The Examination of the Quality of life of Public Residential Estates in Lekki Peninsula, Lagos.

Iniubong S. Adeyemi, Anthony C. Iweka, and Babatunde A. Adeyemi

Department of Architecture, University of Lagos, Lagos, Nigeria

ABSTRACT

Purpose- The quality of the public realm in residential estates has become a significant issue in academic research in developing nations. There has been little empirical research to examine this with restriction from an applied or problem-oriented perspective in the study area. The paper aims to explore the quality of life of public residential estates in Lekki peninsula, Lagos, Nigeria in order to improve environmental planning and design. The objectives are to examine the environmental quality and explore the quality of the public realm.

Design/methodology/approach- A mixed method approach using systematic random sampling was adopted. In the quantitative approach, survey method with a sample frame of 1542 in three purposively selected estates was used. The sample size was arrived from 7.5% of sample frame. The qualitative approach used interview and observational techniques on twenty respondents in each of the three estates to authenticate the qualitative method.

Findings- The results of the principal component analysis revealed the qualities of the public realm in the public residential estates represents five themes namely recreation, green areas, mobility, traffic and healthcare synonymous with Kamp et.al, (2013) model. The qualitative result was consistent but showed the presence of healthcare are not adequate enough.

Theoretical/Social/Practical implication- Though limited, the presence of crime was identified. This will upsurge the insecurity of the public residential estates if not checked adequately.

Originality/Value- The paper identified the presence of recreational facilities as a direct primary focus and suggested the construction of playgrounds, gyms and open spaces which will improve the overall quality of life of the residents and economic possibilities.

Keywords: Environmental Quality, public realm and quality of life

INTRODUCTION

The importance of a healthy built environment by use of public facilities has become significant on the environment and residents' quality of life (Quesada-Molina and Astudill-Cordero, 2022). Chu, Fenelon, Rodrigue, Zota and Adamkiewicz, (2022) elaborates world health organization (WHO) defines healthy housing as the support of complete physical, mental and social wellbeing. Environmental quality plays a vital role in healthy residential estates (Chu et.al. 2022). The multidisciplinary nature of environmental quality is connected to the quality of life (Pacione, 2003). In more recent time Onifade (2021) defined environmental quality as an essential part of the broader concept of 'quality of life', the basic qualities such as health and safety in combination with aspects such as coziness and attractiveness. Poor residential estates

include exposure to conditions driven by both indoor and outdoor sources, building design and conditions, the presence and performance of mechanical systems and structure of the building (Chu et.al.,2022). In addition, Kamp et.al. (2003), asserts the characteristics of environmental quality in residential estate include the built and natural environment as well as the public realm. Bird, Ige, Pilkington, Pinto, Petrokofsky and Burgess-Allen, (2018) sees environmental features as neighborhood attributes namely public spaces, services, clean water and energy. A lot of theoretical research has been done on how the shared public realm can counter inequality, communing and decline public life (Grundstrom, 2022). He expatiated that in respect to public realm studies, social infrastructure in residential estates has been almost overlooked as it forms the background structure and systems that allow economic, social and cultural life. Focusing on quality of the public realm begins with a well-designed residential architecture with the designing process being a value difficult to evaluate (Mazur, Bac, Vaverkova, Winkle, Nowysz and Koda, 2022). A public realm may, therefore, be said to be living a good quality of life, when a large percentage of the community's characteristics engender habitability of the localities and human relationships (Supsoontornkul, 2022). There has been little empirical research to examine the public realm characteristics with restriction from an applied or problem-oriented perspective in the study area. The aim is to explore the quality of the life of public residential estates in Lekki peninsula, Lagos.

SCOPE OF THE STUDY

This paper will adopt Kamp et al. (2003) environmental quality model (Figure 4) to explore the quality of life focusing on the public accessibility, safety and security domains in Public residential estates from New Town Development Authority (Table1) in Lekki Peninsula in Lagos State.

This is limited to the fully developed public estates due to the fully constructed and almost complete habitation of the estate as well as serving as a yardstick for further research of government residential estates. The three purposively selected estates namely Abraham Adesanya, Jakande Estate and Lekki scheme 1 estates respectively. This study is limited to examining the quality of the public realm in the selected public residential estates. The study population is captured from New Town Development Authority 2021 (Table 1) from which the sample size is calculated.

Table 1: List of residential Estates in Lekki Peninsula, Lagos State

s/n	Location	Owner	Scheme Title	Classification	Development Status	Year Designed
1	Eti-Osa	Government	Abraham Adesanya Estate	Mixed-use	Fully developed	Early 2000
2	Eti-Osa	Government	Fairmont Garden Scheme	Mixed-use	Developing	2008
3	Eti-Osa	Government	Idera city scheme	Residential	Underdeveloped	2010
4	Eti-Osa	Government	Jakande housing estate	Residential	Fully developed	1983
5	Eti-Osa	Government	Lekki Peninsula Foreshore	Residential	Developing	2001
6	Eti-Osa	Government	Lekki Peninsula Scheme I	Residential	Fully developed	1981
7	Eti-Osa	Government	Lekki Peninsula Scheme II	Residential	Developing	1995

8	Ibeju _Lekki	Government	Abijo GRA Scheme	Residential	Developing	1997
9		Government	Eko Akete estate	Mixed-use	Underdeveloped	
10	Ibeju _Lekki	Government	Iberekodo industrial Scheme	Mixed-use	Underdeveloped	2011

Source: New Town Development Authority 2021

STUDY AREA

Figure 1: Map showing Lekki Scheme 1 Lagos.

Source: Google Maps 2021 Imagery

Lekki Scheme I (Figure 1), comprising 17,9372 housing units from New Town Development Authority, 2021 was built in 1981 by the government. It is located at approximately (6^0 26' 38" N 3^0 28' 12" E) and is bound by three major roads which serve as arteries in and out of the estate. The major roads branch off into smaller streets and close. The estate being a mixed-use development has various types of buildings.

Abraham Adesanya estate (Figure 2), comprising 2,258 housing units from New Town Development Authority, 2018 was built in the early 2000 by the government. It is located approximately on (6^0 27'55" N 3^0 34' 30" E) The Estate is linear and laid out in the form of broad numbered roads. The roads serve as major arteries in the road network of the Estate, bounding and delineating it into lettered streets. The buildings are predominantly semi-detached bungalows.

Figure 2: Map showing Abraham Adesanya Estate Lekki Lagos

Source: Google Maps 2021 Imagery

Figure 3: Map Showing Jakande Estate Lekki Lagos

Source: Satellite 2021 Imagery

Jakande estate Figure 3, comprising 336 housing units from New Town Development Authority, 2021 was built in 1983 and located at approximately (6^0 27' 31" N3^0 36' 07" E). It is a government estate with residents occupying flats in two-storey buildings. The building is arranged in a linear form, with the presence of natural and built characteristics and infrastructure. The Estate is laid out in the form of broad roads, which serve as the major arteries in the road network of the Estate bounding and delineating the Estate. The major arteries in turn branch out into roads and serve as the link between buildings.

LITERATURE REVIEW

Environmental Quality: In various academic research literature Kamp, Leidelmeijer, Marsman and Hollander (2003) and Pacione (2003) elaborated that related concept as livability, quality of life and sustainability has been popular and gaining obvious recognition in policy making and urban development, but environmental quality has a varying representation in research, design and environmental policy formulation. In the European Union, environmental quality plays a significant part in governmental policy paper especially spatial planning, housing and environmental policy (Pacione, 2003). Living environment, residential perception and satisfaction, livability, quality of place, living and residential quality, sustainability and the evaluation of the natural and built environment are concepts that are very identical but so frequently connected to environmental quality (Kamp et.al ,2003). Kamp et.al ,2003 elaborated on various models in relation to environmental quality. The model (Figure 4), Domains of (human) livability and (environmental) quality-of-life (Kamp et. al., 2003) explains environmental quality as connection to quality of place and quality of life. Furthermore, domains named (Public) services accessibility, safety and security, built and natural environment and natural resource were identified. In Lagos state, a continual population growth has led to the need for an increase in the quality of life in Public residential estates inclusive of Lekki peninsula (Emodi and Udechukwu,2021). Lekki peninsula spans parts of Eti-Osa and Ibeju-Lekki local government (Boge, 2021).
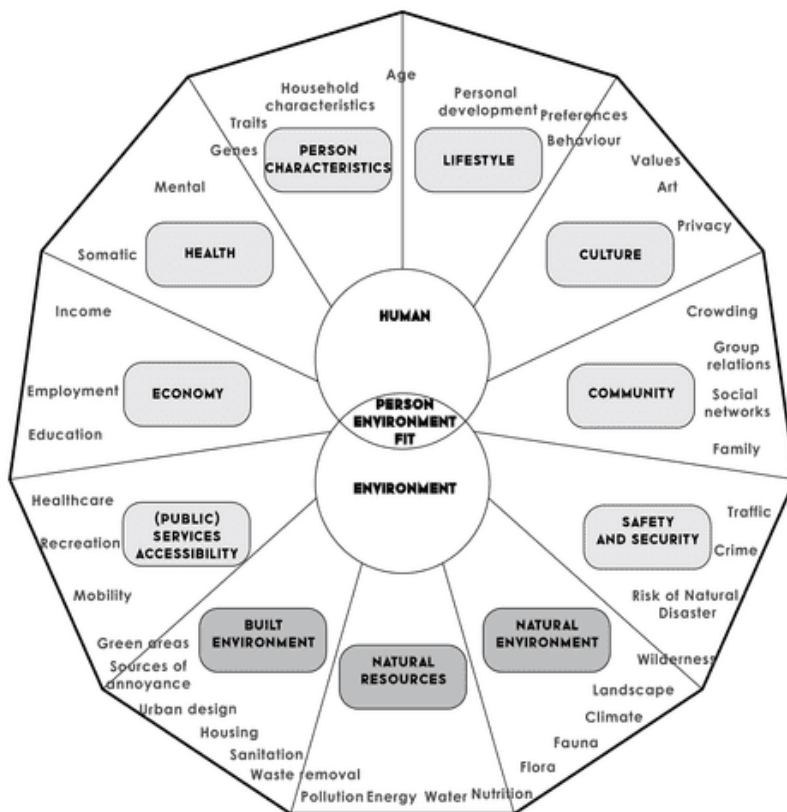

Figure 4. Source: Domains of (human) Livability and (environmental) quality of life

Source: (Kamp et. al.,2003).

Public realm: Public realm are open spaces and places that the public has free access to include streets, squares, parks, open spaces, public transport, safety and security, institutions and civic buildings (Praliya and Garg ,2019). Azare, Dantata, Musa and Duala (2018), emphasizes the public spaces being an integral part of the public realm. Residential estates are the usual form of residential design used in new towns, where estates are designed as an autonomous suburb, centered on a small commercial center and public spaces; Such estates are usually designed to minimize through-traffic flows, and to provide recreational space in the form of parks and greens (Ribeiro ,2020). The idea that the built environment consist of public spaces is a commonly expressed perception of design standards in the new-build sector of the housing market (Ware ,2021). The quality of residential estates within any neighborhood should be such that satisfies minimum health standards and good living and public accessibility standards (Ukpong, Akah and Agbabiaka, 2023). The most important quality of the public realm in the built environment are social ties in the neighborhood, safety risks (e.g., crime, traffic), environmental hygiene (e.g., noise, air pollution), and the presence of facilities (e.g., shops, greenery) (Ribeiro,2020). The environmental quality of the residential estate is central to creating a sustainable community; To that avail, sustainable residential estates that have high quality of public realm, built and natural environment with a dynamic and innovative economy, good transport, supportive community and voluntary services are environmentally sound for habitation (Lamprecht, 2016). Accordingly, Kamp et. al. (2003) agrees that growing heavy traffic, neighborhood, crime, well- being, risk of natural disasters, and health care disparities are anxieties growing amongst the European communities. In addition, Azare et. al. (2018) includes the importance of exposures to noise, external safety, mobility, green areas as it relates to environmental quality in respect to the public realm.

Quality of life: A healthy built environment using environmental principles and resources have become of significant on residents 'quality of life and their environment (Quesada-Molina and Astudill -Cordero, 2022). In reference to environment, the quality of community life has to do with the sum total of the qualities of the community environment which tend to induce in the citizen or dweller the feeling of well-being and satisfaction. A community may, therefore, be said to be living a good quality of life, when a large percentage of the community's characteristics engender habitability of the localities and aids economic production and human relationships (Jennings and Bamkole ,2019). In addition, Supsoontornkul (2022) expatiated, that quality is per definition context dependent, be it social or cultural, and (the perception of) quality varies in time. However, there are three theories relevant to the discourse of the concept of quality, these include: the comparison theory, the livability theory and the folklore approach. With respect to the comparison theory, satisfaction or the perception of quality is assumed to be a product of a comparison of situations (e.g. after a change in circumstances), a comparison between the actual and the desired situation and a comparison with the situation of others. The comparison approach is often contrasted with the livability theory, which assumes that perceived quality is dependent on objective qualities. As noted by Pacione (2003) that quality of life is not a feature which is part of the environment but a behaviour-related meaning of the interaction between environmental characteristics and personal characteristics; while Quality of life can also be referred to as a person's opinion and valuation of his /her place in life in respect to the value and culture systems in which he /she resides and in respect to his/her expectations, concerns and standards (WHO ,2015) and Kamp et. al., 2003). Onifade (2021) explained livability as the quality of life in the nation: The degree to which its provisions and requirements fit with the needs and capacities of its residents. The folklore approach assumes that satisfaction is a product of attitude ('national character') rather than of the actual characteristics.

RESEARCH METHOD

The paper used a mixed method with a random sampling technique for the distribution of questionnaires. The sources of data were gathered from published articles, semi- structured interview and observation. The

qualitative approach interviewed 20 respondents in three purposively selected estates (Abraham Adesanya, Lekki Scheme 1 and Jakande) in order to authenticate/corroborate the quantitative approach as well as explore new concepts. For the quantitative approach, 7.5% of the 20,531 housing units (sample frame) was adopted as the sample size and distributed between Jakande, Lekki Scheme 1 and Abraham Adesanya as 2,258, 17,937 and 336 housing units respectively compared to 5% by Krejcie and Morgan (1970).

ANALYSIS

The survey had 1429 participation out of 1542 from the respondents with 24 returned out of 26 administered in Jakande, 154 returned questionnaires returned out of 170 in Abraham Adesanya and 1,251 questionnaires were returned out of 1,346 questionnaires administered in Lekki Scheme 1; Hence the rate of return was 92.7%. The analysis were Descriptive statistics, Principal component and thematic presented in tables and NVIVO format.

Table 2: Quality of the Public Realm in the Study Area

Variable	Mean	SD	Scale	RM	R
Evidence of transport facilities within the estate	4.86	0.409	5	1.43	High
Adequate maintenance of bushy areas within the estate	4.81	0.690	5	1.41	High
Presence of recreational facilities	4.74	0.922	5	1.39	High
Presence of healthcare facilities	4.55	0.896	5	1.34	High
Presence of street trees within the estate	4.15	0.970	4	1.22	High
Good condition of transport facilities within the estate	4.07	0.827	4	1.19	High
Existence of ornamental plants around the estate	3.92	0.640	4	1.15	High
Good conditions of recreational facilities	3.66	1.033	4	1.07	High
Good road condition	3.64	0.761	4	1.07	High
Good conditions of healthcare facilities	3.29	1.023	3	0.97	Low
Adequate maintenance of ornamental plants around the estate	2.77	0.701	3	0.81	Low
Adequate maintenance of street trees within the estate	2.46	0.541	2	0.72	Low
Presence of bushy areas within the estate	2.43	0.524	2	0.71	Low
Good state of vehicular traffic	2.16	0.930	2	0.64	Low
Presence of crime	1.83	0.863	2	0.54	Low
High impact of vehicular flow of traffic	1.15	0.475	1	0.34	Low
Pooled Mean	3.41	0.221	3	1.00	High

Source: Field Survey 2022.

n = 1429. SD = Standard Deviation, RM = Relative Mean, Scale: 1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Moderately Agree (MA), 4 = Agree (A), 5 = Strongly Agree (SA). RM ? 1 = High, RM < 1 = Low. Scale Mean = 3.00.

Based on the pooled mean and the relative mean results (Table 2), participants in the survey moderately

agree that the quality of the public realm in the residential estates includes evidence of transport facilities within the estate, Adequate maintenance of bushy areas within the estate, presences of recreational facilities, presences of healthcare facilities, presences of street trees within the estate, good conditions of transport facilities within the estate, existence of ornamental plants around the estate, good conditions of recreational facilities and good road condition with a mean response rating of 4.86, 4.81, 4.74, 4.55, 4.15, 4.07, 3.92, 3.66, 3.64 > 3.41 (pooled mean).

Principal Components Analysis on the Quality of the Public Realm in the Study Area

The quality of the public realm in the study area was analyzed using exploratory factor analysis (principal component analysis, PCA). Sixteen (16) variables were considered and were analyzed individually using PCA. The principal component analysis (PCA) was carried out based on varimax rotation method. Only factors having eigenvalue above (1) were considered significant and retained. The cut-off point for item loading was 0.50 and any items below the desired cut-off were not displayed in the results. Prior to performing principal components analysis, the suitability of data for factor analysis was assessed using KMO and Bartlett's Test. Inspection of the correlation matrix revealed the presence of significant coefficients of -0.117 and up to 0.972.

Table 3: KMO and Bartlett's Test

	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.713
Bartlett's Test of Sphericity Approx. Chi-Square	6221.947
df	542
Sig.	.000

(N = 1429).

KMO and Bartlett's Test

The Kaiser-Meyer-Oklin (Table 3) was 0.713 exceeding the recommended value of 0.50, and the Bartlett's Test of Sphericity is statistically significant (p=0.000) at 6221.947 supporting the factorability of the correlation matrix and confirming its suitability for factor analysis.

Table 4: Total Variance Explained

Component Total	Initial Eigenvalues		Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings			
		% of Variance	Cumulative %Total		% of Variance	Cumulative % Total		% of Variance	Cumulative %
1	5.176	32.348	32.348	5.176	32.348	32.348	3.521	22.007	22.007
2	3.173	19.834	52.182	3.173	19.834	52.182	2.904	18.147	40.154
3	1.698	10.614	62.796	1.698	10.614	62.796	2.463	15.396	55.550
4	1.276	7.977	70.774	1.276	7.977	70.774	1.620	10.127	65.677
5	1.196	7.474	78.247	1.196	7.474	78.247	1.548	9.676	75.353
6	1.082	6.765	85.012	1.082	6.765	85.012	1.545	9.659	85.012
7	.840	5.250	90.263						
8	.569	3.554	93.817						

9	.378	2.365	96.181						
10	.185	1.154	97.335						
11	.175	1.096	98.431						
12	.150	.936	99.366						
13	.057	.358	99.724						
14	.028	.177	99.901						
15	.011	.071	99.972						
16	.004	.028	100.000						
Extraction Method: Principal Component Analysis.									

The principal components analysis (Table 4) with Varimax rotation method revealed the presence of six components with eigenvalue exceeding 1, explaining a total 22.007%, 18.147%, 15.396%, 10.127%, 9.676% and 9.659% of the variance respectively; for a total eigenvalue of 3.521, 2.904, 2.463, 1.620, 1.548, and 1.545. The total variance explained is 85.012%. The six identified components are renamed with the indicated items to constitute the key quality of the public realm in the study area.

Table 5: The Rotated Component Matrix

Natural Environmental Characteristics	Component					
	1	2	3	4	5	6
Presence of recreational facilities	.973					
Good conditions of recreational facilities	.869					
Adequate maintenance of ornamental plants around the estate	.780					
Existences of ornamental plants around the estate	.604					
Good state of vehicular traffic		.842				
High impact of vehicular flow of traffic		.796				
Adequate maintenance of bushy areas within the estate			.856			
Adequate maintenance of street trees within the estate			.788			
Presences of street trees within the estate			.759			
Presences of bushy areas within the estate			.709			
Presence of healthcare facilities				-.912		
Good conditions of healthcare facilities				.909		
Evidence of transport facilities within the estate				.766		
Good conditions of transport facilities within the estate				.633		
Presence of crime				.514		
Good road condition						.879
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization						

Rotated Component Matrix Results Using VARIMAX Method

Based on the rotated Varimax method (Table 5), the following six qualities of the public realm were identified in the residential estates namely recreational facilities (component 1), vehicular traffic (component 2), maintenance of street trees and bushy areas within the estate (component 3), healthcare

facilities (component 4), transport facilities (component 5), and good road condition (component 6).

Thematic analysis on constituents of the quality of the public realm in the study area.

The respondents from public estates (Abraham Adesanya, Jakande and Lekki Scheme 1) quoted" *The environment is really bushy though cut often and we notice empty plots around. Yes, the estate is quite pleasing to view with the existence of ornamental plants and street trees. Moderate existence of recreational and healthcare facilities is located around the estate. The condition of these recreational facilities is moderate. The road condition is just fair, so better maintenance needs to be done during the rainy season. The impact of vehicular flow of traffic though favourable has a presence of crime with the growing heavy commercial activities and regular transport facilities.*

The coded responses brought about themes: recreation, crime, healthcare, green areas, traffic and mobility. The qualitative results showed the residents responses grouped into five themes to include Mobility, Traffic, Recreation, Green areas and Healthcare are consistent with the quantitative findings. This is graphically illustrated in the NVIVO Figure 4.
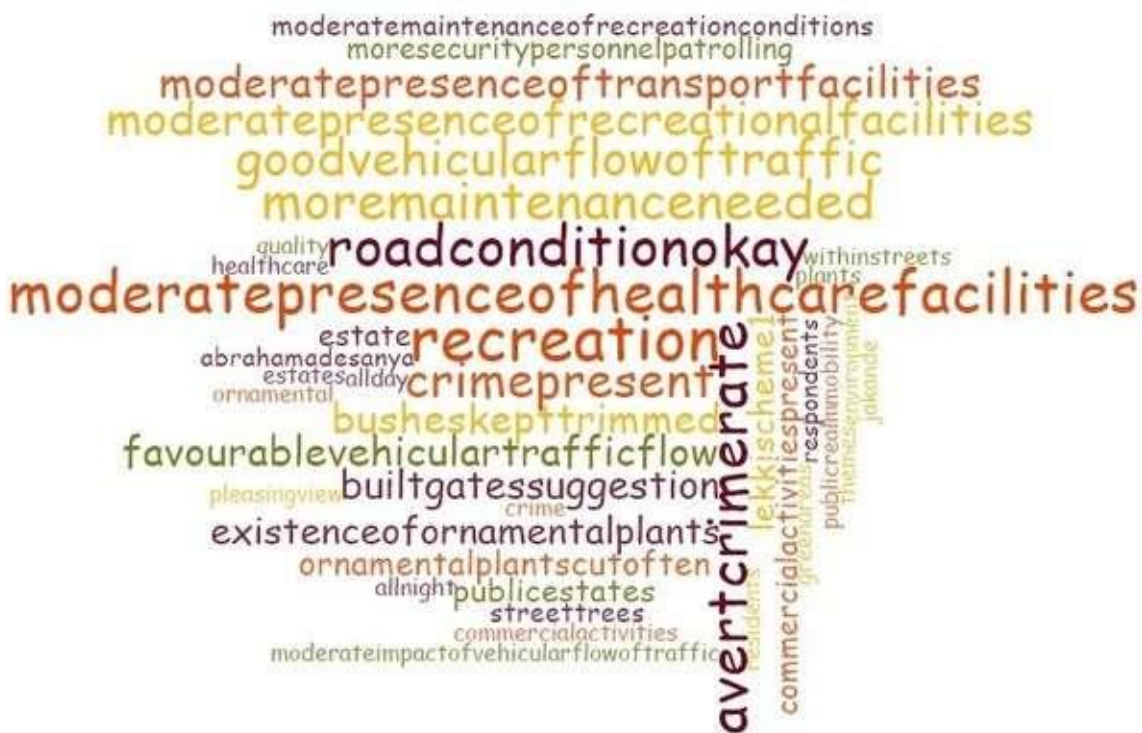

Figure 4: NVIVO of the quality of the public realm.

DISCUSSION

The quality of the public realm characteristics using descriptive statistical analysis- Public realm represents all parts of the built environment for the public that is safe and has free access namely but not limited to parks, streets, squares, green areas and others' rights of way for residential estates (Ribeiro, 2020).The results showed in public estates (Abraham Adesanya, Jakande and Lekki scheme 1 estates) as the highest (with *evidence if transport facilities within the estate, adequate maintenance of bushy area within the estate, presence of recreational and healthcare facilities with 1.43,1.41,1.39,1.34 respectively*). Though *the good condition of recreational facilities and road condition* are moderate, the *good conditions of health care facilities (3.29) are low and the adequate maintenance of ornamental plants and street trees around the estate are (2.77 and 2.46) low. The impact of vehicular traffic is the lowest at 1.15.*

The quality of the public realm in the study area using factor analysis (PCFA)-The result showed the items of the six components representing the qualities of the public realm identified in estates are *Recreational facilities, vehicular traffic, maintenance of street trees and bushy areas, healthcare facilities, transport facilities and good road condition.* The results of this analysis revealed in component 1, *the presence of recreational facilities (.973) as the highest.* Component 2 showed *high impact of vehicular flow of traffic (.796),* moderately high and component 3 revealed the presence of health care facilities (.912) as high. However, the study showed in Abraham Adesanya, Jakande and Lekki Scheme 1 estates, the *slight presence of crime (.514)* under the 5th component should be paid more attention. These qualities of the public realm in the public residential estates represents five themes namely recreation, green areas, mobility, traffic and healthcare. This is synonymous with the standpoint of Kamp et.al (2003), model that represents these themes under (public) service accessibility and safety and security. Praliya &Garg 2019, supported this theory as quality of good public design comprises themes of protection, enjoyment and comfort.

Qualitative result on the quality of the public realm in Lekki Peninsula- In the qualitative results which authenticates the quantitative findings showed, the residents' responses can further be grouped into five themes namely: Mobility, Traffic, Recreation, Green areas and Healthcare. The theme, Mobility, represented the residents' views on the presence of transport facilitates and good condition of the roads in the study area. *The results showed the condition of transportation and roads good but the suggestions to an upgrade in the maintenance of roads during the rainy season.* Traffic, *the responses revealed favorable vehicular flow of traffic but attributed this to the rise in crime in the public estates.* Recreation: *it is moderate or lack of recreational facilities in these estates.* Green areas, *findings showed moderate maintained bushy areas and presence of ornamental and* street trees. Healthcare: *the presence of healthcare though noticed in some estates are not adequate enough.* It is important to note that a favorable quality of the public realm will serve as the lungs of residential estates and promote good wellbeing of the residents supported by (Ukpong et.al.,2023).

CONCLUSION AND RECOMMENDATION

In conclusion, the findings revealed *Recreational facilities, vehicular traffic, maintenance of street trees, and bushy areas, healthcare facilities, transport facilities and good road condition* and the *slight presence of crime* which will be a threat to the security and total wellbeing of the respondents. The presence and condition of recreational facilities was the highest positive significant feature, the good conditions of health care facilities were low, and the presence of crime rate was identified. It is recommended that the construction and maintenance of recreational, and healthcare facilities should be a primary focus, and crime protection designs, and construction must be adopted to enhance the environmental planning and design of residential estates in Lekki Peninsula, Lagos.

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