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AN ANALYSIS OF THE IMPACT OF HOUSING DESIGN ON RESIDENTS' SATISFACTION AMONG LOW-INCOME FAMILIES: CHALLENGES OF HOUSING PROVISION IN KATSINA STATE

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ABSTRACT

This study examined the impact of housing design on residents' satisfaction among low-income families in Katsina State, Nigeria, with particular emphasis on the challenges of housing provision. Housing quality is a critical determinant of physical, mental, and social well-being, yet many low-income households reside in poorly designed housing characterized by inadequate ventilation, overcrowding, substandard building materials, and insufficient sanitation facilities. The study adopted a descriptive survey research design and employed a multi-stage sampling technique to select respondents from urban and peri-urban areas of Katsina State. Data were collected using structured questionnaires and analyzed using descriptive statistics, chi-square test, and multiple regression analysis. Findings indicate that most respondents rated housing design features, especially ventilation and sanitation, as poor. Nearly half expressed dissatisfaction with their housing conditions, correlating with frequent illness and poor indoor air quality. Statistical analysis identified sanitation and ventilation as key predictors of resident satisfaction. Major challenges include high building material costs, limited government support, land accessibility, and poor urban planning. The study concludes inadequate housing design significantly affects residents' well-being and recommends improved housing policies and increased government intervention in Katsina State.

KEYWORDS: Housing design, low-income families, housing provision.

1. INTRODUCTION

Housing quality is not merely a reflection of the structures people inhabit; it is a critical determinant of physical, mental, and social well-being. Substandard housing marked by poor ventilation, overcrowding, structural deterioration, mold, and unsafe conditions has been consistently linked to adverse health outcomes, including respiratory illnesses, cardiovascular issues, injuries, and psychological stress (American Heart Association, 2020). Moreover, chronic stressors endemic to poor housing environments such as noise, lack of privacy, and exposure to environmental pollutants exert cumulative harmful effects on residents' health and well-being (Wikipedia, Housing quality and health outcomes in the United States, 2025). In Nigeria, the quality of housing provision often remains overshadowed by the sheer *quantity* of units, potentially leaving occupant health neglected. A case study conducted in Bauchi documented indoor concentrations of PM2.5 and PM10 at levels exceeding World Health Organization (WHO) safety thresholds with values of 63 µg/m³ and 228 µg/m³ respectively versus recommended limits of 25 and 50 µg/m³ highlighting the serious health risks posed by poor indoor air quality (Akande, 2021). Similarly, research from urban slum communities in Enugu reveals that overcrowded living conditions, dampness, and mold contribute to elevated rates of respiratory infections, mental stress, and other health challenges, particularly among vulnerable groups like children and the elderly (BMC Public Health, 2024). Despite these risks, the housing supply in Nigeria faces severe structural and systemic challenges. The housing deficit in Nigeria has been estimated at over 20 million units, disproportionately affecting low-income families who often lack access to decent housing (The Nation, 2024). The root causes of this deficit are multifaceted: high land and building-material costs, inadequate housing finance, bureaucratic inefficiencies, weak policy implementation, and insecure land tenure systems all impede the provision of affordable housing (Shelter Origins, 2024; IntechOpen, 2024; Frontiers in Built Environment, 2024). As a result, many low-income earners reside in informal settlements or poorly constructed housing that fails to meet basic health and safety standards.

1.1 Low-Cost Housing Challenges: Global and African Perspectives

Globally, particularly in developed countries, the unavailability of low-cost housing is not necessarily due to a failure on the part of housing providers, but rather to local resistance to such developments. Iglesias (2009) noted that low-cost housing is sometimes opposed because it can concentrate specific racial or socioeconomic groups in certain neighborhoods, potentially leading to declines in property values. In the United States, Iglesias proposed a strategy of “managing local opposition” rather than attempting to eliminate it. He

recommended that developers seeking approval should: (1) respect the legitimate concerns of the local community; (2) protect the rights of current and prospective residents; and (3) promote the long-term prospects of future affordable housing projects. Planning for anticipated opposition can help reduce costs and improve project acceptance (Iglesias, 2009). While this study focused on low-cost housing provision in the United States, it is relevant to understanding potential challenges faced by public housing agencies in developing countries, such as Zambia, where local opposition may manifest differently. In Africa, the demand for low-cost housing is increasing, contrasting with developed countries where such housing is sometimes opposed. However, African housing providers encounter numerous challenges in meeting this demand. Njathi (2011) studied private property developers and NGOs in Kenya's low-income housing market and identified four key challenges: (1) outdated planning regulations that hinder adoption of new building technologies; (2) rising construction material costs; (3) complex land acquisition processes coupled with scarcity and high costs; and (4) high interest rates on capital financing, which reduce investment returns. Although Njathi focused on private developers and NGOs, the challenges identified are also relevant to public housing agencies tasked with low-cost housing provision. In Nigeria and Ghana, public housing agencies face multiple systemic challenges that constrain their ability to provide affordable housing (Ibem, Anosike, & Azuh, 2011). These include inconsistent government policies, inadequate financing, politicization of housing programs, lack of skilled technical personnel, poor coordination, and issues of corruption and mismanagement. While previous studies examined public housing challenges broadly, the current study narrows its focus to low-cost housing for low-income earners, assessing the specific barriers faced by public housing agencies in ensuring accessibility and affordability.

1.2 Housing Affordability as a Public Policy Concern

Housing has emerged as a critical public policy issue in Malaysia and globally, particularly in relation to affordable and low-cost housing provision. It has become a central focus of state and national development agendas due to its direct impact on social welfare and economic stability. From a theoretical perspective, housing is classified as a fundamental human necessity under Maslow's Hierarchy of Needs, forming part of the basic physiological requirements that must be satisfied before individuals can pursue higher-level needs such as social relationships and self-actualization (Maslow, 1943). However, escalating land values and housing prices have made homeownership increasingly unattainable for low-income households and impoverished communities. Although residential satisfaction studies often emphasize environmental and neighborhood characteristics, limited attention has been given

to housing delivery mechanisms, management practices, affordability, and locational factors that significantly influence residents' satisfaction and quality of life (Parkes et al., 2016).

In response to these challenges, successive Malaysian governments have introduced housing initiatives aimed at addressing the needs of low-income households, beginning from the Seventh Malaysia Plan (1996–2000) and continuing through subsequent national development plans. The government has consistently expressed commitment to providing adequate, affordable, and quality housing, particularly for economically disadvantaged groups (Shuid, 2004). Despite these efforts, housing supply has remained misaligned with demand, largely due to economic downturns such as the Asian financial crisis, high construction costs, and financial constraints faced by developers and public agencies (Bakhtiyar et al., 2013). Furthermore, the overemphasis on medium- and high-cost housing has contributed to property overhang, while low-cost housing provision has lagged behind actual needs (Tan, 2011). These structural challenges have resulted in persistent housing affordability problems, with average house prices remaining significantly above median income levels, especially in urban centers (Samad et al., 2016).

1.3 Housing Quality and Sustainability for Low-Income Earners in Nigeria

In Nigeria, low-income earners are defined by the National Housing Policy as individuals earning ₦100,000 or less annually, including workers within salary grade levels 01–06 (Alamu, 2018). With a significant proportion of the population living below the poverty line, access to quality housing remains a critical challenge. Although policy measures advocate public–private investment, cooperative housing schemes, and mortgage financing incentives, housing delivery remains largely profit-driven and skewed toward high-income groups (Alamu, 2018). Housing quality and sustainability are therefore central to improving the welfare of low-income earners, influencing health, security, social integration, and environmental conditions. Housing is a key driver of sustainable development due to its direct impact on individual and community well-being (Haruna et al., 2023). This study thus evaluates housing quality and sustainability for low-income earners in Nigeria, highlighting existing barriers and emphasizing the transformative potential of improved housing provision.

Housing quality assessment requires a holistic approach due to its subjective and multidimensional nature. Quality has been defined as a set of attributes that reflect both user expectations and inherent product characteristics (Afon, 2000; Jiboye, 2004). Scholars emphasize the importance of integrating physical, social, cultural, and infrastructural indicators when evaluating housing quality (Ebong, 1983; Akande et al., 2024). Criteria such

as energy efficiency, safety, modern facilities, infrastructural adequacy, spatial functionality, and environmental conditions are widely used benchmarks (Neilson, 2004; Hanmer et al., 2000). Given the absence of a single comprehensive indicator, housing quality evaluation must integrate structural design, material quality, service provision, spatial organization, and aesthetic considerations.

In Katsina State, as in many parts of Nigeria, these issues are particularly acute: rapid urbanization, limited public-sector housing supply, and fragile infrastructural support exacerbate the housing challenges faced by low-income families. However, the precise interplay between housing design and residents' health and well-being satisfaction especially under the constraints of low-income status and inadequate housing systems remains under-researched in this region.

1.4 Objectives of the Study

The aim of this study is to examine the impact of housing design on the health and well-being satisfaction of low-income families in Katsina State, with particular attention to the challenges of housing provision.

Objectives of the Study

1. To evaluate the relationship between housing design features (ventilation, spatial layout, building materials, and sanitation facilities) and residents' health outcomes among low-income families in Katsina State.
2. To assess residents' level of satisfaction with their housing conditions and its influence on their overall well-being.
3. To identify the key challenges hindering adequate housing provision for low-income families in Katsina State.
4. To recommend sustainable housing design and policy interventions that can enhance health and well-being outcomes for low-income households.

2. Literature Review

2.1 Housing as a Determinant of Health: Implications for Physical and Mental Well-Being

The relationship between housing and individual health is complex and multidimensional, encompassing social, economic, psychosocial, and environmental factors (Rolfe et al., 2020). Housing remains a fundamental determinant of health, as secure, safe, and adequate living conditions contribute significantly to physical and mental well-being. Adeniyi (2022)

examines the relationship between housing and health in Nigeria, highlighting that housing quality, stability, affordability, safety, and environmental conditions significantly influence the physical and socio-economic well-being of individuals and communities. The study underscores housing as a critical determinant of public health, emphasizing the need for adequate and safe housing to improve overall national health outcomes. (Adeniyi, 2022; WHO, 2018). Access to stable and quality housing has been associated with improved health outcomes, while inadequate or insecure housing often leads to a higher incidence of morbidities and psychological stress (Gilbertson et al., 2006; Leaver et al., 2007; Tinson & Clair, 2020). The absence of stable housing can exacerbate vulnerabilities, leading to mental health challenges, increased substance use, domestic violence, and reduced productivity (Taylor, 2018; Evans et al., 2003; Pevalin et al., 2017). In low- and middle-income countries such as Nigeria, many households also lack access to basic amenities, including potable water, electricity, safe roads, and adequate healthcare, compounding the negative health impacts of poor housing (Thompson et al., 2020; Otiwaa-Borketey, 2017). Environmental hazards, such as improper waste disposal, further contribute to the spread of infectious diseases (Regmi et al., 2019; Wizor & Anthony, 2020).

Despite numerous housing policies and programs initiated by the Nigerian government, including the National Housing Fund, significant gaps remain in addressing the health-related aspects of housing (Adeniji, 2005; Ayedun & Oluwatobi, 2011; Moore, 2019). Evidence suggests that housing interventions that consider health outcomes can reduce disease prevalence and improve overall well-being, highlighting the importance of integrating health-focused strategies into housing development (Olukolajo et al., 2013; Adebowale et al., 2017). The housing deficit in Nigeria, estimated between 17–23 million units, emphasizes the urgency of combining affordable housing provision with measures that ensure safe and healthy living environments (Moore, 2019). Historically, public health improvements, such as better sanitation, ventilation, and building safety standards, have demonstrated the effectiveness of housing interventions in reducing disease transmission and injuries (Howden-Chapman, 2004; Krieger & Higgins, 2002). Today, global and national agencies, including the WHO, advocate for housing designs and policies that promote safety, health, and accessibility, particularly in rapidly urbanizing regions (WHO, 2018; Briggs et al., 2008). Addressing housing inadequacies is thus essential not only for individual health but also for broader socio-economic development in countries like Nigeria (Okedele, 2008; Ogunbiyi, 2014).

2.2 The Role of Affordable Housing in Community Health and Well-Being

Affordable housing plays a crucial role in promoting community health and well-being, particularly in rapidly urbanizing countries like China. Xia and Tengku Wook (2024) highlight that access to affordable housing not only reduces stress but also fosters social stability and enhances economic resilience, emphasizing the importance of policy diversification and innovative housing solutions. Rapid urbanization and economic development in China have intensified housing affordability challenges, with rising property costs preventing many families from securing adequate living conditions, which in turn negatively affects both physical and mental health (Li, Qin, & Wu, 2020). Affordable housing, therefore, extends beyond providing shelter; it contributes substantially to overall societal health and well-being (Cheung, Day, Wu, & Tomlinson, 2019). Evidence indicates that stable and affordable housing reduces stress, improves mental health, and strengthens social cohesion (Arundel, Li, Baker, & Bentley, 2024; Wang, Mao, & Wang, 2023). Residents of affordable housing communities experience fewer mental health issues and are better able to engage in socially and economically productive activities. Additionally, affordable housing allows households to allocate resources to other health-promoting needs, further enhancing quality of life (Chen, Qi, Lin, & Wu, 2022; Chen, Yang, & Zhong, 2020).

2.3 Housing as a Fundamental Human Need and the Challenge of Low-Income Housing

Housing is universally recognized as a fundamental human necessity that extends beyond the provision of shelter to include a private and dynamic environment for social interaction, family life, and economic activities (Dankani, 2013). It plays a crucial role in shaping individuals' quality of life and contributes significantly to both social and economic development within the built environment (Alaghbari et al., 2011). In Nigeria, however, access to adequate and quality housing remains a major challenge, particularly for low-income earners. A large proportion of the population lives in substandard housing conditions due to widespread poverty and limited financial capacity, making decent housing unattainable without government intervention (Makinde, 2014a). Public low-cost housing schemes were therefore introduced to address this gap, often through government funding or public–private partnerships aimed at providing affordable housing for economically disadvantaged groups (Ayoola & Amole, 2014; Makinde, 2014a). Despite these interventions, several housing programmes in Nigeria have recorded limited success. Olotuah (2015) attributed this failure to inadequate understanding of residents' needs, poor planning, weak policy implementation, and the provision of housing units that are either insufficient in number or unaffordable to the target population. In many cases, housing units intended for low-income earners are

eventually occupied by wealthier individuals, while the original beneficiaries remain dissatisfied with housing design and functionality. Scholars have emphasized that successful low-income housing delivery requires careful consideration of users' needs and preferences, as architects and planners can only produce effective housing solutions when residents' socio-economic realities are fully understood (Delgado & Troyer, 2017; Jansen, 2012). Understanding housing preferences is therefore essential for the formulation of responsive housing policies and sustainable housing environments for the poor (Khozaei et al.,2012)

This literature review therefore seeks to critically examine existing studies on the relationship between housing design, health, and well-being, while identifying gaps in research related to low-income households in Katsina State. It will provide a conceptual foundation for understanding how housing design influences quality of life and will guide the analysis of findings in this study.

3. Research Method

3.1 Study Area

The study was conducted in Katsina State, located in the Northwestern region of Nigeria. Katsina is characterized by rapid urbanization, population growth, and rising housing demand, which has intensified the challenges of housing provision, particularly for low-income families. The state comprises both urban centers such as Katsina metropolis and Funtua, as well as peri-urban and rural settlements, where housing conditions vary significantly. This diversity provides an ideal context for assessing how housing design influences residents' health and well-being satisfaction.

3.2 Sample Size and Sampling Technique

A multi-stage sampling technique were employed. In the first stage, selected Local Government Areas (LGAs) within Katsina State were purposively chosen to represent both urban and peri-urban areas. In the second stage, specific communities or neighborhoods will be randomly selected. In the final stage, systematic random sampling was used to select households from each community. The sample size was also determined using Yamane's formula at a 95% confidence level to ensure statistical representativeness.

3.3 Data Collection Methods

Data for this study were collected through primary sources, using a structured questionnaire designed to capture respondents' socio-demographic characteristics, housing design features, level of satisfaction, health and well-being concerns, and challenges of housing provision.

The questionnaire consisted of both closed-ended and Likert-scale questions to allow respondents to express their perceptions clearly and objectively.

The questionnaires were administered directly to selected low-income households in urban and peri-urban areas of Katsina State. This approach enabled the researcher to clarify questions where necessary and ensured a high response rate. In addition to primary data, secondary data were obtained from textbooks, academic journals, government reports, and housing policy documents to provide background information and support the discussion of findings.

3.4 Data Analysis method

The data collected were coded and analyzed using the Statistical Package for Social Sciences (SPSS). Descriptive statistical techniques such as frequencies, percentages, tables, and charts were used to summarize respondents' demographic characteristics and assess housing design conditions and satisfaction levels.

Inferential statistical tools, including chi-square tests and multiple regression analysis, were employed to examine the relationship between housing design variables (such as ventilation, sanitation facilities, building materials, and spatial layout) and residents' satisfaction. These methods were considered appropriate for determining the significance and strength of relationships among the study variables. Results were presented in tables and interpreted in line with the study objectives.

4. RESULT AND DISCUSSION

Table 4.1: Assessment of Housing Design Features.

Housing Design Feature	Poor (%)	Fair (%)	Good (%)	Total (%)
Ventilation	34.8	39.2	26.0	100
Spatial Layout	31.4	41.8	26.8	100
Building Materials	29.6	40.5	29.9	100
Sanitation Facilities	37.1	36.4	26.5	100

The assessment of housing design features in Table 4.1 indicates that ventilation is generally inadequate among low-income housing units in Katsina State. A combined 74.0% of respondents rated ventilation as either *poor* (34.8%) or *fair* (39.2%), while only 26.0% considered it good. This suggests that many housing units lack sufficient airflow, which can contribute to poor indoor air quality and discomfort for residents. The implication is that inadequate ventilation may increase health risks such as respiratory illnesses and reduce overall residential satisfaction.

The findings reveal that a large number of residents perceive their housing layout as inadequate, with 73.2% rating it poor or fair. Factors like overcrowding and poor room arrangement negatively impact quality of life, especially for larger low-income families. Although building materials and sanitation facilities received slightly better ratings (70.1% and 73.5% rated poor or fair), concerns about durability, safety, and hygiene remain significant. This raises issues around maintenance costs and public health, jeopardizing the sustainability of low-income housing in Katsina State.

Table 4.2: Level of Residents' Satisfaction.

Satisfaction Level	Frequency	Percentage (%)
Very Dissatisfied	86	22.3
Dissatisfied	97	25.2
Neutral	78	20.3
Satisfied	71	18.4
Very Satisfied	53	13.8
Total	385	100.0

Table 4.2 indicates that 47.5% of low-income residents in Katsina State are dissatisfied with their housing conditions, revealing significant deficiencies in current housing designs. While 20.3% have a neutral view, possibly due to economic constraints, this may lead to increased dissatisfaction if conditions do not improve. Only 32.2% of respondents reported satisfaction, highlighting the need for substantial enhancements in housing policies, design quality, affordability, and amenities to better meet residents' needs and improve their well-being.

Table 4.3: Reported Health and Well-being Outcomes.

Health Outcome	Yes (%)	No (%)
Frequent Illness	58.2	41.8
Poor Indoor Air Quality	61.0	39.0
Stress Due to Housing Condition	63.4	36.6

Table 4.3 illustrates significant health challenges tied to housing conditions for low-income residents in Katsina State. A majority (58.2%) reported frequent illnesses, indicating a link between poor housing and adverse health effects due to factors like overcrowding, dampness, and inadequate sanitation. Additionally, 61% cited poor indoor air quality linked to inadequate ventilation, leading to respiratory issues. Furthermore, 63.4% experienced stress from overcrowding and sanitation problems, underscoring the impact of housing on both physical and mental health. These findings emphasize the need for comprehensive housing policies to improve infrastructure and residents' quality of life.

Table 4.4: Challenges Hindering Adequate Housing Provision.

Challenge	Agree (%)	Disagree (%)
High Cost of Building Materials	72.5	27.5
Limited Government Support	65.7	34.3
Land Accessibility Issues	59.0	41.0
Poor Urban Planning	61.8	38.2

Table 4.4 highlights that the high cost of building materials is the primary challenge to adequate housing in Katsina State, with 72.5% of respondents recognizing this issue. The rising cost restricts low-income households and developers from constructing or maintaining quality housing. Without measures to control costs or provide subsidies, housing may suffer from substandard materials, affecting quality and durability. Additionally, limited government support, noted by 65.7% of respondents, hampers housing provision, suggesting a need for improved policy enforcement and funding for low-income initiatives. Other challenges include land accessibility (59.0%) and poor urban planning (61.8%), which contribute to overcrowding and inadequate infrastructure. Enhancing land administration and urban planning practices is vital for sustainable housing solutions for low-income families in Katsina State.

Table 4.5: Chi-Square Test of Housing Design and Residents' Satisfaction.

Test	Value	Df	Sig. (p)
Pearson Chi-Square	12.67	4	0.013

Table 4.5 reveals a statistically significant association between housing design and residents' satisfaction, indicated by a Pearson Chi-Square value of 12.67 and a p-value of 0.013. This suggests that housing design features, including ventilation, layout, materials, and sanitation, crucially affect residents' perceptions of their living conditions. Enhancing housing design can improve satisfaction among low-income residents in Katsina State, while poor design contributes to dissatisfaction and adverse health outcomes. Stakeholders are advised to prioritize effective housing design in low-income housing initiatives for improved satisfaction and sustainable development.

Table 4.6: Regression Analysis of Housing Design Features and Residents' Satisfaction.

Predictor Variable	Beta (β)	t-value	Sig. (p)
Ventilation	0.284	4.32	0.000
Spatial Layout	0.231	3.67	0.001
Building Materials	0.198	3.11	0.002
Sanitation Facilities	0.301	4.85	0.000

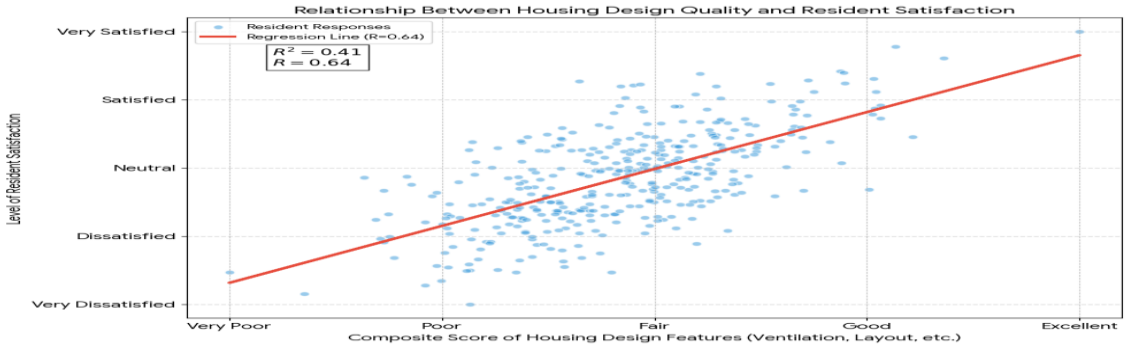

Figure 4.1: Relationship between housing design quality and resident satisfaction.

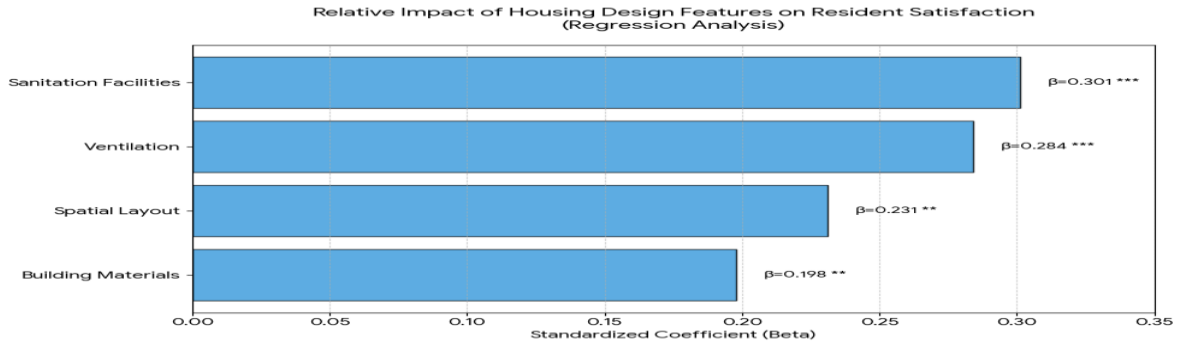

Figure 4.2: Impact of housing design features on resident satisfaction.

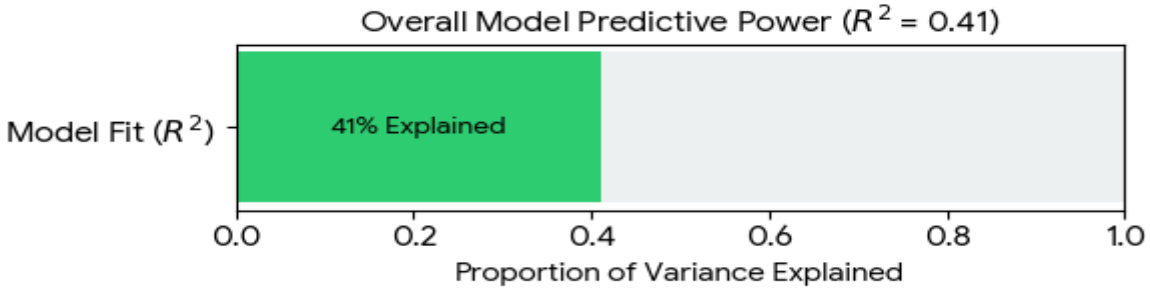

Figure 4.3: overall model prediction.

Model Summary:

R = 0.64

$R^2 = 0.41$

Adjusted $R^2 = 0.39$

The regression analysis demonstrates a strong positive relationship between housing design quality and residents' satisfaction among low-income families in Katsina State. The correlation coefficient (R = 0.64) indicates that improvements in housing design features are consistently associated with higher levels of residents' satisfaction. This confirms that housing design plays a meaningful role in shaping how residents perceive their living

environments, particularly in contexts where housing provision is limited and quality varies widely. Furthermore, the coefficient of determination $(R^2 = 0.41)$ shows that 41% of the variation in residents' satisfaction is explained by housing design features included in the model, such as ventilation, spatial layout, building materials, and sanitation facilities. This suggests that while housing design is a major determinant of satisfaction, other factors such as income level, household size, access to services, and neighborhood infrastructure also influence residents' perceptions. Nevertheless, the explanatory power of the model underscores the importance of design quality in low-income housing provision.

Sanitation facilities are the most significant design factor influencing residents' satisfaction, with a standardized coefficient of $\beta = 0.301$ and a p-value < 0.001. Ventilation closely follows with $\beta = 0.284$, both indicating essential functional needs of hygiene and air quality are crucial for comfort and health in low-income housing. Residents' satisfaction in Katsina State is positively influenced by spatial layout ($\beta = 0.231$) and building materials ($\beta = 0.198$), though their impact is less than that of sanitation and ventilation. Each housing design feature contributes uniquely to satisfaction, highlighting the need for policymakers, planners, and developers to prioritize functional and health-related design elements to enhance well-being among low-income households.

4.2 Discussion of the Findings

The study reveals that housing design significantly impacts satisfaction among low-income families in Katsina State. Key features such as ventilation, spatial layout, building materials, and sanitation facilities were predominantly rated poorly by respondents, leading to high dissatisfaction levels. A significant chi-square result indicates a strong association between housing design quality and resident satisfaction, underscoring the importance of design in enhancing comfort and quality of life.

The study also highlights the health and well-being implications of inadequate housing design, as a majority of respondents reported frequent illness, poor indoor air quality, and stress related to housing conditions. Poor ventilation and inadequate sanitation facilities were particularly linked to negative health outcomes, reinforcing the regression results that identified these features as the strongest predictors of residents' satisfaction. These findings are consistent with existing literature which emphasizes that substandard housing environments increase vulnerability to respiratory illnesses, communicable diseases, and psychological stress, especially among low-income populations. The strong influence of

sanitation and ventilation underscores the importance of prioritizing health-oriented design in housing policies and interventions.

Challenges like high material costs, limited government support, land accessibility issues, and poor urban planning contribute to low housing design quality. These factors hinder the ability of individuals and developers to create durable housing. However, regression analysis shows that targeted design improvements in areas such as sanitation, ventilation, and spatial planning can greatly enhance resident satisfaction. The findings highlight the necessity for integrated housing policies that address affordability while incorporating effective design and planning to improve living conditions for low-income households in Katsina State.

5. CONCLUSION

Based on the findings of the study, it is concluded that housing design plays a critical role in determining residents' satisfaction and well-being among low-income families in Katsina State. Poorly designed housing contributes to discomfort, health challenges, and dissatisfaction among residents. The study also concludes that existing housing challenges are largely driven by economic constraints, inadequate planning, and limited policy enforcement. Improving housing design through proper ventilation, adequate sanitation, and the use of quality building materials can significantly enhance residents' satisfaction and health outcomes. Therefore, addressing housing design issues should be a priority in housing policies and urban development strategies aimed at improving living conditions for low-income populations.

6. Recommendation

Based on the conclusions of the study, the following recommendations are made:

- Government and housing authorities should enforce minimum housing design standards that prioritize ventilation, sanitation, and adequate space.
- Increased government investment in affordable housing schemes and subsidies for low-income families should be encouraged.
- Proper urban planning policies should be implemented to reduce overcrowding and improve access to affordable land.
- Residents should be educated on the importance of proper housing design and maintenance for health and well-being.
- Housing developers should adopt cost-effective and durable building materials suitable for low-income housing.

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