

# Sanitation facilities and hygiene practices in a semi-urban community in Rivers State, south-south Nigeria.

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## ABSTRACT

Background: Water and sanitation projects are synergistic in producing health effects; while there has been massive investment in water projects as part of the effort to achieve the Millennium Development Goal on access to water and sanitation; the same cannot be said for sanitation projects. This study examined the state of sanitation facilities and hygiene behaviour in an oil rich community in the Niger delta region of Nigeria.

## Method

The study was carried out in Ogbogu, a small semi-urban community in Rivers State, south-south Nigeria, using a descriptive cross-sectional study design. The data was collected using a structured interviewer-administered questionnaire, field observations and focus group discussions. The questionnaire was administered to female heads of households with under-five children; the field observations consisted of direct observations, spot checks and rating checks of sanitation facilities and hygiene behaviour of the respondents; while the focus group discussions were held with executive members of the community's women's association.

## Results

Only 68% of the households in the community had access to a sanitation facility. The reasons given for not having a sanitation facility include lack of space (85.92%), and cost (12.68%). Most of the facilities were flush toilets (61.07%), and they formed 87.95% of the 83 facilities found to be in good hygienic condition. Of the respondents with sanitation facility, 28.86% would not allow young children to use the facility. Only 21.36% of the respondents routinely disposed the stool of their children into the sanitation facility; human faeces were consequently found around the house of 40% of the respondents. About 22% of the respondents were found to have the appropriate hand washing behaviour; while the two week period prevalence of diarrhea amongst children less than 36 weeks was 14.09%.

## Conclusions

The access to sanitation facility, and hand washing behaviour in the study community were poor. Hygiene education and social marketing of sanitation facilities are hereby advised.

**Keywords:** Sanitation facility; hygiene practices; Semi-Urban community; Nigeria.

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## INTRODUCTION

Water and sanitation projects are synergistic in producing health effects<sup>1-3</sup>. In a review of several studies, it was for instance found that whereas improvements in the quantity and quality of water alone were able to reduce the morbidity due to diarrhoeal diseases by just 17%; combinations of water and sanitation projects had the capacity to reduce the morbidity by as much as 30%<sup>4</sup>. This synergy stems from the fact that both work together to reduce the pathogen load in the ambient environment, and in the interruption of the transmission of the pathogens. The WHO estimates that 5.5% of the global disease burden is due to inadequate water and sanitation, while the duo is believed to be responsible for 88% of the 4 billion diarrhoeal cases, and the resultant 1.8 million deaths that occur in the world annually. The WHO further estimates that 94% of the diarrhoeal cases are preventable through increased availability of clean water, and improved sanitation and hygiene<sup>5</sup>.

The importance of safe water and improved sanitation is further reflected in their inclusion as one of the Millennium Development Goals, a framework that has been widely accepted for the worldwide improvement of health and welfare<sup>6</sup>. This much was recognized in the Nigeria's National Economic Empowerment and Development Strategy (NEEDS) document where water and sanitation were recognized as the foundations for all the developmental efforts in Nigeria<sup>7</sup>.

But whereas there have been a lot of investments on improving water supply, efforts at improving access to sanitation facilities in Nigeria have been restricted to the building of a few public toilets. According to the 2003 National Demography and Health Survey, 29.8% of rural households in Nigeria had access to potable water compared to 6.7% with flush toilet<sup>8</sup>. This lack of emphasis is said to be responsible for 5 - 20% of all deaths in Nigeria<sup>7</sup>. In the Niger delta region, access to potable water has improved in recent years<sup>9</sup>, but most of the inhabitants still engage in open defecation, including the use of jetty-type toilet that severely contaminates its riverine environment<sup>8</sup>. Yet, the 2004 National Environmental Sanitation policy sets the target of 80% sanitation coverage by 2015<sup>7</sup>.

This study reports the state of the sanitation facilities and hygiene practices in a semi-urban community in the Niger delta region. It is hoped that the result of the study would help give an idea of the magnitude of the problem in the region. It is also hoped that the study would provide the advocacy tool needed in giving safe excreta disposal in the region, the attention it deserves.

## MATERIALS AND METHODS

**Study site:** The study was carried out in Ogbogu, a semi-urban, oil bearing community in the Ogba/ Egbema/ Ndoni Local Government Area of Rivers State, Nigeria. Ogbogu had a population of about 10, 000 people (projected with the 2006 national census), made up predominantly of people of Ogba ethnic group. Like most other communities in the local government, Ogbogu had a huge presence of oil exploration and exploitation activities; although most members of the community were still subsistent farmers. The community had a good network of tarred internal road, regular electricity supply, piped-borne water and a primary health care center, most of them provided or equipped by the either the oil companies operating in the community, or government agencies like the Niger Delta Development Commission (NDDC).

### Study Design

A descriptive cross-sectional study design was used, with the data collected using a structured interviewer-administered questionnaire, field observations and focus group discussions. The questionnaire was administered to female heads of households in the community with under-five children; the field observations consisted of direct observations, spot checks and rating checks of sanitation facilities and hygiene behaviour of the respondents; while the focus group discussions were held with executive members of the community's women's association to gain further insight into the responses contained in the answered questionnaires. A triangulation of these research techniques were used to help gain a deeper insight into the hygiene behaviours of the respondents, and the condition of the sanitation facilities in the community. These methods have been particularly found to be very good in assessing hygiene behaviours<sup>10</sup>.

### Sample Size Estimation

The study was designed to detect a 5% difference in access to sanitation facility, with an alpha error of 5%, acceptable beta error of 20%, and a statistical power of 80%; and using the national average of household access to sanitation facility of 74.3%<sup>8</sup>. Using the usual formula for sample size determination for descriptive studies<sup>11</sup>, the minimum required sample size was thus determined to be 194, but made up to 220 to take care of non-responses.

### Data Collection

The data were collected by BO (the first author), and trained assistants who were Community Health Extension Workers and Environmental Health Officers of the community's health center. The training received consisted of an item-by-item discussion of the study instrument, as well as role plays on how to assess the items being assessed.

The respondents for the questionnaire were female head of the households in the community with under-five children. They were chosen after every five houses, because members of the extended families in the community tend to build their houses close to each other, and in most cases share their sanitation facilities. In the event of a house being occupied by more than one eligible household, the youngest of the possible respondents was chosen. A household was defined

as an aggregation of persons who lived together and shared a common source of food

The questionnaire was interviewer-administered, and used to gather information on the socio-demographic characteristics of the respondents, the type of sanitation facility used in the household, and their hand washing behaviour. The questionnaire also collected information on the occurrence of diarrhea within the preceding two weeks amongst children of less than 36 months in the household, and how the stools of children are generally handled.

Sanitation facility was defined as an excreta disposal facility that is either a toilet or a latrine, while household access was defined as when a household has a private sanitation facility, or shares a facility with not more than five other households in the building or compound. Hand washing behaviour was assessed using the five critical times and five techniques<sup>12</sup>; while diarrhea was defined as more than three loose stools passed in a 24-hour period.

The field observations techniques were used to assess the state of the household's sanitation facility, and whether provisions were made for hand washing in the facility. The sanitation facility was said to be hygienic when there were no faeces on the floor, seat, or walls, and when there just a few flies in the facility.

A session of focus group discussion was held with executive members of the community's women's association to gain further insight into the responses contained in the answered questionnaires. The discussion was conducted in Pidgin English and the local language, recorded using notes and audiotape, and then analyzed; all using the standard method<sup>13</sup>.

### Data Analysis

Data handling and analysis were manually carried. The hand washing behaviour of the respondents was assessed by self-reporting of the critical time and behaviour, with one point given for each correct time mentioned. A score of 8 points or more (out of a possible ten) was taken as appropriate hand washing behaviour<sup>12</sup>. Summary measures were calculated for each outcome of interest; and bivariate analysis carried out to test for association between ownership of sanitation facility and education status, and place of employment of male head of household. The test of significance was conducted using chi square tests at 95% confidence interval, with P- value of 0.05 or less considered statistically significant

## RESULTS

A total of 220 questionnaires were administered and retrieved. As depicted in Table I, most of the respondents were engaged in agriculture (31.36%), had secondary school education (46.82%), and had spouses with mostly secondary school education (53.18%), who were mostly engaged in agriculture (25%), or self-employed (28.84%).

Only 149 (67.73%) of the households had access to a sanitation facility as shown in Table II. But most of the households as shown in Table III, had male heads that were either civil servants or worked with the oil companies in the area. Table IV showed that there is an association between

education and ownership of a sanitation facility (p-value <0.00001)

The reasons given by the respondents for not having a sanitation facility include lack of space 61 (85.92%), and cost 9 (12.68%). Most of the facilities were flush toilets 91 (61.07%), and they formed 87.95% of the 83 facilities found to be in good hygienic condition. Of the respondents with sanitation facility, 43 (28.86%) would not allow young children to use the facility for the fear that they might fall into

the latrine pit. Children were mostly allowed to defecate wherever is convenient for them; and only 47 (21.36%) of the respondents routinely disposed the stool of their children into the sanitation facility.

About 88 (40%) of the respondents were found to have human faeces in their compound, and only 48 (21.82%) were found to have the appropriate hand washing behaviour. 31 (14.09%) of the households reported at least an episode of diarrhea in a child less than 36 months.

**Table 1: The sociodemographic characteristics of study participants**

Variable	Number (N= 220)	Percentage (%)
Age		
14 - 19 years	37	16.82
20 - 29 years	116	52.73
30 - 39 years	63	28.64
40 - 49 years	4	1.82
>/ 50 years	-	-
Educational status of respondents		
No formal education	13	5.91
Primary	63	28.64
Secondary	103	46.82
Tertiary	41	18.63
Place of employment of respondent		
Agriculture	69	31.36
Self-employed	73	33.18
Civil servant	19	8.64
Oil Company	2	0.91
Student	31	14.09
Housewife only	26	11.82
Educational status of respondents spouse		
No formal education	3	1.36
Primary	34	15.45
Secondary	117	53.18
Tertiary	66	30
Place of employment of respondents spouse		
Agriculture	55	25
Self employed	63	28.64
Civil servant	23	10.45
Oil Company	39	17.73
Student	17	7.73
Unemployed	23	10.45

**Table 2: The availability and condition of the sanitation facilities in the study community**

Variable	Number	Percentage (%)
1. Availability of sanitation facility(N = 220)		
Available	149	67.73
Absent	71	32.27
2. Reasons for not having a sanitation facility (N = 71)		
Lack of space	61	85.92
Cost	9	12.68
No reason	1	1.41
3. Types of sanitation facilities owned by the households (N = 149)		
Flush toilet (including pour flush) 91		61.07
Simple pit latrine	57	38.26
VIP latrine	1	0.67
4. Hygienic status of the sanitation facility (N = 149)		
Good	83	55.70
Bad	66	44.3
5. Sanitation facilities in good hygienic condition (N = 83)		
Flush toilet	73	87.95
Simple pit latrine	9	10.84
VIP latrine	1	1.20
6. Hand washing behaviour (N = 220)		
Good (8 - 10 points)	48	21.82
Moderate (5 - 7 points)	63	28.64
Bad (< 4 points)	109	49.55
7. Period Prevalence of diarrhea (N = 220)	31	14.09

**Table 3: Distributions of households with sanitation facility according to the place of employment of male head of household**

Variable	Availability of Sanitation of facility		
	Present	Absent	Total
Agriculture	23	32	55
Self employed	47	16	63
Civil servant	18	5	23
Oil Company	37	2	39
Student	14	3	17
Unemployed	10	13	23
Total	149	71	220

$\chi^2 = 40.82$  (p-value < 0.00001)

**Table 4: Distributions of households with sanitation facility according to the educational status of male head of household.**

Variable	Availability of Sanitation of facility		
	Present	Absent	Total
No formal education	0	3	3
Primary	11	23	34
Secondary	85	32	117
Tertiary	53	13	66
Total	149	71	220

$$X^2 = 30.89 \text{ (p -value} < 0.00001)$$

## DISCUSSION

The study showed that about two-third of the households in the study community had sanitation facility and that only about a fifth of the respondents had appropriate hand washing behaviour. This is largely similar to the findings of the 2003 National Demography and Health Survey (NDHS) in Nigeria<sup>8</sup>; and compares well with most of the studies carried out in other developing countries<sup>14,15</sup>. According to the NDHS<sup>8</sup>, 63.6% of the households in the rural communities had access to some form of sanitation facilities; a proportion found to be 50.9% in Ethiopia<sup>14</sup>, and 30.9% in India<sup>15</sup>.

According to this study, not owning a sanitation facility was not often due to choice, but linked to lack of space for the facility and lack of money for the sanitary improvement. Lack of space was cited as the main reason, mostly because the houses in the older sections of the community were originally built without sanitation facility and close to each other, in land communally owned by the extended family. This has also been noted in the inner sections of most Nigerian towns<sup>8</sup>. Although the inclusion of sanitation facility and a minimum vacant land space have always been key requirements for every approved building plan, they are often not enforced in Nigeria, especially in the rural areas. Considering the fact that housing renewal programmes are often very emotive in Nigeria, the best option in ensuring that households in older sections of Nigerian communities have the needed improved sanitation facility, is to encourage the use of facilities that are safe and hygienic in crowded areas; such facilities include the double pit offset pour-flush latrine, and the cheaper versions of the sewerage system (simplified and condominal sewerage) that have been used with great success in India and Brazil<sup>3</sup>.

Lack of money for the sanitary improvement was a distant second reason given for not owning a sanitation facility; but it also underlines the fact that most households in the study community with sanitation facility had breadwinners in highly remunerative employment. This points to the lack of assistance offered to householders in the community in owning a sanitation facility; a finding also noted elsewhere in Nigeria<sup>16</sup>; and emphasized by the finding that only 1.2% of householders in the study community owned a ventilated improved pit (VIP) latrine; a facility massively promoted in Nigeria by the defunct Directorate of Food, Road and Rural Infrastructure (DFRRI).

As efforts are being made to meet target 10, goal 7 of the Millennium Development Goal that sets a target of halving by 2015 the proportion of households without access to water and

sanitation facility; it has to be reiterated that greater emphasis need to be given to improving access to sanitation facility, to ensure that the accruing health benefits from the Millennium Development Goal is maximized<sup>2, 4</sup>. Householders in Nigeria would need not only technical assistance to build their own sanitation facility, but also some product subsidy to ensure that cost does not constitute a barrier to ownership. All these can be accomplished through a Water and Sanitation Agency, using social marketing technique<sup>3</sup>.

Many of the facilities in the study community were found in unhygienic conditions; and considering the fact that these facilities were mostly water flush facilities and simple pit latrines, it is not difficult to explain why. Water flush facilities are notoriously difficult to maintain when used by several households, especially when there are no piped water supply; while simple pit latrines are noted for their stench and flies infestation<sup>3</sup>. The unhygienic conditions of the facilities give the householders only partial protection against several water-borne infections<sup>17</sup>.

Also, the unhygienic conditions of the sanitation facilities, the improper disposal of children faeces, and the poor hand washing behaviour of the respondents are perhaps responsible for the number of childhood diarrhea reported in the community<sup>18, 19</sup>. The period prevalence of diarrhea in the community was higher than the average for south-south Nigeria (8.0%), but close to the national average of 18.8%. However, the causative conditions and behaviors are similar to those found in other Nigerian communities<sup>8</sup>. According to the 2003 NDHS<sup>8</sup>, 56.5% of the sanitation facilities in Nigeria were simple pit latrines; 64.8% of the faeces of children were safely disposed; while the required hand washing materials were available to just 43.4% of the respondents. These call for increased efforts in the promotion of hygiene practices, particularly amongst children and child care givers; especially as several studies have indicated that hand washing alone has the capacity of reducing the prevalence of diarrhea by 30-48%<sup>20</sup>; while hygiene education is considered a highly cost-effective intervention for reducing childhood diarrhoeal diseases<sup>21</sup>.

## CONCLUSION

The access to sanitation facility in the study community was comparable to those of urban communities in Nigeria. However, hand washing behaviour remains poor such that the prevalence of diarrhea is still high in the community. Hygiene education and social marketing of sanitation facilities are hereby advised to promote hygiene practices and improve access.

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