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Housing Condition and Human Health in Beere Area, Ibadan, Nigeria

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Abstract:
Poor urban housing and environmental conditions in inner areas of Ibadan, Nigerian and its impact on the health of the poor residents. Administration of structure questionnaire was conducted on the sample size of 384 houses using systematic sampling and the head of an owner-occupied family in a house was purposively sampled. The study recovered 276 (72%) valid questionnaires. The descriptive statistical tool was for analysis of basic characteristics of the respondents. The inferential statistics was conducted with the use of Probit version of Binary Regression and all analysis were conducted at 5% level of significance for factors determining housing conditions (including ventilation adequacy, availability of kitchen and roof status). People suffered from environmental induced diseases that are infectious and highly contagious because housing condition was poor and in filthy environment

Keywords: *Condition, environmental, housing, health and Ibadan*

1. Introduction

Housing, as one of the basic needs of man, is very fundamental to the welfare, survival and health of individuals (Bonnefoy, 2007; Aribigbola, 2011). It has therefore become an important phenomenon that requires ultimate attention in human societies. The modern concept of housing has gone ahead to incorporate the physical structure of the home and its encompassing environment (Bonnefoy, 2007; Zainal, Kaur, Ahmad and Khalili, 2012). Housing and environmental conditions which may also be referred to as housing quality or housing habitability is very fundamental to individuals and society as it assumes a critical part in a man's physical, mental, and passionate wellbeing and productivity (Bonnefoy, 2007; Aribigbola, 2011; Zainal, Kaur, Ahmad & Khalili, (2012).

Housing, which is as old as the city in which it is situated, constitutes the major feature of it, occupies the largest space in the city and has always played an important role firstly in shaping urban regions and then achieving their sustainable development (Olaniran and Yusuff, 2012; Cahantimur, 2012). Urbanization and rapid population explosion have resulted to the improper management and deterioration of quality of huosing stock especially in developing countries like Nigeria. The problem of housing in many Sub-Saharan African countries arises mainly from urbanization without economic growth (Basorun and Fadair, 2012). Amao, (2012) notes the occurrence of rapid rate of urbanisation which has led to severely degenerated urban environment and poor housing conditions in Nigerian cities. Isma'il, Ishaku, Yahaya, Tanko, and Ahmed, (2015) noted that there is correlation between urban growth and housing problems.

Housing conditions have multidimensional aspects that are often difficult to quantify or observe (Aizawa and Helble, 2015). A challenge for everyone concerned about measuring housing quality is to first agree on a definition for housing quality (Statistics New Zealand, 2015). Dudhwala,(2012) identified difficulties of urban poor to include: being restricted from the business openings; low salary; insufficient housing; unhealthy living situations; constrained social assurance instruments; deficient wellbeing and low educational level.

Specifically, housing condition and quality in the core areas of most Nigerian cities including Ibadan has greatly degenerated and has seriously affected the health of the very poor inhabitants. The extraordinary swarming and resulting decay of Ibadan's inward city occurred over a long stretch and it is firmly connected to financial change and restricted city budget plans (UN-Habitat, 2003). It is now seem to be an unsurmountable challenge to both the poor residents and the government at all levels. In line with foregoing statement of problems, the following research questions are addressed. What is the present condition or quality of housing in the study area? What is the impact of poor housing condition on the health of the inhabitants of the urban area? What could be done to permanently arrest the worsening condition?

The aim of the study is to assess impact of housing condition and quality on human health in Beere, Ibadan in order to lay bare its magnitude against attainment of sustainable urban life with a view to improving the livelihood and environment of the economically vulnerable inhabitants. The objectives towards achievement of the above aim are to; study the prevalent environmental conditions and

quality of houses in the study area; evaluate the impact of housing and environmental conditions on the health of the affected residents and finally come up wth recommendations.

The Yorubas and indeed Ibadan have a long history of urbanisation. Today Ibadan is still growing in all directions while its inner part is continuously degenerating. It therefore signifies a good research site for this kind of work. Other sections that are in this paper include review of literature, research methodology, findings and discussion, conclusion and recommendations.

2. Literature Review

The inner core region, occupied by early settlers in the city, presents the worst scenario with respect to both quality of dwelling and neighbourhood environment. The quality of housing and neighbourhood environment reduces as the degree of density or level of crowdedness increases (Coker, Awokola, Olomolaiye, and Booth, 2007). Ogra and Onatu, (2013) concluded that, dense and derelict inner cities, sprawling informal settlements and overcrowded township areas provide a clear evidence in cities that the demand for housing is substantially growing, especially with the increase in population growth and migration to urban areas. Boamah, (2012) sees that the poor housing conditions in the Offinso South Municipality of Ghana could be partly attributable to the breakdown or the debilitating of the more distant family framework and the bolster that is offered to powerless relatives, for example, the elderly and youngsters in meeting their housing needs. Boamah, (2013) concluded that, households' delivery of housing is also insufficient and is associated with high degree of informality. Most families live in corrupted situations; distant and indiscriminately created neighborhoods with housing units without satisfactory waste transfer components.

Coker et al. (2007) argued that, quality of a residential area not only mirrors the city development, planning and allocation mechanisms between socio-economic groups, but also shows the quality of life of the urbanites. The general nature of the current housing stock and environment could be enhanced through government mediation as obligatory recovery and urban renewal programs. The environmental quality of an area highly depends on the functionality of the available physical infrastructure (Oche, Ogbole, Okeke and Alaga, 2015). Cahantimur, (2012) described future developments importance in improvement of public transportation and road capacities, and then intensification of existing low-density areas, particularly around transport interchanges and along transport corridors.

Josiah (2014) concluded that socio-economic life style determines housing conditions and its cosequences manifest in the society while the consequences of rapid rate of urbanisation in the country have been severely degraded urban environment. Omole, (2010) revealed that, generally, housing and the general outlook of the environment were very poor indeed in the city of Akure, Nigeria and the condition has negative impact on the socio-economic lifestyles and the health of the residents. His study is on Akure only while this one concentrates on Beere, Ibadan.

Amao, (2012) concluded that, the major issues found in informal settlements studied include judicial and administrative failures, physical infrastructures and service problems, increasing socio-economic problems posing threats to their long-term livelihood, and poor environmental conditions. Amao (2012) identified housing condition indicators to 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 land-scaping, noise and pollution control as well as security. Poor housing condition not only accentuate poverty but also hampers national economic growth by reducing property taxability (Gambo, Idowu, and Anyakora, 2012).

Muzondi, (2014) concluded that, effective urban planning and development requires a proactive, strategic approach that is future-oriented without ignoring the present urban dynamics. Onu, & Onu, (2010) advocated for good urban governance as an effective means of boosting, for the low income people, accessibility to land, credit and affordably standard housing in a decent environment.. Components for measuring the extent of the housing problem ought to incorporate investigation of income and family size with a view to arriving at desired goal in housing provision and environmental improvement (Moyo, 2014**).** Factors of housing quality include considerations such as price, quantity, tenure, economic impacts, environmental impacts, and structural norms of housing standards (Emankhu, and Ubangari, 2015). Some of these factors are all investigated in this research.

Why does health status matter for well-being?

- People's health is one of the most valued aspects of people's life. Surveys in many countries consistently found that people put health status, together with jobs, at the top of what affects their living conditions (OECD, 2011).

Why does environmental quality matter for well-being?

- The environment where people live is a key component of people's quality of life. The impact of environmental pollutants on health is sizeable, with around one fourth of the global burden of diseases deemed to be associated with poor environmental conditions. But the environment also matters intrinsically when people attach importance to the beauty and the cleanliness of the place where they live (OECD (2011).

Gambo, Idowu and Anyakora, (2012) revealed that, those living in a poor neighbourhood are paying a variety of hidden costs on health, poor quality of education, water, employment opportunity etc. which may subsequently affect their economic productivity. As increased poverty and urbanization exert more pressures on urban facilities, most Nigerian cities tend to have lost their original dignity, social cohesion and administrative efficiency (Aluko, 2010). Urbanization is not only characterized by demographic change but involves social change, technological advancement and economic transformation (Isma'il *et al 2015).* An improvement in the economic condition of the people will impact positively on their housing condition (Olukolajo, Adewusi, and Ogungbenro, 2013).

Owoeye, and Omole, (2012) concluded that, poverty tends to breed poor environmental and unhygienic conditions that have great impact on human health. This is because the poor are incapable of paying for the required amenities for a healthy living, most especially, quality housing thus they become vulnerable to health hazards. Issues of unlawful squatting, change of capacities and to a great degree poor levels of administration arrangement are intensified by the obvious absence of budgetary limit and political will to

overhaul such an extensive zone. Likewise, individuals firmly contradict resettlement because of their solid connection to the hereditary grounds (UN-Habitat, 2003). Where the above observations prevail, a means of improving the condition and health of the people become paramount.

Therefore, it is basic to teach the general population on the positive relationship between housing and human wellbeing in order to enhance general information on the subject and evolve better housing practices (Tagurum *et al* 2015). This is the basic focus of this research coupled with the fact that Ibadan is the largest city south of Sahara Africa and that it has been receiving international academic attention for a very long time. It is hopeful this research would receive adequate attention for proper use in this regard.

Conceptual framework hinged upon is "that attending to the land and housing needs of the urban poor will have a positive impact on poverty reduction and will also make cities more sustainable and also accentuate national economic growth through improved property taxation" (UN, 2011). The study adopted the concept of sustainable livelihood that would eradicate the magnitudinous impact of poor housing condition against good health with a view to improving the lives of the economically vulnerable inhabitants and accentuate national economic growth probably.

According to Campanera, Nobajas, and Higgins, (2013) the analysis of urban environmental quality and well-being, which has been widely used to frame research into the person–environment relationship is termed 'sociogeographic' conceptual framework.

Agbola and Agunbiade, (2009) on the other hand, review it as the study of the "politicised environment" or "the political economy of human-environment interactions". It is a multi-disciplinary concept of political ecology that uses the methods of the social sciences to understand the human processes that result in the initial destruction and re-creation of material environments.

It is established that housing adequacy has three gauges in Canada and Australia. Occupancy standard of a maximum of 2 and a minimum of 1 person per bedroom; physical quality requiring presence of internal toilet, bathroom and kitchen with absence of need for major repair; and location that imposes less non-housing costs e. g. travel costs, gives access to essential services, family and friends (Gabriel, Jacobs, Arthurson, Burke & Yates, 2005). UN-HABITAT, (2011) regards more than three people sharing the same room aa a deficiency in sufficient living space. The World Health Organisation (1961) and Ibimilua, & Ibitoye, (2015) concluded that, a good house should have a good roof to keep out the rain, good walls and doors to protect against bad weather and to keep out animals, sunshades all around the house to protect it from direct sunlight in hot weather and wire nettings at windows and doors to keep out insects like house flies and mosquitoes.

3. Research Methodology

3.1. Study Area

The study area is located within the center of Ibadan city. The study area is shown in figure 1 at the appendix. It encircles Beere roundabout. It starts from Labiran junction and goes right/east till it reaches Beyeruka junction. Then it turns southward along Beyeruka Road to connect Beere-Oranyan Road from where it goes up along Oke Dada Road before turning west beside Mapo Hall to link Beere – Oja Oba Road at Mapo Hall junction. It goes south along this road only to turns west again at Mapo roundaboutand from where it goes straight to Orita Merin junction and onto Ayeye and then takes to the right/east to follow up Opo Yeosa Road and then links Oke Are Road. It penetrates compounds across Oke Are Road to connect Yemetu - Beere Road and goes straight back to Labiran junction.

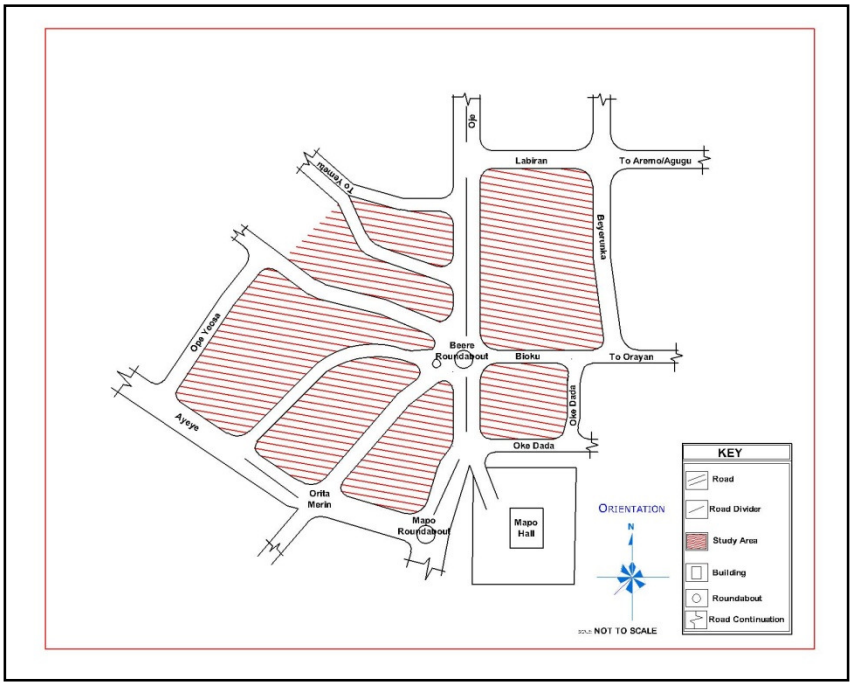

Figure 1: Locational sketch of Beere, Ibadan (not to scale)

3.2. Model Specification

The study for the first time, as known to the researchers, regresses the factors determining housing conditions against state of houses in the study area to make econometric analysis possible. The study follows existing literature like Oche *et al* (2015); Boamch (2013) and Amao (2012); and as well takes into consideration other important factors that are yet to be analysed like ventilation adequacy, availability of kitchen and roof status. It is imperative to include these factors because they to a great extent determine housing condition in the study area. The study adopts binary regression which is informed by the nature of the used dependent variable, see Long (2012).

The model is explicitly stated as:

$Pr\ (Housing=1) = f\ (\bar{\alpha}+\beta_1 ventilation+\beta_2 waste+\beta_3 roof+\beta_4 kitchen+ \beta_5 Infrastructure+\mathcal{E}ni)$

Implicitly as:

- $Pr\ (HOC=1) = f\ (\bar{\alpha}+\beta_1 VTA+\beta_2 WDM+\beta_3 ROS+\beta_4 KIA+ \beta_5 INF+\mathcal{E}ni)$

Where;

Pr = probability; HOC = Housing condition; VTA = Ventilation adequacy: WDM = Waste disposal means; ROS = Roof status; KIA = Kitchen availability; INF = Infrastructural facilities

***β_1 =** coefficient of VTA; **β_2=** coefficient of WDM; **β_3=** coefficient of ROS; **β_4=** coefficient of KIA; **β_5=** coefficient of INF*

$\bar{\alpha}$ = intercept or constant; $\mathcal{E}$ = error term

The *a priori* expectation is that X_1, X_2, X_3, X_4 and X_5 are expected to have positive effect on probability of having good housing condition. This information is mathematically stated as;

$$\beta_1, \beta_2, \beta_3, \beta_4 \text{ and } \beta_5 > 0$$

Housing condition takes the value of 1 if it is in good condition and 0 if in bad condition.

3.3. Sampling and Sampling Technique

The target population was all adult male inhabitants of the area and all the houses but the sample frame was all heads of resident households. Practical difficulty encountered during the research was non-availability of total population of both the people and houses therein the study area. The population figures of both the people and houses as released by National Population Commission in 2006, that was most recent census in Nigeria, were aggregates for Local Government Area and not district by district.

The researchers through direct observation assumed the range of total number of houses to be between 2,000 to 2,800 houses. The sample size for the study is 384 houses. This was determined through sample size determination formula recommended by Krejcie and Morgan (1970) for unknown population.

The formula is given as:

$$\frac{\left[\frac{Range}{2}\right]^2}{\left[\frac{Accuracy\ level}{Confidence\ level}\right]} 2$$

Where range = higher value – lower value; accuracy level = range × desired level of accuracy; confidence level = 95% at two-tailed test.

Administration of structured questionnaire was conducted to collect data from the inhabitants of the study areas using systematic sampling to select every 10th house out of every twenty houses for the survey. Purposive sampling was adopted to select only the head of a family in a house.

The study recovered 276 valid questionnaires yielding a recovery rate of 72%. All the valid questionnaires were further subject to both descriptive and inferential statistics. The descriptive statistics revealed basic characteristics of the respondents. The inferential statistics was conducted with the use of Probit version of Binary Regression and all analysis were conducted at 5% level of significance.

4. Findings and Discussion

4.1. Descriptive Analysis

4.1.1. Socio-Economic Characteristics of Respondents

The ocupiers status in the study area according to the available data reflects the following; Landlord 48%, Tenant 34% while squatter remains 18%. This indicates that almost half of the people living there own their houses. The relevance of this to the study is that majority inherited the buildings as family houses and have socio-cultural attachment which could aid effective implementation of meaningfully developmental project or programme that may be proposed for the area. The age structure is as follows; 30% for 18-20 years, 24% for 21-30 years, 18% for 41-60 years, 16% for 31-40 years while 12% is above 50 years. This analysis indicates that there were more youths in the study area who could be trainned or re-orientated to adapt to meaningful change. The educational background as analyzed shows that 32% attended primary school, 28% had modern/secondary education, 8% had no formal education and 18% had technical education while 14% attended tertiary institutions. Peoples' level of education determines the type of accomodation they live in, employability and income earned in modern economy. Thus, unemployment is higher in the study area as well as business activities while artisan and professional are not many and retired people remains only 6% .

The monthly income analysis indicates that 64% earned below minimun wage of ₦18, 500 set by the Federal Government of Nigeria and adopted by Oyo State Government for civil servants' pay, 16% earned between ₦18, 501 and ₦50,000, 8% earned above ₦150,000 while 6% earned between ₦80,000 and ₦120,000, 4% earned from ₦50,001 – ₦80,000 and 2% earned ₦120, 001 – ₦150,000. above. The obvious outcome of this is high poverty level which gives rise to poor housing and lack of its maintenace in an unsanitary environment. The contributions of poverty as a reflection of income inadequacies resulting from unemployment or under-employment as well as inadequate residential housing facilities, especially for waste management, and residential environment degradation in Nigeria is apparent (Andrew- Essien, Elizabeth & Akintoye, 2012). However, low income earners play a significant role in economy of urban areas and therefore deserve supporting aid. Poverty is a condition in which a person or community is deprived of, and or lacks the essentials for a minimum standard of well-being and life.

4.1.2. House and Household Characteristics

Analysis of the use of building in the study area indicates that residential is the major one with 76% while commercial remains only 14%, industrial and mixed use remain 6% while rcreational and religion record 4% each. One can offer explanation for this result on the premise that the area evolved as basically residential area. Secondly, the pattern of the area and the location of structure do not give room for commercial and recreational activities (apart from street trading and shops, stores and petroleum filling stations along the roads) due to space and accessibility constraints.

Various numbers of household living in a house unit as analyzed shows 40% for three households/families, 30% for two families, 20% for 4-6 families while 6% is for 7-10 families and 4% for above 10 families.

To complement the analysis on number of household living in a house unit, is total number of people living in a house unit. It shows that 20% has total number of 7-10 people, 25% has 16-20 people in a single house, 10% has 4-6 people, 18% has 21-25 people while 5% has 2-3 people and 20% has 11-15 people with 2% has more than 25 people. In a similar study carried out by Boamah (2014) in Offinso South Municipalityin Ghana, overcrowding was identified as a major problem in the available housing units with congestion in the sleeping rooms, insufficient facilities in the housing units and the absence of living rooms in the housing sector of the municipality. This will amount to over untilisation of available infrastructure and the consequence is poor environmental condition. Overpopulation causes stress on the environment and there is evidence everywhere of rapid decline in environmental quality and human living conditions occasioned by rapid increase in human numbers (Amao, 2012). In many poor countries, overpopulated and poor areas exhibit high rates of disease due to unsanitary conditions, malnutrition, and lack of basic health care.

4.1.3. Physical Characteristic and Building Condition

Analysis on the number of floor in building sampled shows that, 52% was a storey, 28% was 2 storey while 3 storey was 12% and 8% for 4 storey respectively. On the types of building, it shows that 34% was brazilian type, 26% was traditionally compound house while 20% was blocks of flats, 20% was detached bungalow. On the condition of roof, it indicates the result as follows: 60% confirmed the roof was intact, 40% claimed the roof was leaking. It means roof condition of most houses in the area was still intact as at the time of study. The roof were usually repaired to withstand vagary of weather because most of the building were very old in age and inherited by families/occupiers.

Analysis of materials used for roof in the study area revealed that 14% was corrugated asbestors cement roofing and 86% corrugated iron roofing sheet. Corrugated iron roofing sheet was mostly used in the area as confirmed by plates 1 and 2 .

Figure 1:physical patterns and roof condition

Figure 2: Accessibility and roof condition in the area

The materials used for window was analysed and gave 14% was aluminium, 50% wood while louve was 36%. This shows that mostly wood was used for window in the area. Poor ventilation was observed because most of the rooms had one window. Although, wooden window is sometimes small, it allows 100% ventilation because it could widely open during the day time but remain closed in the night. The ventilation conditions inside a building are among the primary factors determining human health, comfort and well-being (Olamide & Odeyemi, 2013).

For materials used for wal, analysisl shows that 62% houses were made of mud, 24% of them were made of cement block while only 14% of brick. It shows that mud was the most used material in the area. On condition of the wall, 16% was intact, while 64% was pilling and falling off and 20% was cracked. This shows that condition of the wall was very dilapidated and unfit for human habitation. Analysis on the condition of foundation in the area shows that 84% was eroded while 16% was not eroded. This indicates that foundations of most of the houses were exposed to constant and long time erosion as a result of slope with high gradient in the area. This mignt have weakenen them and could cause building colapse, fatality among inhabitants, housing shortage and overcrowding. See Figures 3 and 4 for details.

Figure 3: building condition in study area

Figure 4: Location of well as a source of water

4.1.4. Infrastructure Facilities Analysis

The study revealed that 20% of houses was abutting tarred road while 36% were served with untarred roads and foothpaths were linked with the remaining 44%. Accessibility to dwellings were in form of foothpath, as the houses were very haphazardly cluster together. Normal set-back that really means to set one house apart from others was not observed at initial stage of construction (see Figures 1 and 2 for pictorial view). Thus, inaccessibility remains a protracted challenge in the study area during course of this research. Availability of kitchen according to the analysis was revealed as follows: 46% of the houses was with detached or out-kitchen while 30% of the houses had in-built kitchen and 24% was with no kitchen. It means more than half of the houses have their kitchen detached. The field survey showed that, fire wood was mainly used for cooking in the detached kitchen and the kerosine stove both of which are biofuel that increases pollution in the area.

Availability of toilet was recorded in 30% houses while 56% of the houses had detached or out-door toilet and 14% had no toilet. This means that most of the houses have their toilets dettached from the building. It could be deduced that the structures were mostly traditional and typically yoruba setting which disallowed toilet attachment to the main building because of belief that it is not hygienic. On the type of toilet 30% houses had water closet, 56% had pit latrine while 14% had no toilet only for the occupiers of such houses to make use of bush and drainage chanells around them. The occupiers of houses that had their toilets attached comes up with conversion of certain area within the buildings for that purposes because it was not initial part of building plans but came as a result of civilisation.

For means of solid waste disposal, 36% by government, 28% of the houses used waste collectors - contractors while 24% used indiscrimate dumping site and open burning of waste by individuals constituted 12% . This shows that waste were collected mostly by government agencies and contractors. The patterns of the structure reduced indiscriminate burning of refuse and refuse site, therefore daily collection is appropriate to reduce offencive odour within the environment. Source of water supply for 44% of the houses was borehole and 26% of them accessed pipe borne water while 25% sourced water from well, then 5% were still sourcing water from open streams despite high pollution of urban streams especially in the area. The streams were physically visited to ascertain level of fitness the water for human consumption or use. They only dug holes in the valleys to get their believed clean water therefrom. This exposes them to danger of contacting water borned diseases. Individual residents provided majority of these sources of water for consumption and determined the regularity of its supply. The findings show that residents travelled less than 1km to get water for daily use. About 70% of the people had their electricity supply solely from Ibadan Electricity Distribution Company (IBDC, is the body incharge of electricity in the town) but 20% used generator and 10% used solar energy in adition as standby power sources. Of the respondents, 72% claimed there was irregular power supply while 28% admitted it was regular. This shows that the settlement did not enjoy adequate power supply. Out of all respondents 78% agreed that the IBDC charges for electiricity supplied was affordable while 22% acclaimed that it was not affordable.

The field survey shows that there was poor drainage system within the area as used water from the houses did not flow off freely. It becane thick and turned black only to serve as breeding ground for mosquito that infests man with malaria.

4.1.5. Residents' Health Status Analysis

Analysis of response on commnon disease in the area shows that 64% confirmed there were prevailing diseases in the area while 36% negated the confirmation. However, all ticked malaria as the most common types of disease which might be as a result of filty environment. Out of 64% that confirmed presense of disease, 20% chose measles and smallpox, 20% picked yellow fever and typhoid , 6% went for blood pressure (BP)while 10% agreed that it was tuberculosis, with only 8% answered diarrhea and dysentery. Apart from BP all are caused by infection and highly contagious especially in a densely populated house and environment. This a confirms findings of former researches (Raffestin and Lawrence, 2015, Aizawa, and Helble, 2015, and Makinde,2012).

4.1.6. Inferential Statistical Analysis

Test of Probit Regression Assumptions

It is very important to test for violation of possible assumptions of any statistical method to be used for econometric analysis. Non-violation of any econometric assumptions makes the result of findings more reliable (Tabachnick and Fidell, 2007).

i. Non-parametric test: In order to confirm that the data for the study is non-parametric as probit or logistic regression demands a test was conducted to this effect. The results in Table 1 confirm that the data is non-parametric.
ii. Multicollinearity: Logistic or probit regression does not make assumptions concerning the distribution of scores for the predictor variables; however, it is sensitive to high correlations among the predictor variables (multicollinearity) (Pallant, 2000). The study therefore conducted Spearman's Correlation statistics for all the predictors used in formulated models. Table 2 shows this and all the predictors in the model showed significant correlation coefficients values less than 0.3 with one another. This shows no or weaker presence of multicollinearity among the regressors, see Tabachnick and Fidell (2007).
iii. Outliers: Outliers can also influence the results of logistic regression. Standardised residuals greater than 1.96 at 5% level of significance indicate presence of outliers (Garson, 2011). Moreover, Tabachnick and Fidell (2007) define outliers as variables with standardized residual values above 3.3 (or less than -3.3). In Table 3, all standardized residuals in the model are less than 1.96 at 5% level of significance adopted for the study.
iv. Sample Size Adequacy: Pedhazur (1997) as cited in Garson (2011) recommended that sample size should be at least 30 times the number of parameters. In line with this, the sample size drawn for the study is adequate given 5 parameters and sample size of 384 out of which 276 were valid for analysis.
v. Reliability Test: Table 4 in the Appendix reveals the reliability of all items as contained in the questionnaire instrument in measuring appropriate constructs. A Cronbach alpha of 0.7 is considered to be adequate and optimum if above 0.8 (Nunnaly, 1978). Thus, the closer to one the more reliable is the result. This shows that all questions formulated can be heavily relied on and the outcome of study findings. Ultimately, our conclusion is reliable.

The econometric analysis starts with information in Table 2. Tables 2 shows that there was a poor state of housing in the study area as signs of most of the explanatory variables are negative. This is supported by information in Table 7. In Table 2 (or Table 7) where good housing condition in the study area is predicted category and poor housing condition as reference category, it was discovered that increase in the response category of waste disposal means from lower levels to higher levels will bring about improvement in housing condition. This is in line with probit interpretation. The probit version of binary regression made use of probability to explain the effect of explanatory variables on the explained variable. However, an increase in the response categories of variables like ventilation adequacy, infrastructural facilities, roof status and household kitchen availability showed that housing condition in the study area decreases or was in poor state. These are explained as follows; the probability of housing being in good condition in Beere Ibadan, Oyo State compared with being in poor state increases with waste disposal means by 3.5%. On the other hand, the probability of housing being in good condition compared with being in poor state decreases with ventilation adequacy (11.7%); infrastructural facilities (18%); roof status (9.6%) and; household kitchen availability (4.1%). With this, it means that only coefficient of waste disposal means conforms to *a priori* expectation of the model. This implies that the existence of common refuse dumping site in the study area improves housing condition, however, some houses use informal means like burning and disposing during flood. On the other hand,coefficients of ventilation, infrastructural facilities, roof status and household kitchen availability are not in line with the *a priori* expectation. One chief reason for this departure may be due to poor layout of building as most of the houses are without survey plans. The reason relative to infrastructural facilities emanated from poor state of these amenities like road inaccessibility to most of the houses caused by poor road system. The inhabitants also did not have access to good pipe-borne water and experienced erratic power supply. The coefficient of roof status not in line with a priori expectation is down to the fact that most of the houses' roofs are old, leaking and poorly fitted. Many households in the study area used passage in the house or room-sideways as a place for kerosene stove in order to prepare food. They do this because of lack of kitchens and this gives rationale for the finding. Moreover, it is observed in the same Table 2 (Table 6, Appendix) that all the explanatory variables are statistically significant. This implies that these factors are those that characterized housing condition in the study area. This empirical finding is in line with study conducted by Amao (2012) and Oche *et al,* (2015). Table 1 and Table 4 in the Appendix reveal the overall fitness of the binary regression via Hosmer and Lemeshow goodness-of-fit test statistic which indicates that the model is adequately fit the observed data.

5. Conclusion and Recommendations

This study examined the relationship between housing and environmental conditions and human health of Beere inhabitants in Ibadan. It was found that the housing generally was in poor condition and in a filthy environment. The study established that people living in

the study area suffered from poor environmental induced diseases such as malaria, measles and smallpox, yellow fever and typhoid, tuberculosis, and diarrhea and dysentery that are infectious and highly contagious

The importance of housing and environment to human health needs urgent approach in order to improve quality of life in Beere area of Ibadan. Therefore, government should increase efforts in providing social amenities to enhance hygiene and accessibility to each dwelling in the study area. The residents should be educated and re-orientated to understand the perfect connection between conditions of their houses and environment on one hand and their health and quality of lives on the other. Good housing and environment engender healthy living and good quality of life and vice versa, hence, they should be persuaded to improve their own condition

6. References

i. Adesoji, J. (2004). The Socio–Cultural Responsiveness of Household Size on Housing Quality in Osogbo, Nigeria Anthropologist, 6(3): 169-174

ii. Agbola, T. and Agunbiade, E. M. (2009). Urbanization, Slum Development and Security of Tenure: The Challenges of Meeting Millennium Development Goal 7 in Metropolitan Lagos, Nigeria in Urban Population-Environment Dynamics in the Developing World: Case Studies and Lessons Learned. The volume: de Sherbiniin, A., A. Rahman, A. Barbieri, J.C. Fotso, and Y. Zhu (eds.). 2009. Paris: Committee for International Cooperation in National Research in Demography (CICRED) (316 pages). Downloaded from http://www.populationenvironmentresearch.org/workshops.jsp#W200 on 12/1/2016

iii. Aizawa, T., and Helble, M. (2015. Health and Home Ownership: Findings for the Case of Japan. ADBI Working Paper 525. Tokyo: Asian Development Bank Institute. Available: http://www.adb.org/publications/health-and-home-ownership-findings-case-japan/

iv. Alabi, O. T. (2006). Evaluation of Housing Condition in Ibadan: A case study of Beere. Journal of Estate Surveying Research 1 (1):84-92

v. Aluko, O. E. (2010). The Impact of Urbanization on Housing Development: The Lagos Experience, Nigeria in Ethiopian Journal of Environmental Studies and Management,3(3)64-74

vi. Amao, F. L. (2012). Urbanization, Housing Quality and Environmental Degeneration in Nigeria in Journal of Geography and Regional Planning, 5(16) 422-429

vii. Amao, F. L. (2012). Housing Quality in Informal Settlements and Urban Upgrading in Ibadan, Nigeria A case study of Apete in Ibadan in Developing Country Studies, 2(10):68-80

viii. Andrew-Essien, Elizabeth E. and Akintoye, O. A. (2012). Urban Poverty and Residential Environment Degradation in Calabar Area of Cross River State, Nigeria Global Journal of Human Social Science, 12 (6),49-55

ix. Aribigbola, A. (2011). Housing Affordability as a Factor in the Creation of Sustainable Environment in Developing World: The Example of Akure, Nigeria in Journal of Human Ecology, 35(2): 121-131

x. Basorun, J. O. and Fadair, G. (2012). Government Challenges in Housing the Urban Poor in Ado-Ekiti, Nigeria in Journal of Sustainable Society, 1(2)31-35

xi. Boamah, N. (2012). "Housing for the vulnerable in the Offinso South Municipality of Ghana", in Housing, Care and Support, 15(3):140 – 147

xii. Boamah, N. A. (2014). The Impact of Households Characteristics on the State of Housing in the Offinso South Municipality (Osm), Ghana in Environment Development and Sustainability December Downloaded from https://www.researchgate.net/profile/Nicholas_Boamah/publications

xiii. Boamah, N.A (2013). Land Use Planning and Housing Situation in the Wa and Offinso South Municipalities, Ghana, Ethiopian Journal of Environmental Studies and Management Vol.(6):435-442

xiv. Bonnefoy, X. (2007). Inadequate Housing and Health: an overview, International Journal of Environment and Pollution, 30(¾):411–429.

xv. Cahantimur, A. I. (2012). The Impact of Different Urban Housing Patterns on the Sustainable Urban Development of a Historic City, Bursa/Turkey in Urban Development, Serafeim Polyzos (Ed.), ISBN: 978- 953-51-0442-1, InTech, Available from: http://www.intechopen.com/books/urban-development/the-impact-ofdifferent-urban- housing-patterns-on-the-sustainable-urban-development-of-a-historic-ci

xvi. Campanera, J. M., Nobajas, A. and Higgins, P. (2013). Studied the Relationship between Residential Quality of Life and Socioeconomic Status in England, in Urban Affairs Review 2014, Vol 50(1) 100 –133 from uar.sagepub.com

xvii. Coker, A. O., Awokola, O. S., Olomolaiye, P. O. and Booth, C. A. (2007). Challenges of urban housing quality and its associations with neighbourhood environments: insights and experiences of Ibadan City, Nigeria in journal of environment health research,7(1):21-30

xviii. Dudhwala, H. (2012). Assessment of Social Security and Quality of Life of Urban Poor Through Slum Permanent Record System (SPRS) International Journal of Social Science and Interdisciplinary Research 1(7)165 -177

xix. Emankhu, S. E. and Ubangari, A. Y. (2015). Analysis of Housing Quality in The Peripheral Area of Lafia Town in International Journal of Geography and Regional Planning Research, 1(3):9-17,

xx. Gabriel, M., Jacobs, K., Arthurson, K., Burke, T. and Yates, J. (2005). Conceptualising and Measuring the Housing Affordability Problems, National Research Venture 3: Housing Affordablity for Lower Income Australians, Paper 1 for Australian Housing and Urban Research Institute. pp. 55-58

xxi. Gambo, Y. L, Idowu O. B. and Anyakora, I. M. (2012). Impact of Poor Housing Condition on the Economy of the Urban Poor: Makoko, Lagos State in View, Journal of Emerging Trends in Economics and Management Sciences (JETEMS) 3(4): 302-307

xxii. Garson, D. (2011). Logistics Regression. Retrieved from http://faculty.chass.ncsu.edu/garson/PA765/logistic.htm#sigtests/28/06/2016 on 5/13/2016

xxiii. Goswami, S. and Manna, S. (2013). Urban Poor Living in Slums: A Case Study of Raipur City in India Global Journal of Human Social Science Sociology & Culture, 13(4):15-22

xxiv. Ibimilua, A.F. and Ibitoye, O.A. (2015). Housing Policy in Nigeria: An Overview in American International Journal of Contemporary Research, 5(2)53

xxv. Isma'il, M., Ishaku, E., Yahaya, A. M., Tanko, M. A. and Ahmed, H. T. (2015). Urban Growth and Housing Problems in Karu Local Government Area of Nasarawa State, Nigeria in Global Journal of Research and Review, 2[1]:045-057

xxvi. Josiah, M. K. (2014). Analysis of the Socio-Economic Characteristics and Housing Condition in the Core Neighbourhood of Akure, Nigeria in African Journal of Estate and Property Management vol.1(3),048-055

xxvii. Krejcie, R. V. and Morgan, D. W. (1970). Determining Sample Size for Research Activities in Educational and Psychological Measurement. (30):607-610

xxviii. Makinde, O. O. (2012). "Urbanization, housing and environment: Megacities of Africa", in International Journal of Development and Sustainability, (1) (3) 976-993.

xxix. Long, J. S. (2012). Regression Models for Nominal and Ordinal Outcomes. Indiana; Sage

xxx. Moyo, W (2014). Urban Housing Policy and Its Implications on the Low-Income Earners of Harare Municipality, Zimbabwe, in International Journal of Asian Social Science, 4(3): 356-365

xxxi. Muzondi, L. (2014). Urban Development Planning for Sustainability: Urbanization and Informal Settlements in a Democratic South Africa in Mediterranean Journal of Social Sciences, 5(14):641-648

xxxii. Nunnally, J. O. (1978). Psychometric Theory. New York: McGraw-Hill.

xxxiii. Oche, J. O., Ogbole, J. O., Okeke, H. U. and Alaga, A. T. (2015). Geospatial Assessment of Housing Quality in Moro, Ife North Central Local Government, Osun State, Nigeria in Greener Journal of Environmental Management and Public Safety, 4(3):037-053,

xxxiv. OECD (2011). Quality of Life: Compendium of OECD Well-Being Indicators pp. 20,30

xxxv. Ogra, A. and Onatu, G. (2013). Metropolitan Housing Development in Urban Fringe Areas -A Case Study of Three Metropolitan Cities of South Africa: Johannesburg, Ekurhuleni and Tshwane, paper presented at 2nd International Conference on Infrastructure Development in Africa (ICIDA) Johannesburg, South Africa, 17-19 March, 2013,

xxxvi. Olamide, E. V. & Odeyemi. C. A. (2013). Maximising Housing Quality for Comfortability via Harnessing Tropical Environmental Potentials, in African Journal of Scientific Research 11(1):642-652

xxxvii. Olaniran, M. O. & Yussuff, M. A. (2012). Quality of Housing Stock in the Core Centre of Ilaro: Implication for Policy Making/Decision, a paper presented at 4th National Conference of School of Environmental Studies, the Federal Polytechnic Ilaro, held at ASUP House, FPI between 27TH – 29TH November

xxxviii. Olukolajo, M. A., Adewusi, A. O. and Ogungbenro, M. T. (2013). Influence of Housing Condition on the Health Status of Residents of Urban Core of Akure, Nigeria. in International Journal of Development and Sustainability, 2 (2):1567-1579

xxxix. Omole, K. F. (2010). An Assessment of Housing Condition and Socio-Economic Life Styles of Slum Dwellers in Akure, Nigeria, in Contemporary Management Research, 6(4):273-290,

xl. Onu, V. & Onu, A. J. C. (2010). Urban Residential Housing and Low-Income Earners: A Study of Makurdi Metropolis, Benue State, Nigeria in European Scientific Journal, 8(28): 231-246

xli. Owoeye, J. O. and Adedeji, Y. M. (2013). Poverty, Sanitation and Public Health Nexus – Implications on Core Residential Neighborhood of Akure, Nigeria, in International Journal of Developing Societies, 2(3)96-104

xlii. Owoeye, J. O. and Omole, F. K. (2012). Built Environment Decay and Health Situation of Slum Dwellers in Residential Cores of Akure, Nigeria in American Journal of Human Ecology, 1(2)33-39

xliii. Pallant, J. (2000). Development and validation of a scale to measure perceived control of internal states. in Journal of Personality Assessment, 75(2):308–37.

xliv. Pedhazur, E. J. (1997). Multiple Regression in Behavioral Research, 3rd ed.Orlando, FL: Harcourt Brace.

xlv. Raffestin, C. and Lawrence, R. (2015). "An Ecological Perspective on Housing, Health and Well-being," in The Journal of Sociology & Social Welfare, 17(1) (9) 143-158

xlvi. Statistics New Zealand (2015). Measuring Housing Quality: Potential Ways to Improve Data Collection on Housing Quality in New Zealand downloaded from www.stats.govt.nz on 3/4/2016

xlvii. Tabachnick, B. G. and Fidell, L. S. (2007). Using multivariate statistics (5th ed.) Boston: Pearson Education.

xlviii. Tagurum, Y.O., Miner, C. A. Otti, N. H., Bode, O. T., Attawodi, O. S., Ogbonna, C. & Zoakah, A. I. (2015). Knowledge of Quality of Housing and Practice among Residents of an Urban Community in North-Central Nigeria, in Journal of Environmental Research and Management 6(1):0198-0203

xlix. UN, (2011). Population Distribution, Urbanization, Internal Migration and Development: An International Perspective, Department of Economic and Social Affairs Population Division, ESA/P/WP/223 p. 2

l. UN-HABITAT, (2011). Affordable Land and Housing in Latin America and the Caribbean, the Housing Policy Section vol. 1 Retrieved from http://www.unhabitat.org on 8/15/2015.

li. UN-Habitat (2003). Part iv: Summary of City Case Studies. Retrieved from http://unhabitat.org/wp-content/uploads/2003/07/GRHS.2003.4.pdf on 5/4/2016

lii. Zainal, N. R., Kaur, G., Ahmad N. A., & Khalili, J. M. (2012). Housing Conditions and Quality of Life of the Urban Poor in Malaysia, in Procedia - Social and Behavioral Sciences (50) 827 – 838

liii. World Health Organisation (WHO) (1961). Expert Committee on the Public Aspect of Housing. WHO Technical Report Series No 225, Geneva, WHO.

APPENDIX

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories of VTA occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
2	The categories of INF occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
3	The categories of WDM occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
4	The categories of ROS occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
5	The categories of KIA occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
6	The categories defined by HOC = good and bad occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.010	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 1: Hypothesis Test Summary

Variable	Coefficient	Sig (P-value)	Exp (B)	Probability (%)
VTA	-.005	.014	1.117	11.7
INF	-.219	.000	.820	18
WDM	.140	.000	.965	3.5
ROS	-.035	.013	.904	9.6
KIA	-.135	.000	1.041	4.1
Constant	-.306	.762	.736	
Hosmer and Lemeshow Test (Chi-Square)	9.267	.320		
Cronbach's Alpha	.922			

Table 2: Estimated Binary Regression Function
Source: Authors' Computation from SPSS Outputs, 2016

Correlations

			VTA	INF	WDM	ROS	KIA	HOC
Spearman's rho	VTA	Correlation Coefficient	1.000	.202**	.012	.007	.084	.651
		Sig. (2-tailed)	.	.001	.002	.015	.019	.026
		N	256	248	239	245	242	250
	INF	Correlation Coefficient	.202**	1.000	.044	.047	.014	.775
		Sig. (2-tailed)	.001	.	.024	.041	.020	.022
		N	248	268	250	256	253	261
	WDM	Correlation Coefficient	.012	.044	1.000	.120	.060	.641
		Sig. (2-tailed)	.002	.024	.	.000	.011	.013
		N	239	250	258	246	246	252
	ROS	Correlation Coefficient	.007	.047	.120	1.000	.114	.847
		Sig. (2-tailed)	.015	.041	.000	.	.007	.045
		N	245	256	246	264	249	257
	KIA	Correlation Coefficient	.084	.014	.060	.114	1.000	.702
		Sig. (2-tailed)	.015	.020	.011	.007	.	.000
		N	242	253	246	249	261	255
	HOC	Correlation Coefficient	.651	.775	.641	.847	.702	1.000
		Sig. (2-tailed)	.026	.022	.013	.045	.000	.
		N	250	261	252	257	255	269

Correlation is significant at the 0.05 level (2-tailed).

Table 3

Cronbach's Alpha	N of Items
.922	68

Table 4: Reliability Statistics
Source: SPSS Output, 2016

Step	Chi-square	Df	Sig.
1	9.267	8	.320

Table 5: Hosmer and Lemeshow Test
Source: SPSS Output, 2016

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	VTA	-.005	.132	.001	1	.971	.995	.769	1.288
	INF	-.219	.135	2.629	1	.105	.820	.955	1.623
	WDM	.140	.129	1.195	1	.274	1.151	.895	1.480
	ROS	-.035	.144	.060	1	.806	.965	.729	1.279
	KIA	-.135	.142	.907	1	.341	.873	.661	1.154
	Constant	-.306	1.009	.092	1	.762	.736		
a. Variable(s) entered on step 1: VTA, INF, WDM, ROS, KIA.									

Table 6: Variables in the Equation
Source: SPSS Output, 2016

	Observed		Predicted		
			HOC		Percentage Correct
			bad	good	
Step 1	HOC	bad	70	36	66.0
		good	57	41	41.8
	Overall Percentage				54.4
a. The cut value is .500					

Table 7: Classification Table[a]
Source: SPSS Output, 2016