



Health Implication of Housing Conditions on Residents in Calabar South Local Government Area, Cross River State, Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Authors ODI and BJO designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author ODI managed the analyses of the study. Author BJO managed the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

Aim: Staying healthy is a function of many factors among which housing condition of man is prime. Both intrinsic and extrinsic attributes of housing can impact on human health. This study examined the health implications of housing conditions on the residents of Calabar South Local Government Area, Cross River State, Nigeria.

Methodology: A cross sectional descriptive study design was employed using questionnaire to elicit information on the housing conditions of residents and their public health implications in Calabar South Local Government Area of Cross River State, Nigeria from February to May 2016. A sample size of 400 respondents was used for the study. Data collected were analyzed descriptively using simple percentages.

Results: Findings from this study indicate that malaria and typhoid fever were the two major health challenge among the residents. Also, domestic accident/injuries were observed to be more frequent which can be the possible effect of poor housing conditions among the residents of Calabar South Local Government Area. Results of the dwelling condition of residents in Calabar South revealed

that 41.8% of the respondents rated it very poor with only 4.5% of the respondents rating their dwelling place to be excellent. Common pest/vectors perceived in housing units as highlighted by the respondents showed that mosquitoes (46.3%) and cockroaches (30.8%) were more prevalent.

Conclusion: It was recommended among others that there should be a continuous public enlightenment among the people on the health implication of their living conditions in Calabar South Local Government Area of Cross River State.

Keywords: Environmental concerns; health implication; housing condition; Calabar South.

1. INTRODUCTION

In the midst of various environmental concerns confronting developing nations such as Nigeria, the most fundamental challenge is housing [1]. Housing is seen as “inadequate” if it lacks essential infrastructure, facilities, and services which include disposal facility, waste collection, adequate space and ventilation, electricity, water supply, sanitation, as well as general environmental quality [2]. Proper housing is therefore critically significant to the general well-being, comfort and health status of humans [3]. It satisfies an array of needs in a dweller such as; intellectual needs, physical needs and emotional needs (comprising both aesthetic and psychological). Furthermore, an adequate housing leads to a healthy society, although the overall environment of man is accountable for the state of man’s health as well as wellbeing. It is difficult to link this directly by empirical evidence [4]. This is because other numerous factors can cause ill-health, such as poverty, social disadvantage, malnutrition, poor working conditions or joblessness, absence of medical healthcare.

The association between living conditions and health has long been recognized and accepted by scholars [5]. Krieger and Higgins [2] opined that adequate housing is capable of protecting residents from dangers giving them the needed solitude, security, strength, control as well as capable of contributing significantly to health. On the other hand, where the state of housing is poor and inadequate, it may result in communicable and chronic ailments, injuries and poor childhood development. The national housing policy (1991), is concerned about assessment of social projects in Nigeria, and posited that “the collapse of some communal projects such as water and housing schemes are related to lack of ample monitoring and evaluation of policy implementation”.

According to WHO [6], populations associated with negative well-being and poor health are so

much likely to reside in substandard houses and that when housing condition is improved, it impacts on health and saves money. There are many diseases that have been linked with poor housing conditions, e.g. cardiovascular and respiratory illnesses from air pollution arising indoors; deaths and illness, high temperature; infectious illnesses increase due to low housing conditions, substandard living conditions are linked to a number of health illnesses such as injuries, asthma, lead poisoning respiratory infections, and mental health [6]. Deteriorating paint in old homes has been identified as the key basis for lead poisoning in children exposed to paint chips and inhale lead-contaminated dust [7]. Lead poisoning can cause permanent damage to brain and paralyzes development of nervous system, thus, leading to reading disabilities and low intelligence [8].

Report by WHO [6] and Essien [9], reveal that residents in damp and mouldy areas are at an elevated risk of respiratory infections, allergic rhinitis (inflammation of the mucous membranes) and asthma. The presence of mould in buildings can pose health risk to babies, young children, elderly people, those with skin diseases and the people undergoing chemotherapy. The most susceptible among these groups are children [10].

The public health community is conscious of the magnitude of social determinants of health (together with housing) in current times, thus far defining the task of public health professionals on how they influence living conditions is a huge challenge. Responsibility for social determinants of health is understood to be basically beyond the limits of public health [2]. Several researches on housing and health have been carried out in various cities in Nigeria [9,11,12,13]. The study of Ogundahunsi and Adejuwon (2014) in Ondo State identified malaria ailment as the most reported by 53%. The study in Calabar Municipality by Essien [9], identified malaria as the most prevalent disease with 75%, skin rashes, cough, eczema and scabies were

44.25%, 29.25%, 10.25%, and 5% respectively as reported by respondents. Thus, this study seeks to assess the health implication of housing condition of dwellers in Calabar South Local Government Area.

2. MATERIALS AND METHODS

2.1 Study Area

Calabar South, a local government in Cross River State, Nigeria. it makes up part of the Calabar Metropolis, and one of the seven Local Government Areas in the Southern Senatorial District. The area lies between latitude 4°84' N and longitude 8°16' E and occupies a land area of 264km² with a population of 191,630 as at 2006 census as publish by the Federal Government Gazette of the National Population Census [14]. It is bounded in the North by Calabar Municipality, the South by the Cross River, the East by the Great Qua River and the West by the Calabar River. Calabar South has one General hospital, 27 Primary health centers spread across the political wards and numerous private health facilities. The Local Government Area is a semi-urban settlement with a mixture of many ethinc groups but predominantly made up of the Efiks, Efuts, Quas, Ibibios and Yakkurs.

2.2 Study Design and Population

A cross sectional descriptive study design was employed using questionnaire to elicit information on the housing conditions of residents and their public health implications in Calabar South Local Government Area of Cross River State, Nigeria from February to May 2016.

The study population was made up of adults (18 years and above) irrespective of vocation residing in the housing units under the study area.

2.3 Sample Size Determination and Sampling Procedure

The sample size for this study was determined using Lutz's formula, [15] which is given as;

Where,

- n = Sample size
- Z = Confidence interval (i.e. 95% = 1.96)
- P = Probability of success (0.5)
- D = Margin of Error or Precision (0.05)
- Q = probability of failure (0.5)

Therefore;

The sample size for this study as calculated was 384. However, to make room for non-response and attrition bias, the sample size was increased by 4% giving a sample size of 400 that was used for the study.

Multi-staged sampling technique was employed in the selection of wards, streets, household and respondents and the procedure is described as follows;

Stage 1: Selection of wards

Calabar South has 11 wards. Five wards were selected using simple random sampling technique. Names of the wards were written on pieces of paper, folded and put in a basket. The basket was thoroughly shaking and five research assistants were asked to pick out a piece of paper and the names of the wards written on the five papers picked constituted the selected wards.

Stage 2: Selection of streets

In each selected wards, simple random sampling technique was used to select eight streets (8 street x 5wards = 40 street). Names of streets were written on pieces of paper, folded and put in a basket. After thorough shaking, a research assistant was asked to pick out 8 streets and the names of the streets written on the 8 papers picked were considered for the study. The procedures continue for all the five wards until 40 streets were duly selected.

Stage 3: Selection of households

In each selected street, systematic sampling technique was used to select 10 households (40streets x 10households = 400 households). The sampling interval used was derived from the formula: total number of household in a street divided by the desired number (Appendix 1). Every second household on each street was used as the first unit in selecting the households until ten (10) households were selected to obtain a total of four hundred (400) households.

Stage 4: Selection of respondents

In each household selected, adult's male and female (18 years and above) were employed to participate in the study. In households where on adult was present, the next household was used.

Also in households where there was more than one adult, depending on the number of adult present, numbers were written on pieces of papers, folded and put in a basket. After thorough shaking, respondent was asked to pick one paper. The person who picked number one was recruited to participate in the study. This procedure described above was utilized to sample 400 responded from households in the study area.

2.4 Instruments for Data Collection

- I. A structured questionnaire was designed to collect necessary data from respondents. The questionnaire was self-administered to the study participants and was divided into four sections. Sections A and B consist of socio- demographic data and the knowledge of poor housing to health, while Sections C, D and E consist of types of housing, location attribute and health conditions (perceived diseases) among respondents.
- II. The residential houses for the study were assessed using a standard observational checklist for sanitary inspection of premises by the Ministry of Environment was modified and use to evaluate all sampled dwelling unit. Some of these items included: types, size, and number of windows, bathroom and toilet if adequate. Samples of photographs were taken to show the poor state of housing in the study area.

2.5 Pre-Testing

Twenty (20) questionnaires were pre-tested among residents in Atimbo area of Calabar Municipal, of Cross River State. The essence of pre-testing the questionnaire is to ascertain its reliability and validity. After the pre-testing, the questionnaires were edited and adapted to improve the comprehension of the questions.

2.6 Data Collection Procedure

The questionnaires were administered to only adults (18 and above), the questionnaires were filled and returned and was recorded also. Five field Assistants were trained for a week in preparation to assist the researcher for actual administration and collection of questionnaires from respondents. Throughout the survey, continuous quality control procedures (cross-checking the completeness of responses,

ensuring non- interference/influence on respondents, on-spot-check by researcher to reconfirm responses) were maintained to ensure the validity and completeness of data collection.

2.7 Methods of Data Analysis

The data was analyzed using simple percentages. Statistical Packages for Social Sciences (SPSS version 20.0) was used to process the data and the results were presented in Tables, Figures and charts. Regression analysis was used to test for hypothesis at 5% alpha level.

3. RESULTS

The results of the residents' knowledge of the health implication of housing conditions among respondents as presented on Table 1 showed that more than half of the respondents 211 (52.8%) were aware of the fact that poor housing affects human health. Possible effect of poor housing on human health as indicated by the respondents were mostly 78 (29.0%) accident/injuries, 62 (23.0%) general discomfort, 46 (17.1%) exposure to disease transmission and 32 (11.9%) loss of life and properties. Knowledge of factors that contributes to poor housing in the area were predominantly 128 (28.8%) lack of good road network, 78 (17.6%) building houses with sub-standard materials, 65 (14.6%) lack of good drainage system and 63 (14.2%) lack of repairs/replacement/renovation of buildings.

Table 2 presents the results of self-reported health problems associated with housing conditions in Calabar South Local Government Area of Cross River State. The results showed that greater proportion of the respondents 369 (92.3%) reported that they had treated for malaria while 170 (42.5%) respondents had treated for typhoid fever both in the past 12 months. Skin diseases suffered by respondents in the past 12 months were mostly 182 (44.2%) rashes, 62 (15.0%) eczema and 48 (11.7%) scabies while respiratory diseases mostly reported were 243 (58.6%) cough and 82 (19.7%) wheezing.

Common pest/vectors perceived in housing units as highlighted by the respondents as shown in Fig. 1 were majorly 185 (46.3%) mosquitoes, 123 (30.8%) cockroaches and 40 (10.0%) houseflies. Results in Fig. 2 showed that most respondents 277 (63.7%) admitted that they have experience

unintentional home injury from falling in the last 12 months preceding the survey. However, the remaining 123 (36.3%) respondents reported to have experienced domestic accidents at least once in the last 12 months which include; 79 (18.2%) burns, 16 (3.7%) choking and suffocation and 58 (13.3%) poisoning. Although, 277 (63.7%) respondents admitted that they have never experience any domestic accident in their homes in the last 12 months preceding the survey. However, the remaining 123 (36.3%) respondents reported to have experienced domestic accidents at least once in the last 12 months which include; 79 (18.2%) falls, 58 (13.3%) choking and suffocation and 16 (3.7%) burns.

Fig. 3 presents the results of respondents' rating of their dwelling condition. Most respondents rated their dwelling condition as poor 167 (41.8%) while 131 (32.8%) respondents rated it as very poor. Only 18 (4.5%) respondents rated their dwelling to be excellent. Most respondents rated their dwelling condition as average while

131 (32.8%) respondents rated it good. Only 18 (4.5%) respondents rated their dwelling to be excellent.

4. DISCUSSION

The high level of awareness of the health implication of poor housing exhibited by the respondents in this study may be attributed to information from personal experiences of friends/family members/relatives of the respondents and regular dissemination of information via the electronic media on issues of poor housing. Other sources of information on the effects of housing on health reported by most respondents working in health care facilities include their experiences with patients relating to housing conditions. Self-reported effects of poor housing on human health as reported by the respondents were mainly 29.6% accidents/injuries, 23.6% general discomfort, 17.5% exposure to disease transmission and 12.2% loss of life and properties. This result is consistent with the findings of Runyan [16] which

Table 1. Residents' knowledge of the health implication of housing conditions among respondents (N=400)

Variables	Number of respondents	Percentage
Aware that housing conditions affects human health		
Aware	211	52.8
Not aware	189	47.2
Total	400	100
Possible effect of housing conditions on human health*		
Do not know any	45	16.7
Fire outbreak	4	1.5
Air pollution	2	0.7
Exposure to disease transmission	46	17.1
Loss of life and properties	32	11.9
Accident/injuries	78	29.0
General discomfort	62	23.0
Total	269	100
Possible factors that contributes to poor housing		
Do not know any	28	6.3
Lack of good drainage system	65	14.6
Environmental pollution	9	2.0
Indiscriminate disposal of waste	41	9.2
Lack of finance	11	2.5
Overcrowding	21	4.7
Lack of good road network	128	28.8
Building houses with sub-standard materials	78	17.6
Lack of repairs/replacement/renovation of buildings	63	14.2
Total	444	100

*Multiple responses

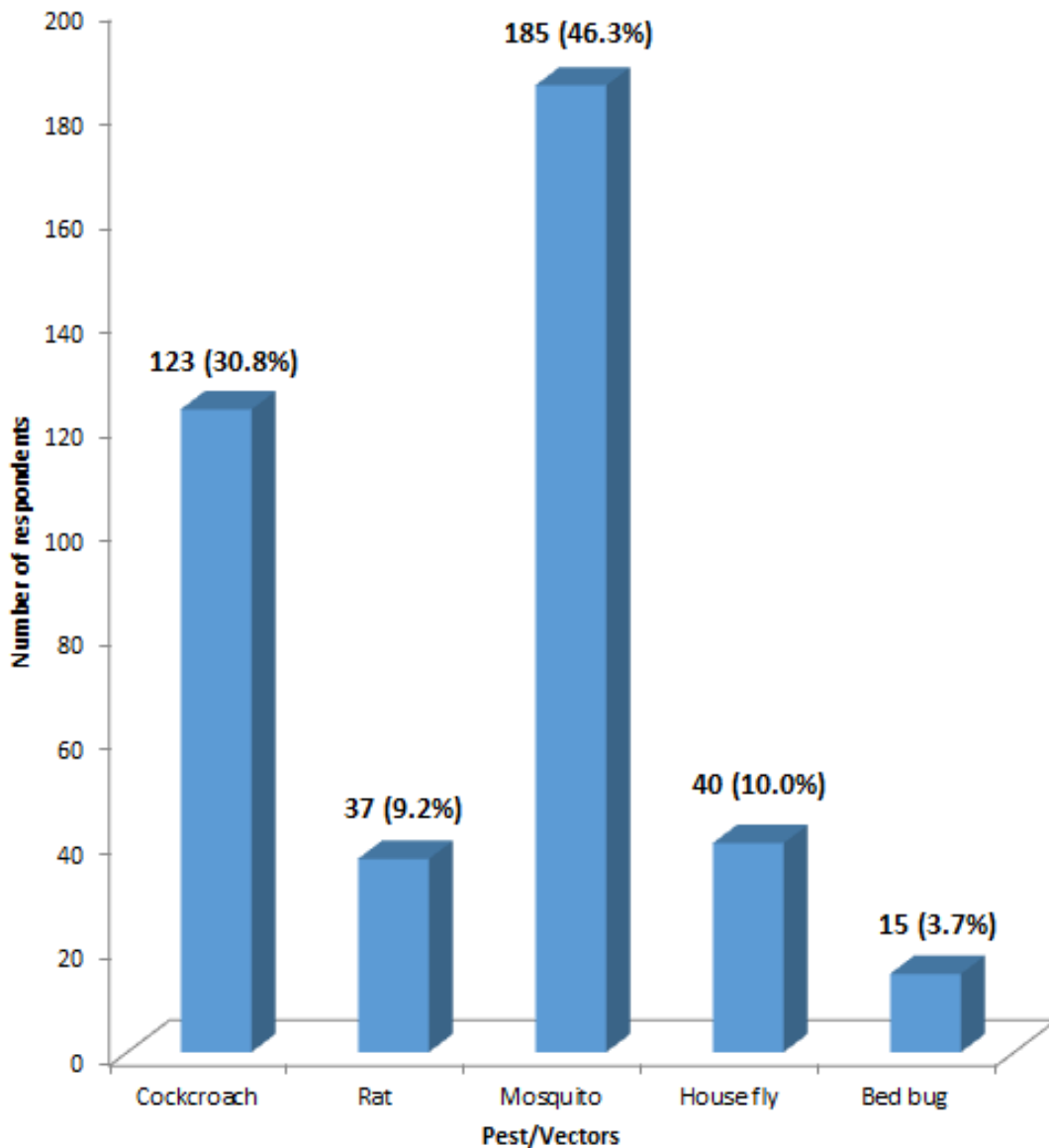


Fig. 1. Common pest/vectors perceived by respondents in housing units

indicate that falls account for over half of all unintentional home accident/injuries. The ability of respondents to indicate at least one effect of poor housing on health clearly suggests high level of knowledge which was as a result of the personal experience and/or experiences of friends/family members/neighbors, including regular dissemination of information via the electronic media/social network on high morbidity and mortality rates from poor housing condition.

The study further showed that the respondents also knew at least one factor that contributes to poor housing condition. The most common were 30.2% lack of good road network, 18.4% houses with sub-standard materials, 15.3% lack of good

drainage system and 14.8% lack of repairs/replacement/renovation of buildings. The high knowledge exhibited by the respondents on the factors that contributes to poor housing were as a result of visual observation of event within the surrounding environment, neighborhood experience, personal experience and spreading of information on the media/social network.

Most respondents 92.3% reported that they had treated malaria in the past 12 months. The endemicity of malaria infection is triggered by the proliferation of female *Anopheles* mosquito breeding sites in stagnant dirty water, overgrown weeds and bush, indiscriminate disposal of waste, lack of drainage system near dwellings. A

study by Asenso-Okyere [17] of malaria in Kojoh Ghana revealed that factor perceived as causing malaria include mosquitoes, flies, dirty environment, unsafe water and poor hygiene. Consequently, people residing in such areas are often exposed to mosquito bites resulting in malaria high risk zone tends to treat malaria. This finding agrees with the study of Ogundahunsi and Adejuwon [13] in Osun State which reported that malaria was the most reported ailment in the community with 53%. The study also showed that, 42.5% reported that they have treated typhoid in the last 12 months. Typhoid fever in humans is usually transmitted via contaminated food or water. Food stored, processed or prepared in dirty environment has a high tendency of being contaminated. This means that

the residents in houses built without an adequate water supply are likely to be predisposed to the disease.

Skin rashes were reported by 41.0% respondents while cough was the mostly highlighted respiratory disease suffered by 58.6% respondents in the last 12 months. This finding agreed with the result of studies by Essien [9] and Olukolajo et al., [12] in Calabar and Akure respectively where skin rashes accounted for 44.25% and 54.4%. The occurrence of both skin and respiratory infections are associated with overcrowding, dampness and ventilation. Houses with such features place the individuals living in it at risk of contracting disease infection.

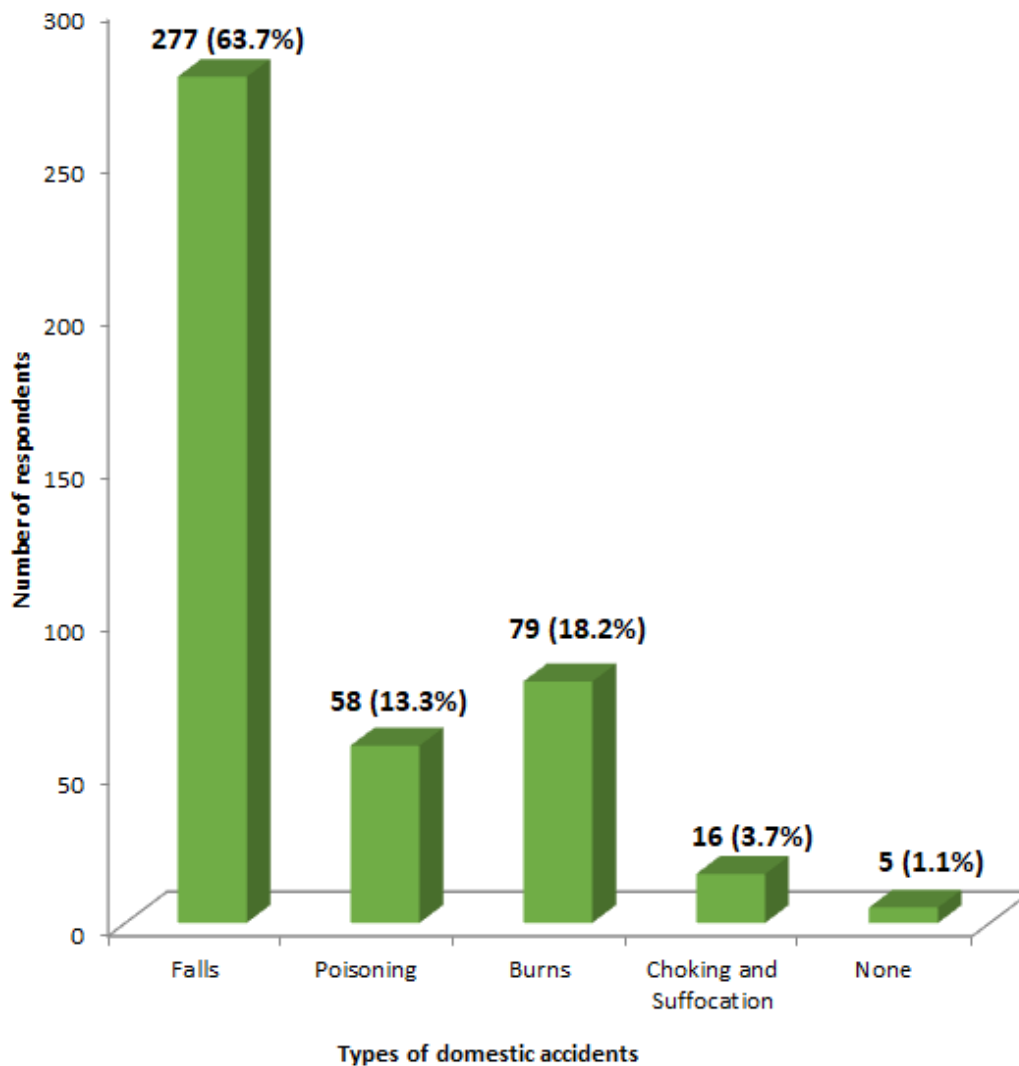


Fig. 2. Types of domestic accidents experienced by respondents in their homes during the last 12 months preceding the survey

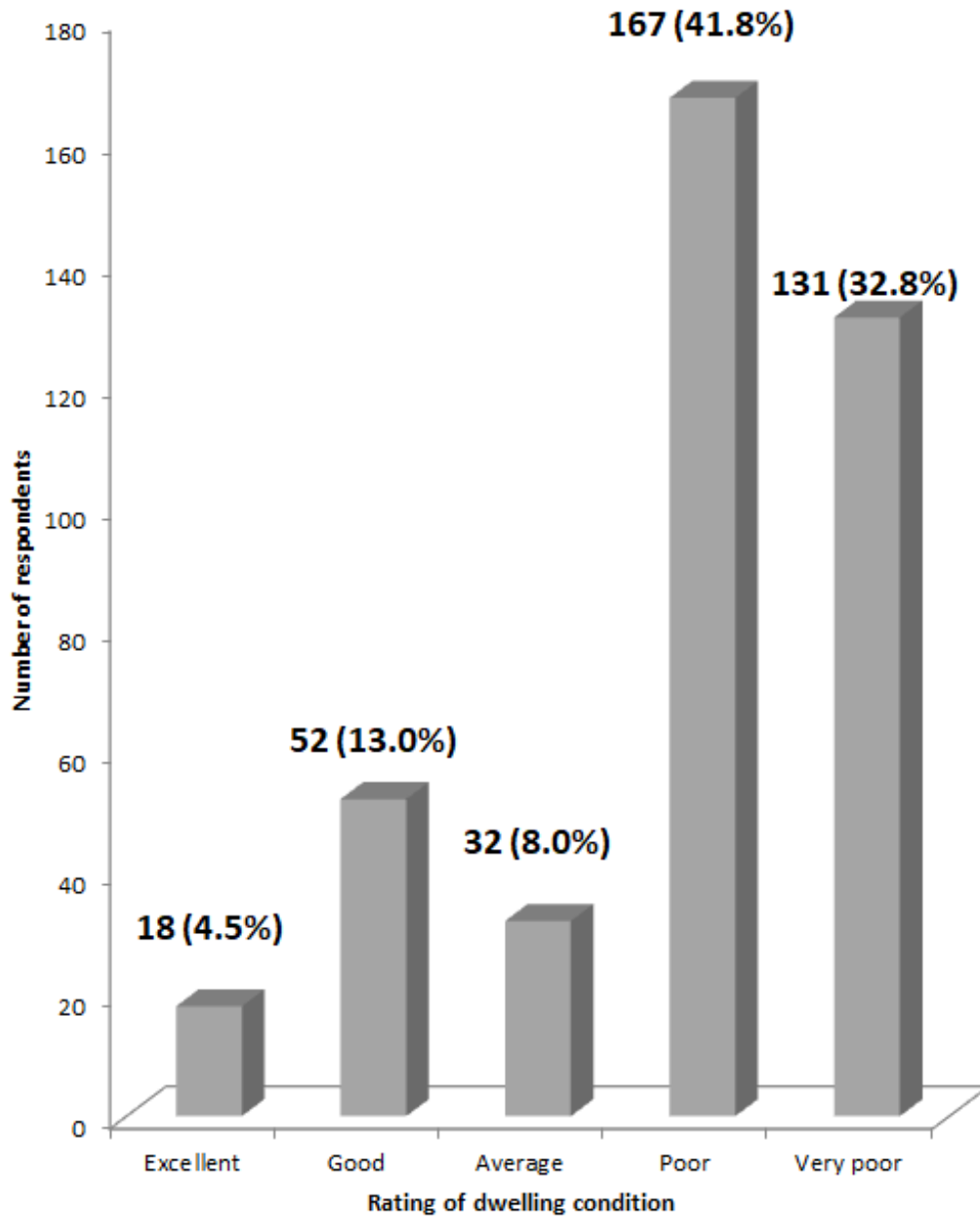


Fig. 3. Respondents' rating of their dwelling condition

Majority of the respondents 46.3% reveals that the most common vectors perceived in houses were mosquitoes. This was due to poor drainage system, stagnate water from non-flowing runoff pipe from bathroom, dilapidated soak away, bushy environment and indiscriminate disposal of waste in the study area were hence serving as a breeding site. While 30.8% report that cockroaches were in their housing units. The vector was mostly found in houses built with mud walls, zinc/thatch roofs, wooden windows and located in unhygienic environment like dilapidated soak away and without waste

disposal facilities adequate lightening. Houses with dilapidated wooden furniture could encourage the presence of cockroaches, rodents, rats and mosquitoes. This finding disagree with the study carried out by Essien [9] in Calabar Municipality which reported that rats 54% accounts for the most common vector follow by mosquitoes with 45%. Domestic accidents experienced by the respondents in their homes during the last 12 months were majorly 63.7% falls, 18.2% burns, 13.3% poisoning and 3.7% choking and suffocation. These incidents are common in houses where the floor is slippery,

Table 2. Self-reported health problems associated with housing conditions (N=400)

Variables	Number of respondents	Percentage
Ever treated for malaria in the past 12 months		
Treated malaria	369	92.3
Not treated malaria	31	7.7
Total	400	100
Ever treated for typhoid in the past 12 months		
Treated typhoid	170	42.5
Not treated typhoid	230	57.5
Total	400	100
Skin diseases suffered in the past 12 months*		
Rashes	182	44.2
Chickenpox	44	10.7
Eczema	62	15.0
Scabies	48	11.7
None	76	18.4
Total	412	100
Respiratory diseases suffered in the past 12 months*		
Cough	243	57.3
Wheezing	82	19.3
Asthma	9	2.1
Diarrhea	26	6.1
Breathing problem	15	3.5
None	49	11.6
Total	424	100

*Multiple responses

broken floor, the structures are dilapidated, absences of lighting and ventilation. These housing conditions were also reported by Runyan [16]. From the findings, falls account for over half of all unintentional home accident/injuries.

5. CONCLUSION

The drive towards quality housing in Nigeria is gradually getting its desired attention. Many factors may be responsible for condition of health of people of which housing is undoubtedly one of such. This study revealed that housing conditions play a dynamic role in healthy living and life sustainability. The respondents had good knowledge of awareness on the effect of housing conditions on health but practice was not encouraging as most of the houses were insanitary. Although many factors may be responsible for condition of health of people, housing is undoubtedly one of such. Poverty has been linked with poor state of health. The government should improvise different programmes that can enhance the economic status of households. This does not necessarily mean upward revision of salary of state

employees but creating an enabling environment where even private businesses can thrive.

CONSENT

As per international standard or university standard, participant's written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Appendix 1. Selection of households in Calabar South Local Government Area

S/N	Name of ward	Total number of houses	Interval	Total number of households
1	02	175/80	2.1	80
2	04	158/80	2.0	80
3	05	161/80	2.0	80
4	08	171/80	2.1	80
5	10	181/80	2.3	80
Total		864		400

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