IOSR Journal of Computer Engineering (IOSR-JCE)
e-ISSN: 2278-0661,p-ISSN: 2278-8727, Volume 21, Issue 3, Ser. V (May - June 2019), PP 53-58
www.iosrjournals.org

Assessment of Housing and Environmental Quality of Peripheral Areas: A Case Study of Nagoyi Fringe of Urban Zaria, Kaduna State, Nigeria

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Peripheral areas are mainly characterized by inadequate access to basic services, infrastructure and social amenities. This study assessed the quality of houses and environment in Nagoyi urban fringe of Zaria, Kaduna State, Nigeria.The data used for the study are information on housing and environment such as types of buildings, number of occupants, nature of ownership, sources of water, sources of electricity, type of toilet, nature of road, etc. Both primary and secondary sources were explored in the study. On primary data, questionnaire was administered to 150 residents to get the aforesaid data. The study adopted a multi-stage stratified sampling technique in choosing the houses of the respondents and nature of building and income earned per month by the respondents was used in classifying the houses. Descriptive statistics using table and percentage was used in analyzing the data. The results revealed that there are low, medium and high income earners living at the fringe with majority being low income earners. The results also revealed that there is a relationship between nature of housing and housing ownership with income as owners of duplex houses earned above $166 a month. The result also revealed that all those that earned below $83 a month live in either a compound house or a flat house. It was recommended that government should provide some services that are lacking, residents should team up to improve and maintain some infrastructure and KAEDCO should improve their service in the study area.

Key words: *Environment, Housing, Nagoyi fringe, Peripheral, Quality, Zaria*

Date of Submission: 12-06-2019 Date of acceptance: 28-06-2019

I. Introduction

Urbanisation is a continuous process in developing countries, such as Nigeria and is often accompanied with rapid deterioration of urban housing and living conditions (UNCHS, 2014). This is traceable to the fact that urbanisation leads to explosive population growth, which is occasioned by a phenomenal leap in the quantitative housing needs of the populace (Akkufo, 2006). A substantial and growing proportion live in or around metropolitan areas and mega cities in developing countries including the zone termed the 'urban fringe' (Adesina, 2007). This urban fringe is also known as peripheral area of the city.

Therefore, peripheral areas are often studied in the context of informal and formal housing, recognizing the fact that they incorporate predominantly informal housing developments. Peripheral areas are mainly characterized by inadequate access to basic services, both social and physical infrastructure and housing finance (Mabogunje, 1990). Other characteristics of peripheral area include: (i) lack of secure tenure (ii) housing that contradicts city by-laws (iii) housing built on land not owned by the housing owner (iv) lack or inadequate access to basic public services (v) substandard housing and inadequate building structures (vi) illegal subdivision of buildings (vii) poverty, criminality and social exclusion and (viii) unhealthy living conditions and hazardous locations (UN-HABITAT, 2003).

Rapid increase in the population of urban centres has resulted in an increase in the cost of living because of higher demand on urban commodities. There is a dearth and high cost of urban land, and high cost of housing, which is often in short supply and out of the economic reach of the majority of the urban households (Olayiwola, Adeleye and Jiboye,2006). The urban centres are populated by a large mass of people on low and medium wage and who face irregular employment. This segment of the urban population is constrained to live on limited, insufficient, crowded, and dirty shelter and a generally degraded environment similar to urban fringe (Mabogunje, 1990; Olotuah, 2006).

Nagoyiurban fringe of Zaria Local Government Area, Kaduna State is one of those peripheral areas. The fringe is a new settlement that houses some staff of Federal College of Education Zaria, Ahmadu Bello University Zaria and a host of other formal andinformal institutions in urban Zaria that need to be assessed to see the characteristics of the environment and housing quality.In doing so, hypothesis was tested to find out the relationship between socioeconomic statuses of the residents and housing and environmental qualities.

1.1 Tests for Hypothesis

H_0: there is no relationship between socioeconomic statuses of residents and housing and environmental quality

H_1: there is relationship between socioeconomic statuses of residents and housing and environmental quality

1.2The Study Area

The study area is located in Zaria, Kaduna State of Nigeria, situated between latitude 11^0 15' - 11^0 3' N and longitude 7^0 3'E - 7^0 45'E. It is situated in the eastern part of Zaria immediately after Kofarbai.(Fig.1). It is a part of the central high plains of northern Nigeria and is about 670m above sea level. The study area belongs to the tropical continental type of climate corresponding to Koppen's tropical savannah or tropical wet and dry climate zone (Aw), characterized by strong seasonality in rainfall and temperature distributions (Koppen, 1928; Abaji,Ishaya and Abashiya, 2016; Abdulkadir, 2014). It has two distinct seasons: the dry or harmattan season (October to March) and wet season (April to September). Long- term average annual rainfall is about 1,000mm while drought years can be as low as 800mm and wet years as high as 12,00mm. A paramount feature of the rainfall in Zaria is its convective nature and the characteristic occurrence of associated thunderstorms with heavy winds (Ojo, 1982; Oladipo, 1985; and Ayoade, 1988).

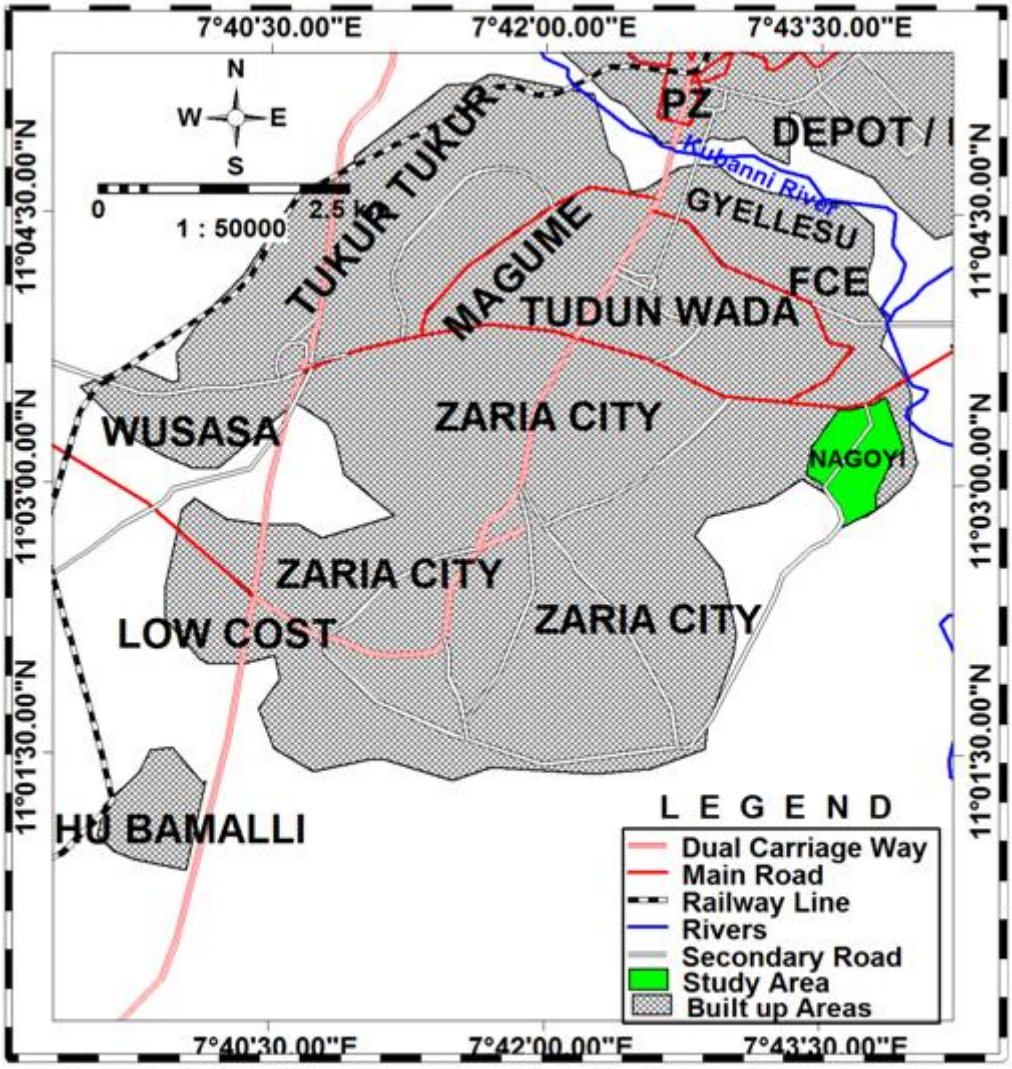

Fig 1: Zaria Local Government Area Showing the study area.
Source : Department of Geography, Federal College of Education, Zaria.

II. Materials And Methods

The data used for the study were information on environmental quality of houses such as types of dwellings, number of occupants, nature of ownership, sources of water, sources of electricity, type of toilet, nature of road, etc. Both primary and secondary sources were adopted for this study. For primary data,

questionnaire was administered to 150 residents of Nagoyi urban fringe.The number of household for Nagoyi settlement is not available with National Population Commission, due to this constrain the number of household was collected from 'SarkinNagoyi'(village head)Selen and Gonzalez (2013) used this method. The number of household as obtained from SarkinNagoyi was 451 and systematic sampling of choosing onehousehold at interval ofthree was adopted. While there are no closely defined rules for sample size (Baumi, 2000; Shiner, 2012), sampling in research sometimes relies on small numbers with the aim of studying an in-depthand detail (Miles and Huberman, 1994; Shiner, 2012). The study adopted a multi-stage stratified sampling technique. This method adopted a progressive sequential approach committing that sampling was done at different stages of sampling. At the first stage, all the residents'were identified. At the second stage, the types of houses were categorized and classified into low income, medium income and high income. Nature of house and income earned per month by the respondents was used in classifying the houses. At the third stage, 60, 50 and 40 houses were selected for questionnaire administrationfor the low, medium and high income houses. (Oluwaseyi, 2015). A total of 150 questionnaires were administered to the residents.In each of the three categories of houses visited, most cooperated, except few and those who did not cooperate were substituted with others.The target person for the survey was the household head. Where the household was unavailable, one of the residents was given the questionnaire.All the 150 copies of the questionnaires were successfully retrieved for analysis (Table 1).

III. Results And Discussion

Table 3.1. SOCIOECONOMIC CHARACTERISTICS/STATUS OF NAGOYI URBAN FRINGE SETTLEMENT

	Frequency	**Percentage**
	Marital Status	
Single	57	48.0
Married	93	62.0
Total	**150**	**100**
	Gender	
Male	103	68.0
Female	47	32.0
Total	**150**	**100**
	Education	
Quranic	12	8.0
Primary	20	13.3
Secondary	90	60.0
Tertiary	28	18.7
Total	**150**	**100**
	Monthly Income	
Less than N30000	32	21.4
N 30000-60000	90	60
N 60000	28	18.6
		60.0
Total	**150**	**100**
	Age	
Less than 21 years	15	10.0
21-40 years	24	16.0
41-60 years	81	54.0
More than 60 years	30	20.0
Total	**150**	**100**
	Occupation	
Business	33	22.0
Farming	16	10.7
Civil servant	52	34.7
Schooling	39	26.0
Others	10	6.7
Total	**150**	**100**
	Years Living in Area	
Less than 10 years	22	14.7
10-20 years	78	52.0
More than 20 years	50	33.3
Total	**150**	**100**
	Household Size	
1-5	61	40.7
6-10	52	34.7
More than 10	37	24.7
Total	**150**	**100**

The study revealed that 60.0 % of the respondents have secondary education. 18.7% have tertiary education while 8.0% havequranic education. This implied that all the respondents in the study area can read and write either in western way or Ajami (Hausa version of Arabic writing). The study revealed that 28% of the respondents, earned aboveN 30,000($83) in a month, 60 % of the respondents earned between N30, 000-N60000($83-$166) while 32% of the respondents earned less than N30,000 ($83) a month. Most of the household heads earned more than $83. Most of the respondents with less than $83 a month are not the household heads; they represent the household head where he/she is unavailable. Thisfurther revealed the presence of students among the respondents who earned little.The findings revealed that majority, 54.0 % of the respondents were41 to 60 years of age, 20.0 % were above 60 years, while 10.0% were less than 21 years. This showed that to own or have a house requires time and savings sometime as majority of the respondents were from 41 to 60 years, some even reach their retirement ages before they could own a house. The study also revealed that 34.7% of the respondents were civil servants, 26.0 % of the respondents were students, 22.0 %, while the remaining 6.7% were craftsmen, artisan, including retirees, etc. this implied that majority of the respondents were civil servants with a high number of students in the study area. The information on the occupational pattern might have serious implication on the houses they live and the entire environment in which they inhabit. The findings revealed that most of the respondents,52.0% have been living in the area for 10 to 20 years, 33.3 % of the respondents have been livingfor more than 20 years while 14.7 % of the respondents have been living in the area for less than 10 years ago. This implied that majority of the respondents have been residing and were familiar with the whole environment. The findingsalso revealed that household with 1 to 5 dwellers have 40.7 %, 6 to 10 dwellers have 34.0 % dwellers while the remaining 24.7% of the respondents have more than 10members dwelling in them. Table 1.

Table 2. CHARACTERISTICS OF HOUSING AND ENVIRONMENT IN NAGOYI URBAN FRINGE

	Housing Type	
	Frequency	**Percentage**
Compound	53	35.3
Flat	78	52.0
Duplex	19	12.7
Total	**150**	**100**
	Housing Use	
Residential	123	82
Commercial	18	12
Educational	5	3.3
Others	4	2.7
Total	**150**	**100**
	Housing Wall	
Mud	36	24
Cement	107	71.3
Concrete	7	4.7
Total	**150**	**100**
	Type of Toilet	
Pit latrine	88	58.7
Water closet system	62	41.3
Total	150	100
	Type of Drainage	
Open drainage	107	71.4
Covered drainage	37	24.6
Soak away	6	4
Total	**150**	**100**
	Household Status	
Owner occupier	102	68
Inheritance	22	14.7
Tenancy	26	17.3
Total	**150**	**100**
	Sources of Water	
Bore hole	67	44.7
Well	38	25.3
Vendor	36	24
Pipe borne	9	6
Total	**150**	**100**
	Light/Electricity	
KAEDCO	89	59.3
Generator	39	26
Mixed	22	14.7

Solar panel3		2
Total	**150**	**100**
	Road Accessibility	
Good	7	4.7
Fair	18	12
Poor	125	83.3
Total	**150**	**100**

The variables of the environmental characteristics of Nagoyi urban fringe that are discussed include the land use type, type of dwelling units, age of the building, building usage, among others. It is detailedas follows: It is evident from the findings that flat house have highest percentage of 48.7% and this is in agreement with the household size of 6 to 10 that account for 34.7%. Compound house have 38.7 %, while duplex have just 19.7 %. Residential land use account for 84. 7%, commercial land use was 12.0 % while educational land use was 3.3%. The remaining 2.7% is for other land uses like recreational, religious, and so on. This showed that the buildings in the area are not appropriated with planning standards as a number of other uses are not given their due share.The findings revealed that 24.0 % of the wall was made by mud, 71.3 % was made by cement, while concrete brick account for 4.0 %. Mud wall represent almost one quarter of the walls and can be attributed to the presence of low income earners. High number of cement (71.3%) can be attributed to the high presence of medium and some high income earners and in some houses; low income earners also have cement walls. The 4.0% concrete walls showed that there are some high income earners in the fringe. The findings revealed that majority 58.7% of the respondents have pit latrine, while the remaining 43.0 % make use of water closet system in their buildings. This indicated that the scarcity of water in the fringe is partly responsible for the high number of pit latrine which does not require water for washingas against water closet system.

The study revealed that 71.4 % of the respondents have open drainage in their neighbourhood, 24.6 % have covered/buried drainage, while the remaining 4.0 % have soak away in their buildings. Presence of 71.4% open drainage indicated the typical characteristic of drainage system in most developing countries.In terms of housing tenure, the findings revealed that 14.7 % of the respondents inherited their houses from their parents. 68.0 % were owned and occupiedby the dwellers.The remaining 17.3% of the houses are occupied by tenants. This implied that most of dwellers have owned their houses an indication of the presence of retirees and business men in the fringe. A large number of the respondents, 44.7 % depend on bore hole for domestic use; well users are up to 25.3 % while the remaining 24.0% relied on vendors for their water supply. Recently, a pipe borne water was generated to the fringe and only 9% of the respondents are connected owing to the fact fringe areas have few or no access to social amenities (UN-HABITAT, 2003). It cost them time, effort and resources for one of the necessities of live. Majority of the respondents,59.3% depend solely on power supply from Kaduna Electric Distribution Company (KAEDCO) 26% depend on power from generator, while up to 14.7 % used generators to complement the continuous power outage in the fringe fromKAEDCO. This implied that, there is no regular power or electricity supply at the fringe as evidenced by the high number of generators owners. Some people did not bother to even connect with KAEDCO because of the epileptic power supply. Findings on the road network revealed that only 4.7 % of the respondents stated that the road network of the study area is good, 12 % of them stated that the road is fair. Also, 83.3% of the respondents, more than three-quarter stated that the road network is bad. This showed a government neglect of responsibilityat the fringe.

IV. Conclusion and Recommendations

The important indicators of housing quality such as house type, access road, source of light, source of water, number of occupants, material used in building, toilet facility and type of housing ownership were identified. The results revealed that housing quality at Nagoyi are of moderate quality considering the fact that the settlement accommodate high income earners, medium income earners and low income earners and considering the data obtained.From the findings, we reject null hypothesis because housing and environmental quality have direct correlation with socioeconomic statuses of the residents. Government should build drainages on the access roads and communal effort is needed by the residents in maintaining them. In addition, government or Kaduna Electricity Distribution Company (KEDCO) should connect the fringe with transformers to improve and ensure efficient electricity supply.

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Abdulkadir, M. Y. " Assessment of Housing and Environmental Quality of Peripheral Areas: A Case Study of Nagoyi Fringe of Urban Zaria, Kaduna State, Nigeria." IOSR Journal of Computer Engineering (IOSR-JCE) 21.3 (2019): 53-58.