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ASSESSMENT OF INCLUSIVE HOUSING DESIGN FEATURES AND RESIDENTS' PERCEPTION IN UNIVERSITY STAFF QUARTERS IN SOUTHWESTERN NIGERIA

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ABSTRACT

Inclusive housing design has become increasingly important in promoting accessible, safe, and equitable residential environments for diverse user groups. However, limited empirical evidence exists on the availability and performance of inclusive housing features in university staff quarters in Nigeria. This study assessed inclusive housing design features and residents' perceptions in selected university staff quarters in Southwestern Nigeria. Specifically, it examined residents' socio-economic characteristics, identified existing inclusive housing design features, evaluated residents' perceptions of these features, and determined the relationship between residents' characteristics and their perceptions of housing quality. A mixed-methods research design was adopted using structured questionnaires administered to 340 household heads selected through multistage sampling across four federal universities, complemented by field observations. Data were analysed using descriptive and inferential statistics. The findings showed that 59.4% of respondents were male, while 71.8% had resided in the staff quarters for between one and ten years. Wide entrance doors (67.1%) and step-free entrances (62.9%) were the most commonly available inclusive design features, whereas accessible bathrooms (43.5%) and ramps (40.6%) were relatively inadequate. Residents rated safety and security as the highest-quality inclusive feature (Mean = 3.78), while adaptability of spaces recorded the lowest rating (Mean = 3.64). Income level (Mean = 3.81) was identified as the strongest socio-economic factor influencing perceptions of housing quality. The study concludes that although staff quarters possess several inclusive housing features, significant deficiencies remain in universal accessibility and adaptability. It recommends integrating inclusive design principles into the planning, upgrading, and management of university staff housing to improve accessibility, functionality, and residents' quality of life.

Keywords: Inclusive housing design; University staff quarters; Residents' perception; Accessibility; Southwestern Nigeria.

I. INTRODUCTION

Housing extends beyond providing physical shelter to creating environments that influence residents' well-being, social interaction, and quality of life (Amao et al., 2024). Increasing attention has therefore been given to inclusive housing design, which seeks to ensure that residential environments are accessible, usable, and adaptable for people with diverse ages, physical abilities, household structures, and socio-cultural backgrounds (Zallio & Clarkson, 2021; Zawawi et al., 2024). Inclusive housing, rooted in universal design principles, incorporates features such as barrier-free access, adequate circulation spaces, adaptable layouts, and supportive neighbourhood infrastructure that enhance safety, comfort, and independent living (Ekhaese & Oyelude, 2025; Patil & Raghani, 2025).

Despite growing awareness of inclusive design, its application in residential developments remains limited, particularly in developing countries where housing policies and building regulations inadequately address universal design requirements (Ahmed et al., 2024). Previous studies have largely focused on accessibility in public buildings, healthcare facilities, and educational environments, while limited empirical attention has been given to university staff housing. Consequently, little is known about the availability of inclusive housing design features within university staff quarters or how residents perceive their adequacy in meeting diverse housing needs (Inclusive Housing Environments for People with Intellectual Disabilities Review, 2025).

Residents' perceptions are essential in evaluating the effectiveness of inclusive housing because the mere provision of physical design features does not necessarily guarantee usability or satisfaction. Socio-economic and cultural characteristics such as age, income, household size, and physical ability influence how residents experience and evaluate housing environments (Shekhar et al., 2019). Understanding these relationships provides evidence for developing more user-centred and responsive residential environments.

Southwestern Nigeria, with its concentration of federal and state universities, offers an appropriate setting for examining inclusive housing within institutional residential environments. Therefore, this study assesses inclusive housing design features and residents' perception in university staff quarters in Southwestern Nigeria, while also examining how residents' socio-economic and cultural characteristics influence their perception of inclusive housing quality.

II. LITERATURE REVIEW

Inclusive Housing Design

Inclusive housing design is an architectural approach that seeks to create residential environments that can be used safely, comfortably, and independently by people of different ages, abilities, cultural backgrounds, and household compositions. Unlike conventional housing design, which often focuses on meeting minimum building standards, inclusive design emphasizes accessibility, usability, adaptability, and equitable participation for all users (Zallio & Clarkson, 2021). The concept is closely related to Universal Design, which advocates environments that require little or no modification throughout the life cycle of occupants (Steinfeld & Maisel, 2012).

Recent studies have expanded the concept beyond physical accessibility to include flexibility of spaces, environmental comfort, intuitive circulation, safety, and neighbourhood connectivity. Patil and Raghani (2025) argued that inclusive housing should incorporate barrier-free entrances, accessible sanitary facilities, wider circulation spaces, adaptable layouts, and neighbourhood infrastructure that supports independent mobility. Similarly,

Zawawi et al. (2024) noted that inclusive housing must accommodate changing human abilities throughout different life stages rather than focusing solely on persons with disabilities. Such design strategies improve usability, reduce environmental barriers, and promote social inclusion within residential communities.

In developing countries, however, the implementation of inclusive housing principles remains inconsistent. Ahmed et al. (2024) observed that many residential developments continue to lack essential accessibility features such as ramps, handrails, adequate circulation widths, and safe pedestrian infrastructure despite existing accessibility regulations. Consequently, many housing environments remain difficult to use for elderly persons, persons with disabilities, and other vulnerable groups.

Residents' Perception of Inclusive Housing Design

Residents' perception has become an important indicator for evaluating housing quality because the effectiveness of inclusive design extends beyond the physical presence of design features to how users experience and interact with them. Housing environments that are perceived as accessible, safe, comfortable, and adaptable generally produce higher levels of residential satisfaction and quality of life (Shekhar et al., 2019). Perception-based assessment therefore provides valuable insight into whether existing housing actually meets residents' functional and social needs.

Previous studies have shown that environmental comfort, safety, accessibility, neighbourhood infrastructure, and spatial flexibility significantly influence users' satisfaction with residential environments (Amao, Rahbarianyazd, & Odunjo, 2024). Features such as adequate natural lighting, effective ventilation, pedestrian-friendly walkways, secure neighbourhoods, and barrier-free circulation contribute positively to residents' perception of housing quality. Conversely, inadequate accessibility, poor maintenance, and limited adaptability often reduce user satisfaction and restrict independent living, particularly among elderly residents and persons with disabilities.

Researchers also emphasize that socio-economic and cultural characteristics influence how residents perceive housing quality. Factors such as age, household size, income, cultural practices, and physical ability affect housing expectations, space utilization, and residential priorities (Ekhaese & Oyelude, 2025). Consequently, inclusive housing should adopt a user-centred approach that responds to the diverse characteristics of occupants rather than applying uniform design solutions.

Empirical Review and Research Gap

Empirical studies on inclusive design have predominantly concentrated on public buildings, educational facilities, healthcare environments, and housing for persons with disabilities or older adults. Although these studies demonstrate the importance of universal accessibility and user-centred design, relatively few have examined inclusive housing within university staff residential environments, particularly in Nigeria.

Recent investigations have reported that accessibility provisions in many residential developments remain inadequate, especially regarding ramps, accessible bathrooms, pedestrian infrastructure, and adaptable internal spaces (Ahmed et al., 2024; Patil & Raghani, 2025). Similarly, systematic reviews of inclusive housing research indicate that although physical accessibility has received considerable attention, limited studies have simultaneously examined residents' socio-economic characteristics, the availability of inclusive housing features, and users' perception of housing quality within institutional residential settings.

University staff quarters represent a unique residential environment occupied by households with varying ages, family structures, income levels, cultural backgrounds, and physical abilities. Despite their strategic importance in supporting staff welfare and institutional productivity, empirical evidence on the inclusiveness of these residential environments remains limited, particularly in Southwestern Nigeria. This study addresses this gap by assessing existing inclusive housing design features, examining residents' perceptions, and evaluating how socio-economic characteristics influence perceptions of inclusive housing quality. The findings provide evidence for improving future university staff housing developments through the integration of inclusive design principles.

III. METHODOLOGY

Research Design

The study adopted a mixed-methods research design, combining quantitative and qualitative approaches to assess inclusive housing design features in university staff quarters in Southwestern Nigeria. The quantitative component involved the administration of structured questionnaires to residents to obtain data on socio-economic characteristics, perceptions of inclusive housing design, and housing quality. The qualitative component comprised field observations using an observation checklist and photographic documentation to identify and assess existing inclusive housing design features within the selected staff quarters.

Study Area

The study was conducted in selected federal university staff quarters in Southwestern Nigeria. Four universities with purpose-built staff housing were purposively selected: the University of Ibadan (Oyo State), Obafemi Awolowo University (Osun State), Federal University of Technology, Akure (Ondo State), and the University of Lagos (Lagos State). These institutions were selected because they possess established staff housing estates suitable for evaluating inclusive housing design features.

Population and Sampling Procedure

The study population comprised residents of the selected university staff quarters, including both academic and non-academic staff. A multistage sampling technique involving purposive and systematic random sampling was adopted. The four universities were purposively selected based on the availability of functional staff quarters. Thereafter, housing units were systematically selected by choosing every tenth housing unit within the estates. Using Slovin's formula, a sample size of 350 housing units was determined from a population of 2,855 housing units. A total of 340 valid questionnaires were retrieved and used for analysis, representing a response rate of 97.1%.

Data Collection

Primary data were collected through structured questionnaires, field observations, observation checklists, and photographic documentation. The questionnaires captured residents' socio-economic and cultural characteristics, perceptions of inclusive housing design features, and housing quality. Field observations were used to assess the availability and condition of inclusive housing design features such as step-free entrances, circulation spaces, accessible sanitary facilities, lighting, neighbourhood infrastructure, and other accessibility-related elements. Secondary data were obtained from relevant literature and institutional records to support the study.

Variables Measured

The study examined four major variables:

i. Socio-economic and cultural characteristics: gender, age, household size, income level, ethnicity, religion, family structure, length of residence, presence of elderly persons, and persons with disabilities.
ii. Existing inclusive housing design features: accessibility features, circulation systems, sanitary facilities, environmental features, safety provisions, and neighbourhood infrastructure.
iii. Residents' perception of inclusive housing design: perceived accessibility, safety, environmental comfort, usability, adaptability, and neighbourhood quality.
iv. Relationship between socio-economic characteristics and perception of housing quality: influence of income, age, household size, culture, disability status, and elderly presence on residents' perception of inclusive housing design features.

Data Analysis

Quantitative data were analysed using descriptive statistics, including frequencies, percentages, mean scores, standard deviations, and ranking indices. The relationship between residents' socio-economic characteristics and their perception of inclusive housing design features was examined using inferential statistical analysis, while qualitative observation data were analysed through content analysis and supported with photographic evidence. Results were presented using tables and descriptive narratives.

IV. RESULTS AND DISCUSSION

This chapter presents the analysis and interpretation of data collected from 340 respondents (97% response rate) on the evaluation of inclusive housing design features in selected university staff quarters in Southwestern Nigeria.

(i) Socio-economic characteristics of users

Socio-economic characteristics of respondents: The respondents were predominantly male (59.4%), with the majority aged between 31 and 40 years (34.7%), indicating an economically active workforce. Yoruba respondents constituted the largest ethnic group (78.8%), while Christianity (51.8%) and Islam (45.3%) were the dominant religions. Most respondents lived in nuclear households, with 71.8% residing in two- or three-bedroom housing units. Blocks of flats (44.7%) were the predominant housing type, and most respondents had lived in the staff quarters for between one and ten years (71.8%). Notably, 37.6% of households included elderly persons, while 15.3% had persons with disabilities, underscoring the need for inclusive housing designs that accommodate diverse user groups.

Table 1. Summary of Socio-economic Characteristics of Respondents (n = 340)

S/N	Variable	Dominant Category	Frequency	Percentage (%)
1.	Gender	Male	202	59.4
2.	Age	31–40 years	118	34.7
3.	Ethnicity	Yoruba	268	78.8
4.	Religion	Christianity	176	51.8
5.	Educational Qualification	HND/B.Sc.	152	44.7
6.	Staff Category	Academic Staff	196	57.6
7.	Employment Status	Permanent	248	72.9
8.	Family Type	Nuclear	214	62.9
9.	Housing Unit	3-Bedroom	126	37.1
10.	Building Type	Block of Flats	152	44.7
11.	Elderly in Household	Yes	128	37.6
	Persons with Disability	Yes	52	15.3
	Main Reason for Choosing Staff Quarters	Proximity to Workplace	142	41.8

Source: Field Survey (2026).

(ii) Existing Availability Features Within the Selected Housing Environments

This section presents a comprehensive assessment of accessibility provisions within housing units and neighbourhood environments, as well as residents' evaluation of design elements based on a four-point Likert scale.

Accessibility Availability (Interpretation)

The availability of accessibility features within the housing units, as presented in Table 2, shows a mixed level of provision, with some features being moderately available while others remain inadequately provided. Among the listed features, wide entrance doors recorded the highest availability with 228 responses, compared to 112 responses indicating non-availability. This suggests that most housing units have been designed with relatively adequate entrance space, which enhances ease of entry and exit, especially for individuals using mobility aids.

This is followed by step-free entrances, which were reported as available by 214 respondents, while 126 respondents indicated their absence. This reflects a fairly positive level of barrier-free access at the entry points of many housing units, although a notable proportion still lack this essential feature. Similarly, wide corridors were available in 196

responses, compared to 144 not available, indicating a moderate level of internal spatial accessibility that supports movement within housing units.

In terms of safety-related features, non-slip floors were reported as available by 186 respondents, while 154 indicated they were not available, suggesting that safety considerations are present in many but not all housing units.

However, more specialized accessibility features show lower levels of provision. Handrails, though moderately present (172 available vs 168 not available), indicate almost an equal split, suggesting inconsistency in safety support for elderly or mobility-impaired users. Likewise, ramp access shows a relatively low availability, with 138 respondents indicating availability compared to 202 who reported absence, making it one of the least provided features.

The least available feature is accessible bathrooms, with only 148 respondents reporting availability, while 192 indicated non-availability. This highlights a significant deficiency in internal accessibility design, particularly in facilities essential for independent living.

Table 2: Availability of Accessibility Features within the Assessed Housing Environment (n = 340)

S/N	Accessibility Feature	Available n	Available %	Not Available n	Not Available %	Total
1	Step-free entrance	214	62.9	126	37.1	340 (100%)
2	Ramp access	138	40.6	202	59.4	340 (100%)
3	Wide entrance doors	228	67.1	112	32.9	340 (100%)
4	Wide corridors	196	57.6	144	42.4	340 (100%)
5	Handrails	172	50.6	168	49.4	340 (100%)
6	Accessible bathroom	148	43.5	192	56.5	340 (100%)
7	Non-slip floors	186	54.7	154	45.3	340 (100%)

Source: Authors' Field Survey, 2026

Floor Design Features

The assessment of floor design features, as presented in Table 3, shows that respondents generally perceive the flooring conditions in the housing units as moderately

satisfactory, with mean values ranging between 2.84 and 3.03, indicating an overall average to good level of performance across the evaluated indicators.

The highest-ranked feature is smooth movement, with a TMV of 1012 and a mean score of 2.98, suggesting that floor surfaces generally support ease of movement within housing units. This implies that residents experience relatively good circulation across internal spaces, which is an important component of functional and accessible housing design.

This is followed by ease of cleaning, which recorded a TMV of 1030 and the highest mean value of 3.03, ranking 2nd. This indicates that respondents consider the floor finishes relatively easy to maintain, which contributes to hygiene, durability, and overall residential satisfaction.

Slip resistance ranked 3rd, with a TMV of 996 and a mean score of 2.93. This suggests that while flooring materials are generally acceptable in terms of reducing slip hazards, there are still moderate concerns regarding safety, particularly in conditions where floors may become wet or smooth.

The lowest-ranked feature is safety for vulnerable users, which recorded a TMV of 966 and a mean score of 2.84. This indicates that respondents perceive floor safety for elderly persons, children, and individuals with disabilities as the least satisfactory aspect of floor design. The relatively lower rating highlights potential risks and suggests that current flooring materials and design may not fully meet universal accessibility standards.

The result in Table 3 reveals that floor design features in the housing units are generally rated as moderate to good, with emphasis on functionality and maintenance. However, the consistently lower performance of safety-related indicators particularly for vulnerable users suggests that greater attention is needed to improve inclusive design standards. Enhancing slip resistance and ensuring safer flooring systems would significantly improve accessibility and reduce risk for all users, especially those with mobility challenges.

Table 3. Floor Design Features

Feature	Poor	Fair	Good	Very Good	TMV	Mean ($\bar{x}$)	SD	Rank
Slip resistance	76	142	84	38	996	2.93	0.93	3
Smooth movement	74	156	78	32	1012	2.98	0.89	1
Ease of cleaning	74	168	72	26	1030	3.03	0.85	2
Safety for vulnerable users	66	136	96	42	966	2.84	0.95	4

Source: Authors Field, 2026

Wall and Space Features

The assessment of wall and space features, as shown in Table 4, indicates that respondents generally perceive these aspects of housing design as moderately adequate, with mean scores ranging from 2.81 to 3.02, reflecting an overall average level of satisfaction.

The highest-ranked feature is wall safety, with a TMV of 1026 and a mean score of 3.02, ranking 1st. This suggests that respondents generally consider the walls in the housing units to be structurally safe and reliable. It implies that issues related to wall strength, finishing, and basic structural integrity are relatively well addressed compared to other spatial features.

Furniture movement ranks 2nd, with a TMV of 1006 and a mean score of 2.96. This indicates that most respondents find it reasonably easy to move furniture within rooms, suggesting that internal layouts provide a fair level of functional usability, although not exceptionally spacious.

Room spacing ranks 3rd, with a TMV of 980 and a mean score of 2.88. This suggests that while some respondents are satisfied with the available room sizes, others perceive spatial limitations that may affect comfort, circulation, and efficient use of space, particularly in densely occupied units.

The lowest-ranked feature is flexibility, with a TMV of 954 and a mean score of 2.81, indicating that respondents perceive limited adaptability in the design of internal spaces. This implies that the housing units may not easily accommodate changes in household needs, furniture arrangement, or future modifications, which is a key concern in inclusive and universal housing design.

The findings in Table 4 show that wall and space features are generally rated at a moderate level of adequacy. While structural safety and furniture movement are relatively satisfactory, spatial flexibility and room adequacy are weaker aspects. This suggests that although the housing units are functional, they lack sufficient adaptability and optimal space planning required for fully inclusive housing design. Improving spatial flexibility and optimizing room layouts would enhance comfort, usability, and long-term livability for diverse household needs.

Table 4. Wall and Space Features

Feature	Poor	Fair	Good	Very Good	TMV	Mean (x̄)	SD	Rank
Wall safety	76	162	74	28	1026	3.02	0.86	1
Room spacing	70	146	88	36	980	2.88	0.92	3
Flexibility	64	140	92	44	954	2.81	0.97	4
Furniture movement	74	150	86	30	1006	2.96	0.90	2

Source: Authors Field, 2026

Windows and Ventilation Features

The evaluation of windows and ventilation features, as presented in Table 5, shows that respondents generally perceive these aspects of housing design as moderately good, with mean values ranging from 2.88 to 3.08, indicating an overall fair to good level of satisfaction with indoor environmental quality.

The highest-ranked feature is natural lighting, with a TMV of 1048 and a mean score of 3.08, ranking 1st. This suggests that most respondents are satisfied with the amount of daylight entering their housing units. Adequate natural lighting enhances indoor comfort,

reduces reliance on artificial lighting during the day, and contributes positively to residents' well-being and energy efficiency.

This is followed by cross ventilation, which recorded a TMV of 1030 and a mean score of 3.03, ranking 2nd. This indicates that air circulation within the housing units is generally adequate, allowing for improved indoor air quality and thermal comfort, although some respondents may still experience ventilation challenges in certain units.

Window operation ranked 3rd, with a TMV of 1006 and a mean score of 2.96. This suggests that while many respondents find windows relatively easy to operate, a noticeable proportion still experience moderate difficulties, which may affect ventilation control and ease of use, especially for elderly or physically challenged residents.

The lowest-ranked feature is window accessibility, with a TMV of 978 and a mean score of 2.88, indicating that respondents perceive limitations in the ease of reaching, opening, or adjusting windows. This is particularly important in inclusive housing design, as poor window accessibility can affect independence, safety, and environmental control for vulnerable users.

Overall, the result in Table 5 reveals that windows and ventilation features are generally rated as moderate to good, with natural lighting and cross ventilation performing best. However, issues related to window accessibility and ease of operation remain weaker aspects of design. This suggests that while indoor environmental quality is relatively satisfactory, improvements are needed to enhance user-friendly and inclusive window designs that support all categories of residents, particularly those with mobility limitations.

Table 5. Windows and Ventilation Features

Feature	Poor	Fair	Good	Very Good	TMV	Mean ($\bar{x}$)	SD	Rank
Window operation	74	152	80	34	1006	2.96	0.90	3
Natural lighting	90	158	66	26	1048	3.08	0.83	1
Cross ventilation	82	156	72	30	1030	3.03	0.85	2
Window accessibility	70	140	90	40	978	2.88	0.94	4

Source: Authors Field, 2026

Circulation Features

The assessment of circulation features, as presented in Table 6, indicates that respondents generally perceive the circulation elements within the housing units as moderately satisfactory, with mean scores ranging from 2.75 to 3.01. These findings reflect the extent to which the housing environment supports movement, accessibility, and ease of navigation for residents.

The highest-ranked feature is entrance access, which recorded a TMV of 1024 and a mean score of 3.01, ranking 1st. This suggests that respondents generally find the entrances to their housing units accessible and convenient to use. Good entrance accessibility is an important aspect of inclusive housing design, as it facilitates easy entry and exit for all users, including elderly persons and individuals with mobility challenges.

This is followed by movement ease, with a TMV of 1008 and a mean score of 2.97, ranking 2nd. The result indicates that residents experience a relatively satisfactory level of movement within the housing units. This suggests that the internal arrangement of spaces

supports circulation and allows occupants to move around with reasonable comfort and convenience.

Corridor width ranked 3rd, recording a TMV of 970 and a mean score of 2.85. This finding suggests that while corridors are generally adequate for movement, some respondents perceive limitations in their width. Narrow corridors can restrict movement and may create difficulties for wheelchair users, elderly residents, and households moving furniture or equipment within the building.

The lowest-ranked feature is stairway access, which recorded a TMV of 934 and a mean score of 2.75, ranking 4th. This indicates that respondents perceive stairway accessibility as the least satisfactory aspect of circulation design. The relatively low rating suggests that staircases may not adequately support safe and convenient movement, particularly for vulnerable users such as older adults, children, and persons with disabilities.

The findings in Table 4.6 reveal that circulation features within the housing units are perceived as moderately adequate, with entrance accessibility and general movement performing better than corridor width and stairway access. The lower rating of stairway access highlights a significant area for improvement in achieving inclusive housing design.

Table 6. Circulation Features

	Poor	Fair	Good	Very Good	TMV	Mean (x̄)	SD	Rank
Movement ease	70	160	78	32	1008	2.97	0.89	2
Stairway access	62	136	96	46	934	2.75	0.98	4
Corridor width	66	148	88	38	970	2.85	0.95	3
Entrance access	80	162	70	28	1024	3.01	0.87	1

Source: Authors Field, 2026

Neighbourhood Features

The availability of neighbourhood features, as presented in the Table 7, provides insight into the extent to which the residential environment supports accessibility, safety, comfort, and overall inclusiveness for residents.

The findings show that street lighting is the most available neighbourhood feature, with 246 respondents (72.4%) indicating its presence, while 94 respondents (27.6%) reported its absence. This suggests that the majority of the residential environment benefits from adequate lighting, which contributes to safety, security, and ease of movement, particularly during nighttime.

This is followed by pedestrian walkways, which were reported as available by 224 respondents (65.9%), while 116 respondents (34.1%) indicated that they were not available. The relatively high availability of walkways suggests that considerable attention has been given to pedestrian movement within the neighbourhood, thereby enhancing accessibility and mobility for residents.

The drainage system ranked third in availability, with 208 respondents (61.2%) confirming its presence and 132 respondents (38.8%) reporting its absence. This indicates that drainage infrastructure is moderately provided within the neighbourhood, contributing to environmental sanitation and reducing the risk of flooding and water stagnation.

Similarly, parking spaces were reported as available by 198 respondents (58.2%), while 142 respondents (41.8%) indicated they were not available. Although more than half of

the respondents acknowledged the presence of parking facilities, the result suggests that parking provision may still be inadequate in certain areas of the residential environment.

Recreational spaces were available according to 176 respondents (51.8%), while 164 respondents (48.2%) reported their absence. The nearly equal distribution between availability and non-availability suggests that recreational facilities are not consistently provided across the neighbourhood. This may limit opportunities for social interaction, physical activity, and community engagement among residents.

The least available neighbourhood feature is safety signage, with only 142 respondents (41.8%) indicating its presence, while 198 respondents (58.2%) reported that it was not available. This finding highlights a significant deficiency in safety-related infrastructure within the neighbourhood. The absence of adequate signage may affect wayfinding, hazard awareness, and overall safety, particularly for visitors, children, elderly persons, and individuals with disabilities.

Table 7. Neighbourhood Features

Feature	Available	Percentage	Not Available	Percentage
Walkways	224	65.9%	116	34.1%
Street lighting	246	72.4%	94	27.6%
Parking spaces	198	58.2%	142	41.8%
Recreational spaces	176	51.8%	164	48.2%
Drainage system	208	61.2%	132	38.8%
Safety signage	142	41.8%	198	58.2%

Source: Authors Field, 2026

Pedestrian Features

The assessment of pedestrian features, as presented in Table 8, indicates that respondents generally perceive the pedestrian environment within the neighbourhood as moderately satisfactory. The mean scores range from 2.85 to 3.05, suggesting that the neighbourhood provides a reasonable level of support for pedestrian movement and accessibility.

The highest-ranked feature is outdoor movement, which recorded a TMV of 1036 and a mean score of 3.05, ranking 1st. This indicates that respondents generally find it easy to move around outdoor spaces within the neighbourhood. The result suggests that the layout and design of external spaces adequately support pedestrian mobility and facilitate convenient movement between different locations.

This is followed by connectivity, which achieved a TMV of 992 and a mean score of 2.92, ranking 2nd. The finding implies that pathways and circulation routes provide a fairly good level of connection between residential units and other neighbourhood facilities. Effective connectivity is essential for promoting accessibility, reducing travel barriers, and enhancing the overall functionality of the residential environment.

Walkway accessibility ranked 3rd, with a TMV of 990 and a mean score of 2.91. This suggests that pedestrian walkways are generally accessible to residents, although some limitations may still exist. The relatively moderate rating indicates that certain walkways may

not fully accommodate all users, particularly elderly persons, children, and individuals with mobility impairments.

The lowest-ranked feature is safety of paths, which recorded a TMV of 970 and a mean score of 2.85, ranking 4th. Although the score remains within the moderate range, it indicates that respondents have concerns regarding the safety of pedestrian routes. Factors such as uneven surfaces, inadequate maintenance, poor lighting in some areas, or insufficient safety measures may contribute to this perception.

Table 8. Pedestrian Features

Feature	Poor	Fair	Good	Very Good	TMV	Mean ($\bar{x}$)	SD	Rank
Walkway accessibility	64	158	82	36	990	2.91	0.92	3
Safety of paths	60	150	90	40	970	2.85	0.95	4
Outdoor movement	72	166	74	28	1036	3.05	0.86	1
Connectivity	68	150	88	34	992	2.92	0.91	2

Source: Authors Field, 2026

Residents' Perception of Inclusive Housing Design Features

This section presents the analysis of respondents' perceptions regarding the level of inclusiveness of existing housing design features within staff quarters and their surrounding neighbourhoods. The assessment covered key aspects such as site and neighbourhood conditions, building accessibility, internal spatial arrangements, and environmental comfort features.

Perception of Site and Neighbourhood Inclusive Design Features

The perception of site and neighbourhood inclusive design features, as presented in Table 9, reveals that respondents generally hold a positive view of the neighbourhood environment, with mean scores ranging from 3.43 to 3.76, indicating an overall good level of perceived inclusiveness.

The highest-rated feature is street lighting, which recorded a TMV of 1278 and a mean score of 3.76, ranking highest among all variables. This suggests that residents perceive street lighting as highly adequate and effective, contributing significantly to visibility, security, and nighttime safety within the neighbourhood. The relatively low standard deviation (1.01) also indicates a fairly consistent agreement among respondents regarding its adequacy.

This is followed by pedestrian walkways, with a TMV of 1230 and a mean score of 3.62, indicating that respondents generally consider walkways to be well provided and accessible. This reflects a positive perception of pedestrian-friendly infrastructure, which is essential for mobility and inclusive neighbourhood design.

Similarly, open spaces recorded a TMV of 1226 and a mean score of 3.61, suggesting that recreational and outdoor communal areas are fairly available and contribute positively to residents' quality of life. These spaces are important for social interaction, relaxation, and community engagement.

Safety routes ranked slightly lower, with a TMV of 1194 and a mean score of 3.51, indicating that while residents generally perceive circulation routes as safe, there are still moderate concerns that may relate to maintenance, design, or security conditions in certain areas.

The lowest-rated feature is parking adequacy, which recorded a TMV of 1166 and a mean score of 3.43. Although still within the "good" category, this result suggests that parking provision is the weakest aspect among the assessed neighbourhood features. It indicates possible congestion or insufficient parking spaces relative to demand.

Table 9. Perception of Site and Neighbourhood Inclusive Design Features

Feature	Very Good	Good	Fair	Poor	Very Poor	**TMV**	**Mean**	**SD**
Pedestrian walkways	78	126	82	36	18	1230	3.62	1.07
Safety routes	70	118	90	40	22	1194	3.51	1.10
Parking adequacy	64	110	98	44	24	1166	3.43	1.11
Street lighting	92	132	72	30	14	1278	3.76	1.01
Open spaces	80	120	84	38	18	1226	3.61	1.08

Source: Authors Field, 2026

Perception of Building Accessibility Features

The perception of building accessibility features, as presented in Table 10, shows that respondents generally perceive the accessibility conditions of buildings as good, with mean scores ranging from 3.46 to 3.66 and an overall section mean of 3.55. This indicates a generally positive but not exceptional level of satisfaction with building accessibility provisions.

The highest-rated feature is entrance access, which recorded a TMV of 1244 and a mean score of 3.66, ranking highest among all variables. This suggests that respondents generally find building entrances accessible and easy to use, which is a critical aspect of inclusive design as it determines the ease of entry and exit for all users, including persons with mobility limitations.

This is followed by circulation ease, with a TMV of 1218 and a mean score of 3.58, indicating that internal movement within buildings is generally perceived as smooth and functional. This suggests that spatial layouts and internal pathways moderately support user mobility.

Ramp access recorded a TMV of 1200 and a mean score of 3.53, showing that respondents view ramp provisions as fairly adequate, although there is still room for improvement in ensuring universal accessibility, particularly for wheelchair users and elderly residents.

Similarly, bathroom access achieved a TMV of 1196 and a mean score of 3.52, indicating moderate satisfaction with the accessibility of sanitary facilities. While this suggests that some buildings are designed with inclusive bathrooms, a significant proportion still lack fully accessible facilities.

The lowest-rated feature is elderly/disability ease, with a TMV of 1178 and a mean score of 3.46. Although still within the "good" range, this result indicates that respondents perceive some limitations in how well buildings accommodate the specific needs of elderly persons and individuals with disabilities.

Table 10. Perception of Building Accessibility Features

Feature	Very Good	Good	Fair	Poor	Very Poor	TMV	Mean	SD
Entrance access	84	124	82	32	18	1244	3.66	1.05
Ramp access	72	118	90	38	22	1200	3.53	1.10
Circulation ease	76	122	86	36	20	1218	3.58	1.08
Bathroom access	70	116	94	40	20	1196	3.52	1.10
Elderly/disability ease	68	110	96	44	22	1178	3.46	1.13

Source: Authors Field, 2026

Perception of Floor and Space Features

The perception of floor and space features, as presented in Table 11, indicates that respondents generally view these aspects of housing design as good, with mean scores ranging from 3.49 to 3.64 and an overall section mean of 3.57. This suggests a generally positive assessment of the internal spatial quality and usability of residential units.

The highest-rated feature is floor safety, which recorded a TMV of 1236 and a mean score of 3.64, ranking highest among the variables. This indicates that respondents generally perceive flooring materials and finishes as safe for use, with reduced risks of slipping or accidents, contributing positively to overall residential safety.

This is followed by wall comfort, with a TMV of 1220 and a mean score of 3.59, suggesting that respondents find the internal wall conditions comfortable and satisfactory. This may relate to structural stability, finishing quality, and thermal or aesthetic comfort within living spaces.

Furniture movement recorded a TMV of 1212 and a mean score of 3.56, indicating that residents generally find it easy to move furniture within their rooms. This reflects a moderate level of spatial efficiency and functional layout within housing units.

Similarly, room size adequacy achieved a TMV of 1208 and a mean score of 3.55, showing that most respondents consider room sizes to be reasonably sufficient for their needs, although there is still room for improvement in spatial planning.

The lowest-rated feature is flexibility of spaces, with a TMV of 1188 and a mean score of 3.49. Although still within the "good" category, this result suggests that respondents perceive limitations in the adaptability of internal spaces, particularly in terms of reconfiguration or adjustment to changing household needs.

Table 11. Perception of Floor and Space Features

Feature	Very Good	Good	Fair	Poor	Very Poor	TMV	Mean	SD
Floor safety	82	120	88	32	18	1236	3.64	1.06
Room size adequacy	74	118	90	38	20	1208	3.55	1.09
Flexibility of spaces	70	112	94	44	20	1188	3.49	1.11
Furniture movement	76	120	86	36	22	1212	3.56	1.10
Wall comfort	78	122	84	34	22	1220	3.59	1.09

Source: Authors Field, 2026

Perception of Window, Lighting, And Ventilation Features

The perception of environmental comfort features, as presented in Table 12, indicates that respondents generally rate the indoor environmental conditions of their housing units as good, with mean scores ranging from 3.45 to 3.69 and an overall section mean of 3.57. This suggests that residents are generally satisfied with the environmental quality of their living spaces, although some areas still require improvement.

The highest-rated features are natural lighting and ventilation, both recording identical TMV values of 1256 and mean scores of 3.69, ranking highest among all variables. This indicates that respondents perceive their housing units as well-lit and adequately ventilated. These two factors are essential for improving indoor comfort, reducing energy consumption, and enhancing overall well-being, suggesting that the buildings perform well in terms of environmental design.

This is followed by window operation, with a TMV of 1198 and a mean score of 3.52, indicating that respondents generally find windows reasonably easy to use. However, the slightly lower score compared to lighting and ventilation suggests that some users still experience minor challenges in window functionality or design usability.

Privacy recorded a TMV of 1190 and a mean score of 3.50, showing that residents are moderately satisfied with the level of visual and acoustic privacy in their living environments. While acceptable, this result suggests that improvements could still be made to enhance personal and spatial privacy within housing units.

The lowest-rated feature is thermal comfort, with a TMV of 1174 and a mean score of 3.45. Although still within the "good" range, this indicates that some respondents experience discomfort related to temperature regulation, which may be influenced by building materials, ventilation efficiency, or climatic adaptation of the housing design.

Table 12. Perception of Environmental Comfort Features

Feature	Very Good	Good	Fair	Poor	Very Poor	**TMV**	**Mean**	**SD**
Natural lighting	88	126	78	30	18	1256	3.69	1.05
Ventilation	90	124	76	32	18	1256	3.69	1.06
Window operation	72	118	88	40	22	1198	3.52	1.11
Thermal comfort	68	110	94	44	24	1174	3.45	1.14
Privacy	70	116	90	42	22	1190	3.50	1.12

Source: Authors Field, 2026

Relationship Between Socio-Economic Characteristics and Perception of Inclusive Housing Design

This section examines how the socio-economic and cultural characteristics of respondents influence their perception of inclusive housing design features within the selected staff quarters. The analysis focused on variables such as cultural background, household size, income level, age, and the presence of elderly persons or persons with disabilities in the household**.**

Socio-Economic and Cultural Influence on Perception of Inclusive Housing Design Features

The perception of the influence of socio-economic and cultural factors on inclusive housing design features, as presented in Table 13, indicates that respondents generally agree that these factors significantly affect the adequacy, accessibility, and effectiveness of housing design. The mean scores range from 3.64 to 3.81, reflecting a generally positive level of

agreement regarding the role of these variables in shaping housing experiences and perceptions.

The highest-ranked factor is income effect, which recorded a TMV of 1296 and a mean score of 3.81, ranking 1st. This suggests that respondents strongly believe that income level has a major influence on access to inclusive housing features. Individuals with higher income levels are generally more capable of affording housing units with better accessibility provisions, improved neighbourhood facilities, and enhanced environmental quality. This finding highlights the important role of economic capacity in determining housing opportunities and residential satisfaction.

The second-ranked factor is age influence, with a TMV of 1258 and a mean score of 3.70. This indicates that respondents recognize age as an important determinant of housing needs and perceptions. Different age groups often have varying requirements regarding accessibility, mobility, comfort, and safety, making age a critical consideration in inclusive housing design.

Household size impact ranked 3rd, recording a TMV of 1268 and a mean score of 3.73. This suggests that the number of household members significantly affects how residents perceive housing adequacy and inclusiveness. Larger households typically require more space, greater flexibility, and improved circulation areas, thereby influencing their evaluation of housing design features.

Similarly, cultural influence recorded a TMV of 1250 and a mean score of 3.68, ranking 4th. This result indicates that respondents acknowledge the role of cultural values, traditions, and lifestyle preferences in shaping housing design expectations and residential satisfaction. Cultural practices often influence space utilization, family interactions, and housing preferences.

The presence of elderly persons achieved a TMV of 1264 and a mean score of 3.72, reflecting strong agreement that the existence of elderly household members influences perceptions of inclusive housing features. Households with elderly persons are more likely to prioritize accessibility, safety, and mobility-supportive design elements such as ramps, handrails, and step-free access.

The lowest-ranked factor is disability presence, with a TMV of 1238 and a mean score of 3.64. Although it occupies the last position in the ranking, the mean score remains relatively high, indicating that respondents still agree that the presence of persons with disabilities influences housing needs and perceptions. The lower ranking simply suggests that respondents perceive other socio-economic factors as having a slightly greater overall influence.

Table 13. Socio-Economic and Cultural Influence on Perception of Inclusive Housing Design Features

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	TMV	Mean	SD	Rank
Cultural influence	86	124	82	30	18	1250	3.68	1.05	4
Household size impact	90	128	78	28	16	1268	3.73	1.02	3
Income effect	102	130	66	26	16	1296	3.81	1.01	1
Age influence	88	126	80	28	18	1258	3.70	1.04	2
Elderly presence	92	124	78	28	18	1264	3.72	1.04	5
Disability presence	84	120	86	30	20	1238	3.64	1.08	6

Source: Authors Field, 2026

Perceived Quality of Inclusive Housing Design Features

The assessment of the perceived quality of inclusive housing design features, as presented in Table 14, indicates that respondents generally rate the quality of inclusive housing within the staff housing estate as high, with mean scores ranging from 3.64 to 3.78. This suggests that residents have a positive perception of the extent to which housing and neighbourhood features support accessibility, safety, comfort, and inclusiveness.

The highest-rated quality indicator is safety and security provisions, which recorded a TMV of 1286 and a mean score of 3.78, ranking 1st. This finding suggests that respondents perceive safety and security measures within the housing estate as the strongest aspect of the residential environment. Adequate lighting, secure circulation routes, and neighbourhood safety measures may have contributed to this favourable assessment.

Closely following is overall accessibility, with a TMV of 1272 and a mean score of 3.74, ranking 2nd. This indicates that respondents generally believe that housing units and their surrounding environments provide a reasonable level of accessibility for residents. The result reflects a positive perception of features such as entrance accessibility, movement within buildings, and access to neighbourhood facilities.

Environmental comfort ranked 3rd, recording a TMV of 1274 and a mean score of 3.75. This suggests that residents are satisfied with environmental conditions such as natural lighting, ventilation, thermal comfort, and privacy. The relatively high score indicates that the housing environment contributes positively to residents' comfort and well-being.

The quality of neighbourhood accessibility and infrastructure recorded a TMV of 1258 and a mean score of 3.70, ranking 4th. This finding suggests that respondents generally perceive neighbourhood facilities such as walkways, drainage systems, street lighting, and open spaces as satisfactory and supportive of daily activities.

Internal circulation ranked 5th, with a TMV of 1248 and a mean score of 3.67. This indicates that residents are reasonably satisfied with movement within housing units, including access through corridors, entrances, and stairways. However, the slightly lower

score compared to other indicators suggests opportunities for improvement in circulation efficiency and accessibility.

The indicator overall inclusiveness of the staff housing estate recorded a TMV of 1246 and a mean score of 3.66, ranking 6th. This suggests that respondents generally agree that the housing estate provides an inclusive living environment, although some aspects may still require enhancement to better accommodate diverse user groups.

The lowest-ranked indicator is adaptability of spaces, which recorded a TMV of 1238 and a mean score of 3.64, ranking 7th. Although the score remains within the high range, it indicates that respondents perceive spatial adaptability as the weakest aspect of inclusive housing quality. This suggests that housing units may have limited flexibility to accommodate changing household needs, family growth, aging occupants, or users with varying physical abilities.

Table 14. Perceived Quality of Inclusive Housing Design Features

Quality Indicator	Very High	High	Moderate	Low	Very Low	TMV	Mean	SD	Rank
Overall accessibility	92	128	76	28	16	1272	3.74	1.02	2
Internal circulation	86	122	84	30	18	1248	3.67	1.06	5
Safety and security provisions	98	130	70	24	18	1286	3.78	1.03	1
Adaptability of spaces	84	118	88	32	18	1238	3.64	1.08	7
Environmental comfort	96	126	72	28	18	1274	3.75	1.03	3
Neighbourhood accessibility and infrastructure	90	124	78	30	18	1258	3.70	1.05	4
Overall inclusiveness of the staff housing estate	88	120	82	30	20	1246	3.66	1.08	6

Source: Authors Field, 2026

V. CONCLUSION

This study assessed inclusive housing design features and residents' perceptions in selected university staff quarters in Southwestern Nigeria. The findings reveal that although several inclusive housing features are available within the housing units and neighbourhoods, important accessibility provisions such as ramps, accessible bathrooms, and other universal design elements remain inadequate. Residents generally expressed positive perceptions of the existing housing environment, particularly regarding safety, environmental comfort, and accessibility, but identified adaptability of spaces as the weakest aspect of housing quality. The study further established that residents' socio-economic and cultural characteristics—including income, age, household size, and the presence of elderly persons or persons with disabilities influence how inclusive housing design is perceived. The study therefore concludes that achieving inclusive university staff housing requires not only the provision of physical design features but also housing policies and design strategies that respond to the diverse needs and characteristics of residents.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are provided

1. **Upgrade Existing Quarters:** Improve existing staff housing with ramps, handrails, accessible bathrooms, and step-free entrances.
2. **Provide Barrier-Free Circulation:** Ensure entrances, corridors, walkways, and shared spaces support easy movement for all residents.
3. **Adopt Inclusive Design:** Integrate accessibility, flexibility, safety, and adaptability into future staff housing developments.
4. **Improve Accessible Facilities:** Increase the provision of accessible sanitary facilities, non-slip surfaces, and appropriately sized doors.
5. **Conduct Post-Occupancy Evaluation:** Regularly assess residents' satisfaction and use their feedback to guide housing improvements.
6. **Strengthen Maintenance Practices:** Maintain accessibility features and residential facilities to ensure continued usability and safety.
7. **Enforce Inclusive Housing Standards:** Relevant authorities and professional bodies should develop and enforce inclusive design standards for university staff quarters.

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