

A Review of the Safety of Our Homes: A Case Study In Nigeria

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Abstract: Tradition holds it that the home is a haven, where people are protected and nurtured. For many, however, the home has become a health hazard when factors such as poverty, environmental contamination, and poor design combine to cause or exacerbate disease and accidents which sometimes leads to death. A largely pre-coded questionnaire, which had varied type of questions ranging from Open Ended, Multiple Choice and Fill-in-questions was designed to identify the factors that provide for safety at home. The target population for administration of the questionnaire comprised professional colleagues, friends, old college association groups, church members and current post graduate students under my tutelage. Their responses automatically plotted the graphs and results obtained via Google App. This, to a large extent, eliminated errors and gave very accurate results. Results showed that the total number of respondents were 324 and these were from 26 out of the 36 states of Nigeria which demonstrated a wide spread of views on the questions asked. The results also showed that 94.8% of the respondents use gas for cooking, but surprisingly as many as 83% do not own fire extinguishers in their homes as well as no fire alarm system installed. This posed a potential dangerous situation for many of these homes in case of accidental fire occurrence. Most of the respondents listed Air Pollution, Noise, Security and Crime as a common challenging problem in their neighbourhood. The study recommends that the Nigerian building Code of 2006 be made available to all in the building construction industry who should in turn educate their clients, the owners of the buildings.

Key Words: Safety, Home, Environmental Quality, livability

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I. Introduction

Man's basic needs are food, shelter and clothing. It is universally accepted that housing is the second most important need of man after food. Housing constitute a major part of urban development. Good-quality housing is not only a necessary goal in its own right, but it is also an addition to economic growth, social development, improved governance and enhanced security and stability (Aluko, 2004).

The word "housing" is used both as the process and the product of creating shelter for human beings (Jorgensen, 1982). Normally, shelter consists of a one-household dwelling. If the dwelling is a flat in a block row of houses it is referred to as a dwelling unit. Many people refer to a housing unit as a whole building, and the dwelling unit as the space occupied by one household, whether it is one single room, a number of rooms in a flat, or a whole building.

Globally, there has been no consensus on the definition of housing. However, three schools of thought exist. The first defines housing in terms of its physical form, and its shortage as one of the "small secondary evils of the capitalist mode of production" (Burgess, 1982). The second defines housing as a dwelling that incorporates a bundle of services, which range from the units to bases from which economic activities can be pursued (Burns and Grebler, 1977). In this regard, Montgomery and Mandelker (1979) pointed out the multidimensional nature of housing since the concept connotes not just walls and a roof, but other aspects also, including (a) specific location in relation to work and services; (b) neighbours and neighbourhood; (c) property rights and privacy; and (d) income and investment opportunities. The third defines housing as a process which makes the act of dwelling possible (Turner, 1976; Habraken, 1972). In effect, the term, housing includes the house itself and the total surrounding environment with its ancillary facilities and services (Obinna, 2008).

Therefore housing goes beyond simple shelter to include the income of the residents, utilities and community services such as water supply, energy, access road, sewage and refuse disposal facilities. Housing Quality is related to the functionality of the house and the various components of the house are interrelated. Tradition holds it that the home is a haven, where people are protected and nurtured. For many, however, home is a health hazard when factors such as poverty, environmental contamination, and poor design combine to cause or exacerbate disease and accidents which may even lead to death.

In Architecture, there is a popular saying that “form follows function”. This is very true for any dwelling unit. The daily operations in the dwelling unit must balance out to give the occupants maximum comfort. During the design process for a custom home, there is always an attempt to integrate form and function in the belief that form should follow function and not merely serve as an ornament. In fact, “form follows function” is a phrase coined by American architect Louis Sullivan (1995). Wright (1995) argued that the shape of a building should not be fashioned after some aesthetic tradition, but rather should be determined by the purpose of the building.

In the early 20th century, influential architect Sullivan mentee of Frank Lloyd Wright, adapted and further developed this approach to architectural design, which he termed “organic architecture.” Like Sullivan, Wright argued that “form and function are one.” Organic architecture seeks to integrate space into a unified whole. The style of a building should grow naturally from its environment. More specifically, “organic architecture” does not mean the imitation of nature’s forms, rather a reinterpretation of nature’s principles. This includes respect for the properties of the materials and for the harmonious relationship between form and function of a certain building. Furthermore, organic architecture strives to incorporate the spaces into a coherent whole where site and structure come together harmoniously. According to Wright, architecture should have an inherent relationship with both its site and its time (Wright, 1995).

No matter how beautiful a building is, it is of paramount importance that it be considered functional by the standard given in the Building Code of that nation. Nigeria has a Building Code prepared in 2006, which is consulted when developers apply for building permit. Space standards are very significant both inside and outside the dwelling. There is evidence that inadequate space standards can disorganize family life. For instance, the current expert consensus in European countries is that the lower limit for mental health is 16m² of floor area per person (Chombart de Lauwe, 1955; Musil, 1962), and the desirable standards established by the American Public Health Association (1950) are twice the above figures. But these represent standards for new construction; and many European and North American families probably have a current space standard of less than 7m² per person for existing buildings while it is certain that families are to be found in Latin America, Africa, and Asia with less than 2 m² of floor area per person (Loring, 1956).

There is also evidence that an equally important criterion is the number of rooms in the dwelling. A careful survey by Loring (1956), using paired groups of “well adapted” and “disorganized” families, showed that significant differences were associated with number of rooms’ available, floor area, and general surroundings, but not with other supposedly significant factors such as possession of a bath or the physical condition of the dwelling.

In Britain in spite of the gigantic backlog of substandard housing, it is expected that new construction will continue to improve its minimum standards of equipment and space. During the past sixty years, the recommended minimum space standard has increased by about 40% or 5m² per person, and it is believed that the increase may have been greater in most other industrialized societies, which started from a lower base. On the basis of a sustained 3.5% annual growth in productivity, it seems very possible that the minimum standard of new housing will double in the next forty years; even if space standards increase at only half this rate, a standard for new construction of 23m² of floor area per person would then be common place by the early twenty-first century FEANTSA (2009).

That renewed interest is being manifested at the national and international levels, as well as in the form of grassroots community action. In late 2004, the World Health Organization convened its 2nd International Housing and Health Symposium at Vilnius, Lithuania, a conference designed to review the existing scientific evidence on housing and health relationships, and assess needs for further research. In what may prove to be a development with wide-ranging global impact, the symposium generated the Vilnius Declaration, in which 250 scientists and officials representing 24 countries committed themselves “to taking action to ensure that health and environmental dimensions are placed at the core of all housing policies (from housing construction and rehabilitation plans, programmes and policies to the use of adequate building materials) and that healthy conditions are ensured and maintained in the existing housing stock.”

In January 2005, indoor environmental quality took center stage at the Surgeon General’s Workshop on Healthy Indoor Environment. The two-day gathering of more than 300 experts from government, academia, the building sciences industry, and public interest groups focused on increasing attention to the issue of indoor air pollution, with the surgeon general and other participants calling for action to improve the health of Americans by improving indoor environments. Substantial scientific evidence gained in the past decade has shown that various aspects of the built environment can have profound, directly measurable effects on both physical and mental health outcomes, particularly adding to the burden of illness among ethnic minority populations and low-income communities. Lack of sidewalks, bike paths, and recreational areas in some communities discourages physical activity and contributes to obesity; in those low-income areas that do have such amenities, the threat of crime keeps many people inside.

The Nigerian National Building Code of 2006 gives the floor area for every dwelling unit that has at least one room, which shall have not less than 14m² of floor area. Other habitable rooms except kitchens shall have an area of not less than 10.8m². The width of a habitable room other than a kitchen shall not be less than 3.0 m in any dimension. There are some basic items that must be in a building such as: toilet, appropriate room sizes, kitchen, and bathroom. Also, the standard of construction of the building is equally important, with reference to materials used for roofing and flooring; internal layout, orientation, water supply, electricity, storage facilities, parking and distance to other buildings. It is also important that some basic services and facilities are readily available such as: hospital/health centers, primary school, secondary school, market, recreational facilities, maintenance of facilities when due, installation of modern facilities, proper sanitation, internet facilities, drainage system, fire station/extinguishers, fumigation services, interlocked compound and parking space.

II. Aim of Study:

To review the safety of our homes and the environmental qualities to ensure good liveability.

2.1 Objectives of the Study:

- (1) To identify the factors that provide for safety at home,
- (2) To determine if our homes are really safe for human habitation,
- (3) To ascertain the importance of environmental quality to livability

III. Methodology

Primary source comprise:

- i. A largely pre-coded questionnaire, which had varied type of questions ranging from Open Ended, Multiple Choice and Fill in questions was used. The questionnaire was designed using Google App Form. It was administered through internetenable devices such as Whatsapp, emails and the filled forms were received through my Gmail account that was used to generate the questionnaire. The questionnaire was designed in such a manner that without completing all questions it cannot be submitted. The responses sent to Google App submitted and automatically gives the graphs and results. This eliminates errors and gives very accurate results.
- ii. **Target Group**
Professional Colleagues, Friends, Old Girls Association Groups, Church Members and Post Graduate Students

IV. Results and Discussion

4.1 Demography of Respondents

The total number of respondents were 324 from 26 out of the 36 states of Nigeria which gave a wide spread of views, about 72%, of the questions asked. Table 1, shows the sex of the respondents as 197 female and 127 males giving a total of 324 persons. Figure 1 gives the highest age bracket as 41 – 50yrs. In Figure 2 shows that most of the respondents are professionals. The Others represents Accountants, Architects, Bankers, Lecturers, House wife and Retirees. This appears to have the value of 22%.

Table 1 – Sex of Respondent

Sex	Number
Female	197
Male	127
Total	324

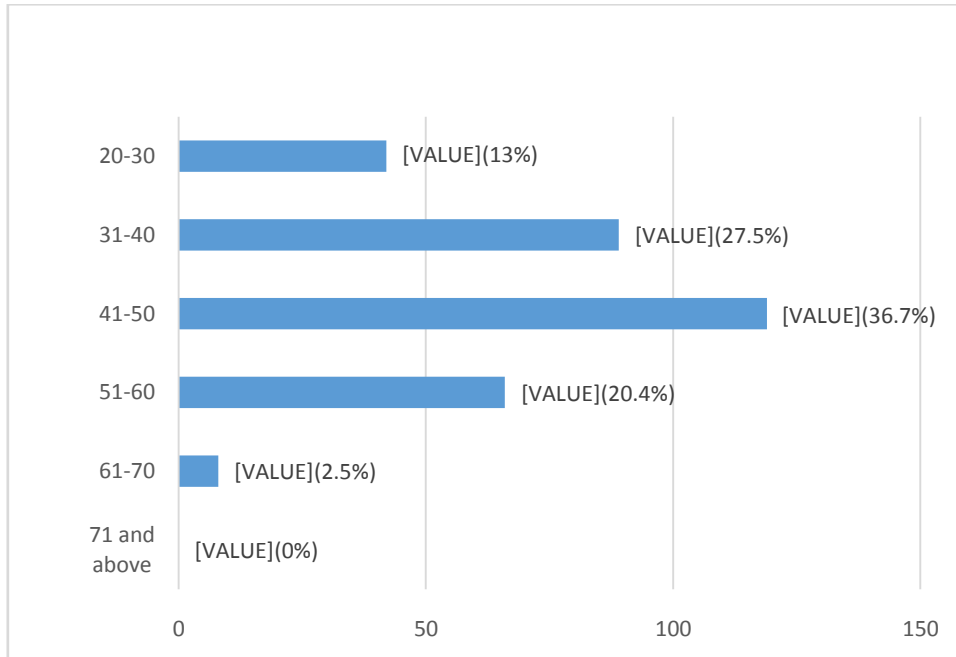


Fig 1. Age of Respondents

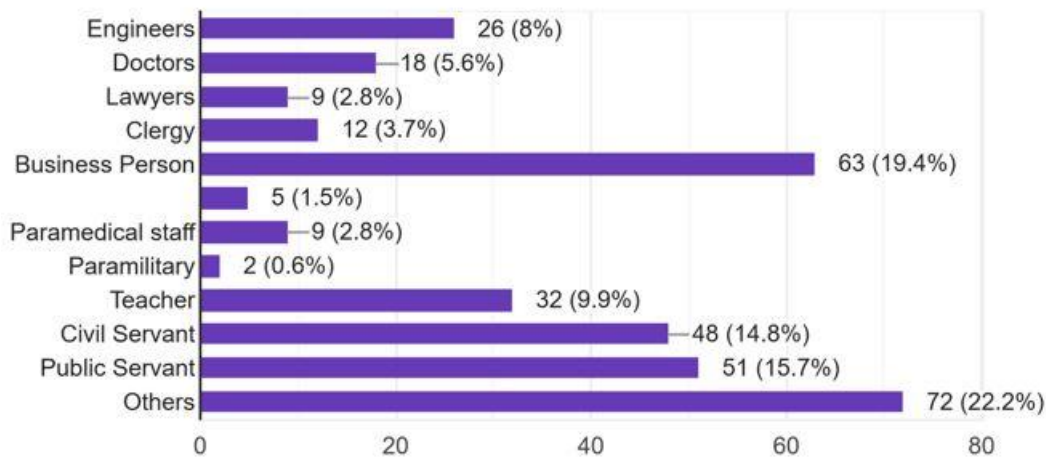


Fig 2. Occupation of Respondents

4.3 Type of House and Household Composition

The National Bureau of Statistics (NBS) of the Federal Government of Nigeria (2015 – 2016) figures defines the average household size in the country as 5. The result from Figure 3 showed that 35.8% of respondents, the highest shows that majority of respondents, live in households of 6 and above persons. In Figure 4, the highest is 64.5% which shows that most residents live in medium density neighbourhoods. Figure 5 shows that the highest number was 42% respondents and these live in is Block of Flats. This actually reflects the majority of the types of houses in Nigeria, which in most cases are one, two and three bedroom flats. It then follows that if the average home has 6 persons and more then these homes are obviously clustered or overcrowded. Which raises the issue of sufficient space for circulation, social well-being within the home and likely spread of diseases faster in such homes.

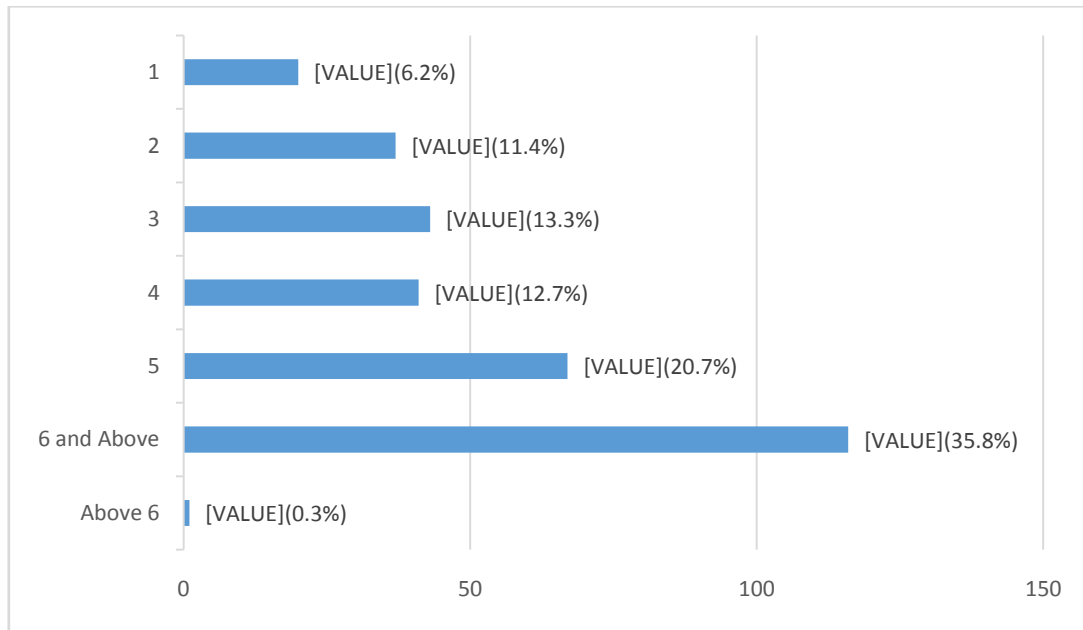


Fig 3. Number of Persons who live in the Respondents Household

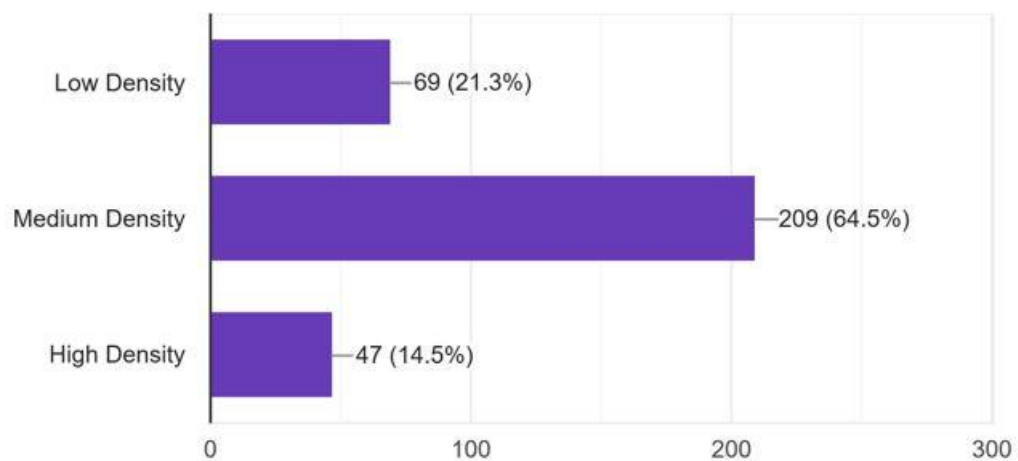


Fig 4. Type of Neighbourhood of Respondents

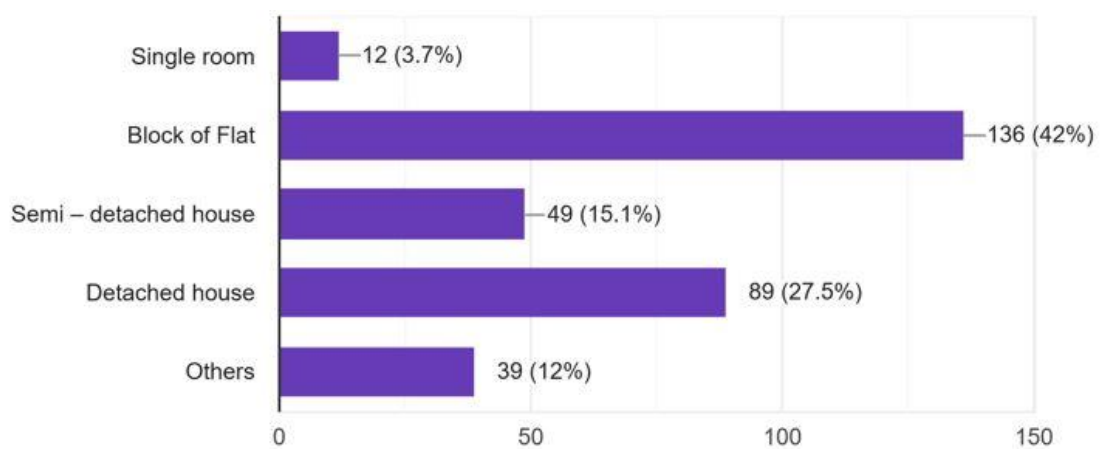


Fig 5. Type of House Respondents Live

4.4 Ventilation

In Figure 6 the number of highest of respondents, 52.8%, said they have good ventilation in their homes. In other words nearly half of the respondents do not have ventilations in their houses. Ventilation is the replacement of used inside air with the outside air. The ventilation condition inside a building is among the primary factors determining health, comfort and wellbeing of its inhabitants. Cross ventilation is the ventilation achieved by placing openings on opposite walls of an enclosure. The supply of fresh air is necessary in order to remove odour, excessive heat and smoke from room interior which may cause suffocation. The requirement is governed by the type of occupancy, number and activity of the occupant and by the nature of processes been carried out in the space.

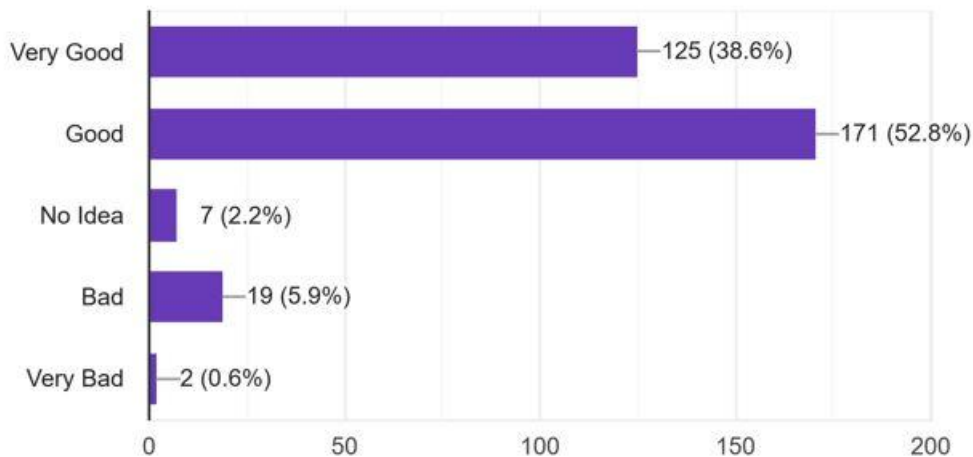


Fig 6. Cross Ventilation in Respondents House

4.5 Source of Power Supply

The results in Figure 7 show the rate of power supply from Power Holding Company of Nigeria (PHCN). The highest respondents, 35.5%, were of the opinion that electricity supply was bad. Thus, most respondents have to make their own provision for power supply as detailed in Figure 8. In fact, 82.1% have resorted to personal generators to provide power in their homes. That is these individuals have to buy fuel for their personal generators at an extra cost which may distress the family finances. The added risk to the home is storing fuel for the generator which will portend danger in case of fire outbreak.

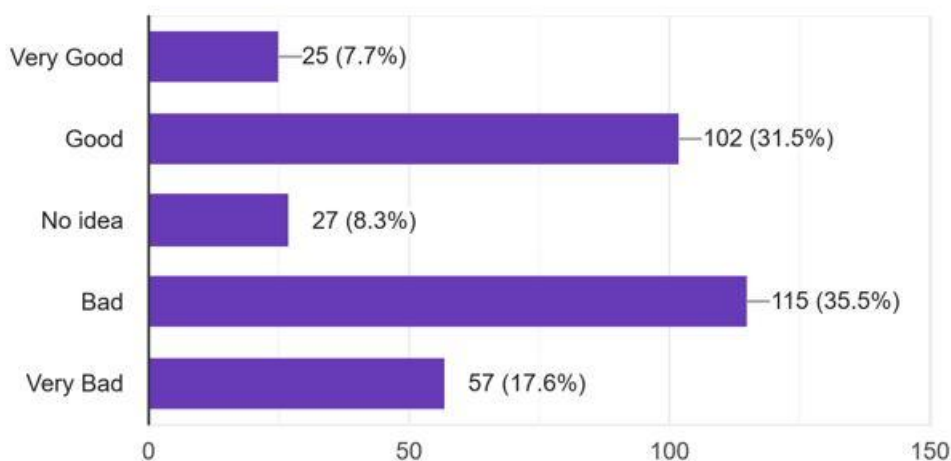


Fig 7. Power Supply from Power Holding Company of Nigeria (PHCN)

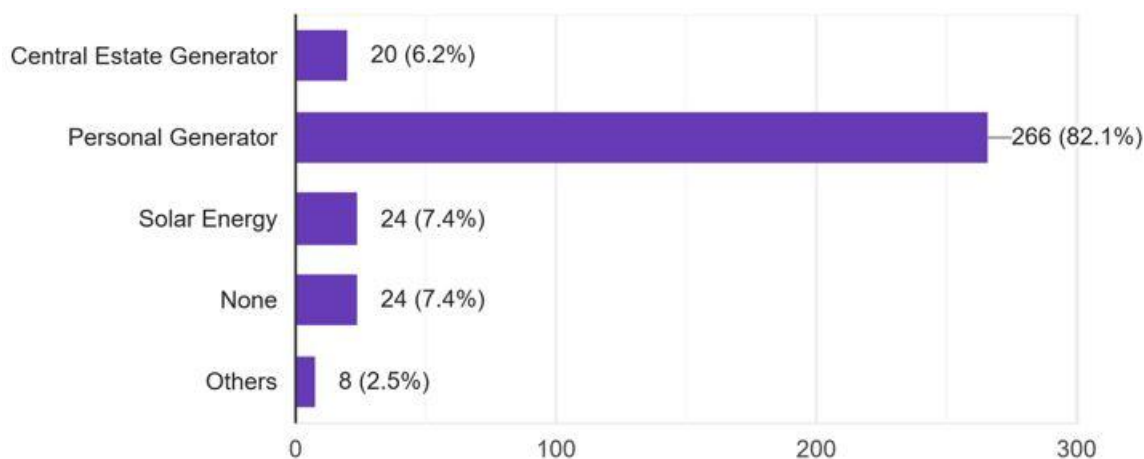


Fig 8. Other sources of Power for Respondents

4.6 Problems in the Neighbourhood

3.6. 1. Waste Disposal

Waste disposal is one of the key issues in urban management. In Figure 9 most of the respondents, 36.4%, have to use vendors to collect their waste because the government has not provided sufficient and designated places for the respondents to dispose of their waste. When waste is not quickly disposed of it makes the neighbourhood dirty as well as prone to a lots of respiratory and other air borne diseases.

4.6.2 Noise Pollution

A large number of the respondents, 27.2%, in Figure 10 said that noise pollution is one of the problems in their neighbourhood. It could be from personal generators as seen in Figure 8. It may also be vehicular and human traffic, and noise from loud music from neighbours' homes. When a neighbourhood is noisy, people cannot to sleep adequately and this can have adverse effect on their health as well as their productivity. Noise causes physical and psychological problems, particularly for children as well as adults.

4.6.3 Security and Crime

Figure 10, shows that 20.4% of respondents had security as a problem and another 4.9% said crime was a problem. Security and crime cannot be effectively managed if there is epileptic power supply as noted earlier. Criminal activities thrive in darkness because people cannot be seen in the dark. Also, for effective security gadgets to be use such as CCTV, Sensor Lights and others, there need to have constant electricity. It cannot be overemphasized that Power supply plays a vital role in the quality of livability in any society.

4.6.4 Air Pollution

In Figure 10, the second highest problem noted in the neighbourhood of respondents, was 29.3%, was air pollution. This raises a lot of questions, what are the sources of the air pollution? Are there industries and factories located within or very close to the neighbourhood? Air pollution causes lots of respiratory and lung diseases to individuals in neighbourhoods. In fact, permanent damage to internal organs may occur on the long run. This may reduce the quality of life of these individuals who live in such neighbourhood and may eventually even lead to death.

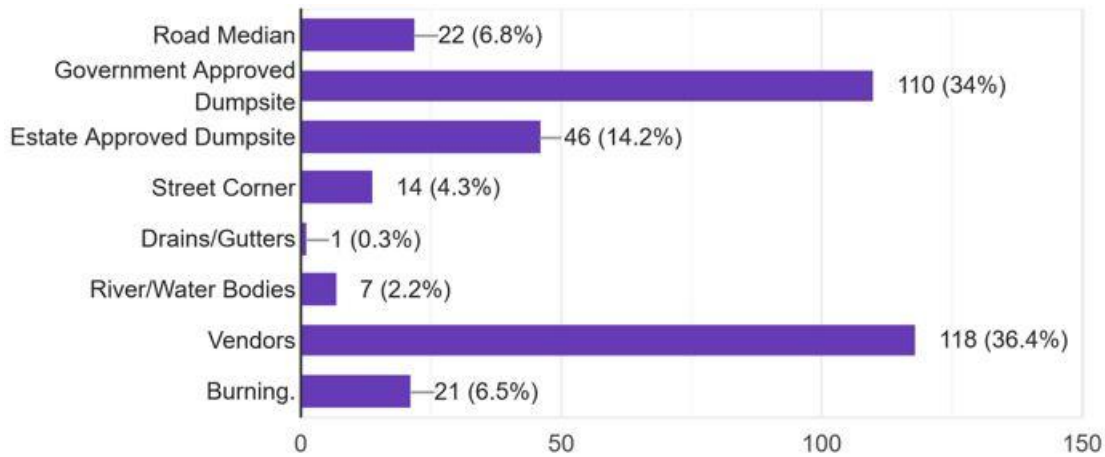


Fig 9. How Respondents dispose of their waste

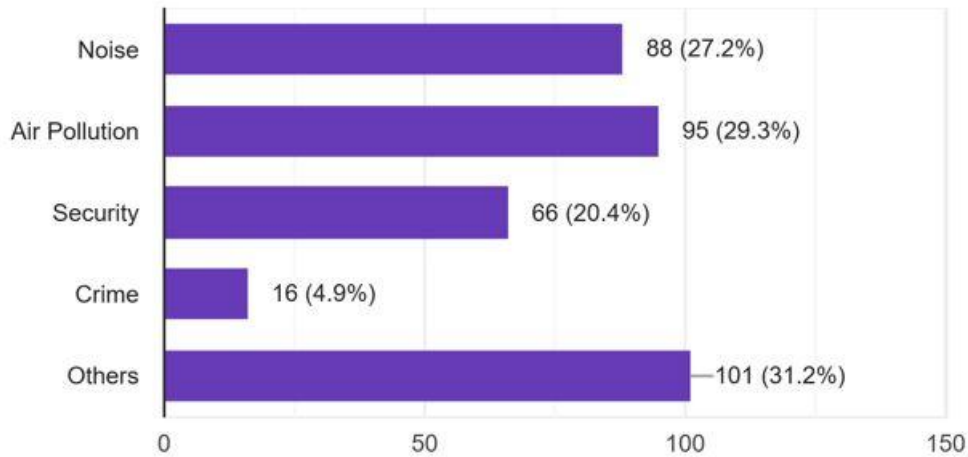


Fig 10. Major Problems in the Neighbourhood of Respondents

4.7 Fires and how to handle

Fires are a major source of accidents in homes and every home should ensure that there is fire alarm system installed; this is not the case in most homes in Nigeria even at design stage. The result as seen in Figure 11 shows that 94.8% of the respondents use gas for cooking but surprisingly as seen in Figure 12, as many as 83% do not own fire extinguishers in their homes as well as no fire alarm system installed. This poses a dangerous situation for many of these homes. From Figure 13, the highest was 66% respondents who said it will take 1 – 5 minutes response time for people to leave their homes in case of a fire accident. This time is fast enough and acceptable by best practice all over the world. Every household member should be trained on escape routes, notification of appropriate response agencies, instructions on activating a building fire alarm system, how and when to use a fire extinguisher, and what should be done after evacuating a building. Exits' accesses and discharges must be maintained and unobstructed. Exits provide a safe and easily identifiable route out of a building in cases of emergency and allow swift and unhampered ingress for firefighters or other emergency personnel in the event of a fire or rescue.

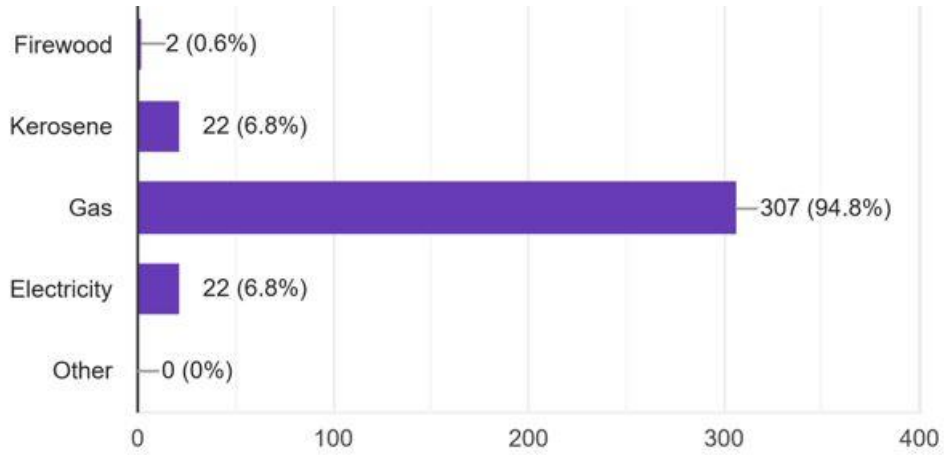


Fig 11. Respondents Source of Energy for Cooking

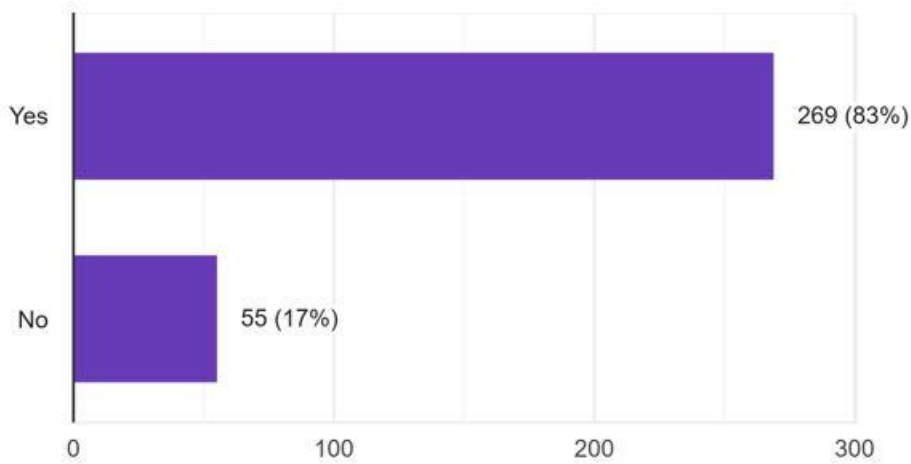


Fig 12. Number of Respondents who have Fire Extinguishers in their Homes

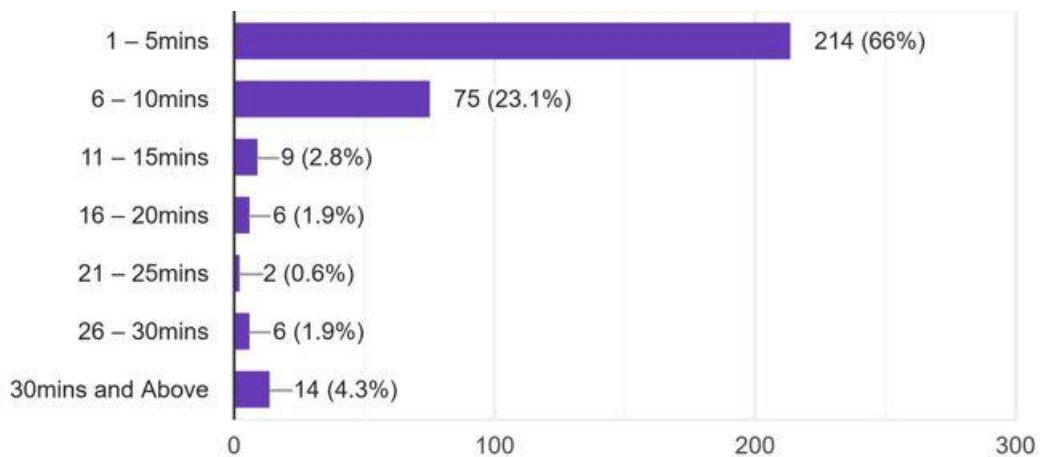


Fig 13. Response Time it will take Respondents to evacuate their Homes in a Fire Incident

V. Conclusion and Recommendations

Home sweet home; the home should be the most comfortable place we should lay our heads after a hard days job and get up refreshed the following day. Tradition holds it that the home is a haven, where people are protected and nurtured. For many, however, home is a health hazard when factors such as poverty, environmental contamination, and poor design combine to cause or exacerbate disease and accidents which may even lead to death. The research showed several factors such as types of houses which further indicates the number and size of rooms, all of which play a vital role in the social wellbeing of the individual in that home. For a home to be optimally functional there is the need for cross ventilation and adequate power supply. Also, the work identified problems in neighbourhoods such as waste disposal, noise pollution, air pollution, security, crime and fire accidents. Fires are a major source of accidents in homes and every home should ensure that there are fire alarm system installed which is not the case in most homes in Nigeria even at design stage. Power supply plays a vital role in the quality of livability in any society. Some recommendations are: The Nigerian building Code of 2006 should be made compulsory for purchase for anyone who buys land, seeking for building approval, renovation, landlords, all professionals in the building industries. Also it should be available on the internet and accessible to all. Importantly there must be enforcement of the law against defaulters of the building code. For this to happen, employ sufficient professionals to monitor buildings at the various stages of construction. Building designs should provide adequate spaces for parking, recreation, green open space for planting of trees and grasses. There should be designated government approved disposal points within neighbourhoods.

References

- [1]. Aluko, O. (2004). Housing and Urban Development in Nigeria. Ibadan, Nigeria. Kins Publication
- [2]. Burgess, E.W.(1982). Housing for Sale? The Self-help housing market in Pereira, Colombia. Housing Studies, New York, Columbia Press.
- [3]. Burns, S. & Grebler, L. (1977). The Housing of Nations; Analysis and Policy in a Comparative Case Comparing Wealth Effects: The Stock Market versus the Housing Market. *Advances in Macroeconomics* 5 (1), 1–32.
- [4]. Chombart de Lauwe, P. H. 1955 Le logement, le ménage et l'espace familial. *Informations sociales* 9:956–980.
- [5]. Federation Europeene d' Associations Nationales Travallant avec les Sans – Abri AISBL (FEANTSA), (2009). European Federation of National Organisations Working with the Homeless 'European Review of Statistics on Homelessness in Europe'. Brussels
- [6]. Jorgensen, N.O. (1982). Housing Finance for Low Income Countries. Housing Research and Development Unit. The University of Nairobi, Kenya.
- [7]. Loring, W. C. (1956). "Housing and social organization." *Social Problems* 3, 167-173.
- [8]. Montgomery, R. & Mandelker, D. (1979). Developing and Financing Housing and Highways Systems. *The Review of Regional Studies*. 36(1) 63 – 86.
- [9]. National Bureau of Statistics (NBS) by the Federal Government of Nigeria 2015 – 2016 , Panel Review
- [10]. National Urban Development Policy of Nigeria. (NUDP), (2006). Federal Republic of Nigeria
- [11]. Obinna, V. C. (2008). *Housing in Nigeria Policy Aspects*. King Jovic International Publishers, Port-Harcourt, Nigeria.
- [12]. Turner, J. (1976). Provider's Model versus Supporters model in urban housing. *European Centre for Research Training and Development*, United Kingdom. 1(2) 31 – 36.
- [13]. Wright, F. L. (1995). The Solomon R. Guggenheim Museum. In: Pfeiffer, Bruce Brooks (Ed.): Frank Lloyd Wright Collected Writings (5), 1949-1959. New York.

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