



HOUSING QUALITY OF MOTHERS WITH UNDER FIVE CHILDREN: A COMPARATIVE STUDY OF UPLAND AND RIVERINE AREAS OF RIVERS STATE

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Article history:		Abstract:
Received:	7 th January 2024	<p>Safe housing is fundamental to healthy living. Poor housing quality increases the burden of malnutrition in children globally and nearly half of the children under the age of five die annually due to malnutrition especially in areas with difficult accessibility. This study was designed to compare the housing quality of mothers with under-five children in the upland area with those in the riverine areas of Rivers state.</p> <p>A cross-sectional study involving a multistage stratified random sampling method to select 316 mother/child pairs in six Local Government Areas of Rivers state was adopted. A pretested semi-structured interviewer-administered questionnaire was used. Descriptive and inferential statistics were used to analyse the data.</p> <p>In the upland area about 60% of the households lived in apartments with shared facilities and about a quarter practiced open defecation (25.2%). While more than three-quarter of the households (76.5%) resided in apartments with shared facilities and open defecation was practiced by more than half (56.0%) of the households in the riverine area. Although borehole use was the predominant source of household water supply, the use of public taps was more pronounced in the riverine (21.4%). Bush refuse dumping was predominant in the upland (56.9%) while the ocean (78.9%) was similarly preferred by households in the riverine area.</p> <p>Most mothers lived in apartments where basic facilities were shared and open defecation was high. Efforts should be geared towards providing sanitary facilities to households especially in the riverine communities and sensitisation programmes should be organised to improve hygiene awareness.</p>
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INTRODUCTION

Housing is a fundamental requirement for healthy living. This study was designed to compare the housing pattern of mothers with under-five children in the upland area of Rivers state with those in the riverine areas. Due to urbanization and poor economic opportunities in rural areas, many people move to urban cities that are already struggling with problems of overcrowding, infrastructural deficiency and high cost of living. Consequently, most people are forced to accept shelter in slums and urban fringe.

It is an observable fact that families with higher income levels tend to reside in neighbourhoods with better housing facilities than their lower-income counterparts. Housing facility refers to those characteristics that describe a house intended for human habitation which may include size, cooking fuel, toilet type, access to power and water supply, ventilation and so on. Jiboye, (2004) reported that it is inappropriate to use a single variable to assess the qualitative nature of residential apartments because one variable alone cannot give the accurate picture. Therefore, housing qualitative assessment should also consider type of apartment, services and facilities within the dwellings among other factors. Studies have opined that indoor air pollution and poor sanitation could increase stunting prevalence (Mishra and Retherford, 2007; Islam et al., 2021; Nankinga 2019). Unimproved source of water and poor sanitary practices may predispose individuals in such environment to poor health conditions which may lead to malnutrition. This is a common

practice in low-income families with minimal formal education and families residing in deprived areas (Statista, 2022; Hutton and Chase, 2016).

In Ethiopia, a huge proportion of households (93%) use traditional fuels such as wood, charcoal, and dung cake to meet their daily fuel needs, and most households (59%) cook food outside the house (Statista, 2022). Indoor air pollution and smoking are linked to low birth weight and could possibly influence stunting (Islam et al., 2021). Air pollution and stunting have a direct relationship (Mishra and Retherford, 2007); children living in households that make use of biofuel were more likely to be stunted than children living in households that use cleaner fuels (Mishra and Retherford, 2007; Amare et al., 2019). Poor environmental factors such as unimproved water, unimproved sanitation, and biomass fuel are the second largest global attributable causes of stunting in children (Hutton and Chase, 2016; Nankinga (2019). This implies that a significant proportion of the consequences of poor nutritional status, child growth and school performance can be attributed to inadequate WASH. The World Health Organization estimates that 50 percent of malnutrition is associated with repeated diarrhoea or intestinal worm infections from unsafe water or poor sanitation or hygiene (Mshida, et al., 2018; WHO, 2022). Children who are exposed to open defecation or who do not have access to safe water supply may ingest pathogenic organisms that cause intestinal infection. Chronic inflammation in a child's gastrointestinal track is linked to stunting and anaemia, and puts children at risk of poor early childhood development (Warlson and Berkley, 2018). Persistent diarrhoea can also lead to progressive weight loss and an amplified risk of death (Ekanem, Adedeji and Akitoye, 1994). The prevalence of diarrhoea can drop substantially only if open defecation is completely eliminated in our communities. The Sustainable Development Goal six (SDG 6) is to ensure availability and sustainable management of water and sanitation for all. Against this backdrop, this study aims to examine the prevailing conditions in households of mothers with under-5 children in Rivers state (comparing the upland and riverine regions) in order to contribute to SDG 6 by providing functional data.

METHODOLOGY

A descriptive cross-sectional design was adopted in this study. It was carried out in six selected Local Government Areas in Rivers State, Nigeria. A multistage stratified random sampling technique was employed. Participants were sought in their homes. Informed consent was obtained from the mothers. 316 mother/child pairs were included in the study. Research assistants were recruited and trained. A pretested semi-structured interviewer-administered questionnaire was used to obtain the relevant information. Ethical approval was gotten from UI/UCH Ethical review board with approval number; UI/EC/19/0102 and Rivers state primary healthcare to conduct this study. Descriptive and inferential statistics were used to analyse the data.

RESULTS

Table 1 presents the demographic and socioeconomic characteristics of mothers in Rivers state. It was observed that maternal age pattern did not differ between upland and riverine areas of Rivers state ($p < 0.05$) and most of them were between 20-29 years (56.2%). There were more single mothers in the riverine area (25.5%) than in the upland area (13.3%). Household size was mainly 2-4 members (43.4%), no significant difference was observed. About 70% of the mothers had at least secondary education in both areas whereas up to 15 % of them completed tertiary education in the upland area while only about 6% completed tertiary education in the riverine area. Maternal income below ₦20,000.00 was more in the riverine area (40.2%).

Table 2 presents the housing quality of the mothers. It reveals that more mothers (76.5%) in the riverine area lived in public yards where basic facilities were shared than mothers (62.4%) in the upland area although the difference was not significant. Only a few mothers (16.3%) in the riverine area and about 24.3% of the mothers in the upland area lived in flats with improved facilities. Although, this difference was not significant but almost significant ($p = 0.09$). More than half of the mothers (56.1%) in the riverine area practiced open defecation. Open defecation was also high in the upland area (25.2%). The use of improved toilet facilities was lower in the riverine area (18.4%) than in the upland area (36.2%). More mother's in the riverine area cooked outside (65.3%) the house than mothers in the upland area. The major source of power in the riverine area was the PHEDC (77.6%) and more mother's in this stratum utilized this source of power than mothers in the upland area (51.8%). The use of lamps (36.4% in the upland area and 20.4% in the riverine area) was fairly high indicating poor access to power supply in the areas. Although the source of domestic water was mainly borehole, mother's used water from public taps in the riverine area (21.4%) which was not observed in the upland area. The use of kerosene was found to be the major source of cooking fuel but the use was more in the riverine area (64.3%) than in the upland area (42.7%). The use of gas to cook was relatively higher among mothers in the upland area (25.7%). This difference was significant ($p = 0.000$). The place of refuse disposal significantly differed in the two areas. Almost 80% of the mothers in the riverine area disposed refuse in the ocean while about 60% of the mothers in the upland area disposed refuse in the bush. This is not a safe practice as it negatively affects the environment. Most households do not have safe outdoor playground where the children could play (56.0% in the upland area and 58.2% in the riverine area).

Table 1: Demographic and socioeconomic characteristics of mothers in Rivers state

Variables	Total 316 (100%)	Upland 218 (100%)	Riverine 98 (100%)	X ²	p-value
Age Group					
Mean age	29.03±5.66	29.18±5.57	28.87±5.88	4.59	0.47
Age range					
15-19	9(2.9)	7(3.2)	2(2.0)		
20-29years	168(56.2)	110(50.5)	58(59.2)		
30-39years	128(40.4)	94(43.1)	34(34.7)		
40-49	11(3.5)	7(3.2)	4(4.1)		
Marital Status					
Single	49(17.1)	29(13.3)	25(25.5)	9.52	0.02
Married	262(82.9)	189(86.7)	73(74.5)		
Household size					
Mean size	5.11±1.90	5.08±1.81	5.17±2.10		
2-4 members	137(43.4)	93(42.7)	44(44.9)	2.63	.453
5-7members	112(35.4)	79(36.2)	33(33.7)		
8-10 members	59(18.7)	42(19.3)	17(17.4)		
>10	8(2.5)	4(1.8)	4(4.1)		
Educational level					
No formal	5(1.6)	2(0.9)	3(3.1)	6.55	.048
Primary	47(14.9)	28(12.8)	19(19.4)		
Secondary	224(70.9)	154(70.6)	70(71.4)		
Tertiary	40(12.7)	34(15.6)	7(6.1)		
Maternal employment Status					
Not employed	56(17.7)	35(16.1)	21(21.4)	10.66	.059
Petty trading	98(31.0)	64(29.4)	34(34.7)		
Artisan	93(29.4)	64(29.4)	30(29.6)		
Farmer	16(5.1)	15(6.9)	1(1.0)		
Business woman	45(14.2)	33(15.1)	12(12.2)		
Civil servant	8(2.5)	7(3.2)	1(1.0)		
Maternal Income					
< #20,000	127(40.2)	89(40.8)	38(38.8)	38.79	.000
#21,000-#40,000	68(21.5)	39(18.4)	29(28.6)		
#41,000-60,000	35(11.1)	27(12.4)	8(8.2)		
#61,000-#80,000	38(12.0)	28(12.8)	10(10.2)		
> #80,000	48(15.2)	34(15.1)	14(14.3)		
Total	316(100)	218(100)	98(100)		

Table 2: Housing Quality of mothers in Rivers state

Housing Quality	Total 316 (100%)	Upland 218 (100%)	Riverine 98(100%)	X ²	p-value
Apartment type					
One room in public yard	140(44.3)	91(41.7)	49(50.0)	6.31	.097
Two rooms in public yard	71(22.5)	44(20.6)	26(26.5)		
Self-contained	36(11.4)	29(13.3)	7(7.1)		
Flat	69(21.8)	53(24.3)	16(16.3)		
Type of toilet					
Open defecation	110(34.8)	55(25.2)	55(56.1)	140.00	.000
Public toilet	109(34.5)	84(38.5)	25(25.5)		
Improved toilet	97(30.7)	79(36.2)	18(18.4)		
Source of power					
Lamps	99(31.3)	79(36.3)	20(20.4)	22.63	.000
PHEDC	189(59.8)	113(51.8)	77(77.6)		
Inverter system/gen	28(8.9)	26(11.9)	2(2.0)		
Source of domestic water					
Unimproved	20(6.3)	16(7.3)	4(4.1)	59.92	.000
Borehole	259(82.0)	187(85.8)	72(73.5)		
Water board	21(6.7)	0(0.0)	21(21.4)		
Dispensers	16(5.1)	15(6.9)	1(1.0)		
Major cooking fuel					
Firewood	72(22.8)	69(31.7)	3(3.0)	71.73	.000
Kerosene	156(49.4)	93(42.7)	63(64.3)		
Gas	71(22.5)	55(25.7)	15(15.3)		
Electric stove	17(5.8)	0(0)	17(17.4)		
Refuse disposal					
Bush	139(44.0)	124(56.9)	15(15.3)	209.97	.000
Ocean	81(25.6)	4(1.8)	77(78.6)		
Roadside	61(19.3)	57(26.2)	4(4.1)		
RIWAMA	35(11.1)	33(15.1)	2(2.0)		
Outdoor playground					
No	179(56.7)	122(57.0)	57(58.2)	1.11	.574
Yes	137(43.4)	96(44.0)	41(41.8)		

DISCUSSION

This study set out to compare the housing quality of mothers of under-five children in the upland area with those in the riverine areas of Rivers state.

In this study, it was observed that most of the mothers lived in apartment with shared facilities and open defecation was quite high. This might have resulted due to the high cost of decent apartment in the region. In Africa, more than half of the urban population live in slum and are struggling with their economies (UN-Habitat, 2014). According to The Conversation (2018), about one-fifth of the sub-Saharan population share sanitary facilities. This position closely affirms the findings of this study that about 25% of the mothers in the riverine area used public toilets. The use of shared toilets and bathrooms increases susceptibility to life threatening diseases such as enteric fevers, helminth infections, faecal-oral diseases and poor maternal or birth outcome as well as eye infections (Ramlal et al., 2022; Li et al., 2020; Singh et al., 2018; Arena et al., 2010).

Open defecation has devastating consequences to public health (UNICEF, 2018) and was observed to be high in this study especially in the riverine areas. This could have arisen as a result of the fact that many mothers in the riverine areas quitted schooling early and had lower income. A lot of makeshift houses were observed in the riverine areas than in the upland areas. This practice could aggravate the burden of malnutrition among under-five children if left unchecked. Child stunting and wasting have been identified as one of the common consequences of open defecation (Spears et al., 2013). Studies have found that open defecation in low-middle income countries are relatively high and is associated with economic and urban planning deficiencies (Jadhav et al., 2016; Janmohamed et al. 2016; Hirve et al., 2015; Winter and Brachi 2015; Sahoo et al., 2015). These findings corroborate the findings of this study. Nigeria is one of the 26 countries UNICEF is currently implementing the WASH (water, Sanitation and Hygiene) programme due to high burden of open defecation, little or no progress is evident. The NDHS 2018 report by NPC (2019) posited that 56% of Nigerians have access to improved sanitation facilities. The use of improved toilet facilities was observed to fall far behind the reported figure in NDHS 2018, but the practice of open defecation in the upland area was observed to be within the range (25%) reported in 2018 NDHS report but was higher in the riverine area.

Although electricity coverage in the riverine area was relatively better than that in the upland area. The researcher assumes that the presence of NLNG and SPDC companies in Bonny LGA enhanced this position. Nigeria is the biggest economy in sub-Saharan Africa but shortfalls in power supply limits further development (USAID, 2019). It is a country

in sub-Saharan Africa that still faces huge challenges in power supply including low access (World Bank Group, 2019), This is true for the upland area where access to public power supply was low.

Improved source of domestic water was higher in the riverine area than in the upland area. This might have resulted due to the presence of water board services in most communities in the riverine area. In Bonny LGA to be precise, functional public taps were seen scattered all over the visited communities to mitigate problems associated with water supply. These communities were observed to dump refuse and defecate in the water bodies that surround them. The use of streams or open surface water has been associated with helminthic infestation of various forms of water borne diseases and as unsafe for use especially in cooking and drinking because they are usually polluted (NPC, 2019; Kobayashi et al., 2009; Get Revising, 2016).

Although the use of kerosene was the most common cooking fuel used by households in both areas, the use of firewood was more in the upland area than in the riverine area while the use of electric cookers was more in the riverine than in the upland area. Recent studies have reported kerosene as the predominant fuel used by households in Nigeria (Ozoh et al., 2018; Borisade et al., 2020; Emagbere et al., 2016). This aligns with the findings of this study but not with the findings of Isara and Aigbokhaode, (2014) who reported that the use of gas was adopted by about half the respondents surveyed in a sub-urban settlement in Edo state. This study findings corroborates partly with that of Megbowon et al., (2018) who reported that wood and kerosene were the major fuels utilized by most households in Nigeria.

Although in the upland area a significant proportion of households dumped refuse in the bush, refuse disposal in the ocean was predominantly practiced in the riverine area of Rivers state. this is referred to as open dumping (Efe, 2013). This practice constitutes an environmental problem that threatens the health of the populace. Most of the refuse are non-biodegradable and may constrain the proper use of the land or water as the case may be. Waste management is a huge problem in Rivers state. This might be the reason many households practice indiscriminate waste disposal. This negates the actualization of the right to a healthy environment as enshrined in the constitution. According to Statista Research Department (2022), a greater proportion of Nigerians practice informal waste disposal and collection of waste by government authorities is minimal, Bakere (2022) added that only about 20% of solid waste produced in Nigeria is properly collected. These statements agree with the findings of this study.

Outdoor playground for kids to explore safely were limited. More than half the population sampled had no outdoor playground in both areas.

CONCLUSION

Most of the mothers surveyed lived in apartments with shared facilities. The use of improved toilet system fell below standard and open defecation is still a huge problem in Rivers state but vary in forms depending on location. However, the practice of open defecation was more in the riverine area. The use of lamps and candles were fairly high indicating suboptimum power supply in the upland area. Access to improved power was relatively better in the riverine area. Source of domestic water was mainly from borehole in the two strata but the presence of public taps from water board corporation was evident in some of the riverine communities. Refuse disposal was poor; mainly the bush in the upland and the ocean in the riverine. There were fewer observed outdoor playgrounds suggesting that the most housing units were either too clustered or were not well planned. These living conditions may likely predispose the under-five children to a wide range of health problems and a consequent loss of adulthood productivity.

RECOMMENDATIONS

1. It is necessary to ensure access to clean sanitary facilities in order to achieve SDG 6.
2. Public health education campaign which plays a critical role in improving the sanitation standards in informal settlements should be encouraged.
3. Efforts should be geared towards improving access to power supply especially in the upland area.
4. The UNICEF game plan to leave no one behind by reaching the furthest behind first should be extended to these areas as the problem of poor sanitation is overwhelming.

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