

ASSESSMENT OF OPEN DEFECATION PRACTICES IN KADUNA STATE, NIGERIA

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ABSTRACT

Open Defecation (OD) remains a major socio-economic, cultural and public health challenge in many developing countries, including Nigeria. The study examined the practice and spatial distribution of open defecation in rural and urban areas of Kaduna State, Nigeria, with a view to informing effective interventions to address this critical public health issue and to achieve ODF status in Kaduna State by 2030. A total of three hundred and ninety-two (392) respondents participated in the survey. A descriptive cross-sectional survey design was used for the study. Three (3) LGAs were selected from the Kaduna North Senatorial District. Data were acquired from both primary and secondary sources. GPS device was used to record the Geographic coordinates of OD sites, and photographs of existing sanitary facilities were collected using a digital phone camera. The findings revealed that 40% of respondent reported that OD is practiced very highly in their community. Also, respondents in the 18-29 age group defecate in open spaces. More than 80% of respondents across the LGAs attributed OD to lack of education and low monthly income, respectively. Major areas of OD on farmlands in rural areas constituted about 30% of the respondents. Urban areas revealed 40% along gutters and drainages. Only 20% of the respondents were aware of the health challenges related to OD. Hence, the study concluded that achieving ODF status in Kaduna State by 2030 is quite difficult. The study recommended the urgent provision of WASH materials in all the LGAs to combat open defecation in the State.

Keywords: Open Defecation, Sanitation, low income, WASH, Behavior Change, Public Health

INTRODUCTION

The habit of using open fields and woods for defecation rather than using a toilet has long been a major public health and environmental concern (Farouk, Tukur and Sarki, 2024). It is estimated that about 3.5 billion people worldwide lacked access to basic sanitary facilities, while some 2 billion lacked basic hygiene services in 2022 (World Health Organization [WHO], 2023). Onyemaechi, Akinyemi, Aribodor, Fajobi and Okoro (2022) posit that open defecation is the act of defecating without using a toilet, in a manner that does not support the hygienic removal of human waste from the body, ultimately leading to many adverse effects on public health at large. Ngwu (2017) pointed out that open defecation is an ancient practice in which people excrete outside a designated toilet, often deliberately due to unwholesome cultural practices, superstitions, and personal unhygienic behaviors resulting from the unavailability or lack of access to modern toilet

facilities. According to a World Bank report in 2015, 39.84% of the Indian population practices open defecation, and it is known as the country with the highest number of people practicing open defecation (WHO/UNICEF, 2014). Other countries with high percentage are; Indonesia (63 million people), Nigeria (48 million people), Pakistan (40 million people), Ethiopia (38 million people), Sudan (19 million people), Nepal (15 million people), China (14 million people), Niger (12 million people), Burkina-Faso (9.7 million people), (WHO/UNICEF, 2010).

Studies have shown that the impact of open defecation do not just reflect on the health of the masses but also, poses negative social and economic implications for the public as Chambers (2009) noted that the practice of open defecation in urban areas needs attention because it is as detrimental to health impacts (particularly for early life health) are more significant from open defecation when the population density is high. For instance, the same amount of open defecation is twice as bad in a place with a high average population density vis-à-vis a low one. In the African region, Odafivwotu (2019) asserted that people still practiced open defecation, the majority of whom live in rural areas. In 2015, 76% of Eritrea's population practiced open defecation (the highest in the region), while Seychelles, Réunion, and Mauritius were reported as Open Defecation Free (ODF), in contrast to the global and Sub-Saharan Africa averages of 12% and 23%, respectively.

Nigeria is ranked very high among countries with high rates of open defecation. The Federal Ministry of Water Resources (2021) asserted that about 48 million Nigerians (25% of the country's population) still practiced open defecation in 2021, out of which 33 million people lived in rural areas and 15 million people lived in urban areas, a figure that has remained relatively the same since the start of the SDGs. Also, approximately 179 million Nigerians, which accounts for up to 87 percent of the population, lack access to safely managed drinking water services. Uthman (2023) revealed that open defecators in the North-West geopolitical zone constitute about 11%; North-East, 17%; North-Central, 47%; South-South, 23%; South-West, 24%; and South-East, 23%.

In Kaduna State, UNICEF (2024) reported that about 619,000 people still practice open defecation. Abubakar (2018), in his study, noted that a roadmap to eradicate open defecation at the state level was established by Kaduna Rural and Water Supply and Sanitation Agency (KADRUWASSA). This agency was set up to help reduce the adverse effects of poor sanitation and design a program to become ODF by 2030. Therefore, this study is suitable for examining these socio-environmental problems that threaten the socio-economic development of the country and Kaduna State in particular, towards achieving an open defecation-free status at the state level by 2030, and this forms the basis for this study.

The practice of open defecation in Kaduna State has far-reaching consequences, including the prevalence of waterborne diseases such as cholera, typhoid diarrhoea, contaminated surface and ground water, environmental degradation and heightened vulnerability of women and children. Most of these unhygienic practices are still on the rise in rural and urban communities, where sanitary hygiene is inadequate in the State. Despite efforts to improve sanitation infrastructure, many individuals continue to engage in open defecation, exposing themselves and their communities to waterborne diseases, malnutrition, and other adverse outcomes. The Kaduna State Rural and Water Sanitation Agency (KADRUWASSA, 2025) reported that by October 2025, Kaduna State had formally proclaimed itself to be ODF and had constructed over one hundred thousand (100,000) toilets covering both rural and urban areas of the State (KADRUWASSA, 2019). But the reality on the ground paints a different picture, especially in rural parts of the State, where low incomes, cultural beliefs, and low levels of education are the major constraints to improved sanitation. Against this backdrop, this study seeks to bridge a long-standing gap by assessing the socio-economic and health implications driving open defecation practices, with a view to informing effective interventions to address this critical public health issue.

The study addressed the following pertinent questions regarding open defecation in Kaduna State.

- i. What is the prevalence rate of open defecation practices in Kaduna State?
- ii. What are the socio-economic and health implications of open defecation in Kaduna State?

The study covered both rural and urban LGAs in the State—the spatial extent covered three LGAs from the Kaduna North Senatorial District. Three LGAs out of the eight LGAs in the senatorial zone were selected. 1 LGA with the highest population, 1 ODF, and 1 OD LGA were selected for the selection of the LGAs. The selected LGAs are: Zaria, Lere, and Kudan.

Sample Frame and Size

Table 1 presents the Sampling Frame, Sample Size, and Study Population.

Senatorial Zones	LGAs	NPC 2025 Projected Population	Sample Size (n)	No. of Questionnaires Administered	No. of Unreturned Questionnaires
Kaduna North	Lere	596,851	$400 \times \frac{596,851}{1,555,962} = 153$	151	2
	Zaria	714,995	$400 \times \frac{714,995}{1,555,962} = 184$	181	3
	Kudan	244,116	$400 \times \frac{244,116}{1,555,962} = 63$	60	3
	Sub total	1,555,962	400	392	8

Source: Authors' Field Work (2025)

Slovin's (1960) population determination formula for sample size was used to calculate the number of questionnaires administered, as shown in Table 1. The adoption of this technique is to ensure easy access to respondents and to obtain a fair representation. Slovin's (1960) formula is thus:

MATERIALS AND METHODS

Study Area

Kaduna State is situated in the mid-central part of Northern Nigeria. The State is located between latitudes 9° 03' and 11° 32' North of the Equator and longitudes 6° 03' and 8° 38' East of the Greenwich Meridian, as shown in Figure 1. Niger State to the west, Bauchi and Plateau States to the east, and Nasarawa State with FCT to the south. Kaduna State has 3 senatorial districts, namely Kaduna North, Kaduna South and Kaduna Central; 23 Local Government Areas (LGAs); and 255 political wards.

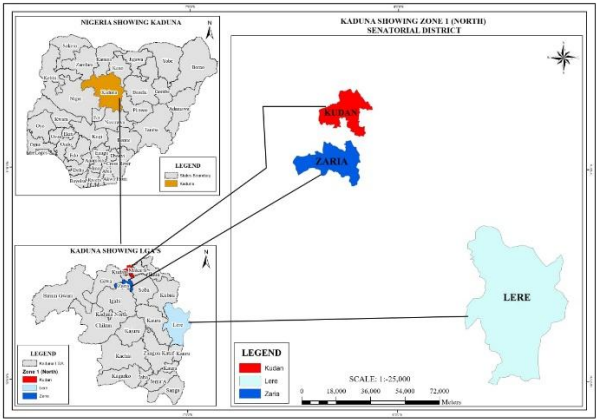


Figure 1: The Study Area

Study Design

The research adopted a cross-sectional descriptive study design. This involved administering structured questionnaires and using an observational checklist of respondents' sanitary facilities.

Study Population

The study population comprised adult residents of both genders aged 18 years and above within the study area. The target population is 1,555,962 people (NPC, 2006).

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

where n = the sample size, N = population, e = limited sample error (0.05) at 95% confidence level.

$$n = \frac{1,555,962}{1 + 1,555,962 (0.05)(0.05)} = \frac{1,555,962}{3,890,905} = 399.9 \approx 400$$

Of the 400 distributed questionnaires, eight (8) were unreturned. Therefore, 392 questionnaires were used for the study.

Sampling Procedure

A multi-stage sampling technique was adopted in conducting this research. The first stage involved the use of political boundaries. In this case, the senatorial zones were used. The second stage was the systematic selection of three (3) LGAs from each senatorial district. One Local Government Area (LGA) that had been certified as Open Defecation Free (ODF), one LGA that was still practicing Open Defecation (OD), and one LGA with the highest population were selected for the study.

Data Collection

Data were generated from both qualitative and quantitative methods. Three (3) field assistants were trained on the handling and collection of field data. The assistants were assigned to the senatorial zones, and one other was attached to the researcher. Research assistants were recruited and trained owing to their familiarity with the local environment, which facilitated effective data collection. Faeces in places like markets, along drainages and rail tracks and motor parks were recorded using a handheld GPS device. Also, physical observations and the administration of structured multiple-choice questions using questionnaire instruments were conducted with respondents. Oral interviews were recorded in the field for proper documentation. Photographs were collected as pictorial evidence of in-situ defecation.

Methods of Data Analysis

The data collected from the field were coded and processed on a computer for analysis using the Statistical Package for the Social Sciences (SPSS) version 25 and Microsoft Excel 2016. MS Excel was used to process and present data in tables and charts. SPSS was used to input, code and clean the survey data for analysis. It provided statistical estimates such as mean, frequency and percentages to simplify the results. Open defecation points collected were plotted using QGIS (3.44.6) software.

Ethical consideration

Approval to conduct the study and access the communities was also obtained from the rural heads. Verbal informed consent was duly sought from every respondent. Participation was strictly voluntary; respondents were informed that they had the right to withdraw at any time without penalty. The respondents were assured of confidentiality and privacy, and the questionnaire contained no identifying information to ensure anonymity.

RESULTS AND DISCUSSIONS

Socio-Demographic Characteristics of the Respondents

The sociodemographic information of the respondents, such as gender, age, educational attainment, marital status, household ownership, occupation, monthly income, and religious affiliation, was statistically analyzed using survey data. The information is presented in Table 2.

Table 2: Socio-Demographic Characteristics of Respondents in Kaduna North Senatorial District

S/N	Socio-Demography	LERE		ZARIA		KUDAN	
		Frequency	(%)	Frequency	(%)	Frequency	(%)
1	Gender						
	Male	96	63.6	102	56.4	45	75
	Female	55	36.4	79	43.6	15	25
	Total	151	100	181	100	60	100
	Age						
	18-29	55	36.4	67	37	27	45
	30-39	32	21.2	52	28.7	15	25
	40-49	30	19.9	40	22.1	11	18.3
	50-59	26	17.2	19	10.5	5	8.3
	60 and above	8	5.3	3	1.7	2	3.3
2	Total	151	100	181	100	60	100
3	Monthly income						
	Below ₦100,000	125	82.8	97	53.6	54	90
	Above ₦100,000	26	17.2	84	46.4	6	10
	Total	151	100	181	100	60	100
	Educational Background						
4	Formal	27	17.9	156	86.2	16	26.7
	Informal	124	82.1	25	13.8	44	73.3
	Total	151	100	181	100	60	100
5	Marital status						
	Single	51	33.8	65	35.9	25	41.7
	Married	36	23.8	54	29.8	17	28.3

	Divorced	28	18.5	35	19.3	9	15
	Separated	27	17.9	24	13.3	7	11.7
	Widowed	9	5.9	3	1.7	2	3.3
	Total	151	100	181	100	60	100
	Household ownership						
	Yes	132	87.4	172	95	47	78.3
	No	19	12.6	9	5	13	21.7
6	Total	151	100	181	100	60	100
	Ethnicity						
	Hausa	142	94	163	90.1	53	88.3
	Igbo	5	3.3	5	2.8	1	1.7
	Yoruba	3	1.9	12	6.6	2	3.3
	Others	1	0.7	1	0.6	4	6.6
7	Total	151	100	181	100	60	100
	Religion						
	Islam	133	88.1	178	98.3	56	93.3
	Christianity	15	9.9	2	1	3	5
	Traditional	3	1.9	1	0.7	1	1.7
8	Total	151	100	181	100	60	100

Source: Author's Field Work (2025)

From Table 2, it was revealed that the socio-demographic percentage by age of male respondents who practice OD is more than 60% in Lere LGA and in Zaria and Kudan (80%). More males defecate than females. This could be because OD is ingrained in males of Kudan LGA more than in females of other LGAs. This is consistent with Yadav (2024), which found that OD is practiced more among males than females among people in rural Bihar, India. The result further revealed that more than 30% of the respondents within the age range of 18-29 defecate. This range is within adulthood. This means that OD is a social norm in adulthood that is difficult to change. This concurs with the study by Dahi et al. (2022), which finds that OD is a social norm that is difficult to change. Less than 3% are 60 years and above. The result showed that fewer than 80% earn ₦100,000, while less than 70% reported having no formal education. This attests that most of them cannot afford to build toilets in their homes, opt for shared sanitary facilities, or have the knowledge to manage their waste properly. The results revealed that over 40% of the respondents are single and more than 10% are separated. This means that most of them preferred to use shared sanitary facilities because they were unmarried. The result further revealed that respondents were predominantly Hausa, with over 90% identifying as Such. This is due to the dominance of Hausa and the Northern Majority of the Senatorial Zone. The result further revealed that more than 90% of the respondents practice Islam. A smaller proportion practiced Christianity. This was due to the dominance of religion, which was tied to ethnicity in the study's core Northern Senatorial Zone.

Income and Education Level of Respondents

Table 3 presents the income levels of respondents earning below ₦100,000 across the LGAs (Lere, Zaria and Kudan).

Income and Education Level of Respondents

	LERE	ZARIA	KUDAN	
Monthly Income	F %	F %	F %	%
Below ₦100,000	132 87.4	145 80.1	45 75.0	
Above ₦100,000	19 12.6	36 18.9	15 25.0	
Total	151 100	181 100	60 100	
Educational Level				
Formal	29 19.2	25 13.8	5 8.3	
Informal	122 80.8	156 86.2	55 91.7	
Total	151 100	181 100	60 100	

Source: Author's Fieldwork (2025)

From the table, the income level below ₦100,000 in the study is very high, as the majority of the respondents could not afford to provide sanitary facilities in their homes. Also, this has forced them to opt for either shared facilities or defecate openly. This finding is congruent with Jenkins (2007), which revealed that financial constraints were the most limiting factor regarding toilet ownership. The formal education level among the respondents was revealed to be less than 20%. This percentage is very low, as many respondents lack knowledge of, access to and use of sanitary facilities. These findings support the study by Belay et al. (2022), which found that low education levels are associated with open defecation.

Practice of Open Defecation

The findings are presented in Tables 4, 5, and 6.

Practice of Open Defecation among Respondents

Table 4 presents the practice of open defecation among the respondents. It was revealed that 40% of the respondents opined that open defecation (OD) is very high in their community. This percentage is quite alarming and may be attributed to the respondents' socioeconomic status and standard of living. This is in congruence with the findings of Ayadi and Rotuwa (2020) that there's a high prevalence of OD practice in the residential zones of Akure, Nigeria. The chart is shown in the figure.

Table 4: Practice of open defecation among Respondents

Variable	Frequency	Percentage (%)
Very high	169	43.1
High	112	28.6
Undecided	52	13.3
Low	32	8.2
Very low	27	6.9
Total	392	100

Source: Fieldwork (2025)

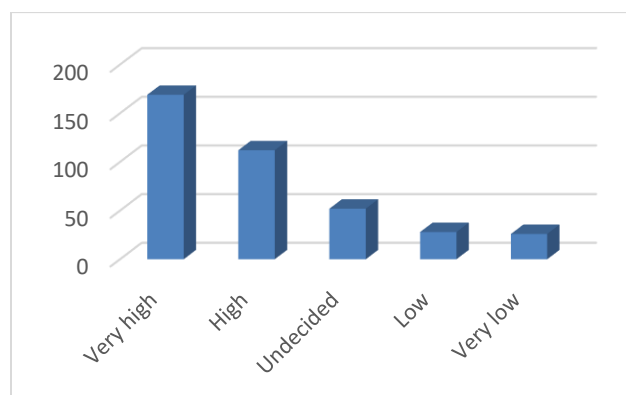


Figure 2: Graph showing practice of open defecation among respondents

Source: Fieldwork (2025)

This high response also supports the findings on the existence of open defecation in a Key Informant Interview (KII) conducted in Kofar Gabas Kudan LGA, which stated thus;

"Well, for me, many people are practicing it here. If you go to some public schools or along drainage paths, you will see it. It is very prevalent in my community." (Male, Farmer, 27 years of age, Rural residence).

Practice of Open Defecation among age group

The study further identified the age category of people involved in open defecation to understand the age demographics of the practice. This is shown in Table 5. It was revealed that about 40% of the respondents were within 18-28 years and 20% within 29-38 years involved in open defecation. This age range is very high. This means that most respondents in the age group preferred to use a shared sanitary facility. This also led to poor sanitary hygiene practices, as more people are forced to defecate openly. This

supports the findings of Makhfudli, Rachmawati and Andini (2017) that open defecation is high within the 18-28 age group.

Table 5: Age Group of Open Defecation among Respondents

Age	Frequency	Percentage
18-29	154	39.4
30-39	76	19.5
40-49	66	16.8
50-59	43	10.9
60 and above	53	13.6
Total	392	100

Source: Fieldwork (2025)

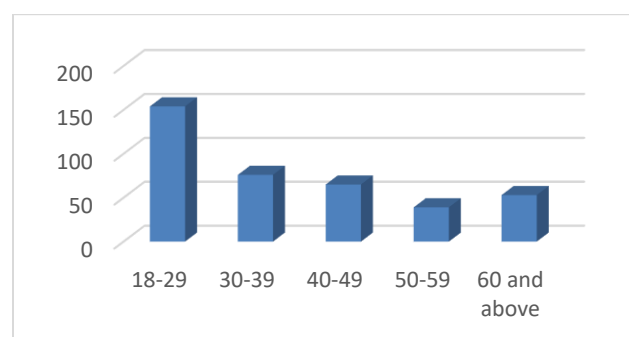


Figure 3: Graph showing the practice of open defecation among respondents

Source: Fieldwork (2025)

Respondents' opinion on whether open defecation is practiced in their community

Table 6: Respondents' opinion on whether open defecation is practiced in their community

Variable	Frequency	Percentage (%)
Yes	256	65.3
No	96	24.5
Don't know	40	10.2
Total	392	100

Source: Fieldwork (2025)

Table 6 revealed that more than 60% of respondents affirmed that open defecation is practiced in their community. Less than 25% of respondents reported open defecation in their community. At the same time, 10% of respondents were unaware of the practice in their community. This result contradicts the findings of Ayanlola et al. (2025), which reported that 83.6% of residents in Lagos do not practice open defecation in their communities.

This response on the practice of open defecation can be attributed to the fact that the majority of the respondents live in rural areas where the practice of open defecation is endemic.

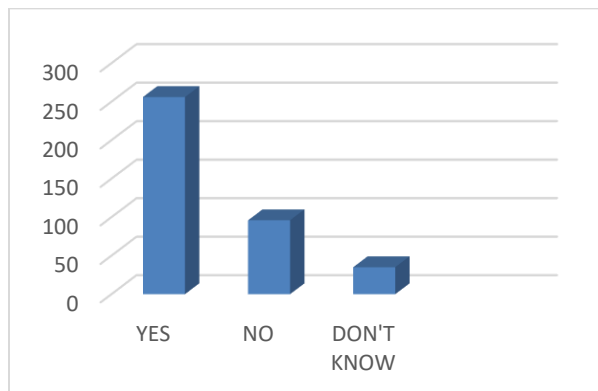


Figure 4: Graph showing respondents' opinion on whether open defecation is practiced in the study.

Source: Fieldwork (2025)

The findings from KII corroborated this result, as a respondent in Durumi, Zaria LGA stated thus;

"The practice is very much in our community. Most people enter the bush, primary school or any form of enclosure; they use it for defecation. Many people do it" (Male, Farmer, 48 years of Age, Rural residence).

Another respondent corroborated the first assertion, stating thus: -
"This topic is a little funny: open defecation... (that is, those people that defecate anywhere, anyhow). It happens. They do it in some of the public schools that are not fenced. You know, everywhere here is urban; there are not many bushes or streams, but around schools, Motor Parks and any open environment. My guess is they mostly do it at night or very early in the morning." (Female, Retired Teacher, 72 years of Age, Urban residence)

Respondents Attitude Towards Open Defecation

The results of respondents' attitude towards open defecation are presented in Table 7.

Table 7: Respondents' Attitude towards open defecation

Variable	Frequency	Percentage (%)
Good	76	19.4
Moderate	120	30.6
Poor	196	50.0
Total	392	100

Source: Fieldwork (2025)

The percentage of respondents with a poor attitude was the highest. This attests that open defecation was perceived as a social practice in the LGAs, with the belief that it had no health or environmental consequences. This supports the findings of Oyegoke, Ogunwale and Folorunso (2025), which revealed that 82.8% of respondents had a poor attitude towards OD practice. The pie chart is shown in Figure 1.3.

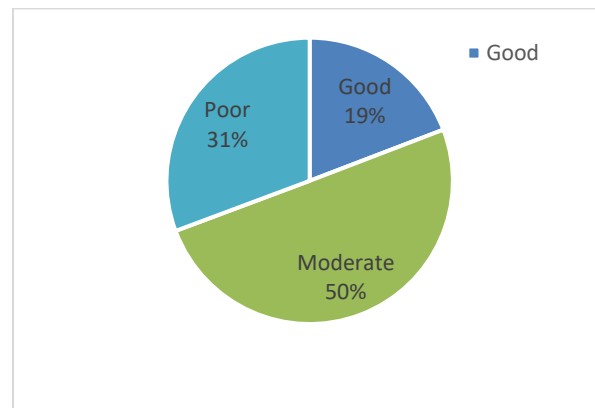


Figure 5: Respondents' Attitude towards open defecation

Source: Fieldwork (2025)

Respondents' Opinion on Open defecation and hygiene practices

Table 1.8 shows the respondents' opinion on open defecation and hygiene practices. It was found that more than 40% of respondents sometimes washed their hands after defecation, suggesting poor hygiene practices among the residents. Surprisingly, more than 70% of the respondents practiced open defecation directly into nearby bushes and canals, while 20% defecated at home and threw their excreta into the nearby bushes or canals.

Table 8: Respondents' Opinion on Open defecation and hygiene practices

Variables	Frequency (n=392)	Percentage (%)
I wash my hands after defecating.		
Yes	51	13.0
No	183	46.8
Sometimes		
Practice of open defecation		
People defecate directly into nearby bushes and canals	298	76.2
People defecate at home and dispose of it into nearby bushes and canals	93	23.8
Why do people engage in open defecation?		
No toilet facilities available in their houses	120	30.7
Insufficiency of toilet facilities in public areas	133	34.0
Lack of proper knowledge of hygiene	75	19.2
The government did not provide toilet facilities	63	16.1

Source: Fieldwork (2025)

Similarly, 30% of respondents agreed that people engaged in open defecation due to a lack of toilet facilities at home while 20% responded that it was lack of proper knowledge of hygiene, especially with a high level of illiteracy in the community, less than 20% responded that government did not provide toilet facilities and less than 30% responded that the open defecation was due to

inadequate toilet facilities in public areas.

Forms and Levels of Practice of Open Defecation

The form of open defecation is presented in the table. It was revealed that about 30% of the respondents practiced open defecation on farmland in the rural areas, while less than 20% practiced on farmland in urban areas. This means there are more open spaces where people defecate in rural areas than in urban areas.

Forms of Open Defecation

Variables	Residential Places	
	Rural	Urban
	F (%)	F (%)
Farmland	123 19.4	76
Rivers	60 15.6	53
Gutters and drainages	52 44.8	175
Bush	121 14.3	56
Uncompleted building	35 7.9	31
Total	391 100	391

Source: Fieldwork (2025)

Also, about 15% defecate in rivers in rural areas, and 15.6% in urban areas. In a KII conducted in Fada community in Jema'a LGA,

one of the respondents stated thus;

'You see, open defecation, especially in our community, is regarded as a social practice that strengthens friendships among ourselves, as we assemble along the riverside to defecate, we enjoy and converse at the same time, you see, there's togetherness in the practice'.

(Female, trader, 33 years of Age, Rural residence).

This is consistent with the study by Antwi-Agyei, Sand, Anne, Vivien, Jane, Kelly, Christine, Joseph, George, and Jeroen (2015), which documented that open defecation in rivers encourages social practices, as some people take delight in the act.

Another respondent in a KII conducted in Rigasa community in Igabi LGA said a contrary view to the above;

'Defecating in a flowing river is more hygienic than a pit latrine, because the river will carry the faeces far away, so there's no bad smells and disease'. **(Male, trader, 43 years of Age, urban residence).**

From the above response, defecating in rivers in rural areas was perceived as a social practice, whereas in urban areas it was considered more hygienic. In addition, less than 20% defecate in gutters and drainage in rural areas, while more than 40% do so in urban areas. This means that there are more gutters and drainage in urban areas than in rural areas. 30% of respondents defecate in the bush in rural areas, compared with fewer than 15% in urban areas. This means there are more bushes in rural areas than in urban areas. Finally, 8.9% of respondents defecate in incomplete buildings in rural areas, compared with 7.9% in urban areas. This means that there are more incomplete buildings in urban areas than in rural areas. The bar chart is shown in Figure 6.

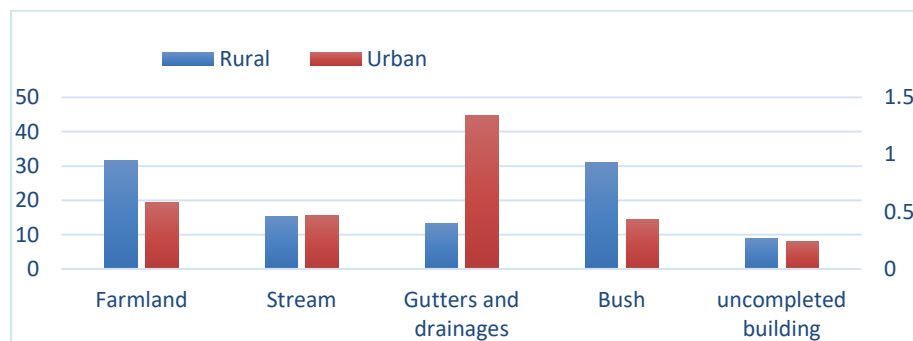


Figure 6: Chart showing areas mostly affected by Open Defecation

Source: Fieldwork (2025)

In urban areas, open defecation in drainages and gutters was high, at about 44.8%. This means there's inadequate **access to safe, clean and private toilet facilities in those areas**. So, this made it possible for most respondents to defecate in urban gutters and drainage systems. Plate 1. Shows open defecation along a drainage gutter in Tudun Wada, Zaria LGA.



Plate 1: Open Defecation close to a Drainage in Tudun Wada, Zaria LGA
Source: Fieldwork (2025)



Plate 2: Open defecation behind a residential building in Tudun Wada, Lere LGA
Source: Fieldwork (2025)



Plate 3: Open defecation along a rail track along Sokoto Road, Kudan LGA, Kaduna South LGA
Source: Fieldwork (2025)

Awareness of the Health Effects of Open Defecation

The results on awareness of the health challenges of open defecation among the communities revealed that the majority of respondents were aware of these challenges. For instance, in Saminaka community (Jema'a LGA), an older female participant in FGD stated thus;

"no, open defecation has no effect; I don't think it has any health effect". (female, 65 years of Age, rural residence).

Another older male respondent in a KII conducted at Saminaka community (Lere LGA) stated:

"I don't know that one can get infected from defecating in the open; I think it is only from pit toilet that one gets infected from defecating in the open". (male, 67 years of Age, rural residence).

Except for these few respondents, the majority of the respondents revealed that defecating in the open results in different illnesses and infections such as typhoid, cholera and skin itching. Other respondents equally stated that open defecation may result in snake or scorpion bites. A female respondent in a KII stated thus;

"there are many health challenges but typhoid and running stomach are most common effects of open defecation". (female, 42 years of Age, rural residence).

Some of the views of the respondents are expressed thus:

"we are aware of the many health challenges associated with open defecation; the only thing we do is to avoid defecating in a particular spot many times rather when we defecate in a particular area for some days, you have to go another location the following day to avoid contacting diseases from the earlier ones". (older male respondent in KII at Takanai community in Zangon Kataf LGA)

Another older male respondent in an FGD conducted in Kafanchan market stated:

"before when we were given birth, defecating in the open had no health effect; nowadays it can cause some health problems even an ordinary pit toilet infects people except the one that can be flushed". (Male, trader, 32 years of Age, urban residence).

Another older female participant in an FGD at Rigasa community stated:

"It has; the more people defecate at places not meant to, the more they are infected. Even the environment too is not healthy. Diseases that are contracted through open defecation are many; all these bacteria that cause running stomach (dysentery). Sometimes when people defecate in open areas, they start having running stomach. There are many and I can't mention all". (Male, 42 years of Age, urban residence).

Another male participant also stated thus;

"It is what causes diseases in someone's health. When my relative had a running stomach, and typhoid, when we took him to hospital, we were told that what brought about it is open defecation". (Male, 33 years of Age, urban residence).

"Emm, open defecation can cause infertility in women due to the heat coming out from the toilet". (female, 37 years of Age, urban residence).

The above statement is in support of the findings of Ekhorgbon (2024), which revealed that heat from latrines causes infections leading to infertility in women.

DISCUSSION

The practice of open defecation is a global issue due to its implications on human health, dignity, and the environment. This study explored the practice of open defecation in Kaduna State. The Findings indicated that open defecation is quite alarming, as more than half of the respondents (78%) demonstrated high

practice while 22% exhibited low practice. Respondents' practice of open defecation may be influenced by their belief systems, cultural and traditional practices, or even behavioral influences. Each of these perspectives may exert significant influence (positive or negative) on their practice. This suggests that interventions to achieve an open defecation-free environment should be tailored towards changing the behavioral patterns of individuals who frequently practice open defecation. This finding was similarly reported by Asare, Gyan and Denteh (2019), who found that respondents perceived open defecation as a bad practice.

However, it is worrisome that respondents in the current study believed that defecating on farmlands increases soil fertility and felt it is beneficial to man and the environment. This shows pure negligence of the effect of open defecation on human health. The low-risk perception of the adverse effects of open defecation on human health may largely account for their negative perception towards open defecation practice. Reasons for not having access to toilets, as indicated by the respondents, include low income, high cost of sanitary equipment, and the absence of toilet facilities in their homes. These reasons may be linked to respondents' socio-economic status; the poorer population suffers most from lack of access to sanitation facilities. This finding corroborates that of Anuradha *et al.* (2017), where similar reasons for not having access to a latrine/toilet were documented. The significant lack of access to toilet facilities confirms the high prevalence of open defecation practices among respondents in the current study. Also, the majority of respondents reported sometimes washing their hands after defecation. This act is unhygienic, as it can introduce infectious diseases, causing serious health concerns. Education and monthly income levels of the respondents across the LGAs were found to be very poor, as the majority lack adequate knowledge of sanitary practices. This, in turn, affects income levels, as the majority earn below ₦100,000 per month. Health awareness revealed that the majority of respondents recognized the health challenges posed by open defecation. Illnesses and infections such as typhoid, malaria and skin itching were identified among respondents.

Conclusion

Open defecation is still a common practice in rural Nigeria, especially where there is significant lack or limited access to improved sanitation facilities. The drive to protect human health and improve environmental sanitation would essentially require the end of open defecation. Findings in this study showed that respondents had good knowledge of open defecation, exhibited positive perceptions about open defecation, but the majority confirmed that they had defecated in open fields. It was also observed that basic sanitation facilities in the study area such as toilets, access to improved water sources, and drainage systems were not available among the respondents. Hence, achieving an open defecation-free environment would require the collaborative effort of relevant stakeholders.

Recommendations

The study recommended that the State Government adopt sanitation marketing through awareness campaigns, encourage behavior change and promote the construction of toilets.

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