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Residents' Perception of Housing Quality Index for Dwellings' Physical Characteristics in the Core Area of Ado-Ekiti, Nigeria

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ABSTRACT

This study examines residents' perception of housing quality index for dwellings' physical characteristics in the core area Ado-Ekiti, Nigeria, South-west Nigeria. A survey of 602 households randomly selected from the core area was done. The results of the study revealed that more than half of the respondents indicated that the present condition of the dwellings components like (roofs, walls, windows, floors, foundations and fascia boards) in the study area was in a very bad state. Subsequently, housing quality index (H.Q.I) for the entire sample was evaluated and the housing quality indexes results were found to be below average (fair) using a five-point Likert scale, starting from very bad (rated as 1), fair (rated as 3) to very good (rated as 5) to calculate the total weighted values of all rated attributes and means values of rated attributes in the study area. Surveyed results have shown significant deterioration in quality of dwellings components in the core area, due to age of buildings and lack of maintenance. The study concluded that there is an urgent need to replace the bad dwellings components, build new structures, provides basic amenities like electricity, pipe-borne water, roads/drainages and to refurbish the existing ones to ensure that the residents do not lack all these amenities.

Keywords: Quality index; perception; dwelling; core; Ado-Ekiti

INTRODUCTION

Housing is one of the basic needs for man's survival after food and without which life will be impossible. Housing quality embraces many factors including the dwellings' physical condition and other facilities and services that make living in a particular place conducive (Omoniyi 2018). Lewin (1981); Olotuah and Adesoji (2005); UN–HABITAT (2006) and Adeleye et al. (2014) opined that housing quality standards are essential and basic to planning residential area. These, are essential elements that ensure safety and wellbeing of people and also promote beauty, convenience and aesthetics in the overall built-up environment. The authors further stressed that quality housing means more than a roof over one's head. It also means providing adequate privacy, adequate space, physical accessibility, adequate security, the security of tenure, structural stability and durability, adequate lighting, heating and ventilation, adequate basic infrastructures, such as water supply, sanitation and waste management facilities. Ebong (1983) and Jiboye (2010) further corroborated the foregoing by submitting that housing quality operates as a combination of many factors, forming an extremely diversified pattern. These factors should be determined together with the people concerned and made affordable to all. According to Statistics New Zealand (2015), housing quality has many elements and can be defined in many ways. A targeted definition of housing quality concerns simply the quality of the internal and external structures of a dwelling and aspects of the internal environment. A normative definition of housing quality generally refers to the grade or level of acceptability of dwelling units, the design, functionality of housing structures, building materials used, the amount of internal and external spaces of the dwelling, housing utilities, and basic service provision (Strassmann 1998).

Olotuah and Taiwo (2015) revealed that housing quality is often evaluated in terms of the quality of design, building materials, the standard of construction, and the provision and performance of public amenities. The study explained that the inadequacy of the quality of most urban housing manifests mainly in the poor physical state of the buildings. The buildings are often unsafe and insecure and do not provide adequate shelter from elements of weather. Also, the satisfaction of the user population with their housing needs and the environment is an important determinant of housing quality. The author stressed that meeting the needs of particular families is an important criterion in evaluating housing quality and therefore the value of a house is determined by the extent by which it satisfies or frustrates the needs of its users. According to Olumide and Odeyemi

(2013), housing quality means the character, disposition and nature of the housing units. It is the attributes, special features or grade of excellence the housing unit must possess. However, the concept of quality in housing is not timeless but is derived from societal norms and political willingness in delivering them to all citizens. Housing quality indicators (HQI) is a measurement and assessment tool designed to allow existing housing stocks to be evaluated based on quality rather than of cost (National Affordable Home Agency, 2008). The agency highlighted ten indicators which include; location, site layout/visual impact, open space, routes and movement, plot size, building layout, noise/light/services within a unit, accessibility within the unit, sustainability and external environment. Aribigbola (2001) and Maryam et al. (2015), revealed the commonly used indicators for evaluating housing quality to include structural adequacy, other amenities, room density and affordability. Lanrewaju (2012) reported that the four major criteria used in assessing housing quality, from a study undertaken in the city of Calabar, were beauty, convenience, health and accessibility.

Ebong (1983) and Jiboye (2010), acknowledged aesthetics, ornamentation, sanitation, drainage, age of the building, access to basic housing facilities, burglary, spatial adequacy, sewage and waste disposal, air pollution and ease of movement among others, as relevant quality determinants in housing. Housing Corporation of Britain (2007) identified three basic indicators for evaluating housing quality of existing housing development to include: location, design and external environment of the house. Hanmer et al. (2000) concluded that qualitative housing involves the provision of infrastructural services which could bring about sustainable growth and development through improved environmental conditions and improved livelihood of residents. In determining the housing quality of the residential neighbourhood, Neilson (2004) stipulated five basic criteria: that housing must comply with a tolerable standard, free from serious disrepair, is energy efficient, and be provided with modern facilities and services, and that it must be healthy, safe and secure. These indicators consist of variables such as access to basic housing and community facilities, the quality of infrastructural amenities, spatial adequacy and quality of design, fixtures and fittings, building layout and landscaping, noise and pollution control as well as security. Statistics New Zealand (2015) revealed that the physical quality of housing is of public policy interest because of its links with individual and family well-being.

There are however indications from these various studies that a single variable may not be sufficient to assess the qualitative nature of residential neighbourhood; therefore, housing acceptability and qualitative assessment should also take into account the type of constructions, materials used, services, spatial arrangement and facilities within dwellings, function and aesthetics, among others **(**Jiboye, 2004). Investing in quality housing can result in improvements in health outcomes among groups that are living in badly constructed and older homes. Homes needing repairs can increase the risk of injury for occupants; these homes are associated with cold and damp living conditions and these are a threat to health. Poor health outcomes, in turn, can have a flow-on effect on outcomes in other areas, such as education, paid work, and economic standard of living. Researches have shown that housing conditions and neighbourhood in which a child is raised can affect that child's well-being and in line with a major British cohort study which shows that the effects of poor housing conditions are cumulative over life.

METHODOLOGY

The methodology adopted for the study was surveyed research method. Data were obtained through questionnaire to collect residents' responses, based on the following criteria: dwellings' physical characteristics and residents' experiences within the study area. Two approaches were used for data analysis: first to obtain frequencies of different categories of variables and second to develop a housing quality index (HQI). This was done to understanding the residents' perception on housing quality. Firstly, Likert rating of 'Very Bad', 'Bad', 'Fair', 'Good' and 'Very Good' were respectively assigned a value of 1, 2, 3, 4 and 5 for all the questions used to measured housing quality. This implies that the range of scores for each respondents for all the questions was between 1 and 5. Secondly, the housing quality indexes (HQI) were obtained by calculating the total weight value (TWV) for each question. This was achieved through the summation of the product of the number of responses to each rated question and the respective weighted value. This can be mathematically expressed as follows:

$$TWV = \Sigma^{n}_{i=1} PiVi \quad (1)$$

Where TWV is the total weight value of each of the questions, Pi is the number of respondents' chosen for a particular rating 1 and is the weight assigned to rating 1. The HQI to each question was arrived at by dividing the TWV by the summation of the respondents to each of the five ratings of a question. This can also be expressed mathematically as

$$PHQI = \Sigma^{n}_{i=1} Pi \quad (2)$$

Where Pi is the perception of housing quality, it must be noted that the closer the HQI of attributes is to 5 (five) and the higher the assumed perception of housing quality. Also,

$$X = \Sigma X/n \quad (3)$$

Therefore, HQI = ΣX/n of rated attributes (n)
Where, HQI is the housing quality index, and ΣX is the total sum of the mean of rated attributes.

RESULTS AND DISCUSSION

The results of the study revealed that 71.6% (431), representing more than half of the respondents, indicated that the corrugated iron sheet used for their roofs was very bad (See Table 1). About 57.3% (345) of the respondents claimed that the quality of the asbestos sheet used for their roofs as very bad and about 5.5% (33); 10.5% (63); 11.3% (71);15.0% (90) of the household-heads indicated that the quality of the asbestos sheet used for their roofs was very good, good, fair and bad respectively. The result of this finding further substantiated the work of Jiboye (2009c), which emphasized that the integrity of the building elements like roof can be used in determining the qualitative evaluation of housing. Considerable proportion of respondents 53.3% (321) rated that the quality of cement block walls plastered with cement as very bad, while, 10.8% (65); 6.1% (37); 20.9% (126); 8.8% (53) of the household-heads among others assessed the quality of cement block wall plastered with cement as fair, bad, good and very good. Also, 65.1% (392) indicated that the quality of the mud wall plastered with cement was very bad (Fig 1). The result further confirmed the authenticity of UN-Habitat (2006) which indicated that solid wall does not ensure only safety and well-being of people but also promotes beauty and aesthetics in the overall built-up environment. It is also interesting to note that more than half of the respondents 62.0% (373) assessed that the quality of wooden windows in their dwellings is very bad. The result confirmed the study of Olamide et al. (2013) that concluded that the character, disposition and nature of housing units can be used to determine the quality of housing of an area (Figure I) below. About 63.6% (383) rated the quality of the floor tiles in their buildings as very bad; while 14.8% (89); 7.8% (47); 9.1% (55); 4.7% (28) indicated that the quality of their floor tiles as good, bad, fair and very good as compared to others in the study area.

TABLE 1. Quality responses with dwelling facilities

S/N	Dwelling facilities	Quality responses											
		Very bad		Bad		Fair		Good		Very good		Total	
		F	%	F	%	F	%	F	%	F	%	F	%
	Roofs	Quality with Roof Types (QRT)											
1	Aluminum sheet/stone tiles	351	58.3	25	4.2	57	9.5	145	24.1	24	4.0	602	100
2	Corrugated iron sheets	431	71.6	44	7.3	55	9.1	61	10.1	11	1.8	602	100
3	Asbestos sheets	345	57.3	90	15.0	71	11.3	63	10.5	33	5.5	602	100
4	Grass	518	86.0	21	3.5	31	5.1	23	3.8	9	1.5	602	100
	Walls	Quality with Wall Types (QWT)											
5	Cement block with cement Plastered	321	53.3	37	6.1	65	10.8	126	20.9	53	8.8	602	100
6	Cement block/brick Unplastered	475	78.9	49	8.1	45	7.5	28	4.7	5	0.8	602	100
7	Mud wall plastered with cement	392	65.1	96	15.9	67	11.1	43	7.1	4	0.7	602	100
8	Mud wall unplastered with cement	498	82.7	49	8.1	34	5.6	18	3.0	3	0.5	602	100
	Ceilings	Quality with Ceiling Types (QCT)											
9	Wood/mats	451	74.9	62	10.3	57	9.5	26	4.3	6	1.0	602	100
10	Ceiling Deco flex/PVC	410	68.1	29	4.8	37	6.1	86	14.3	40	6.6	602	100
11	Perforated/Asbestos ceiling board	387	64.3	47	7.8	70	11.6	63	10.5	35	5.8	602	100
12	None	488	81.1	41	6.8	40	6.6	26	4.3	7	1.2	602	100
	Doors	Quality with Door Types (QDT)											
13	Iron door	382	63.5	39	6.5	44	7.3	102	16.9	35	5.8	602	100
14	Wood	258	42.9	103	17.9	113	18.8	114	18.9	14	2.3	602	100
15	Glass	517	85.9	11	1.8	21	3.5	43	7.1	10	1.7	602	100
16	Zinc	530	88.0	7	1.2	27	4.5	27	4.5	11	1.8	602	100

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	Windows					Quality with Window (QW)							
17	Aluminum glass	387	64.3	30	5.0	63	10.5	76	12.6	46	7.6	602	100
18	Glass louvres	423	70.3	43	7.1	63	10.5	60	10.0	13	2.2	602	100
19	Wood	373	62.0	89	14.8	75	12.5	59	9.8	6	1.0	602	100
20	Zinc	522	86.7	10	1,7	25	4.2	30	5.0	15	2.5	602	100
	Floors					Floor Quality (FQ)							
21	Floor tiles	383	63.6	47	7.8	55	9.1	89	14.8	28	4.7	602	100
22	Terrazzo	507	84.2	32	5.3	25	4.2	30	5.0	8	1.3	602	100
23	Cement Floor Screeding	270	41.9	103	17.1	108	17.9	105	17.4	16	2.7	602	100
24	Mud Floor	522	86.7	30	5.0	35	5.8	9	1.5	6	1.0	602	100
	Fascia					Quality of Fascia (QF)							
25	Aluminum zinc	303	50.3	80	13.3	87	14.5	108	17.9	24	4.0	602	100
26	Wood loses and hanging	343	57.0	102	16.9	73	12.1	77	12.8	7	1.2	602	100
	Foundation					Quality of Foundation (QOF)							
27	Firm and not Exposed	228	37.9	64	10.6	110	18.3	142	23.6	58	9.6	602	100
28	Firm but Exposed	443	73.6	79	13.1	57	9.5	21	3.5	2	0.3	602	100
29	Hanging	540	89.7	30	5.0	22	3.7	7	1.2	3	0.5	602	100
	Wall Cracks					Wall Cracks (WCr)							
30	No crack	350	58.1	30	5.0	61	10.1	120	19.9	41	6.8	602	100
31	Signs of crack	382	63.5	90	15.0	73	12.1	40	6.6	17	2.8	602	100
32	Open cracks	471	78.2	54	9.0	54	9.0	22	3.7	1	0.2	602	100
33	Painted but fading	366	60.8	96	15.9	89	14.8	47	7.8	4	0.7	602	100
34	Painting peeling	403	66.9	96	15.9	68	11.3	32	5.3	3	0.5	602	100

FIGURE 1. Typical building showing collapsed mud wall and eroded foundation

FIGURE 2. Typical building showing dilapidated wooden windows

Discussion of results in (Table 2) below on housing quality index with some dwelling's physical facilities showed that the total weighted value for roofs (TWVR) and total mean value for roof (XR) of all the attributes in the entire sampled variables in the study area are 4292 and 7.12 respectively, while the housing quality index for roof (HQIR) in the core area of Ado-Ekiti is 1.78. This result implies that the household-heads quality levels with the roof status of their dwellings fell between very bad and bad according to the ranking. This suggests that the quality level of most roofs in the study area was bad. It was further observed that the total weight value for wall types (TWVW) and total mean value for wall types (XW) of all the attributes rated for wall types in the entire sample are 3966 and 6.88 respectively, and that the housing quality index for walls type (HQIW) in the area is 1.72. This implies that the quality of walling of most buildings in the study area was bad (Figure 1& 2). It also indicated that respondents' quality level with their building walls were ranked between very bad and bad.

The results reveal that the total weight value for ceilings (TWVC) and the total mean value for the ceiling (XC) of all the attributes rated for ceilings in the samples are 3952 and 6.56 respectively, while the housing quality index for the ceiling (HQIC) is 1.64. These values fall below the average (i.e. 3), therefore the household-heads quality level with ceilings in their buildings is a little above 1 (very bad) but less than 2 (bad) in the rating scale. Further results show that the total weight value for doors (TWVD) and the total mean value for doors (XD) of all the attributes rated for doors are 4057 and 6.74 respectively, and the housing quality index for doors (HQID) is 1.68. These finding revealed that the household-heads satisfaction with the quality of doors in their dwellings is bad in the study area. This further confirmed the lack of maintenance in the core area of the city. It is further observed that the total weight value for window types (TWVW) and total mean value for wall types (XW) of all the attributes rated for window types in the entire sample are 4023 and 6.68 respectively, and that the housing quality index for window type (HQIW) in the area is 1.64. This implies that windows of old buildings in the study area were in bad condition (See Figure 2) below. It also indicates that the respondent's quality level for windows in their building is not very bad but bad due to its ranking between very bad and bad in the area.

The result shows that the total weight value for floors (TWVFL) and the total mean value for floors in the study area (XFL) of all the attributes rated for floors in the entire samples are 3997 and 6.64 respectively, while the housing quality index for floors (HQIFL) in the area is 1.66. This implies that the household-heads quality level of the floor in their dwellings in the study area is very bad but bad as compared with other rankings in the study area. The findings reveal that the total weight value for fascia (TWVFB) and the total mean value for fascia (XFB) of all the attributes rated for fascia in the samples are 2385 and 3.96 respectively, while the housing quality index for fascia (HQIFB) is 1.98. These values fall below the average (i.e. 3), but well above 1; therefore the household-heads quality level for fascia board in their buildings is bad according to the ranking. Further investigation of the results shows that the total weighted value for foundation (TWVFDN) and the total mean value for foundation (XFDN) of all the attributes rated for the foundation in the entire samples were 3119 and 5.18 respectively, while the housing quality index for foundation (HQIFDN) in the area is 1.73. The results further confirm that the respondent's quality levels for their foundations are not very bad but bad in the study area according to the ranking.

It was further observed that the total weighted value for wall cracks (TWVWCR) and the total mean value for wall types (XWCR) of all the attributes rated for wall cracks in the entire sample are 3883 and 6.45 respectively, and the housing quality index for wall cracks (HQIWCR) in the area is 1.61. This indicates that most old building walls in the study area had cracks on them and their quality was bad. It also suggests that the respondent's quality levels for wall cracks in their building are not very bad but bad because of is ranking. According to the results presented in Tables 4.6 (x), the total weight value for painting (TWVP) and total mean value for painting (XP) of all the attributes rated in the entire sample in the neighbourhood are 3368 and 5.59 respectively, and the housing quality index for painting (HQIP) in the study area is 1.86. This implies that the household-heads quality level for painting in their buildings in the area was bad according to the ranking.

TABLE 2. Calculations of quality indexes from dwelling components

	Dwelling's Physical Characteristics	Attributes for dwelling quality	
		TWV	X
	(a)	Roofs (QOR)	
1	Aluminum sheet/stone tiles	1322	2.19
2	Corrugated iron sheets	983	1.63
3	Asbestos sheets	1155	1.92
4	Grass	832	1.38
	Total	4292	ΣX = 7.12
	Housing quality index	7.12/4	HQI = 1.78

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	(b)		Walls (QOW)
5	Cement block with cement plastered	1359	2.56
6	Cement block/brick unplastered	845	1.40
7	Mud wall plaster with cement	977	1.62
8	Mud wall unplastered with cement	785	1.30
	Total	3966	ΣX = 6.88
	Housing quality index	6.88/4	HQI = 1.72
	(c)		Ceilings (QOC)
9	Wood/mat	880	1.46
10	Ceiling Deco flex/PVC	1003	1.66
11	Perforated/Asbestos ceiling board	1242	2.06
12	None	829	1.38
	Total	3954	ΣX = 6.56
	Housing quality index	6.56/4	HQI = 1.64
	(d)		Doors (QOD)
13	Iron door	1175	1.95
14	Wood	1329	2.21
15	Glass	765	1.27
16	Zinc	788	1.31
	Total	4057	ΣX = 6.74
	Housing quality index	6.74/4	HQI = 1.68
	(e)		Windows (QOW)
17	Aluminum glass	1170	1.94
18	Glass louvres	1001	1.66
19	Wood	1040	1.73
20	Zinc	812	1.35
	Total	4023	ΣX = 6.68
	Housing quality index	6.68/4	HQI = 1.64
	(f)		Floors (QOF)
21	Floor tiles	1138	1.89
22	Terrazzo	806	1.34
23	Cement floor screeding	1300	2.16
24	Mud	753	1.25
	Total	3997	ΣX = 6.64
	Housing quality index	6.64/4	HQI = 1.66
	(g)		Fascia (QOFB)
(v)	Aluminum zinc	1276	2.12
(vi)	Wood lose and hanging	1109	1.84
	Total	2385	ΣX = 3.96
	Housing quality index	3.96/2	HQI = 1.98
	(h)		Foundation (QOFDN)
(vii)	Firm and not exposed	1544	2.56
(viii)	Firm but exposed	866	1.44
(ix)	Hanging	709	1.18
	Total	3119	ΣX = 5.18
	Housing quality index	5.18/3	HQI = 1.73

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	(i)	Wall (QOWCR)	
(x)	No crack	1278	2.12
(xi)	Signs of crack	1026	1.70
(xii)	Open cracks	834	1.39
(xiii)	Needs support or on support	745	1.24
	Total	3883	ΣX = 6.45
	Housing quality index	6.45/4	HQI = 1.61
	(j)	Painting (QOP)	
(xiv)	Painted and shining	1393	2.31
(xv)	Painted but fading	1033	1.72
(xvi)	Painting peeling off	942	1.56
	Total	3368	ΣX = 5.59
	Housing quality index	5.59/3	HQI = 1.86

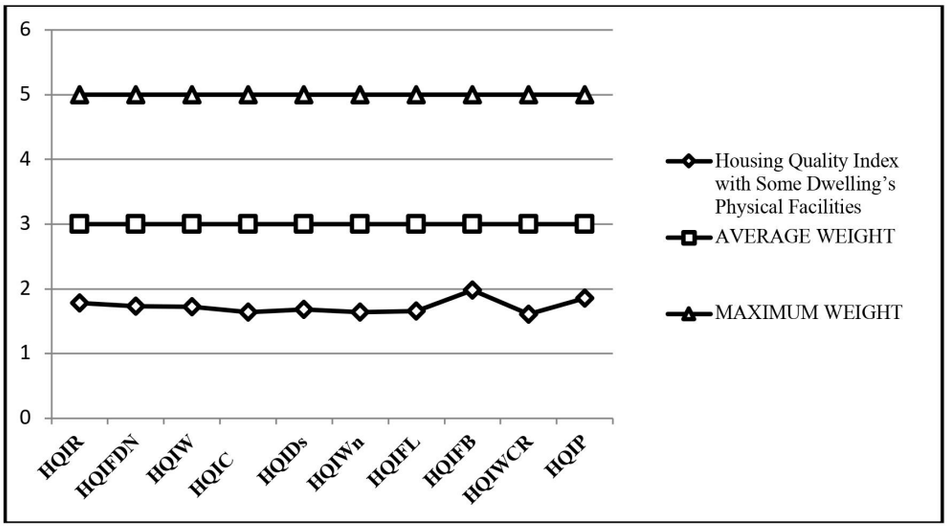

FIGURE 3. Graphical representation of housing quality indexes for dwellings' physical components

LEGEND

HQIR	= Housing quality index for Roofs	(1.78)
HQIFDN	= Housing quality index for Foundation	(1.73)
HQIW	= Housing quality index for Walls	(1.72)
HQIC	= Housing quality index for Ceilings	(1.64)
HQIDs	= Housing quality index for Doors	(1.68)
HQIWn	= Housing quality index for Windows	(1.64)
HQIFL	= Housing quality index for Floors	(1.66)
HQIFB	= Housing quality index for Fascia Board	(1.98)
HQIWCR	= Housing quality index for Wall Crack	(1.61)
HQIP	= Housing quality index for Painting	(1.86)

CONCLUSION

The study used the quality responses of residents' like; dwelling's physical components as independent variables to evaluate the housing quality index. Results have shown considerably the present state of dwelling components in the core area (Fig 1&2).

Subsequently, housing quality index (H.Q.I) for the entire sample was evaluated and the housing quality indexes results for the area was found to be below average i.e. (fair) using a five-point Likert scale, starting from very bad (rated as 1), fair (rated as 3) to very good (rated as 5) to calculate the total weighted values (TWV) of all rated attributes and means (X) values of rated attributes in the study area. The study revealed the perception of residents on the housing quality index of the area especially in terms of the present state of the dwellings. Overall, this study has provided

useful information and insight that could enhance housing and neighbourhood improvement in the study area. Further studies may investigate other core areas of cities in Nigeria to establish the generalization of the findings of this study.

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DECLARATION OF COMPETING INTEREST

None

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