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Evaluating the Impact of Housing Characteristics on Psychological Well-Being among Rural Dwellers in Selected Rural Communities in Osun-State, Nigeria

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Abstract

Housing conditions and access to basic infrastructure in rural Nigeria remain major determinants of public health and socio-economic progress. This study assessed the quality of housing and the availability of water supply, sanitation, electricity, and waste management systems in the rural communities of Ilobu, Erin-Osun, and Ifon-Osun, Osun State. A cross-sectional mixed-methods design was adopted: 383 household heads were surveyed through structured questionnaires, complemented by field observations, key-informant interviews, and on-site measurements (radon, microbiological quality) of groundwater sources. Descriptive statistics, chi-square tests, GIS mapping and thematic analysis were employed.

Results show that 78.6 % of dwellings were classified as Type A (acceptable), yet 31 % lacked in-premises water, 22

% still depended on pit latrines, and only 31 % of households used wholesome water. Groundwater radon ranged 6.30–13.71 Bq L⁻¹ (USEPA MCL = 11.1 Bq L⁻¹) and one borehole exceeded WHO coliform limits. Overcrowding (mean 4–6 rooms per household) and aging housing stock (33 % built 11–20 years ago) were prevalent. Income heterogeneity (17 % earning < N30 000 vs 13 % > N150 000) significantly influenced housing quality and service access ($p < 0.05$).

The study concludes that while structural housing has modestly improved, deficits in water quality, sanitation, and maintenance continue to threaten health. Targeted investment in rural water infrastructure, routine groundwater surveillance, and integrated housing-environment policies are urgently recommended.

Keywords: Rural Housing, Infrastructure, Housing Quality, Sanitation, Nigeria, Ilobu, Erin-Osun, Ifon-Osun

Introduction

Access to decent housing and essential infrastructure remains one of the most pressing development challenges in sub-Saharan Africa, particularly in rural contexts. Housing is more than shelter; it is foundational to health, productivity, and dignity (United Nations Human Settlements Programme [UN-Habitat], 2020) ^[15]. Yet, in rural Nigeria, decades of policy neglect have resulted in widespread housing inadequacies and infrastructural underdevelopment (Akinbamijo, Olayiwola, & Olotuah, 2014) ^[5].

Among the pressing environmental challenges facing developing nations like Nigeria, the issue of housing stands out as both pervasive and multidimensional. Housing transcends the notion of a mere roof over one's head, it encompasses the physical structure, emotional refuge, environmental context, and broader community (World Health Organization [WHO], 2004) ^[17]. Adequate housing must ensure access to basic infrastructure and services such as sufficient space, natural ventilation, effective waste disposal, safe water supply, electricity, and a clean environment (Krieger & Higgins, 2002; WHO, 2004) ^[7, 17].

More than a physical necessity, housing is a critical determinant of human health and psychological well-being (Habib, Yousuf, & Hossain, 2009). Astrolabe (2002) argues that housing fulfills physical, emotional, and intellectual needs, making it foundational to total health. With growing evidence linking environmental factors to mental health, researchers have begun to explore housing not just as shelter, but as a crucial influence on psychological resilience and vulnerability.

Empirical studies have linked inadequate housing to a range of health outcomes, including cardiovascular and respiratory diseases, depression, anxiety, infections, allergic conditions, physical injury, and food-borne illnesses. Housing characteristics—such as tenure status, structural type, quality, available living space, and neighborhood conditions—have all been shown to correlate significantly with mental health outcomes (Rohe & Stegman, 1994; Zumbro, 2014) ^[13, 20].

Homeownership, for example, is frequently associated with improved psychological well-being due to factors such as autonomy, social status, and perceived economic stability (Zumbro, 2014^[20]; Jantti & Sierminska, 2007). Studies have found that owner-occupied homes tend to be of higher quality than rental units (Iwata & Yamaga, 2008; Rossi & Weber, 1996), enhancing overall life satisfaction and reducing psychological stress.

Methodology

Study Area

The study was conducted in Ilobu, Erin-Osun, and Ifon-Osun, towns located in Osun State, Southwestern Nigeria. Geographically, the area lies between longitude 04°00'E and latitude 05°55'N, bordered by Ogun, Kwara, Oyo, and Ondo States. Administratively, the towns fall within Irepodun and Orolu Local Government Areas.

The region experiences a tropical savanna climate, characterized by high humidity and temperature with distinct wet and dry seasons. Climate-related stressors such as heat waves and seasonal flooding may influence health and overall well-being. Vegetation in the area consists mainly of scattered trees and savanna grasslands, which, though limited, provide recreational and social opportunities that could support mental well-being.

According to the 2006 census, the broader study area has a population of about 3.4 million people. High population density contributes to overcrowding, noise, and environmental degradation—factors known to negatively affect quality of life and mental health. Historically, these towns, with origins tracing from the 14th to 19th centuries, have undergone migration, cultural integration, and conflicts. These collective experiences have shaped their present-day spatial organization, intercommunal relations, and social cohesion.

Economically, the region is predominantly agrarian, with cocoa farming and petty trade forming the backbone of livelihoods. However, economic instability and income insecurity heighten psychological vulnerability. Commerce thrives through vibrant market activities, which offer social and economic engagement opportunities, although access to mental health and other healthcare services remains inadequate.

Housing in the study area is generally of poor structural quality, often overcrowded and lacking adequate infrastructure. These conditions contribute to increased risks of anxiety, depression, and psychosocial distress among residents.

Research Design

This study adopted a descriptive survey research design, combining quantitative and qualitative methods. The design enabled assessment of housing characteristics and their effects on psychological well-being. Quantitative data measured variables such as housing quality, overcrowding, ventilation, tenure, and access to amenities.

These were correlated with indicators of mental well-being, including stress, emotional satisfaction, and quality of life. The qualitative aspect used interviews and field observations to capture lived experiences and coping strategies. This mixed-methods approach strengthened validity through triangulation and allowed town-level comparisons.

Population, Sampling Frame, and Sampling Technique

Target Population

The study population comprised residents of Ilobu, Erin-Osun, and Ifon-Osun in Osun State. It included homeowners and tenants across socio-economic and demographic groups.

Sampling Frame

The sampling frame was drawn from enumeration areas, community records, and local leaders. It covered residential zones stratified into high-, medium-, and low-density areas.

Sampling Technique

A multistage sampling approach was adopted. Towns were purposively selected, zones stratified, and households systematically sampled. Within each household, one adult respondent (18+) was chosen using the Kish grid.

Sources and Instruments of Data Collection

Both primary and secondary data were used.

Primary Data

Structured questionnaires were administered to 383 residents, covering socio-demographics, housing characteristics, and psychological well-being using GHQ-12 and WHO-5 tools. The questionnaire was pretested for clarity and reliability. A field observation checklist recorded housing conditions such as materials, sanitation, and overcrowding. Key informant interviews with leaders, health workers, and officials explored housing challenges and mental health concerns.

Secondary Data

Secondary sources included census records, NBS/NPC data, policy documents, WHO and UN-Habitat reports, and prior research on housing and mental health.

Methods of Data Analysis

Quantitative data were coded and analyzed using SPSS (v25). Descriptive statistics summarized profiles and well-being indicators. Inferential statistics (χ^2 , correlations, t-tests, ANOVA, regression) tested relationships between housing and mental health. GIS mapping was applied where location data were available. Qualitative data from KIIs and observations were analyzed thematically to capture housing stressors, perceptions, and coping strategies.

Ethical Considerations

Ethical approval was obtained from an institutional review board and local authorities. Informed consent was secured in English and Yoruba, with voluntary participation. Confidentiality and anonymity were maintained through coding and secure data storage.

Results and Discussion

Socio-demographic Characteristics of Respondents

Understanding the socio-demographic profile of respondents is critical to contextualizing the nature of their housing experiences and how these may affect psychological well-being. This section presents data on variables such as gender, age, marital status, education, occupation, income, household size, and length of residence. These factors often shape access to housing resources, exposure to environmental stressors, and vulnerability to mental health challenges.

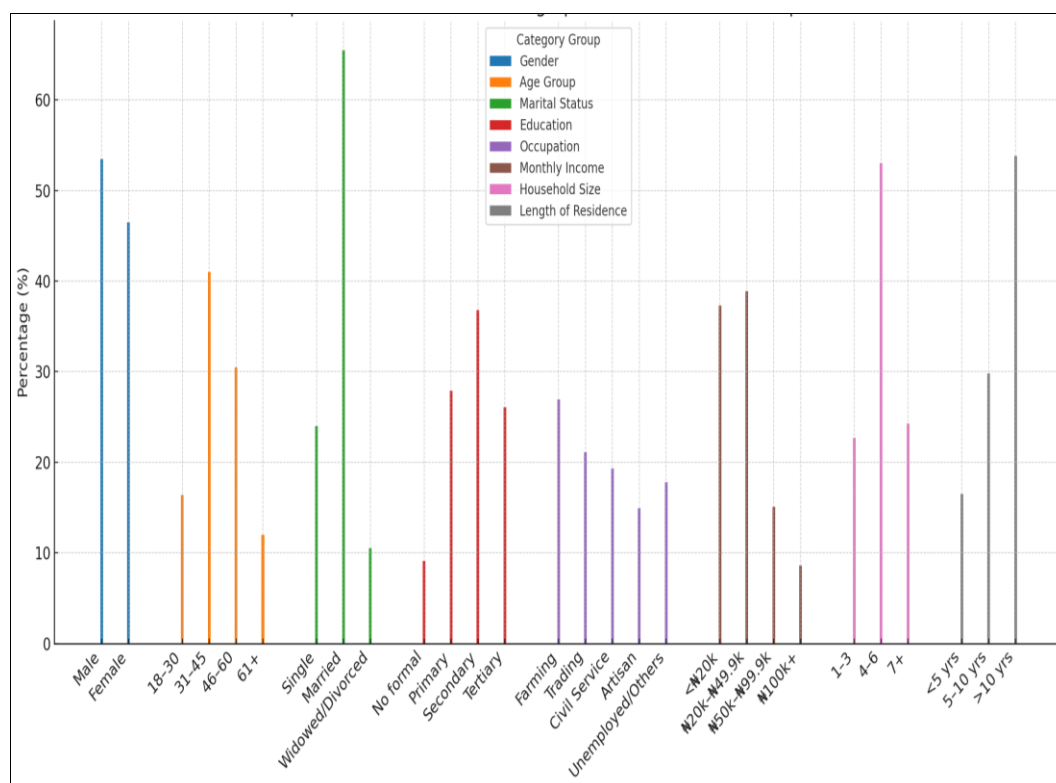


Fig 1: Socioeconomic Characteristics of Respondents

The demographic analysis of respondents provides important insights into the socio-economic characteristics of residents across Ifon-Osun, Erin-Osun, and Ilobu as presented in figure 1.

Gender Distribution:

The gender profile shows a near-balanced participation of males and females, which aligns with findings by *Oluji and Bello (2009)* ^[10] in their study of housing conditions in Southwestern Nigeria, where both genders actively participated in housing-related surveys. This balance enhances representativeness and reduces gender bias in assessing perceptions of housing and well-being.

Age Distribution:

The largest age group among respondents was 36–45 years (24%), followed closely by 55–65 years (25%). This suggests that the survey population is dominated by middle-aged and older adults, consistent with *Adepoju (2011)*, who noted that rural communities in Southwestern Nigeria often have aging populations due to youth migration to urban centers. The relatively low representation of respondents aged 18–25 (14%) highlights the challenge of rural youth retention, which may have implications for community development and continuity of household structures.

Occupational Distribution:

Civil servants constituted the largest occupational group (40%), followed by businessmen (29%), artisans (20%), and farmers (6%). This reflects an occupational shift from agrarian livelihoods to more formal and commercial engagements, similar to the trends reported by *Adewale et al. (2015)* in Osun State. The decline in farming may be linked to land fragmentation, urbanization pressures, and low returns from agriculture. Interestingly, Ilobu respondents were predominantly businessmen (63%), suggesting that commerce plays a major role in shaping

housing demand and income distribution in that town.

Income Distribution:

Income levels varied significantly across the study area. While most respondents in Erin-Osun and Ifon-Osun earned between N61,000 and N150,000 monthly, Ilobu stood out with 74% of respondents earning above N150,000. This variation may be linked to Ilobu's strategic location near Osogbo and its thriving commercial activities, which create higher earning opportunities. These findings echo *Agbola and Olatubara (2003)* ^[4], who emphasized that income disparities across towns significantly influence housing affordability and quality.

Comparative Insights:

Overall, the results demonstrate a socio-economic structure shaped by a combination of formal employment, commerce, and declining agrarian practices. These patterns mirror the observations of *Olotuah and Akinbamijo (2006)* ^[11], who noted that occupational status and income remain the strongest predictors of housing quality and psychological well-being in Nigerian communities. The higher-income concentration in Ilobu may explain better housing outcomes relative to Erin-Osun and Ifon-Osun, where moderate incomes dominate.

Implications:

The demographic and socio-economic profiles of respondents suggest that middle-aged civil servants and businessmen are the major drivers of housing demand in the study areas. However, income inequality and declining agricultural participation pose challenges for inclusive housing development. The findings reinforce the argument by *UN-Habitat (2010)* ^[14] that socio-economic characteristics-particularly age, occupation, and income-directly influence housing access, affordability, and the overall well-being of rural residents.

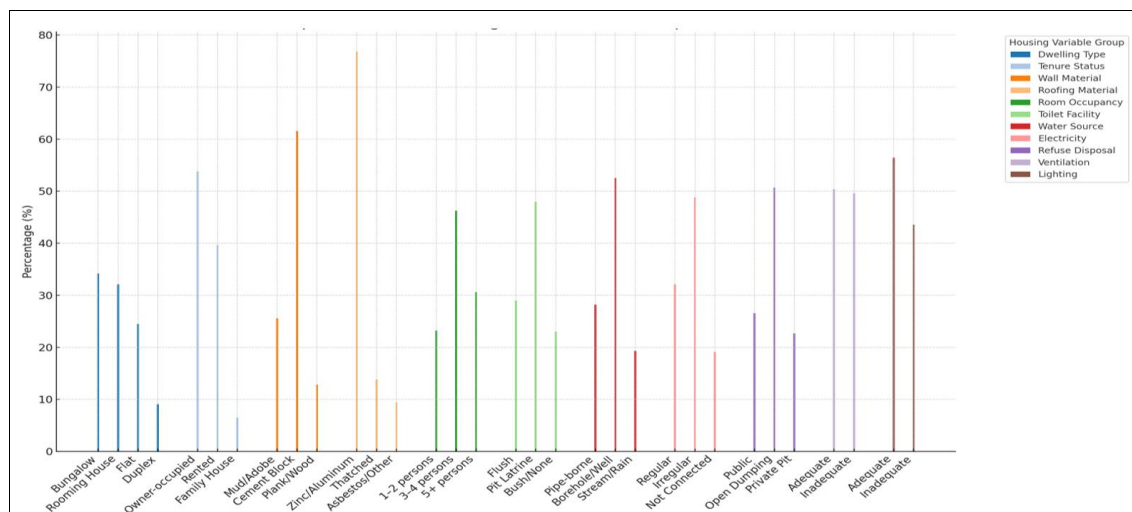


Fig 2: Housing Characteristics of Respondents

Table 1: Wholesomeness of Water in the Households

Quality of water	Ifon-Osun (%)	Erin Osun (%)	Ilobu (%)	Total n (%)	Remarks
Wholesome	44 (25)	34 (22)	42 (79)	120 (28)	It met requirement of a sanitary wall
Fair	73 (41)	87 (57)	11 (21)	171 (42)	
Unwholesome	48 (27)	19 (12)	0 (0)	67 (22)	
Unwholesome	12 (7)	13 (8)	0 (0)	25 (8)	
Total	177 (100)	153 (100)	53 (100)	383 (100)	

Table 2: Radon Concentration in Groundwater Samples

Sample ID	Town	Radon (Bq/L)	Annual Dose (mSvy ⁻¹)
6	Ifon	7.94	0.029
7	Ilobu	7.60	0.050
8	Erin	8.60	0.051
9	Erin	10.60	0.039
10	Ilobu	10.16	0.037
11	Ifon	6.30	0.050
12	Ifon	13.71	0.050
13	Ifon	8.60	0.060
14	Erin	6.30	0.050
15	Ilobu	7.60	0.060

Note: USEPA MCL = 11.1 Bq/L; WHO guideline annual dose limit = 0.1 mSvy⁻¹

Table 3: Microbiological Quality of Groundwater Samples

Sample ID	TVC (×1000)	Coliform Count / 100ml	WHO Standard
6	3000	0	0
7	3050	0	0
8	3700	0	0
9	4250	0	0
10	4150	0	0
11	2650	0	0
12	4300	1	0 ☹
13	3000	0	0
14	3100	0	0
15	3000	0	0

⚠ Only Sample 12 breached WHO standards for coliform presence

Table 4: Wholesomeness of Water in the study area

Variable	Category	Respondents	%
Water Wholesomeness	Wholesome	120	31.3%
	Marginal	171	44.6%
	Unwholesome	67	17.5%
	Grossly Contaminated	25	6.5%

The findings of this study highlight the interplay between housing types, environmental health conditions, building materials, water quality, and sanitation in shaping living standards across Ifon-Osun, Erin-Osun, and Ilobu as presented in figure 2 and table 1-4.

Type of Building and Housing Classification

The majority of respondents lived in bungalows (31%) and semi-detached houses (26%), while compound and tenement housing were more common in Ifon-Osun and Erin-Osun than in Ilobu. Similar trends were reported by *Olotuah and Akinbamijo (2006)* ^[11] in Akure, where bungalows dominated the housing stock due to their affordability and adaptability to rural-urban settings. The predominance of Type A housing (78.6%) indicates that most dwellings meet acceptable standards, though the presence of Type C and D classifications reflects a subset of housing at risk of environmental and structural inadequacies. This is consistent with *Agbola and Olatubara (2003)* ^[4], who found that poor-quality housing in Southwestern Nigeria contributes significantly to health burdens, especially respiratory and waterborne diseases.

Building Materials and Age of Houses

Cement blocks were the most widely used wall material (93%), and aluminium roofing sheets dominated (65%), reflecting a gradual shift from traditional mud walls to more durable materials. This corroborates *Olujimi (2010)* ^[9], who observed that modernization and increased income levels have influenced rural households to abandon mud construction. The age distribution of buildings further reveals that most houses were between 11–20 years (33%) and 21–30 years (23%), suggesting a relatively stable but aging housing stock. The higher proportion of older houses in Erin-Osun (43% within 11–20 years) mirrors findings by *Aribigbola (2001)* ^[6] that many peri-urban communities in Osun State face challenges of deteriorating housing quality due to lack of maintenance.

Room Distribution and Overcrowding

The majority of respondents lived in houses with 4–6 rooms (61%), while only 2% lived in houses with more than 10 rooms. Though this suggests moderate room availability, household size and room occupancy may still result in overcrowding, as earlier reported by *Mabogunje (2007)* ^[8], who emphasized overcrowding as a persistent issue in Nigerian housing.

Water Availability, Sources, and Quality

Only 35% of respondents had water within their premises, with Ilobu residents faring better (100%) compared to Ifon-Osun (21%). Water sources varied, with pipe-borne water (44%) and boreholes (23%) being the most common, while reliance on wells and vendors persisted in some communities. The quality of water was uneven: only 31.3% was classified as wholesome, while 17.5% was unwholesome and 6.5% grossly contaminated. This finding aligns with *Adelekan et al. (2014)* ^[2], who reported that poor water infrastructure in Southwestern Nigeria contributes to frequent outbreaks of cholera and typhoid.

The groundwater analysis revealed that radon concentrations in some samples (up to 13.71 Bq/L in Ifon) approached the USEPA maximum contaminant level of 11.1 Bq/L. Although annual dose estimates remained below WHO's

guideline of 0.1 mSv⁻¹, long-term exposure could pose health risks. Comparable studies by *Onimisi et al. (2012)* ^[12] in North-central Nigeria found similar radon levels in groundwater, raising concerns over chronic exposure in rural communities. Furthermore, microbiological tests showed that one borehole sample breached WHO coliform standards, underlining the risk of contamination from poor sanitation and seepage.

Toilet Facilities

The majority of respondents used water closets (86%), while pit latrines were still in use in Ifon-Osun (19%). This reflects progress in sanitation, though disparities exist across towns. Similar findings were reported by *UNICEF/WHO (2015)* ^[16], which documented uneven distribution of improved sanitation across Nigerian states, often determined by income and infrastructure availability.

Kitchen and Housing Components

Most respondents reported kitchens in good or very good condition, particularly in Ilobu (100% very good), while Ifon-Osun had a higher share of kitchens in fair or poor condition (27%). This variation aligns with the general observation of higher income levels in Ilobu, reinforcing *Ajayi and Olanrewaju (2016)* who argued that household income strongly influences housing quality, including kitchen and sanitation facilities.

Comparative Insights

Taken together, the findings show that while housing in the study area has improved through the adoption of cement block structures, aluminium roofing, and modern sanitation facilities, challenges persist in water quality, maintenance of older housing stock, and environmental health classification. These results are consistent with the works of *Agbola (2005)* ^[3] and *UN-Habitat (2010)* ^[14], which emphasize that housing quality in Nigeria is multidimensional—shaped not only by building structure but also by environmental services such as safe water, sanitation, and waste management.

Implications

The study underscores the need for integrated housing and environmental health policies. Improvements in water supply infrastructure, stricter monitoring of groundwater safety, and targeted maintenance of aging housing stock are necessary to enhance living conditions. As *World Health Organization (2018)* ^[19] notes, adequate housing goes beyond shelter—it is a critical determinant of health and well-being.

Conclusion

The study demonstrates that rural housing in Ilobu, Erin-Osun and Ifon-Osun has moved away from traditional mud structures toward more durable cement-block and aluminium-roofed dwellings, yet the gains in structural quality have not been matched by commensurate improvements in environmental services. Over two-thirds of households still fetch water from outside their premises, nearly one-fifth rely on unwholesome supplies, and groundwater radon approaches or exceeds international action levels in some boreholes. Sanitation is uneven—while 86 % of homes now use water closets, 22 % remain dependent on pit latrines—and overcrowding persists in aging, poorly maintained buildings. These deficits translate

directly into measurable health risks and psychosocial stress, particularly among lower-income households.

Unless rural housing policy is reframed to integrate dwelling quality with reliable water supply, safe sanitation and routine environmental monitoring, the anticipated health and well-being benefits of improved physical structures will remain elusive. We therefore call on state and local governments to prioritise targeted investment in rural water infrastructure, enforce minimum environmental health standards for all dwellings, and institutionalise periodic surveillance of groundwater quality. Such integrated action will ensure that decent shelter in rural Nigeria translates into genuine improvements in public health and quality of life.

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