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Open Defaecation; A Focus on Kighir Community, Makurdi, Benue State, Nigeria

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ABSTRACT

Open air defaecation is a critical health challenge globally, affecting almost 1 billion people worldwide and contributing significantly to an estimated 842,000 annual mortality due to sanitation-related diseases. This study was conducted to determine the knowledge, attitude, beliefs and practices of open air defaecation in Kighir Community of Makurdi, Benue State. A structured questionnaire was used for eliciting information from the study subjects. A total of 100 residents consented to the study; majority of whom were males (60%), age group 31-40years (52.0%). Knowledge of open air defaecation was high (98.0%) with majority of them identifying open fields (57.0%), gutters (13.0%), streets (16.0%), and dumpsites (14.0%) as sites for open air defaecation. Most respondents (61.0%) had no belief pertaining to open defaecation while 39.0% of them had beliefs. 39.0% of the respondents see themselves practicing open defaecation in the future, while 60% of them revealed they want open air defaecation to stop. There was a significant relationship between awareness of open air defaecation and its practice in Kighir community. Site for open defecation, knowledge of consequence, diseases transmitted and mode of infection resulting from open defaecation was also related to the practice of open air defaecation ($P < 0.05$). Knowledge of open air defaecation in the study area is very high. The dangers posed by the practice of open defaecation is however vague to the people of Kighir. The people of Kighir need enlightenment on the dangers posed by it and they also need good toilet facilities to prevent the outbreak of excreta-born diseases.

Keywords: Defaecation, Diseases, Kighir, Toilet, Knowledge, Makurdi

1.0 INTRODUCTION

Open defaecation continues to be a critical health challenge, affecting almost 1 billion people worldwide and contributing significantly to an estimated 842,000 annual mortality resulting from sanitation-related diseases (WHO, 2014). It is a major environmental health problem in sub-Saharan Africa. Although open defaecation rates have been reducing gradually since 2000, the Millennium Development Goals (MDGs) era ended without all countries in sub-Saharan Africa achieving target 7.C., which included reducing by half the proportion of the population without sustainable access to safe and basic sanitation by 2015 (UN, 2015). Some estimates indicate that, at the current rate, this can only be achieved by 2026. All sustainable development goal (SDG) regions saw a drop in the number of people practicing open defaecation, except for sub-Saharan Africa, where high population growth led to an increase in open defaecation from 204 million to 220 million (WHO/UNICEF, 2015).

Those countries where open defaecation is most widely practiced have the highest numbers of deaths of children under the age of five, as well as high levels of under nutrition, high levels of poverty, and large disparities between the rich and poor. In sub-Saharan Africa, 200,000 children under the age of five die from diarrhoea annually, while the numbers dying from cholera within the region are similarly high because of poor sanitation, hygiene practices, and unsafe water supplies (WHO, 2014; World Bank, 2015).

Open defaecation portends grave environmental, health and socio-economic implications in both the urban and rural areas (Ayadi and Rotowa, 2020). It is estimated that 8.22% of the urban population in sub-Saharan Africa engage in it (World Bank, 2015). The practice of open defaecation in urban areas needs attention because research has shown that detrimental health impacts (particularly for early life health) are more significant from open defaecation when the population density is high. For instance, the

same amount of open defaecation is twice as bad in a place with a high population density average vis-a-vis a low population density average (Chambers, 2009).

In year 2015, around 46 million people in Nigeria who were reported to be defaecating in the open. Another 56 million people were estimated to be added during the next ten years. This means a total of 102 million people or 20 million households should have access to a toilet and use it. Besides, sanitation facilities have to be provided to numerous institutions such as schools, health centres, market centres, motor parks, highway eateries, jetties and religious places so as not to have any open defaecation around these places (UNICEF and FMWR, 2015).

According to a World Bank Report (2012), around 122,000 Nigerians including 87,000 children under 5 die each year from diarrhoea; nearly 90% is directly attributed to water, sanitation and hygiene.

The extent of open defaecation varies from as low as 1.2% of households to as high as 65.8% with Benue State having about 52.9% (UNICEF and FMWR, 2015). Open defaecation is practiced at an alarming rate in Kighir, Makurdi Local Government Area of Benue State. Faeces are found in open spaces and in-between houses,

some rapped in black polythene bags, with the resultant stench and fly's nuisance. The sight and smell of faeces within residential neighbourhood reduce the aesthetic quality of the environment and causes embarrassment to residents and visitors to the Community. This also put residents at the risk of sanitation related diseases such as cholera, diarrhoea, and typhoid.

This study aims at gaining insight into the knowledge, attitude, practice and beliefs of residents in this community as regards open air defaecation with a view of developing a valid approach to preventing this practice through public health education or enlightenment.

2.0 MATERIALS AND METHODS

2.1 Study Area

This study was carried out in Makurdi, the capital of Benue state, Nigeria. The city is located in central Nigeria along the Benue River, on latitude $07^{\circ} 43' N$ and Longitude $08^{\circ} 35' E$. Makurdi lies on the south bank of the Benue River. As of 2007, Makurdi had an estimated population of 500,797. It has a mean annual rainfall of about 1,290mm (Akintola, 1986). Temperature in Makurdi is however, generally high throughout the year, with February and March as the hottest months. Temperature in Makurdi varies from a daily of $40^{\circ} C$ and a minimum of $22.5^{\circ} C$.

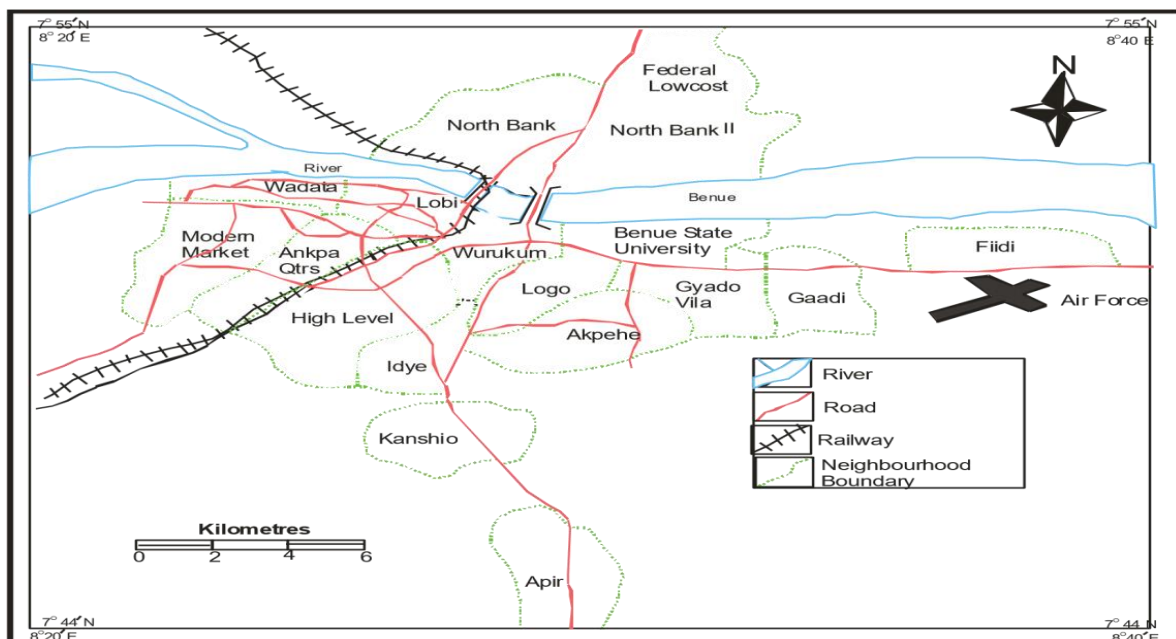


Figure 1: Map of Makurdi metropolis
Source: Ministry of Lands and Survey, Makurdi, 2015

2.2 Sample Population

Kighir community was considered for this study. This community is known for having a record of severally dispersed faeces brought about as a result of open defaecation by residents of the community.

2.2.1 Sample Size

The selected sample size for this study was 100. These samples were randomly collected from the residents of Kighir community who consented to the study.

2.3 Data Collection/ Questionnaire Administration

The purpose of the study was explained to the people involved in the study and written informed consents were obtained prior to the commencement of the study. Members willing to participate in the study were then administered questionnaires. The questionnaire was pre-tested and modified to address identified needs and additional required information. Based on the findings of the questionnaire, the people's awareness, knowledge, community practices, hygiene and sanitation practices as it influences transmission of toxocariasis in Makurdi was assessed.

2.4 Data Analysis

The data obtained were analysed using Statistical Package for Social Science (SPSS) version 21.0. Descriptive statistics such as percentages, proportions and frequency distributions were generated and subjected to Pearson's chi-square test to determine the association between sociodemographic characteristics of respondents and knowledge, practice and beliefs. Confidence level was held at 95% and considered significant when the p-values were less than <0.05 .

3.0 RESULTS

The participants in this study were 60.0% (60) were males while 40(40%) were females. Majority of them were married 52(52.0%). The

dominant age group involved was 31-40years 52(52.0%). Primary school leavers were 33(33.0%), those with no formal education were 33(33.0%) while those with tertiary education were 12(12.0%). Farmers were more 66(61.0%) followed by public/civil servants 20(20.0%), traders 7(7.0%) and other menial occupations (1.0%). Household sizes of 4-6 was the most encountered 66(66.0%) and the dominant religion was Christianity 89(89.0%) (Table 1)

This study showed a high knowledge base of open air defaecation among the respondents 98(98.0%). Knowledge of sites for open air defaecation included: open fields (57.0%), Gutters (13.0%), Streets (16.0%) and Dumpsites (14.0%) (Table 2).

Majority of the respondents utilized pit latrine 47(47.0%) for defaecation, followed by those who defaecate in the open 40(40.0%). The least prevalence was obtained among users of bucket system for defaecation (4.0%). Preferable place of defaecation for majority of the respondents was open air (41.0%). Reasons for open air defaecation includes among others factors such as: age-long practice (18.0%), financial constraints (32.0%), Long-distance to public toilet (22.0%), and bad conditions of public toilet (12.0%) (Table 3).

61(61.0%) of the respondents did not have beliefs concerning open air defaecation, some of which were that it is a long-age practice handed over to them by their ancestors 22(22.0%), sharing of public toilet exposes one to spiritual attacks 7(7.0%) and open defaecation brings good fortune 32(32.0%). 39 (39.0%) revealed that they see themselves practicing it in the future. However, 60.0% of the respondents revealed that they want the practice to be brought to an end. 27(27.0%) opined that open air defaecation has benefits and should be practiced (Table 4,5).

Open air defaecation occurs prominently on the streets (19.0%), 12.0% of the participants were aware of the consequences. 14.0% knew that diarrhoea can be transmitted in the process through contaminated food (12.0%) (Table 6).

Table 1: Socio-demographic characteristics of respondents

Demographic variable	Frequency (N=100)	Percentage (%)
		Age
10-20	5	5.0

21-30	39	39.0
31-40	52	52.0
41-50	4	4.0
Level of formal Education		
None	33	33.0
Primary	34	34.0
Secondary	21	21.0
Tertiary	12	12.0
Sex		
Male	60	60.0
Female	40	40.0
Marital Status		
Single	27	27.0
Married	52	52.0
Divorced	14	14.0
Separated	2	2.0
Occupation		
Student	11	11.0
Farming	61	61.0
Public/civil Servant	20	20.0
Trading	7	7.0
Other	1	1.0
Household size		
1-3	18	18.0
4-6	66	66.0
7-9	10	10.0
Above 9	6	6.0
Religion		
Christianity	89	89.0
Islam	3	3.0
Others	8	8.0
Total	100	100.0

Table 2: Knowledge on Open Air defaecation (OAD) among Respondents

Knowledge	Frequency	Percentage (%)
Awareness of Open Air defaecation		
Yes	98.0	98.0
No	2.0	2.0
Sites for Open Air defaecation		
Open fields	57	57.0
Gutters	13	13.0
Streets	16	16.0
Dumpsites	14	14.0
Consequences of OAD		
Aware	21	21.0
Not aware	79	79.0
Diseases Transmitted due to Open Air defaecation		
Diarrhoea	34	34.0
Dysentery	18	18.0
Typhoid	18	18.0
Others	30	30.0
Mode of Spread of infection		

Flies	10	10.0
Contaminated water	30	30.0
Contaminated food	32	32.0
Others	30	30.0
Total	100	100.0

Table 3: Practice on Open Air defaecation (OAD) among Respondents

Practice	Frequency	Percentage (%)
Type of Toilet used		
Pit latrine	47	47.0
Water Closet	9	9.0
Bucket System	4	4.0
Open defaecation	40	40.0
Preferable Place of defaecation		
Sanitary toilet at own house	28	28.0
Community toilet	31	31.0
Open air defaecation	41	41.0
Reasons for Open defaecation		
Age-long practice	18	18.0
Financial constraints	32	32.0
Long-distance to public toilet	22	22.0
Bad condition of public toilet	12	12.0
Others	16	16.0
Total	100	100.0

Table 4: Beliefs on Open Air defaecation (OAD) among Respondents

Beliefs	Frequency	Percentage (%)
Beliefs on Open Air defaecation?		
Yes	61	61.0
No	39	39.0
If yes, What belief? (n=61)		
It is a long-age practice handed over by the ancestors	22	22.0
Sharing of public toilets exposes one to spiritual attacks	7	7.0
Brings good fortune	32	32.0
Total	100	100.0

Table 5: Attitude towards Open Air defaecation (OAD) among Respondents

Attitude	Frequency	Percentage (%)
Do you see yourself practicing open defaecation in the future?		
Yes	39	39.0
No	61	61.0
Open air defaecation should be brought to an end		
Yes	60	60.0
No	40	40.0
Open Air Defecation has Benefits		
Yes	27	27.0

No	73	73.0
Total	100	100.0

Table 6: Relationship between Knowledge and Practice of Open Air defecation

Knowledge	Practice of Open Air defecation	χ^2	P
Awareness of Open Air defecation			
Yes	13	5.86	0.015
No	26		
Sites for Open Air defecation			
Open fields	13	8.39	0.059
Gutters	15		
Streets	19		
Dumpsites	8		
Consequences of OAD			
Aware	12	5.78	0.018
Not aware	27		
Diseases Transmitted due to Open Air defecation			
Diarrhoea	14	8.70	0.033
Dysentery	5		
Typhoid	12		
Others	8		
Mode of Spread of infection			
Flies	2	9.41	0.024
Contaminated water	18		
Contaminated food	12		
Others	7		

4.0 DISCUSSION

Knowledge of Open air defaecation varied greatly among respondents with majority of them having a good knowledge of open air defaecation (98.0%). This observation is in agreement to the findings of Bhardwaj *et al.* (2013) who reported a prevalence of 67% in a rural setup in Maharashtra and the 90% reported by Geeta and Sampath (2014) in Rural Districts of Tamil Nadu, India. However, Amawulu *et al.* (2020) reported a prevalence of 18.7% in Yenagoa Metropolis, Bayelsa State, Nigeria. Ayadi and Rotuwa (2020) also reported a prevalence of 34.2% in residential zones of Akure, Nigeria. The wide difference in their prevalence with that of the present study is surprising, however, it may be attributed to the difference in the socioeconomic status as well as the standard of living of people in the two study areas.

This conforms to findings of Coffey *et al.* (2014), who stated that a country, whose per capital income was less than \$1.25 showed the tendency

of defecating in an open space concluded that poverty could probably be associated with open defecation.

Level of education was observed to be a major role for open defaecation in the study area because the people without any formal education and those who attended only primary school had the highest frequency. This agrees with the report of WHO that the population practicing OAD seems to decline with increasing levels of education (WHO, UNICEF, 2017).

Farmers constituted the single largest group (61%) of respondents, meaning that households that engage in farming have a higher probability of defecating openly. Since the occupation of an individual determines one's sources of income. Generally, farmers' incomes are low compared with those in other occupations. In Makurdi, Benue State, rainfall conditions do not permit all-year farming and the farmers are unemployed for

a greater part of the year which affects their incomes. There is also the likelihood of farmers not having the urge to construct toilet facilities at home since they spend a greater part of their time on farms during the farming season (Osumanu and Kosoe, 2013; Osumanu *et al.*, 2019).

More so, employment goes hand in hand with increased earnings, good health, as well as other socioeconomic outcomes. Therefore, people living in low socioeconomic status cannot afford improved sanitation and thus are less likely to spend on sanitation (Njuguna and Muruka, 2017).

Busienei *et al.* (2019) reported in their research on open defaecation practices in Lodwar, Kenya that there was little latrine coverage in households with low-income sources as compared with households with high-income sources in the study area with the most of the respondents stating that construction materials (perceived as being expensive) influenced latrine ownership. In a similar study to assess factors related to open defaecation behaviour among school-age children in West Lombok, Indonesia, most of the respondents with low-income levels did not have a latrine facility at their homes as they cannot afford the cost of construction (Makhfudli, *et al.*, 2017).

Similarly, a cross-sectional study from 2008 to 2012 from households in rural areas of Tanzania, Indonesia (East Java), and multiple states of India reported that more than 60% of the households living in low socioeconomic status practice OD compared with less than 1% of the households living under high socioeconomic status (O'Connell and Devine, 2015). This is majorly due to the cost of latrine construction as reported by 83% of the respondents in this study. A similar study in Ethiopia shows that in households with an annual income of US \$300 or more per year, latrine ownership increased by 2-fold as compared with households with less than US \$300 per year (Awoke and Muche, 2013). Another study to assess patterns and determinants of latrine use in Odisha, India, however, suggests that the construction of latrines by the government alone was insufficient to address the practice of OD adequately (Sinha *et al.*, 2017). Low-income levels may also lead to the use of poor latrine construction materials which do not offer enough privacy. This may encourage OD practices. This concurs to the findings of

O'Connell (2014) in his study to assess factors influencing OD and latrine ownership in Cambodia, India (Rajasthan, Meghalaya, and Bihar), Indonesia (East Java), Kenya, Malawi, Peru, Tanzania, and Uganda which points out that it is very important to have a latrine with all its walls enclosed as latrine privacy is a crucial factor. This is especially for women as most of them do not like exposing their body parts and is a motivation why people construct latrines rather than defaecating in the open (Busienei *et al.*, 2019).

Despite the great awareness among respondents, majority of them were not aware of the consequences of open air defaecation. Their knowledge on diseases transmitted by open air defaecation was also vague in conjunction with their knowledge on mode of spread of such diseases.

The findings of this study revealed varying belief system in Kighir community. Some inhabitants of the community revealed that open air defaecation is a long-age practice handed over by the ancestors; and as such it's a practice they cannot stop as a result of culture and spiritual inclinations to what they feel will bring them the blessings of the gods. Others were of the belief that sharing of public toilets exposes one to spiritual attacks while a very few believed that open air defaecation brings good fortune. Such beliefs strengthens the practice of open defaecation and as such will hamper the eradication of the practice in the study area. This concurs to the previous reports of Belcher (1978), Cotton *et al.* (1978), Vyas and Spears (2018), Bhatt *et al.* (2019) and Osumanu *et al.* (2019) that personal and family/societal norms and beliefs are drivers for open defaecation practices. A report in 2017 presents similar factors as barriers for the use of latrine in Nepal. The participants chose to defaecate far away from their houses in this study possibly because of hygiene, religious and spiritual reasons (Kendra, 2017). The findings of this study also revealed that the preferable place for defaecation by most of inhabitants still remains in the open where they can exercise themselves freely without fear of anyone or control by any sanitary rules like that instilled in public toilets. This however contradicts the previous of Routray *et al.* (2015) and Bhatt *et al.* (2019) who reported that preference for open defaecation in rural Odisha,

India and a rural setting in Nepal was to keep the house away from the nuisance of smell and to minimize the chances of creating disease breeding places around homes.

If progress towards open air defaecation elimination is to be accelerated, then a clear understanding of what prevents and what drives the transition from open air defaecation to using a latrine is necessary. Augsburg *et al.* (2015) found that cost was the principal consideration that militated against latrine adoption in both India and Nigeria. Incidentally, the people of Kighir lack adequate sanitary facilities required for a successful and disease-free living. They therefore result to open defaecation in most cases due to the distance of their houses from community toilets and financial constraints of setting up one in their houses. This in agreement with the findings of Routray *et al.* (2015), Kendra (2017) and Bhatt *et al.* (2019) who stated that people with lesser resources would be less willing to build a latrine in their houses.

The findings of this study also showed that majority of the respondents do not see themselves practicing open defaecation in the future. This implies that the respondents only practice open defaecation because they do not have an option and as such will cease from such practice if they are equipped with good sanitary facilities in their houses or community. In furtherance to that, majority of the respondents opined that open air defaecation should be brought to an end.

Augsburg and Rodríguez-Lesmes (2015), working in low income urban areas and slums and rural areas in India, found that there was a strong correlation of toilet ownership with perceived health of households that owned a toilet believing themselves and their family to be healthier than their peers who did not, thus suggesting that,

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contrary to often held views, health considerations play at least some role in the decision to acquire sanitation.

With this current attitude there is hope that open air would be reduced greatly among the people of Kighir Community since most of them do not see themselves practicing open defaecation in the future and most of them opined that open air defaecation should be brought to an end. The practice might however continue among a very few due to their beliefs which cannot be changed with exposure to knowledge of parasitic transmission or other form of community awareness.

5.0 CONCLUSION

At the present rate of progress, even reaching the goal of open-defaecation-free Nigeria by 2025 seems to be a far cry unless there are drastic shifts in the approach and strategy pursued in the past. If the objective is to make Nigeria open-defaecation-free then the focus should be on those who are defaecating in the open. Therefore, the people of Kighir community should be enlightened on the dangers posed by open air defaecation. Sanitary practices should be improved upon by the government through provision of safe toilets at every location in places where one cannot be found. This would ease access to toilets and prevent people from exploring options of open air defaecation. Government should provide funds to researchers to conduct correlational studies linking such practices and exposure to parasitic infections and such studies should be published in different languages and media so that the average man can understand the dangers of open air defaecation. This will go a long way in ensuring that the community joins in the fight to eradicate open defaecation completely.

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