Housing Quality in Segregated Residential Neighborhoods in Bauchi Metropolis

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Abstract- This paper examines the housing quality in segregated residential neighbourhoods of Bauchi metropolis. A total of 600 questionnaires were administered in the study area and the data collected from the survey were analysed using factor analysis. The research revealed that the housing quality in the study area is based on the building design, roofing materials, wall materials, condition of buildings, the age of the buildings, internal & external facilities, toilet & bathroom facilities, and the source of lighting. The research also revealed that the housing quality in the high and medium density areas are relatively lower than that of the low density areas.

Index Terms- Housing Quality, Residential Segregation, Neighbourhoods, Bauchi

I. INTRODUCTION

Residential segregation has been reported to affect the quality and availability of housing to the minorities. According to Bianchi, Farley & Spain (1982) two types of racial differentiation in the housing market can be identified in the US. In the first kind there is a high level of racial residential segregation in metropolitan areas where blacks are concentrated in central cities while the suburbs remain predominantly white. In 1977, 24 percent of black metropolitan households were reported to occupy the suburbs, compared with 59 percent of white metropolitan households. The second kind of racial differentiation involves the type and quality of housing occupied by blacks and whites. Blacks typically live in lower quality housing than whites; they occupy older housing, and are less likely to own their own homes. They also reported that since families with high incomes are able to buy better housing than those with low incomes, much of the difference in housing quality and tenure might result from economic differences (Bianchi, Farley & Spain, 1982).

In a similar report by Williams & Collins (2001), racial differences in neighbourhood quality persist at all levels of socioeconomic status (SES). Middle-class suburban African Americans reside in neighbourhoods that are less segregated than those of poor central city blacks. However, compared to their white counterparts, middle class blacks are more likely to live in poorer quality neighbourhoods with white neighbours who are less affluent than they are. According to reports by Darden (2001) and Dwyer (2007) advantaged groups typically occupy newer housing, often in far-flung suburbs, while older areas in central cities or inner ring suburbs are “left” to less advantaged class and racial groups, particularly blacks. A study in Flint, Michigan by Grady (2011) revealed that substandard and well-maintained housing were dispersed throughout the city of Flint, with a higher density of substandard housing in areas of segregation and concentrated poverty.

Residential segregation can lead to large differences in neighbourhood quality. Oyebanji, Akintoye & Liyanage (2011) opined that residential segregation and deprivation are caused due to the differences in the quality of housing or housing inequality within urban neighbourhoods. According to Williams & Collins (2001), racial residential segregation has also led to unequal access for most blacks to a broad range of services provided by municipal authorities. Political leaders have been more likely to cut spending and services in poor neighbourhoods, in general, and African American neighbourhoods, in particular, than in more affluent areas. Poor people and members of minority groups are less active politically than their more economically and socially advantaged peers and elected officials are less likely to encounter vigorous opposition when services are reduced in the areas in which large numbers of poor people and people of colour live. This disinvestment of economic resources in these neighbourhoods has led to a decline in the urban infrastructure, physical environment, and quality of life in these communities (Williams & Collins, 2001).

Research in the U.S. has found that poor, segregated African American neighbourhoods are also characterized by high mobility, low occupancy rates, high levels of abandoned buildings and grounds, relatively larger numbers of commercial and industrial facilities, and inadequate municipal services and amenities, including police and fire protection. According to Oh (1995) segregated blacks are deprived of access to good jobs, basic social services such as good public schools, housing, and police protection, and municipal services such as garbage pickup and street cleaning, deprivations which significantly undermine the life chances and opportunities of blacks. In line with this, Ellen & Turner (1997) opined that the quality of the neighbourhood environment significantly affects the life choices of both children and adults.

Housing quality is also likely to be poorer in highly segregated areas, and poor housing conditions can also adversely affect health. Multiple housing stressors (dampness or condensation, inadequate heat, problems with noise and vibration from outside, the lack of space and the lack of private space, as well as the presence of environmental hazards) varied by area in the four contrasting neighbourhoods in Glasgow, Scotland. Similarly, U.S. data indicated that crowding, sub-standard housing, elevated noise levels, inability to regulate temperature and humidity, as well as elevated exposure to noxious pollutants and allergens (including lead, smog, particulates, and dust mites)

are all common in poor, segregated communities. These aspects of the physical environment have been shown to adversely affect health (Williams & Collins, 2001).

In Nigeria, Mallo & Anigbogu (2009), in a study in Jos town identified that the inhabitants of the low-density neighbourhoods are predominantly people of high status; a mix of the high status people and peasants occupy the medium-density areas. The high-density areas on the other hand are characterised by poor facilities and infrastructure and inhabited by mostly peasants. Edewor (2011) remarked that the high-density (low quality) residential areas in Nigerian cities have similar socio-economic and physical characteristics. These areas are poorly planned, overcrowded, occupied by low-income persons and the houses are built without reference to street networks. He noted that in the traditional indigenous cities, majority of the inhabitants of the low quality residential areas are indigenes of the urban areas.

The medium quality (medium density) residential areas are inhabited by middle-income persons and the streets are planned. They are not as overcrowded as the low quality residential areas and the density per hectare is relatively lower than in the latter. The ethnic composition is quite mixed, and in traditional town and cities that are growing less rapidly, the inhabitants comprise of young indigenes that have moved to the suburban areas because of the socio-economic and physical conditions in the pre-colonial residential districts (Edewor, 2011). The qualities of the low-density residential areas are higher than any other area. They are well planned and have a lower population. Oyebanji (2011) quoting Yinger (2001) also stated that the most direct effect of residential inequality/segregation is an inequality of neighbourhood amenities in terms of the conditions of surrounding houses, the availability of social networks, the amount of air pollution, the crime rate, and the quality of local schools. This study aims at examining the housing quality in Bauchi metropolis.

II. CONCEPT OF HOUSING QUALITY

Housing is one of the basic needs for mans' survival after food and without which life will be impossible. Housing quality embraces many factors including the physical condition of the building and other facilities and services that make living in a particular area conducive. The quality of housing within any neighbourhood should be such that satisfies minimum health standards and good living standard, but should also be affordable to all categories of households (Aribigbola, 2011; and Amao, 2012). Aderamo & Ayobolu (2010) opined that housing has to be qualitatively and quantitatively adequate in order to fulfil this basic purpose. According to Coker et al. (2007) and Jiboye (2010), the quality of housing, being basically an important health element, affects the well-being of the occupants, their productivity, manner of living and the decencies of their lives. Significantly, good quality housing provides the foundation for stable communities and social inclusion. Aderamo & Ayobolu are of the opinion that the quality of a house and its environment is evident in the physical condition, landscaping, available facilities, and friendliness of neighbours, racial or economic composition or symbolic characteristics.

Aderamo & Ayobolu (2010) further reported that as the population in cities increased rapidly, division of labour increased and wealth became a major index of prestige in the large society. Class boundaries became porous and new class developed as occupational differentiation increased, residential patterning followed the social changes and a form emerged with the advent of transport, which favoured the well to do. The upper class broke the workplace – residence tie and moved away from the ever more congested city centre to a more conducive and exclusive environment. In this spatial pattern, the elite group resides in the exclusive and reserved part of the city, the middle class occupy the former homes of the elite and the poor make do with buildings in the interior, usually make shift, slums and squatter settlements.

This situation is characteristic of most cities of the third world and of course Nigerian cities. Urban areas are usually associated with housing problems. According to Mabogunje, Hardoy & Misra (1978) these problems are poor housing conditions manifested by overcrowding and inadequate dwelling units; high densities resulting from uncontrolled operations of the land market; inadequate supply of public services and infrastructural services; pollution of water and solid waste problems; increasing deterioration of the natural landscape; air and noise pollution.

Several scholars in Nigeria have undertaken studies on housing conditions and quality in Nigerian urban centres and have uncovered a number of factors that affect housing. For instance, Amao (2012) in a study conducted in Apete, Ibadan noted that the houses are in poor conditions and this is characterised by poor ventilation, lighting, spaces, aesthetic, security, drainage, landscape, sanitation, type of construction materials and external environment of the house. This report is similar to that of Coker et al. (2007) who discovered that dwellings in Ibadan were either substandard or unfit for human habitation. Lanrewaju (2012) also noted that the housing quality and infrastructure in Oshogbo is generally poor and falls short of the expected standard. Moreover, it was observed in Akure Town that there was an increasing shortage of urban services and infrastructure. The existing urban services are over strained, which often times lead to total collapse. A large proportion of the population does not have reasonable access to safe and ample water supply, and neither do they have the means for hygienic waste disposal.

III. HOUSING QUALITY INDICATORS

The literature on housing quality revealed the commonly used indicators of housing quality to include structural adequacy, neighbourhood quality, residents' perception of neighbourhood safety, level of public services provided, access to work and other amenities, room density and housing affordability (Aribigbola, 2011). Jiboye (2010) and Lanrewaju (2012) on the other hand reported that the four major criteria used in assessing housing quality, from a study undertaken in the city of Calabar, were beauty, convenience, health and accessibility. The variables considered under these criteria include; aesthetics, ornamentation, sanitation, drainage, age of building, access to basic housing facilities, burglary, spatial adequacy, noise level within neighbourhood, sewage and waste disposal, air pollution and ease of movement among others. While Aderamo & Ayobolu (2010) discovered that five major factors describe

housing quality in Ilorin these are internal facilities; major materials for roofing and materials for external walls; the type of toilet and bathroom facilities available; the source of lighting in the house when centrally provided electricity by the Power Holding Company of Nigeria (PHCN) is not available.

Lanrewaju (2012) citing Neilson (2004) stipulated five basic criteria that should be adhered to ensure housing quality, these are, that the house must be in compliance with tolerable standard, free from serious disrepair, energy efficient, provided with modern facilities and services, and that it must be healthy, safe and secure. These indicators Lanrewaju (2012) reported consist of variables such as; access to basic housing and community facilities, the quality of infrastructural amenities, spatial adequacy and quality of design, fixtures and fittings, building layout and landscaping, noise and pollution control as well as security.

IV. THE STUDY AREA

The area of the study is Bauchi Metropolis in Bauchi State of Nigeria. Bauchi Metropolis, the headquarters of Bauchi State, is located between latitudes 9" 00' and 9" 30' North of the Equator and longitudes 10" 25 and 11" 20' East of the Greenwich Meridian (Gani, Chiroma & Gana, 2012). It covers a total land area of 3,687 square kilometres (Ogwuche, 2013), and a population of 493,810, according to the 2006 population census (Federal Republic of Nigeria Official Gazette, May 2007, National Bureau of Statistics, 2010 and Ogwuche, 2013).

Bauchi derived from the Hausa word for slavery 'bauwanci', was founded initially as a Hausa slave collecting centre situated in the middle of the pagan community. Alternatively, oral tradition still associates the name Bauchi with the first settler, a hunter who was called 'Baushe'. The town was later more firmly established by Yakubu who was sent from the Gerawa by his father- a Muslim convert called Dadi- to Shehu Usman Danfodio at Sokoto for Quranic studies. After becoming one of the twelve leaders to receive a Jihad flag from the Shehu during the 1804-1808 campaigns, he returned to establish his headquarters for the spread of Islam at Bauchi. He became the first Emir of Bauchi and from him descends a long line of emirs including the present Emir (Salihu, 2008).

Bauchi metropolis consists of eight administrative wards (units). These are Hardo Ward, Dan'iya Ward, Makama Sarkin Baki 1 Ward, Makama Sarkin Baki 2 Ward, Majidadi A Ward, Majidadi B Ward, Dawaki Ward, and Dankade Ward respectively (Bello, Danjuma & Adamu, 2007). The state is an area of in-migration of persons from Kano, Katsina and Sokoto states involved in rural-rural movement in the country. In addition, many lgbos, Yorubas and other southern ethnic groups also migrate into the state, especially to the urban centres (OnlineNigeria, 2003).

The settlement pattern of the town consists of the walled city and the extension areas outside the city wall. Within the city walls are the Emir's palace, the central mosque, the central market, area courts, primary schools and the central prison. Bauchi town, unlike other northern towns whereby only indigenes live within the city walls, houses both indigenes and strangers. Almost all this expansion area is associated with buildings and functions' deriving from the town's long held position as a government administrative and higher education centre. The extension areas comprises of the G.R.A, Low Cost Housing, Army Barracks, Police Barracks, the Hospital, secondary schools, and other tertiary institutions such as the Abubakar Tafawa Balewa University. Also within this area are government institutions, industrial areas, and markets (Max Lock Group, 1976).

V. METHODOLOGY

The data used for this study are information collected on the quality of houses in the study area, such as the building design, wall and roofing materials, condition of building, source of light etc. Cluster sampling was used in this study to select the respondents for the study. Cluster sampling was adopted in this study because of its flexibility in sampling frame and it reduces the geographic dispersion of sample elements (Thomas, 2003). The study area was stratified into three that is high, medium and low density areas, or geographical clusters.

According to Muhammad, Kasim & Martin (2015) the high density areas are those areas occupied by the low income group, usually unplanned and unmaintained. The medium density areas are occupied by people from the various income groups, moderately maintained while the low density areas are occupied by the high income group. In the high density areas samples were taken from around the traditional walled city, for the medium density areas neighbourhoods within the urban periphery were sampled while for the low density areas samples were taken from within areas designated as government approved layout such as those within and around government reserved areas (GRA) of the study area. A total of 600 households were sampled from these high, medium and low density areas within the study area. The information needed for the study was gathered using semi-structured questionnaires (based on a 5-point Likert scale) administered in the study area.

The data collected was analysed by factor analysis using the Statistical Package for Social Sciences (SPSS) version 22. According to Parker & Brady (1975), the technique (also called factorial ecology) can either be used to test specific hypotheses or to search for the existence of a larger number of underlying dimensions and reducing it to a matrix which contains a much smaller number of factors, thereby identifying groups of interrelated variables (Aderamo & Ayobolu, 2010). The findings from factor analysis can also be applied on the sample collected, that is, as a descriptive method (Field, 2009), and for interpreting self-reporting questionnaires (Williams, Brown & Onsman, 2012). A total of eight factors were extracted from the factor analysis and the factor loadings were used to interpret the findings from this study.

VI. RESULT AND DISCUSSION

a. Building Design

Four variables loaded on this factor with high factor loadings, that is, bungalow, duplex, room and parlour and the tenement building (face me i face you). The analysis of data from the study area revealed that the major building design used in the medium and high density areas as shown in Table 1 below is the tenement building (which is popularly called 'face me I face

you') having a factor loading of .808 and .954 respectively. While in the low density area bungalows were the most dominant type of buildings having a factor loading of .866. Another type of building which had a high factor loading in the low density area are duplexes which accounted for a factor loading of .801. The type of building which is also predominant in the high and medium density areas as gathered from this research is the room and parlour, this accounted for a factor loading of .736 in the medium density area and .827 in the high density area of the study area.

Table 1: Building Design (Field Survey, 2014)

Building Design Items		Factor Loadings
Low density area	Bungalow	.866
	Duplex	.801
	Room and parlour type	.502
	Tenement building(face me i face you)	.437
Medium density area	Room and parlour type	.736
	Bungalow	.669
	Tenement building(face me i face you)	.808
	Duplex	.646
High density area	Tenement building(face me i face you)	.954
	Bungalow	.819
	Room and parlour type	.827
	Duplex	.641

b. Roofing Material

Three variables loaded on the second factor, which are corrugated iron sheet (CIS), aluminium and asbestos roofing sheets. The roofing material most commonly used in the study area as revealed from the data analysis and field observation is the corrugated iron sheet (CIS), which has a factor loading of .812 in the medium density areas and .910 in the high density areas as shown in Table 2 below. Aluminium and asbestos roofing sheets are not very common in these areas.

The roofing material which had the highest factor loading in the low density area is the aluminium roofing sheet which is .833, followed by the corrugated iron sheet (CIS) .823, asbestos roofing sheets had a lower factor loading of .799.

Table 2: Roofing Materials (Field Survey, 2014)

Roofing Material Items		Factor Loadings
Low density area	Aluminium roof	.833
	CIS roof	.823
	Asbestos roof	.799
Medium density area	Aluminium roof	.727
	CIS roof	.812
	Asbestos	.615
High density area	CIS roof	.910
	Aluminium roof	.876
	Asbestos roof	.861

c. Wall Materials

In the third factor three variables loaded with high factor loadings. The wall materials used in the study area shows in Table 3 that both internal and external walls are made of sandcrete blocks and finished with cement. Walls made of sandcrete blocks in the low density area (GRA) accounted for a factor loading of .985, and walls finished both internally and externally with cement in this area have a factor loading of .986.

In the medium density area, walls made of sandcrete blocks and finished with cement have a factor loading of .968 respectively. While in the high density area walls made of clay/mud bricks accounted for a factor loading of .952 and those walls finished both internally and externally with cement had a factor loading of .954 respectively. The analysis reveals that buildings made of sandcrete blocks had a factor loading of .831 in the high density area.

Table 3: Wall Materials (Field Survey, 2014)

Wall Material Items		Factor Loadings
Low density area	Both internal and external walls are finished with cement	.986
	Internal and external walls are made of sandcrete blocks	.985
	Internal and external walls are made of clay/mud bricks	.649
Medium density area	Internal and external walls are made of sandcrete blocks	.968
	Both internal and external walls are finished with cement	.968

	Internal and external walls are made of clay/mud bricks	.798
High density area	Both internal and external walls are finished with cement	.954
	Internal and external walls are made of clay/mud bricks	.952
	Internal and external walls are made of sandcrete blocks	.831

d. Condition of Buildings

The houses in the study area are relatively in a good condition. This is evidenced from the field survey as shown in the result of the analysis in Table 4 below. In the table it shows clearly that the condition of internal and external walls, the building structure and roof had high factor loadings in all the three density areas of the study area. These factors in all the areas had factor loadings above .8. The condition of building structure in the low density area has a factor loading of .936, in the medium density area .928 and .945 in the high density area.

Table 4: Condition of Building (Field Survey, 2014)

Wall Condition Items		**Factor Loadings**
Low density area	The building structure is in good condition	.936
	Both internal and external walls are in good condition	.936
	The roof of your house does not leak	.884
Medium density area	The building structure is in good condition	.928
	The roof of your house does not leak	.903
	Both internal and external walls are in good condition	.873
High density area	The building structure is in good condition	.945
	The roof of your house does not leak	.916
	Both internal and external walls are in good condition	.895

e. Age of the Building

The opinion of the respondents in the study area on the age of residential buildings in the area revealed that most of the buildings occupied by the respondents are between 20 - 30 years In the low density area such buildings accounted for a factor loading of .837 and for the high density area a factor loading of .937. However, buildings in the medium density area were found to be mostly below 10 years having a factor loading of .989, and those between 20 – 30 years had a factor loading of .823. Buildings between the ages of 10 – 20 years had a factor loading of .512 in the low density area, and .890 in the high density area.

Table 5: Age of Building (Field Survey, 2014)

Age of Building Items		**Factor Loadings**
Low density area	Age of building is between 20-30yrs	.837
	Age of building is below 10 yrs	.837
	Age of building is between 10-20yrs	.512
Medium density area	Age of building is between 20-30yrs	.823
	Age of building is between 10-20yrs	.806
	Age of building below is 10 years	.989
High density area	Age of building is between 20-30yrs	.937
	Age of building is between 10-20yrs	.890
	Age of building below is 10 years	.735

f. Internal and External Facilities

The internal and external facilities in the study area were found to be relatively good. The research in the low density area revealed that both internal and external facilities are available in the study area as shown in Table 6. The analysis of data in the low density area shows that there is adequate water with a factor loading of .880 and electricity supply having a factor loading of .761. Toilet and bathroom facilities are available having a factor loading of .908, and kitchen with modern facilities has a factor loading of .829.

In the medium density area kitchen facilities and electricity supply had the highest factor loadings of .814 and .883 respectively. Toilet and bathroom facilities had the lowest factor loading of .683 in the medium density area. The analysis of data for internal facilities in the high density area reveals that only electricity supply is lacking in the area which had a low factor loading of .524. The research also revealed that there is adequate water supply with a factor loading of .810, waste disposal system .768, toilet and bathroom facilities .750, and kitchen facilities .738.

Table 6: Internal Facilities (Field Survey, 2014)

Internal & External Facilities Items		Factor Loadings
Low density area	Good toilet and bathroom facilities	.908
	Adequate water supply	.880
	Adequate waste disposal facilities	.854
	Well equipped kitchen with modern facilities	.829
	Adequate electricity supply	.761
Medium density area	Well equipped kitchen with modern facilities	.814
	Adequate waste disposal facilities	.724
	Good toilet and bathroom facilities	.683
	Adequate electricity supply	.883
	Adequate water supply	.796
High density area	Adequate water supply	.810
	Adequate waste disposal facilities	.768
	Good toilet and bathroom facilities	.750
	Well equipped kitchen with modern facilities	.738
	Adequate electricity supply	.524

g. Toilet and Bathroom Facilities

Interestingly, the research revealed that houses in the study area have good toilet and bathroom facilities, and many of the houses are fitted with either water closet (WC) or bathroom facilities, or both. The use of WC toilet/bathroom and pit toilets in the low density area had a factor loading of .836, in the medium density area (.899) and in the high density area (.902). During the survey it was discovered that the most common type of toilet used in the low density area is the WC toilet/bathroom while, in the high and medium density areas the use of pit toilets is more predominant. The WC toilet/bathroom is also used in the some parts of high and medium density areas of the study area, from the analysis it indicates that both types of toilet facilities are used in the study area.

Table 7: Toilet and Bathroom Facilities (Field Survey, 2014)

Type of Toilet Items		Factor Loadings
Low density area	Pit toilet	.836
	WC toilet/bathroom	.836
Medium density area	Pit toilet	.899
	WC toilet/bathroom	.899
High density area	Pit toilet	.902
	WC toilet/bathroom	.902

h. Source of Lighting

Due to the unsteady power supply from the main grid in the study area people resort to using power generators, kerosene lamps or candles. The main source of lighting in the absence of light from the Power Holding Company of Nigeria (PHCN) in the high density area as revealed from the analysis of data is kerosene lamp which has a factor loading of .848. The use of generator sets is evident in the low and medium density areas with a factor loading of .923 and .801 respectively.

Table 8: Source of Lighting (Field Survey, 2014)

Source of Lighting Items		Factor Loadings
Low density area	Generator set	.923
	Kerosene lamp	.861
	Candle	.844
Medium density area	Generator set	.801
	Kerosene lamp	.767
	Candle	.678
High density area	Kerosene lamp	.848
	Generator set	.825
	Candle	.754

VII. CONCLUSION

This research has revealed that the criteria which determine housing quality in the study area are building design, roofing materials, wall materials, condition of buildings, the age of the buildings, internal & external facilities, toilet & bathroom facilities, and the source of lighting. The research also revealed that the housing quality in the high and medium density areas are relatively lower than that of the low density areas. The findings of the research showed that the housing quality in the low density area differed from the high and medium density areas in terms of building design, roofing materials and other aspects of the building. All buildings in the study area are provided with the necessary internal facilities, the quality of which differs among the density areas studied. However, in all the areas poor electricity and water supply were reported by the sampled households (who in turn look for alternative means of providing these services). This research thus recommends that the government should take adequate measures to ensure and improve the supply of these basic services, and also other basic infrastructure such as access roads and drainages.

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