued that when appropriate data are applied to the variables of the vertices, then quality of life can be quantified.

a. Study Area

The study was carried out in thirty (30) selected coastal and water front communities in Delta State. These communities are: Ekoro, Ogbeingbene, Ekeni Ejetu, Opuede Bubor, Gbekebor, Abe-Ugborodo, Olukperebu, Akparemogbene, Benikrukru, Biagbene, Ezebiri, Azama, Egolegbene, Ekpemu Akpata, Isaba, Jones Creek, Ayakoromo, Kokodiagbene, Kurutie, Obotebe, Okerenkoko, Okoyitoru, Oporoza, Pepe Ama, Oyangbene, Akpata Gbegbe, Kenghagbene, Eseimogbene, Kumukunuma and Yayorogbene.

3.2. Study design

The sample survey method was adopted in the study. This method involves questionnaire administration and direct observation. The questionnaire was structured to elicit the following: gender of head of household, source of drinking water supply, household's perception of selected indicators of quality of life (access to water and sanitation facilities). Direct observation ensured physical presence and adequacy of social amenities in the various communities.

3.3. Population and Sample Size

Given that the population of residents in coastal and water front communities in Delta State is unknown, we adopted the following formula in obtaining the sample size:

$$n = \frac{Z^2 p(1-p)}{e^2} \qquad (1)$$

Z depends on the degree of confidence. Given that we adopted the 99 percent degree of confidence, Z is 2.58. The value p is the degree of variability, expressed as a decimal. Since it was not given, the study adopted the conventional p = 0.5. For a confidence level of 95 per cent,

the value of e is given as 0.05. Substituting these values into equation (1), we arrived at a sample size of approximately 660 respondents.

3.4. Data collection

To facilitate quality response elicitation, 12 field officers were trained on the technique of helping the respondents fill the questionnaires. Twenty-two (22) questionnaires were distributed to each community. Though the instruments were randomly distributed at the community level, care was taken to target primarily household heads.

3.5. Data Analysis

Weights (5, 4, 3, 2, and 1) were assigned to the five point Likert scales (Very Good, Good, Neutral, Bad and Very Bad) respectively. In order to quantify the household's perception of facilities (water supply and sanitation), we adopted the measure of Facility Condition Index (FCI) used in Adewumi and Olayinka (2017).

The Facility Condition Index (FCI) is a standard facility assessment benchmark. There are two procedures necessary to obtain the FCI. These are:

1. 'Very Good' (VG), 'Good' (G), 'Neither Good nor Bad' (NGNB), 'Bad' (B), and 'Very Bad' (VB) are assigned weighted values of 5,4,3,2 and 1 respectively.
2. A Summation of Weight Value (SWV) is obtained by adding the product of the number of responses to each infrastructure and the respective weight value attached to each rating.
3. The index for each infrastructure was arrived at by dividing the Summation of Weight Value (SWV) by the total number of responses.

   Functionally, the FCI is expressed as:

$$FCI = \frac{SWV}{\sum_{i=1}^{5} \boldsymbol{i} = \boldsymbol{X_i}} \qquad (2)$$

Where

SWV = Summation of Weight Value

x_i = number of respondents to rating i

The SWV is the summation of the number of responses to a facility and the weight attached to it. This value was derived by:

$$SWV = \sum_{i=1}^{5} x_i y_i \qquad (3)$$

Where

y_i = the weight assigned to a value

i = 1, 2, 3, 4, and 5.

The quality of life (QOL) index was arrived at by using a 5-point Likert scores (5 indicating "very satisfied" and 1 indicating "very dissatisfied"). A quality of life index is arrived at the technique adopted in equations (1) and (2). A single question apiece for the respondents' perception of all the facilities as well as overall quality of life indicators was used to arrive to arrive at FCI_o (i.e., overall FCI) and QOL_o (i.e., overall quality of life) respectively after the procedure of equations (1) and (2) was applied.

4. Results and Discussion

A total of 660 were distributed to 30 communities (22 instruments for each community). However, total of 450 questionnaires (completely filled) was collected and analyzed. This implied that 75 percent of the questionnaires was correctly and completely filled. These formed the crux of the analysis. The following were findings from the survey.

4.1. Household Characteristics

4.1.1. Gender

The table below shows the gender distribution of family heads visited. It showed that 64 per cent of respondents were males while 36 percent were females.

Table 1: Gender Distribution of Respondents

S/N	Gender	Distribution	Percentage
1	Male	287	63.8
2	Female	163	36.2
	Total	450	100

Source: Research Survey (2019)

4.1.2. Occupation

Table 2 showed the various occupations which family heads were involved in.

Table 2: Occupation of Household Heads

S/N	Occupation	Distribution	Percentage
1	Fishing	273	60.7
2	Farming	117	26
3	Traders	29	6.4

4	Civil servants	9	2
5	Artisans (builders, craftsmen, etc.)	22	4.9
	Total	450	100

Source: Research Survey (2019)

A cursory view of Table showed that the majority of the respondents were involved in fishing (60.7 percent). This was unsurprising owing to abundant water resources in the region. This was closely followed by farming (26 percent). Only a paltry percent of respondents were civil servants (2 percent).

4.2. Sources of drinking water supply

All the communities had various sources of water supply. The table below showed the source of drinking water available to households surveyed.

Table 3: Sources of Water Supply Accessible to Households

S/N	Drinking water source	Distribution	Percentage
1	Unprotected dug well	103	22.8
2	Tube well/borehole	12	2.7
3	Protected dug well	43	9.6
4	Public tap/standpipe	27	6.0
5	Surface water (etc dam, stream, river, lake, pond, etc)	265	58.9
	Total	450	100

Source: Research Survey (2019)

The statistics shown in Table 3 show that only an average of 18.3 percent has access to safe drinking water supply (i.e., pubic tap/standpipe, tube well/borehole and protected dug well. The vast majority (81.7 percent) of households collect drinking water from unsafe sources.

4.3. Assessment of sanitation level: toilet type

The table showed the toilet type utilized by the surveyed households.

Table 4: Household toilet type

S/N	Toilet type	Distribution	Percentage
1	Flush pour-flush (Water closet)	21	4.7
2	Pit latrine with slab	58	12.9
3	Pit latrine without slab or open pit	87	19.3

4	No facilities or bush or field	122	27.1
5	Open defecation in rivers or streams	162	36
	Total	450	100

Source: Research Survey (2019)

The table above showed that a large number of households in the survey has no private toilet or comfortable toilet, and a large proportion has no toilet at all; utilizing bush or field, or practicing open defecation in rivers or streams, thus endangering the health status of the communities.

4.4. Quality of Facilities

4.4.1. Conditions of Accessed Facilities

In determining the quality of life (QOL) of those in the communities, the state condition of facilities available was assessed. The computation of respondents' perceptions of the facilities is shown below:

Table 5: Conditions of QOL facilities

Facilities	FCI	Deviation ($FCI-FCI_O$)
Source of drinking water	1.5	-0.9
Public utilities (e.g. toilets)	1.9	-0.5
Sanitation facilities (e.g. waste disposal techniques, sewage vehicles, e.t.c)	2.0	-0.4
FCI_O (Overall condition)	2.4	

Source: Research Survey (2019)

As seen in Table 5, the overall condition of the available facilities was below standard (FCIo = 2.4). All the facilities were perceived by low in quality the respondents given the FCI values of the various items. In addition, the negative deviations showed respondents' dissatisfaction.

4.4.2. Analysis of Quality of Life (QOL) Perception

The table indicated the respondents' perception of QOL given accessibility to safe drinking water and sanitation.

Table 6: Perception of Quality of Life

Facilities	FCI	Deviation ($FCI-FCI_O$)
Availability of portable water	0.37	-1.90
Absence of air pollution	1.15	-1.12
Absence of water pollution	1.29	-0.98
Condition of water source	0.65	-1.62
Cleanliness of water channels	1.19	-1.08
Access to waste disposal facilities	1.07	-1.20
Access to public utilities (e.g. toilets)	0.41	-1.86
FCI_O (Overall condition)	2.27	

Source: Research Survey (2019)

Table 6 clearly showed that the respondents were far from being satisfied by the standard of their living. It indicated that respondents' satisfaction level would be enhanced by improvements in the quality of available sanitation facilities as well as safe water.

4.5. Discussion of Findings

The empirical results obtained have economic and social impact as it relates to the quality of life of residents of coastal and water front communities in Delta State. The study showed a deplorable condition of sanitation facilities and inadequacy in access to safe drinking water in the communities. These findings confirmed with those of Adewumi and Olayinka (2017), Blackett, Hawkins and Heymans (2014) and Ashish and Amadi (2013). Given the terrain and volatile environment in the sampled communities, and coupled with government neglect of these communities, residents were far from being satisfied by the standard of their living given access to portable water and sanitary facilities as human development criteria. Though the findings in this regard contrasts those of Yamauchi and Funamizu (2017), Sommer, Shandra, Restivo and Coburn (2015), Wrisdale, Mokoena, Mudau, and Geere (2017), they confirmed those of Adewumi and Olayinka (2017). By implication, given that the communities are mainly faced with unsanitary methods of disposing wastes and constant contact with polluted environment, the issue of access to sanitation and safe water is highly essential.

5. Conclusion and Recommendations

The study established the nature of quality of life of residents of riverine and water-front communities in Delta State using two (2) basic indicators (access to safe water and sanitation facilities). The studyshowed that portable water and sanitation facilities are grossly inaccessible in the sampled communities, thereby resulting in a relatively low quality of life. In order to curb this menace, there is urgent need for collaboration between host communities and governmental authorities. The assistance of donor agencies both locally and foreign

should be solicited for speed provision of these essential facilities in line with the United Nations human right provision. There is also need for the host communities to adequate maintain the few existing facilities in the interim while the governmental authorities upgrade these facilities progressively.

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