

Urban Crime Incidence and Prevention Mechanisms in Kano Municipal Area Council

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This paper established the relationship between crime incidence and residential neighbourhood attributes towards improving safety and security in Kano Municipal Local Government Area (KMLGA). Records of crime incidences for 2017-2018 were collected from Kano Police Commission for the study together with stratified sampling of 382 heads of households as respondents in the study area housing 13 wards in the growing metropolis of Kano. Descriptive and inferential statistics were employed to analyse the data obtained that revealed assault crime as the most prevalent (32%) followed by theft (16.6%), and drug related crimes (15.3%). The neighbourhoods most prone to crime is Sharada (19.8%), Tudun Wazirchi (9.2%) and Sheshe (8.5%); while Zaitawa is the least with only 5.5% of recorded crime in the burgeoning city. Multiple regression results for sexual offence and crimes revealed that poor lighting has the strongest Coefficient of determination (0.468) followed by dead-end-streets (0.422), and hence the strongest unique predictors that explain sexual crimes in the study area. Findings from multiple regression analysis for assault crime revealed that vacant lot/building has the strongest coefficient of determination of 0.140 and for theft crime, dead-ends-street has the strongest (0.360) as unique predictors that explained assault and theft crimes when the variance explained by other predictors in the model was controlled. It is therefore recommended that there should be improvement programmes such as the provision for street lighting, pathway expansions, efficient waste removal, routine maintenance and repair of street lighting equipment in areas of high crime. The city should avoid the abandonment of large building structures like the industrial estates of Sharada – having highest crime rate. These measures can also assist in the fight against the growing trend of urban crime in this most populous metropolis in the savannah regions of sub-Saharan Africa.

Keywords: *crime, crime incidence, urban residents, urban design, neighbourhood facilities*

INTRODUCTION

There is increasing evidence that poor urban planning, design and management influence crime rate (Cozens, 2008; Cozens & Love, 2015; Mohit, Mohamed, & Elsawahli, 2017; Sohn, 2016; Yusuf, 2019). It is also argued that 10 to 15% of crimes have been estimated to have environmental design and management components (Schneider & Kitchen 2002, 2007; UN-Habitat, 2007). While building and site design, street layouts and land uses arrangement, infrastructure improvements have been shown to have impacts on crime incidence (Schneider & Kitchen 2002, 2007; Colquhoun, 2004); Brantingham & Brantingham (1981a & 1981b) contended that crime occurrence has higher propensity at locations where there is congested neighbourhood, cultural diversity, high poverty rates, informal housing, and uncontrolled land use methods. The situation of crime in Nigeria is overwhelming especially in areas of rapidly growing urban neighbourhood and mounting population pressure is forcing the poor to live in unsafe congested environment thereby increasing the tendencies for crime, violence and discriminations to occur (Mabogunje, 2005; Mburu, 2014; Piper, 2015).

UN Habitat (2007) acknowledged that Crime does

not happen suddenly but due to lack of institutional and social control, it also develops out of an uneven and exclusive society. In this case Kano Municipal Local Government Area (KMLGA), a densely populated areas built before the introduction of modern town planning, is characterized by limited accessibility, dilapidated buildings, poor basic infrastructure, among others (Dankani, 2016). It is further explained that physical environments that are largely unchecked by modern planning and are also lacking in basic social infrastructure and services can further threatens the safety of residents and the entire city economy (Kawu, Ahmed, & Usman, 2012; Kawu, 2005; Yahaya & Ishiak, 2013; Mohammed & Kawu, 2014).

Of recent, many research literature have focused on social and institutional determinants of crime in Nigerian cities (Karimu, 2014; Kasali & Odetola, 2016; Ahmed, 2017; Siro & Sundramoorthy, 2017; Umar, 2017). However, a lot is still unclear in regards to the physical determinants of crime incidence in residential neighbourhoods of burgeoning metropolis like Kano municipal area. Hence, this study assessed crime prevalence, incidence, and the environmental attributes that facilitate crime incidence. This was carried out in order to establish the relationship between crime and

residential neighbourhood attributes towards improving safety and security in Kano and similar settlements in the global south.

LITERATURE AND CONCEPTUAL FRAMEWORK

The study of the relationship between incidence of crime and the built environment has led to various theoretical approaches (Jacobs, 1961; Jeffery, 1976). One of the general approaches is termed Crime Prevention Through Environmental Design (CPTED). CPTED theory is based on the assumption that proper design and effective use of the built environment can result to a reduction in crime incidence, reduce fear of crime and improve the quality of life of the populace (Cozens, Hillier, & Prescott, 1999). The concept was first postulated by Jeffery (1976), and more can be traced to Jacobs (1961) and Newman (1972 & 1973) among others.

Jane Jacob’s (1961) book ‘The Death and Life of Great American Cities’ challenged contemporary issues about planning; with safety and security identified as fundamental elements of a well functional city. Hence, the three main qualities of safe city streets for Jacob (1961) are: presence of a clear demarcation between public and private space; there must be eye on the street; and, there must be users on the side walk continuously. Newman’s (1972 & 1973) work on defensible space was acknowledged by Jeffery (1976) as the basis of modern CPTED. Jeffery (1976) argued that his own work was more complex and requires long term research than Newman’s proposal. Newman’s defensible space entails four design elements to help create safe urban environment. These elements are: the capacity of the built form to create perceived area of proprietary concern by clearly defining ownership of space using both symbolic and real barrier (Pakzad, Lotf, & Jahanshahloo, 2007); the capacity

of the built form to provide opportunity for monitoring it space; the capacity of the design and management of the built form to influence the perception of space, promote clean, well maintained and well-ordered environment; and the capacity of the surrounding space to influence the security of the area (Newman,1972).

In research, a conceptual framework is the basis of a research problem, and usually grows out of the theoretical framework that often relates specifically to a research problem (Kumar, 2014). The CPTED concept is derived from the theories of crime and from evidence of empirical findings that established significant relationship between physical features and crime incidence. Existing literature shows that physical attribute such as specific land uses, street layout, environmental disrepair (Cozens, Hillier, & Prescott, 1999; Mohit, Hassan, & Hannan, 2012; Mohit, Mohamed, & Elsayahli, 2017; Sohn, 2016), and deterioration and physical features that block visibility and natural surveillance can encourage higher incidence of crime (Clark & Mayhew, 1980; Bratingham & Bratingham, 1981; Greenberg & Rohe, 1984; Cozens & Love, 2015; Paydar, Kamani-Fard, & Etminani-Ghasrodashti, 2017; Sohn, 2016; UN-HABITAT, 2011).

Manipulating the built environment through urban planning, design and management can also influence crime incidence. As shown in Figure 1, Physical features in neighbourhood (IV₁) and Crime prevention Measures (IV₂) is conceptualized as Independent Variable (IV) while Crime Incidence (each of sexual offence, assault and theft crime) is conceptualized as Dependent Variable (DV). This study then determined the relationships between IV₁ and DV, also IV₂ and DV.

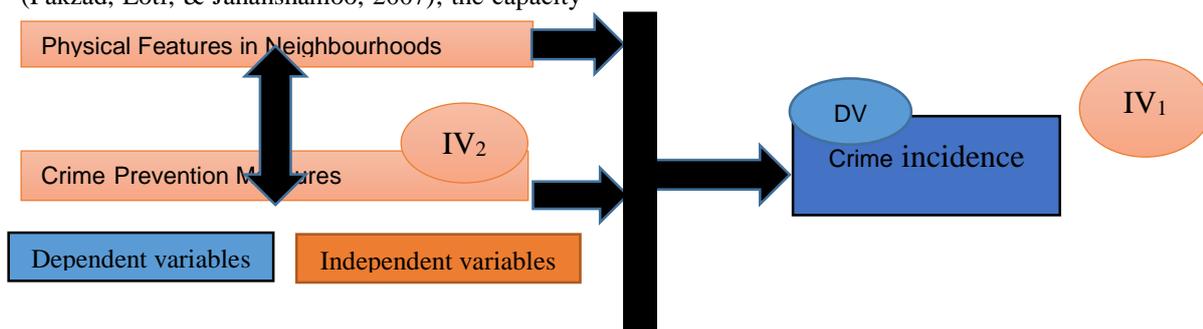


Figure 1: Research Conceptual Framework

RESEARCH METHOD

The Study Area

Kano Municipal Local Government Area (KMLGA) is located between Latitudes 11⁰⁵7’30’’ to 12⁰⁰’30’’N and Longitudes 8⁰²9’30’’ to 8⁰³2’30’’E of the Greenwich meridian (Longman, 2003), that is relatively at the Centre of Kano State. It has an area

of about 17km² and a population of 596,797 in 2018 (NPC, 2018). The area has a large population density of about 31,106 persons per square kilometre (Figure 2). Kano Municipal Local Government Area is made up of 13 wards, that contained landmarks in both the traditional old walled city and new residential areas; serving as an administrative, political and

commercial centres for several centuries housing the 16th century Kurmi Market, the traditional palace of

the Emir of Kano and the Kano central Mosques, Kofar Wambai Market among others.

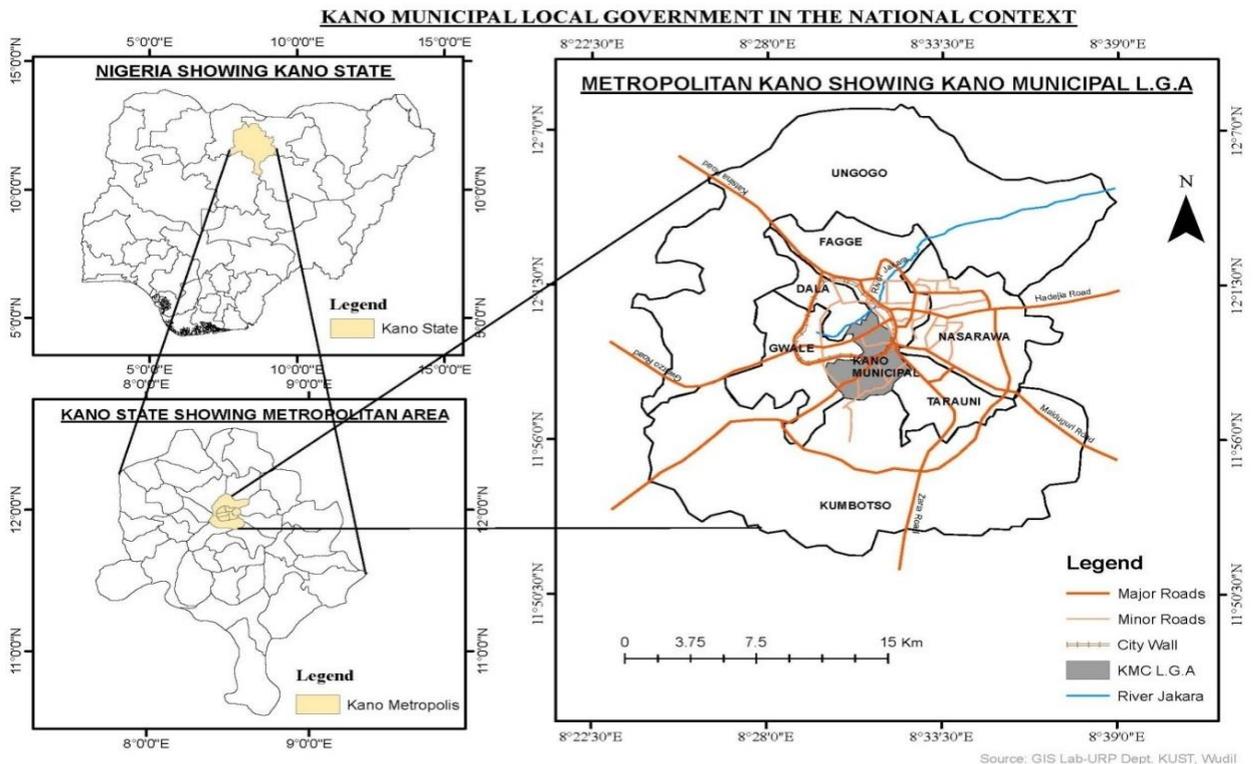


Figure 2: Kano Municipal Local Government Area

Source: KANGIS (2019)

Research Design and Sample Size

The study used quantitative research method known for the description of the research issues through assessment of trends as an explanation of the relationship among variables (Kumar, 2014). In this case, crime prevalence, incidences of crime, and the analysis of the opinions of residents on the attribute that facilitate crime incidence in the study area. The target population has a sample frame of 74,599 households (NPC, 2018) in the different 13 wards of Kano Municipal area, yielded a sample size of 382 determined through Krejcie and Morgan’s (1970) procedure for sample size determination.

Data Collection

To establish the determinants of crime incidence in residential neighbourhoods of KMLGA, primary data were collected through field administration of structured questionnaires across the study area by stratified sampling technique. The questionnaire items solicited information on: crime prevalence (determinants), neighbourhood socioeconomic characteristics income levels and use of hard/illegal drugs; crime occurrences; neighbourhood physical attributes like isolated routes, poor lighting, dead-end streets, e.tc. The structured questionnaires were administered to household heads sampled through systematic random selection. Secondary data was sourced from official household data held by the Kano Municipal LGA and the nation’s National

Population Commission, Kano State office; maps and administrative spatial data from Bureau for Land Management, and, Kano Geographic Information System (KANGIS); while crime records for 2017 to 2018 were obtained from the Police Divisional Headquarters in KMLGA.

The content validity of the questionnaire items was established using experts’ opinion survey. Cronbach Alpha coefficient was used to check the reliability of research instrument and to check the internal consistency of the statements. Therefore, Cronbach's Alpha (α) value was calculated for all used scales, and found to fall within 0.0-1.0 acceptable range for value of reliability of scales; for example: Crime types prevalent (0.521), Neighbourhood characteristics (0.514), and, Crime prevention intervention (0.552), (Gliem & Gliem, 2003; Tavakol & Dennick, 2011). This prepared the work for detailed analysis using inferential and descriptive statistics.

RESULTS

Crime Types and Prevalence in KMLGA

Field findings revealed that a total of 1,276 crimes were recorded in the study area from 2017-2018 (Police Divisional Headquarters in KMLGA) with assault crimes having the highest occurrence (32.0%), theft (16.6%), drug related crime (15.3%), robbery (9.5%), sexual offence/rape (8.3%). Auto-

theft crime (6.5%), vandalism (5.9%), and burglary (5.9%) are the least prevalent (Figure 3). Residents' assessments on crime prevalence in the same area of study however, shows drug related and assault crimes as leading with more than half of the crime incidence (50.8%) while burglary and theft are the least with 10.5%. further assessment shows that

there is no statistically significant difference between police record on crime and residence assessments on crime in KMLGA; as Pearson correlation value (0.49) is greater than the P value of 0.05 Alpha. T value in two-tail (T=1) is lower than t critical value two -tail (t=2.4).

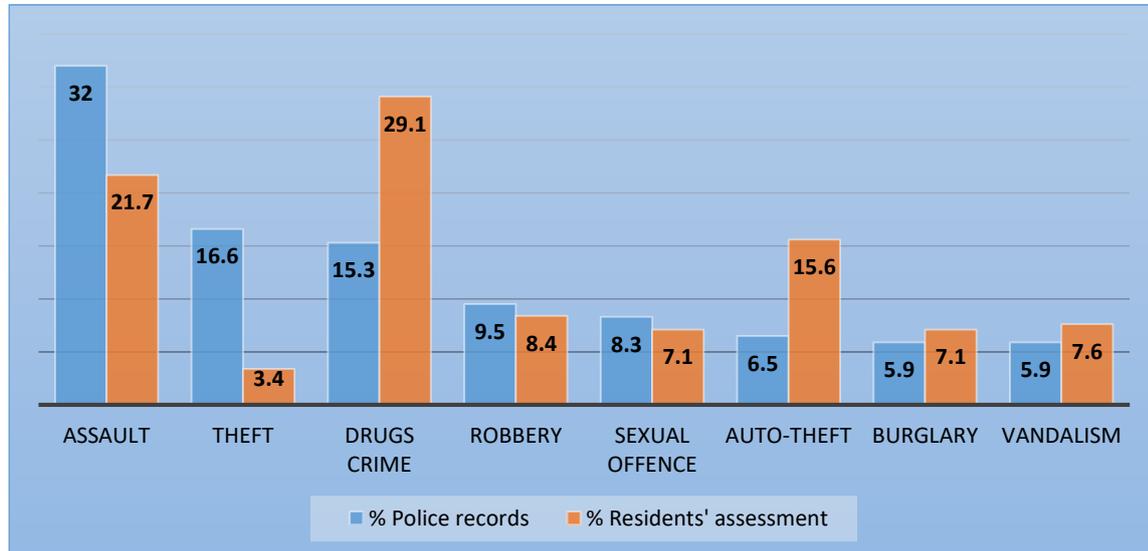


Figure 3: Crime Types Prevalent in KMLGA
 Source: Nigeria Police Force, Kano & Field Surveys (2019)

In the case of spatial distribution, field assessments further revealed that Sharada has the highest crime case with about one-fifths (19.8%) of reported cases in KMLGA followed by Tudun Wazirchi having 9.2% while Kankarofi and Zaitawa are the least with 5.5% and 3.1% respectively (Figure 4). The identifications of the environmental physical

attributes influencing crime incidence indicates that poor lighting (27.7%), isolated route within residential areas (22.8%), public use of illegal drug (16.5%) and unemployment (10.2%) are the main reasons for crime occurrence in the study area while unkempt environment and overgrown shrubs and trees are the least factors.

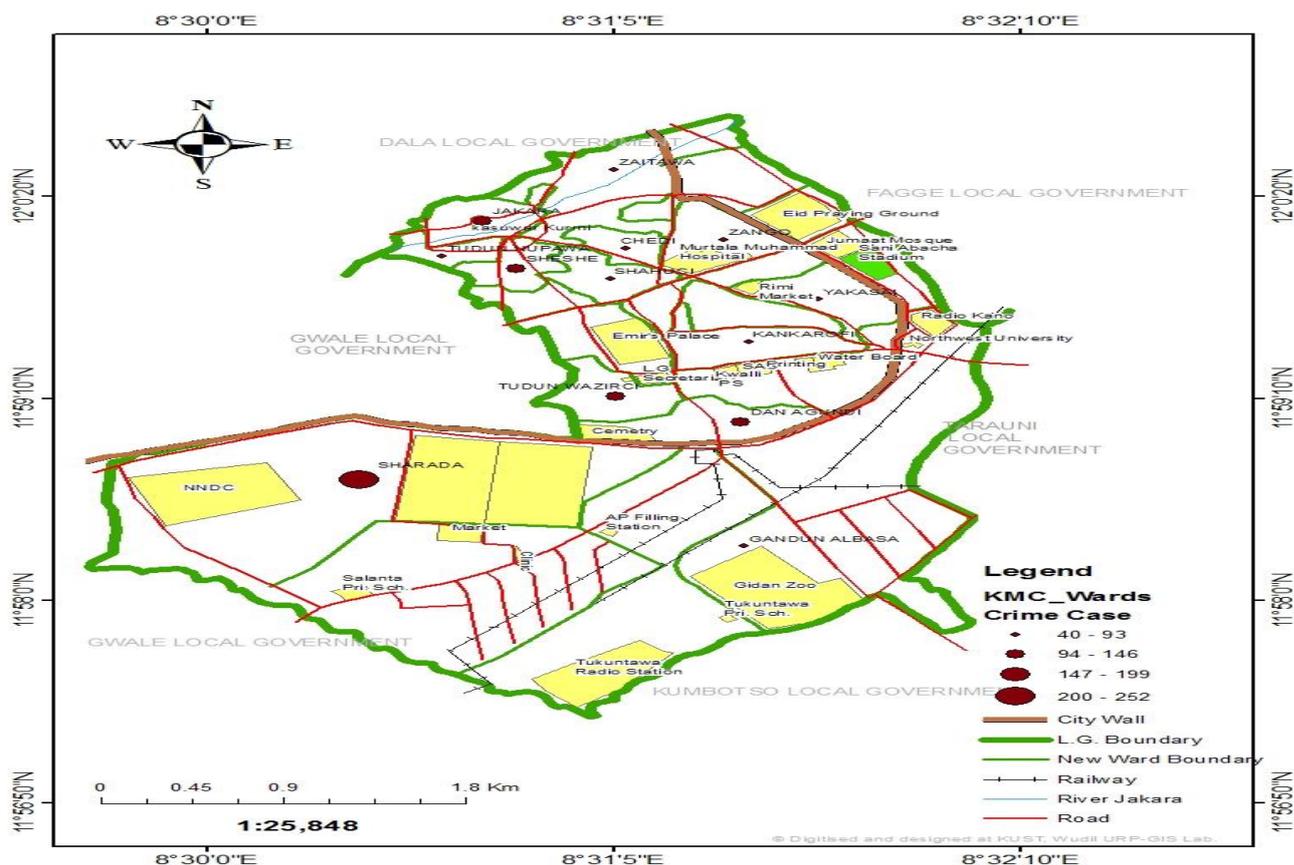


Figure 4: Spatial Distribution of Crime Incidence in KMLGA

Source: Nigeria Police Force, Kano & Field Surveys (2019)

Causative and Empirical Analysis

Multiple regression model was used to establish the relationship between crime types and neighbourhood attributes in order to establish the statistical relationship of each crime type (sexual offence, assault and theft) as dependent variables, and residential neighbourhood characteristics (poor lighting, dead ends street, isolated route, vacant lot/building, abandoned building, illegal public drug use) as independent variables. Prior to result interpretation, a classical assumption of linear regression was also checked. An inspection of the P-P plot of regression standardised residual revealed that all the observed values are from normally distributed population.

Crime Types (Sexual Offence, Assault and Theft)

Table 1 shows the prediction power of the regression model, the obtained Adjusted R square of 0.178 basically means that the five predictor variables explained about 17.8% of sexual offence crime in KMLG. For assault, the obtained Adjusted R square of 0.027 basically means that the two predictor variables revealed about 2.7% of Assault crime. And for theft crime, the obtained Adjusted R square of 0.034 means that the two predictor variables explained about 3.4% of Theft.

Table 1: Model Summary for Crime Types (Sexual offence Assault and Theft)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Sexual offence ^a	.435 ^a	0.189	0.178	1.006
Assault ^b	.179 ^b	0.032	0.027	0.699
Theft ^c	.197 ^c	0.039	0.034	1.411

a. Predictors: (Constant), Dead ends street, abandoned building, Isolated routes, Vacant lots/building, Poor lighting

b. Predictors: (Constant), Abandoned building, Vacant lots/building

c. Predictors: (Constant), Dead ends street, Poor lighting

The ANOVA Table 2 shows the overall significance of the regression model, the F value (F=17.509,

6.288 and 7.633) and P value (less than the Alpha value 0.05) are jointly significant in predicting

sexual offence, assault and theft crime respectively. Basically, this means that the model is significantly

better at predicting the variable that influence the crime type.

Table 2: ANOVA for Crime Types (Sexual offence Assault and Theft)

Model		Sum of Squares	Df	Mean Square	F	Sig.
Sexual offence	Regression	88.559	5	17.712	17.509	.000 ^a
	Residual	380.352	376	1.012		
	Total	468.911	381			
Assault	Regression	6.137	2	3.069	6.288	.002 ^b
	Residual	184.962	379	0.488		
	Total	191.099	381	15.208		
Theft	Regression	30.415	2	1.992	7.633	.001 ^c
	Residual	755.085	379			
	Total	785.500	381			

a. Predictors: (Constant), Dead ends street, abandoned building, Isolated routes, Vacant lots/building, Poor lighting

b. Predictors: (Constant), Abandoned building, Vacant lots/building

c. Predictors: (Constant), Dead ends street, Poor lighting

From Table 3, the P value of poor lighting, dead ends Street, isolated route, vacant lot/building, and abandoned building indicate that the variables are significant in predicting the occurrence of sexual offence, assault and theft crime. The collinearly

statistics show that none of the Variance Inflation Factors (VIF) is higher than 10.0. This indicates that there is no Multi-collinearity among the predictors' variables of the model.

Table 3: Coefficients for Crime Types (Sexual offence, Assault and Theft)

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta				Tolerance	VIF
Sexual offence	1.031	.535			1.929	.054		
Isolated routes	-.402	.066	-.305		-6.097	.000	.860	1.163
Vacant lots/building	.161	.065	.121		2.460	.014	.894	1.119
Abandoned building	-.220	.071	-.165		-3.098	.002	.762	1.313
Poor lighting	.468	.120	.214		3.904	.000	.719	1.390
Dead ends street	.423	.068			6.259	.000		1.074
Assault	4.575	.130	.301		35.156	.000	.931	1.070
Vacant lots/building	.140	.044	.165		3.155	.002	.934	1.070
Abandoned building	-.106	.045	-.124		-2.373	.018	.934	1.029
Theft	2.766	.683	-.019		4.047	.000	.972	1.029
Poor lighting	-.053	.145	.199		-.369	.712	.972	
Dead ends street	.360	.092			3.897	0.000		

The result in Table 3 revealed that poor lighting has the largest Coefficient of determination 0.468 followed by dead end streets with 0.422 Coefficient of determination and hence the strongest unique predictors that explain sexual offence crime in the study area. For assault crime vacant lot/building has the largest Coefficient of determination of 0.140 and for theft crime, dead ends street has the strongest Coefficient of determination of 0.360 as unique predictors that explain assault and theft crime respectively when the variance explained by other predictors in the model is controlled.

Household Assessment of existing crime prevention interventions attributes in KMLGA

Assessments of field results about the presence of crime prevention intervention attributes revealed almost a consensus opinion of disagree (i.e., the

attributes are not present). This implies that crime prevention intervention is not provided or are grossly inadequate in residential neighbourhoods of Kano municipality. This can be attributed to the lack of effective planning interventions and control as building structures were erected before the introduction of modern town planning and administration in Nigeria. Hence, attributes such as the presence of transparent (see-through) fences, sufficient security personnel around location, well maintained environment among others received 'disagree' with the cut -off point of 1.51- 2.49 whereas only three of the crime preventions attributes in the study area fall under neutral (the presence of: connected street layouts to facilitate access; open space for various activities; and, fencing to deter onlookers from the street) with the cut-off point of 2.5-3.49.

Responding to Levels of safety

Majority of the respondents are feeling unsafe particularly when walking alone at night, as 84% always feel unsafe or very unsafe while on the streets

at late hours with only 8.8% expressed feeling safe. Hence, households' opinion about appropriate crime prevention measures are mainly centred on improved street lighting (25.2%), and about one-fifths (18.6%) suggested having functional security light within household premises (Figure 5).

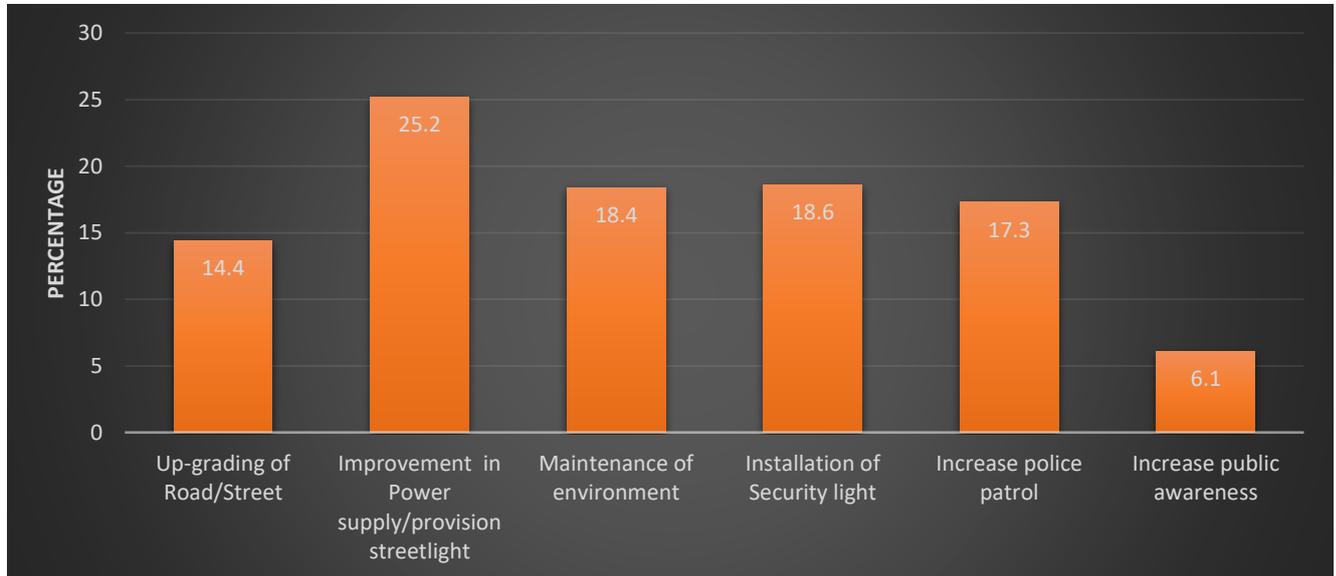


Figure 5: Respondents Opinion about Crime Prevention

DISCUSSION

In order to establish the relationship between crime incidence and physical environmental features, the findings revealed that assault crime were most prevalent (32%) followed by theft (16.6%), drug related crime (15.3%), robbery (9.5%) and sexual offence (8.3%) respectively in Kano Municipal Local Government Area (KMLGA). The neighbourhood that is most prone to crime from the findings are Sharada (19.8%) followed by Tudun Wazirchi (9.2%), Sheshe (8.5%), Dan'Agundi (7.7%) and Jakara (7.6%).

The multiple regression models revealed that poor lighting has the largest Coefficient of determination of 0.468 followed by dead-end-streets with 0.422 Coefficient of determination and hence the strongest unique predictors that explain sexual offence crime in the study area. For assault crimes, vacant lot/building has the strongest Coefficient of determination of 0.140 and for theft crime, dead ends street has the strongest Coefficient of determination of 0.360 as unique predictors that explain assault and theft crimes respectively when the variance explained by other predictors in the model is controlled. These findings implies that isolated route, poor lighting, dead-ends-streets, rundown or abandoned buildings, and vacant lots and buildings are some of the physical determinants of crime incidence in residential neighbourhoods of KMLGA. This result agrees with the findings of Schneider and Kitchen (2007) that 10 to 15% of crimes have been

estimated to have environmental and management components.

This also introduce another impetus to urban crime prevalence. Areas lacking adequate maintenance of infrastructure are often targets to criminal activities as the facilities easily form elements that can be used to shield nefarious activities of the criminals from the searchlights of residents, onlookers, passers-by, and trained security personnel even when they happen to be well-armed.

It was discovered that the physical design elements of crime prevention interventions are not adequately provided in the study area. These include efficient vehicular and pedestrian patterns and networks, effective waste disposal systems, provision and maintenance of neighbourhood facilities and services, and street lighting and surveillance. This result conforms with the findings of Clark & Mayhew (1980), Bratingham and Bratingham (1981) and Greenberg and Rohe (1984) that physical attribute such as specific land uses, street layout, environmental disrepair, and deterioration are physical features that block visibility and natural surveillance thereby encourage higher incidence of crime. Findings also revealed that most respondents feel unsafe when walking alone at night in the residential neighbourhoods of KMLGA, making over a quarter of the residents to call for improved electricity power supplies, provision of more street

lightings devices, and increased surveillance to wade off criminals.

CONCLUSION

This study has highlighted the relationship between crime incidents and physical environmental features in Kano Municipal Local Government Area of Nigeria. Findings revealed that these physical attributes impact on the commission of crime incidences and also deters collective fight against the increasing menace. It is therefore recommended that there should be proper planning, design and maintenance of the built environment through improvement programmes such as functional and people-oriented urban renewal schemes that is bottom-up driven, appreciates the provision of street lighting, pathway expansion, routine maintenance of neighbourhood structures and the repair of street lighting equipment.

Uncontrolled developments, lack of completion or total abandonment of large building structures are of high concern as it has been shown that these are amongst the areas favouring the continuous growth and perpetuation of crimes. Hence, the abandoned industrial lands of Sharada neighbourhood recorded the highest incidence of crime amongst neighbourhoods in the most populous metropolis in the savannah region of sub-Saharan Africa.

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