International Journal of Spectrum Research in Medical and Clinical Practice (IJSRMCP)
1(4), October-December, 2025, Pages 27-32

ISSN: 3092-975X

https://doi.org/10.5281/zenodo.17630936

Public Health Problems Associated with Open Defecation: A Case Study of Gokana LGA of Rivers State, Nigeria

P.N. Njoku [1], G.A. Nwankwo[2], L.G. Nasikpo[3] & J. E. Ezeokoye[4]

dr.p.n.njoku@gmail.com

ABSTRACT

Despite all the efforts of government at all levels in Rivers State to mitigate against open defecation, the practice of open defection (OD) has persisted especially in Gokana LGA of the state. Because of this ugly situation, the researchers embarked on the present study to determine the public health problems arising from open defecation practice. The study employed cross sectional survey design. The population was 129,686 residents and a sample of 398 drown through multistage sampling technique involving three stages. In each stage, random sampling of balloting without replacement was adopted. Structured questionnaire validated by experts was the instrument for data collection. Its reliability was established using test-re-test method, and the generated data from it were subjected to Persons Product Moment statistics which gave a reliability coefficient of 0.78 which was considered adequate for the study. The questionnaire was administered to respondents face to face by the researchers and trained research assistants who helped to reach the respondents in their various wards. Data generated were analyzed using percentages, mean and stand deviation to answer the reach questions, while ANOVA and t-test were used to test the hypotheses. The results revealed the following public health problems of open defecate: contamination of agricultural products; stunted growth among children; giardiasis; increased water borne diseases; environment pollution and contamination; and water & vector borne diseases. The study also revealed that residents with non-formal, primary, secondary and tertiary education had good perception of the health problems of OD. They also showed no significant difference in their perception of public health risks/problems by level of education. Further, the result showed that respondents of different occupations had good perception of the public health risks/problems of OD. Inferential statistics revealed a significant relationship between level of perception of public health problems of OD by occupation. It was recommended that the campaign against OD in Rivers State especially Gokana LGA should be intensified. Adequate laws with appropriate sanctions be imposed on offenders.

Keywords: *Open Defecation, Public Health, Problems, Case study*

INTRODUCTION

Nigerians are becoming more aware of the dangers that open defecation poses to the environment and human dignity. Open defecation refers to the practice of excreting or discarding waste in fields forests bodies of water or other open spaces (WHO 2021). Although open defecation is a global public health concern it is especially prevalent in developing countries such as Nigeria (Ngwu Cited by Ewuzie et al. (2022). Defecation can occur in a variety of open spaces including fields shrubs woodlands ditches streets and canals. They either act in this way due to long-standing cultural or traditional customs or because they do not have access to a restroom. According to WHO and UNICEF (2021) approximately 2. 5 billion people worldwide do not have access to clean restrooms. 2. 4 billion people or 32 percent of the worlds population lack access to improved sanitation and about 1 billion people defecate in the open (UNICEF/WHO 2021).

In fact most countries including Nigeria have failed to meet Target 10 of the Millennium Development Goals (MDG) which called for reducing the number of people without sustainable access to basic sanitation by almost three-quarters of a billion people (UN 2015). More than 47 million Nigerians or 50 or 10 million households openly defecate in and on bushes gutters sidewalks motor parks recreational areas rivers and streets among other locations according to research by Dele

(2019). Because of this dehumanizing situation the Nigerian president issued Executive Order 009 in 2019 that forbade open defecation. The Nigerian Minister of Water Resources launched the initiative Nigeria-Open-Defecation-Free by 2023: A national Road map in order to end the inimical practice by 2025 in collaboration with UNIECF and several other significant organizations. Along with a negative social stigma it exposes Nigeria and its citizens to obvious environmental health and economic problems. Polio cholera dysentery hepatitis A typhoid diarrhea and other serious illnesses can infect both adults and children due to environmental contamination. It is home to intestinal worms trachoma schistomiasis and other neglected tropical diseases. This has made malnutrition and other health issues more prevalent (WHO 2023). Since outbreaks of water-borne and communicable diseases are the primary cause of death for children under five children cannot live in areas where open defecation is common (Akinson 2022). Again if agricultural products are contaminated by open defecation people could lose a lot of money. The human and material resources needed for a sustainable economy are impacted by this (WHO 2024).

Flies and other insects are attracted to human waste piles in addition to waterborne illnesses. These flies spread disease-causing bacteria and excrement before landing on food and drink items that people inadvertently eat. In these circumstances diseases like cholera are directly transmitted by the flies. The World Health Organization (WHO 2024) reports that in 2022 57% of the world's population (94. 6 billion people) used a safely managed sanitation service more than 1. 5 billion people still lack access to basic sanitation facilities such as private latrines or toilets 419 million of these people still defecate in the open such as in streets gutters behind bushes or into open bodies of water and poor sanitation is associated with the spread of polio intestinal worm infections and typhoid. It exacerbates stunting and promotes the emergence of antibiotic resistance. Using a sanitary facility (toilet) to urinate and defecate adds a sense of privacy and dignity to a simple but natural occurrence. It plays a crucial role in the effective and hygienic sanitation of the household by removing waste from the home thereby reducing the exposure of loved ones to human feces and the attendant diseases it carries preventing contamination of the environment and preventing risk to themselves and their neighbors in contrast to poor sanitation which lowers human wellbeing social and economic development due to effects like anxiety risks of sexual assault and missed opportunities for education and employment (WHO 2023).

Even though statistics now available show that open defecation is declining globally, it is still practiced in Gokana LGA despite the efforts of governments at all levels. In light of this, the researchers started this study to find out how Gokana LGA residents perceived the health risks and issues related to open defecation.

Specifically, the objectives of the study were:

1. to ascertain the perception of the health risks/problems associated with open defecation in Gokana LGA of Rivers State.
2. to determine perception level of health risks associated with open defecation by level of education.
3. to determine the perception level of health risks/problems associated with open defecation by occupation of respondents.

The research questions were as follows:

1. What is the perception of the health risks/problems associated with open defecation in Gokana LGA of Rivers State?

2. What is the perception of health risks/problem associated with open defecation in Gokana LGA based on level of education?
3. What is the perception of health risks/problems associated with open defecation in Gokana LGA based on occupation?

Hypothesis

1. There is no relationship between the respondent's perception of health risks/problems of open defecation by level of education
2. There is no difference in the respondent's perception of health risks/problems association with open defecation based on occupation

RESEARCH METHODS

A cross sectional survey study design was adopted for the study. The study area was Gokana LGA in Rivers State. The population was 129,086 residents and a sample size of 398 drawn through multistage sampling technique. First stage involved selection of political wards, second stage was selection of houses and households, while the third state was the selection of 398 respondents. In each stage, random sampling of balloting without replacement was adopted.

A self-developed structured questionnaire was the instrument for data collection. Test-re-test method was used to ascertain the reliability of the instrument. The data generated from it were subjected to Person's Product Moment statistics and it yielded a reliability coefficient of 0.78 which was considered good for the study. The questionnaire was distributed by the researchers and with the aid of research assistants who helped to reach the respondents in their political wards. Data generated were analyzed using percentages & means for answering the research questions, while NOVA & t-test were used to test the hypotheses at 0.05 level of significance.

RESULTS AND DISCUSSION

Research Question 1

What is the perception of the public health risks/problems associated with open defecation in Gokana LGA of Rivers State?

Table 1

Perception of the Public Health risks/problems associated with open defecation in Gokana LGA of Rivers State (n-359)

S/N		X	SD
1.	Soil-transmitted helminthiasis	3.26	.95
2.	Stunting growth among children	2.55	1.09
3.	Intestinal diseases	3.19	.96
4.	Increased anemia in children	1.60	.81
5.	Giardiasis (low height & weight for age in children)	3.07	1.15
6.	Contamination of Agricultural produce	3.10	.84
7.	Increase in water borne diseases like cholera & dysentery	2.82	.74
8.	Visual and olfactory contamination	1.90	.93
9.	Environmental pollution & contamination like foul smell	3.01	1.03
10.	Vector borne diseases	3.14	.81
	Cluster	**2.71**	**.93**
	Cluster	**2.71**	**.93**

$\bar{x}$ <2.50= not a public health risk/problems $\bar{x}$ =2.50 & above = a public health risk/problem

Table 1 shows that overall, $\bar{x}$=2.71 indicating that the items are perceived as public health problems associated with open defecation. Specifically, items, 1,2,3,5,6,7,9 & 10 had $\bar{x}$ >2.5 an indication that they are considered public health risks/problems associated with open defecation.

Research question 2

What is the Perception of Public Health risks/problems associated with open defecation in Gokana LGA of Rivers State by level of education?

Table 2

Public health problems associated with open defecation in Gokana LGA of Rivers State, Nigeria by level of education

		Level of education							
S/N	Item	Non-formal education (=2)		Primary education (n=28)		Secondary education (n = 219)		Tertiary education (n = 110)	
			SD	$\bar{x}$	SD		SD		SD
1.	Soil transmitted helminthiases	3.50	84	3.54	.69	3.16	.98	3.39	.94
2.	Stunting growth among children	2.34	1.24	2.18	1.02	2.04	1.05	2.04	1.19
3.	Intestinal disease,	3.23	.86	3.00	.86	3.17	.99	3.27	.91
4.	Increased anemia in children	3.11	1.02	2.79	1.13	3.00	1.01	3.08	1.05
5.	Giardiasis (low weight & height for age in children)	3.43	.95	3.36	.91	2.87	1.26	3.39	.87
6.	Contamination of agricultural produce	3.33	.71	3.04	.74	3.05	.84	3.20	.86
7.	Increase in waterborne diseases like cholera & dysentery	1.92	.93	2.14	.93	1.87	.94	1.85	.92
8.	Visual and olfactory contamination	2.95	.58	2.93	.54	2.79	.74	2.87	.77
9.	Environmental pollution & contamination	1.50	84	1.46	.74	1.66	.75	1.53	.92
10.	Vector borne diseases	3.27	.67	3.32	.72	3.06	.82	3.25	.78
	Cluster	**2.86**	**.86**	**2.78**	**.83**	**2.67**	**.94**	**2.39**	**.92**

$\bar{x}$ < 2.50 = not a public health problem associated with OD, $\bar{x}$ = 2.50 & above = a public health problem associated with OD

Table 2 Shows that overall, the cluster mean for all the clusters are greater than criterion ($\bar{x}$ =2.50) except those of tertiary education ($\bar{x}$ = 2.39 SD=.92) implying that all the public health risks/problems were perceived as potential public health risks/problems associated with open defecation.

S/N	Item	Occupation: farmer (n=94)		Self-employed (n=152)		Civil/Public Servant (n = 113)	
		-	SD	-	SD	-	SD
1.	Soil transmitted helminthiases	3.34	.74	3.46	.89	2.93	1.10
2.	Stunting growth among children	3.95	.90	2.35	1.24	1.69	.89
3.	Intestinal disease,	3.11	.97	3.26	.81	3.16	1.12
4.	Increased anemia in children	3.04	.97	3.14	.94	2.80	1.16
5.	Giardiasis (low weight & height for age in children)	2.90	1.14	1.41	.95	2.74	1.29
6.	Contamination of agricultural produce	3.10	.64	3.30	.74	2.83	1.02
7.	Increase in waterborne diseases like cholera & dysentery	2.23	.97	1.88	.92	1.62	.94
8.	Visual and olfactory contamination	2.91	.68	2.97	.52	2.55	.94
9.	Environmental pollution & contamination	3.79	.88	1.51	.79	1.58	.73
10.	Vector borne diseases	3.30	.65	3.24	.62	2.88	1.06
	Cluster	**3.16**	**0.96**	**2.76**	**0.84**	**2.58**	**1.02**

Specifically, those with tertiary education adjudged items (1,3,4,5,6,8,10) as public health problems, those with secondary education identified items (1,3,4,5,6,8,10), those with primary education adjudged items (1,3,4,5,6,8,10) as public health problems, while those with non-formal education adjudged items (1,3,4,5,6,8,10) as public health risks/problems of open defecation in Gokana LGA, Rivers State.

Research question 3

What is the perception of health risks/problems associated with OD in Gokana by occupation?

Table 3

Perception of respondents by occupation

Occupation

$\bar{x}$ < 2.50 = Not a public health problems associated with OD; $\bar{x}$ ≥2.50 = A public health problem associated with OD

Table 3 presents data on public health risks/problems of open defecation based on occupation. Overall, the value of cluster mean for the various occupations (Farmer $\bar{x}$ =3.6, SD=0.96) self-employed ($\bar{x}$= 2.76, SD = 0.84) and civil/public servants ($\bar{x}$ =2.58, SD = 1.02) were greater than the criterion mean value of 2.50, implying that the farmers, the self-employed and civil/public servants adjudged all the items as public health risks/problems associated with open defecation. When the data were subjected to inferential statistics, the result revealed.

Table 4
Summary of chi-square analysis of no significant difference in the perception of risk factors associated with open defecation in Gokana LGA of rivers State by occupation

Risk Factors associated with open defecation						
Variables	N	True O(E)	False O(E)	x^2	df	p-value
Occupation						
Farmer	94	150(141.8)	2(10.2)	27.448	2	.000
Self-employed	115	94(105.4)	19(9.6)	3.00		
Civil/public Servant	113	91(87.7)	3(6.3)			

p= ≥ 0.05; accept: p= ≤ 0.05; Reject

Table 4 shows the summary of chi-square test for difference in the perception of risk factors associated with open defecation in Gokana LGA of Rives state based on occupation. The results indicated that there was significant difference found in the perception of risk factors associated with open defecation in Gokana LGA of River State based on occupation (x^2 = 27.448, df = 2, p-value = 0.000). Since the value which is less than 0.05 level significant, the null hypothesis was rejected. Therefore, residents of Gokana LGA of different occupations differ in their level of knowledge of risk factors associated with open defecation.

Table 5
Summary of chi-square analysis of no significant difference in the perception of risk factors associated with open defecation in Gokana LGA of Rivers State based on level of education (n=359)

Perception of risk factors associated with open defecation						
Variables	N	True O(E)	False O(E)	x^2	Df	p-value
Level of education						
Non-formal	2	0.5(0.4)	1.5(1.6)	2.727	3	.0256
Primary	28	25(26.1)	3(1.9)			
Secondary	219	204(206.2)	15(14.8)			
Tertiary	110	106(102.6)	4(7.4)			

P = ≥ 0.05; accept: P= ≤ 0.05; Reject

Table 5 showed the summary of chi-square test of independent for difference in the perception of risk factors associated with open defecation in Gokana LGA of Rivers State based on level of education. The results indicated that there was significant difference found in the perception of risk factors associated with open defecation in Gokana LGA of Rivers State based on level of education (x2 = 2.727, df = 3, p-value = 0.0256). Since the value (p-value=0.0256) is less than 0.05 level of significance, the null hypothesis was rejected.

Therefore, residents of Gokana LGA of different level of education differ in their perception of risk factors associated with open defecation. Implying the more educated the more knowledgeable of risk factors associated with open defecation

Discussions

Going to any convenient open space far away from home/community is perceived to provide people with a sense of independence, privacy and an opportunity to socialize (Budhathoki et al, 2017). This concept is held by many resulting in open defecation been continued unabated, despite its public health consequences. Table I indicated that public health risks associated with open defecation include: soil transmitted helminthiasis (x =3.26:SD=95) intestinal diseases (x=3.10; SD=15) contamination of agricultural produce (x =3.10; SD=84), stunted growth among children (x=2.55:SD=1.09) giardiasis (x =3.07; SD=1.15), increased water borne diseases (x =2.82;SD=74), environmental pollution and contamination (x =3.01;SD=1.03) and vector borne diseases (x =3.14;SD=81). This finding was expected because open defecation all over the world is fort with diseases like the ones revealed in this study. Institute for Health Metrics and Evaluation (IHME, 2016) complements the finding by stating that the principle public health problem of OD is infectious excreta-related intestinal disease of which diarrheal diseases are the most common. Diarrheal diseases were the third cause of death in children under five years of age (5) in 2015 in low-income and lower-middle income countries (LICS & LMKs), resulting in 499,000 deaths and a disability-adjusted life year (DALY) loss of 45./million years (8.5% of total u5-DALY losses). WHO (2023) also opined that open defecation attracts flies which eventually fly around our environment, and infect our foods and drinks. People drink and eat without knowing what they have ingested into their body system. Vector borne diseases including dengue fever, west Nile virus, and the most popular malaria. The overall mean indicates that the respondents have good knowledge of public health risk of OD in Gokana LGA.

With regard to research question 2, and hypothesis 2, overall, the value of the cluster mean is greater than criterion mean (x=2.50) indicating that all the clusters (non-formal, primary, Secondary & tertiary education) had good perception of the public health risks of open defecation and perceived the items as public health risks of open defecation. When the data were subjected to inferential statistics, the result indicated that there was no significant difference in the perception of public health problems based on level of education. Therefore, residents of Gokana LGA of different levels of education differ significantly in their perception of Public Health problems associated with OD in Gokana LGA (F=1.545, df =3, P-value=0.0215). The finding is in line with Offoboche et al, (2021) who found that there was significant difference in the perception of his respondents based on their level of education concerning the public health problems of OD.

Research question 3 with the corresponding hypothesis 3 revealed that overall, the value of all the cluster means were above the criterion mean of 2.50 indicating that all the clusters (farmers, self-employed, civil/public servants) had good perception of public health problems of OD and also adjudged the items public health problems. The result of the hypothesis testing showed that there was significant difference in the public health problems associated with OD in Gokana LGA of Rivers State by occupation (f=16.09, df=2, p-value=0.000). Therefore, residents of Gokana LGA of different occupations differ in their perception of public health problems associated with OD. This finding was in agreement with that of Daniel (2022) which indicated a significant relationship between occupation and level of knowledge and perception of public health problems of OD.

CONCLUSIONS.

Based on the findings of the study, the researchers concluded that respondents had good perception of the health risks/problems of OD.

RECOMMENDATIONS

It was recommended that the campaign against OD in Rivers State especially in Gokana LGA be intensified. Adequate laws with appropriate sanctions be imposed on offenders.

REFERENCES

Akinson,B. (2022). Open defecation and public health. Available from:// urbapaparazzionline.com/ 2016/22/open-defecation-and-public- health (1 June 2022)

Budhathold, et al, (2017) Access to sanitation facilities among Nigerian households; Determinant and sustainability implications. sustainability:9 (4), pp. 547.

Daniel, G.B; Melak H.S. (2022) open defecation and its determinant among households in Sub-Saharan Africa: poked prevalence and multilevel analysis of 33 Sub-Saharan African countries. Demographic and health survey-tropical medicine and health.

Dele, A (2019). Tackling open defecation in Nigeria. Back to environment health & safety law committee publications.

Institute for health metric and evaluation (IHME) (2016) Global burden of disease compare 1900-2015. Institute for health metrics & evaluation, University of Washington, Seattle, WA available form: http://vizhub,healthday.org/gbd-compare(accessed 16 Nov. 2021).

Ngwu. U. I (2017) cited by Ewuzie C. et al;(2022) Open defecation in Nsukka LGA of Enugu State, Nigeria: Shifting the discussion towards health and social-economic implications. Glob.J. art,Humanit.soc.sci vol-2 Iss.-12 page 918-928.

Offoboche, A.M & Ifeanyi, A.i (2021). Influence of open defecation-free (ODF) communication efforts.on knowledge: Attitude& practice of residents of selected state in South-South Nigeria. http://apsedencelibrary.com/handle/123456789/6889

Rakotomanana, H, Komakech, J.J Walters, C.N, Stoecker B.J (2020). The WHO & UNICEF Joint monitoring program (JMP) indicators for water supply, sanitation and hygiene and their association with linear growth in chidren to 23 months in East Africa, Int. Jo environment Res. Public Health 17 (17).

UNICEF/WHO (2023). Progress on household drinking water, sanitation and hygiene 2000-2022: Special focus on gender, New York https://washdata-org/reports/imp2023-wash-households.

WHO/UNICEF (2021) progress on sanitation & Drinking water-2015 update and MDG assessment.WHO,Geneva.Availablefrom https://www.unicef.org/reports/progress-sanitation-and-drinking-water

WHO (2023) preventing diarrhea through better water, sanitation and hygiene; Exposure and impacts in Lowand Middle-income countries WHO, Geneva Available from https;//www

WHO (2024). Sanitation.WHO https//www.who.int