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Influence of Physical Environment on Crime in Informal Settlements of Kibra in Nairobi County, Kenya

By

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Abstract:

The impact of crime in the informal settlements in cities is enormous and extends beyond civilian causalities to the destruction of infrastructure and buildings. The fear of crime and violence continues to be pervasive in cities and is one of the top concerns in citizens' everyday lives. The main purpose of the study was to examine the influence of physical environment on crime in informal settlements of Kibra in Nairobi County, Kenya. The study adopted a cross sectional survey research design. The study population comprised of 118,276 residents of Kibra constituency. The study used a sample of 225 subjects. Both stratified and simple random sampling techniques were used to choose the individuals that took part in the study. A structured questionnaire was used to collect data needed in the study. Content validity by research experts was used to validate the tool of data collection. The reliability of the questionnaire was determined using Cronbach's alpha whose score was 0.77. Data was coded in the computer and analysed by the help of Statistical Package for Social Sciences (SPSS) version 21. Data was then presented into simple percentages and summarized using tables. The study concluded that planning solutions such as putting more eyes on the street, neighborhood cohesion through segregated planning approach and appropriate lighting can be effective tools to passive surveillance. The study recommends that planners should play a key role in improving the livelihood of people in informal settlements. Further, crime prevention through environmental planning should be implemented since it is not only an effective strategy to prevent crime but also cost effective and fits in the informal settlement. This study was found to be of importance in the on the field of urban studies particularly on crime in informal settlements.

Keywords: Crime, criminal activities, informal settlements, physical environment, slum, surveillance

Introduction

Over the past two decades, urban population growth and the effects of globalization have enhanced the complexities and manifestation of crime and violence in cities (UN-HABITAT,

2016).The fear of crime and violence continues to be pervasive in cities and is one of the top concerns in citizens' everyday lives. The UN-HABITAT report (2016) showed that 60 to 70 per cent of urban residents have been victims of crime in those developing or transitional countries where rapid urban population growth is at its highest. High concentrations of people and complex infrastructure leave cities vulnerable to potentially devastating attacks and disruptions to vital services.

A key point to note that has been highlighted in the UN-HABITAT report of 2016 is that efforts to take back the city's spaces are gaining in momentum in many cities worldwide. This is in an effort to transferring certain powers of enforcement to the community level to help ensure that local culture and reconciliation justice is taken into account. According to Jacobs (1961) natural surveillance (eyes on the street) is a good deterrent to criminal activity in informal settlement places. Additionally, urban safety policies need to include both gender and poverty dimensions with a particular focus on citizens at risk including urban poor, youth, women and single female-headed households, and the elderly. According to Kenya Natonal Bureau of Statistics Cencus (2009) report, one out of every three Kenyan living in urban areas, more than 12.5 million Kenyans, lived in some 108 designated urban centres (informal settlements) with populations ranging between 20,000 and 3 million. These slums or informal settlements are under conditions of considerable insecurity and indignity characterized by inadequate housing with little access to clean water, sanitation, health care, schools and other essential public services (Amnesty International, 2010) .

Informal settlements are the consequence of both explicit government policy and decades of official indifference (Mutisya & Yarime, 2011). In particular, informal settlements were excluded from city authority planning and budgeting processes until when the national authorities and international bodies outlined the dangers of slums to humanity. Complexities surrounding informal settlements in the city have made it difficult for the government to pass workable policies which if enacted and applied in the right way could help Kenya improve slums life. In Nairobi the lack of recognition of slums and informal settlements as residential areas denies residents a range of essential services provided by the government to other residents of the city (Mutisya & Yarime, 2011).

These settlements have for long been considered illegal by the local and national government. Due to this fact they suffer neglect in terms of service provision of social amenities. At the helm of all these drawbacks are social conflicts which result in crime. The county government together with local authority is not able to meet the security needs of the densely populated areas of Nairobi. Activities such as drinking or sniffing of illegal substances seem to be socially normal in the slum. In fact, it is unlikely for anyone to be disciplined for being under the influence of drugs as opposed to robbery. Majority of the victims of drug and substance abuse is the youth, and when they engage in taking illegal substances they become aggressive which in turn lead them to commit other crimes in order to get money to buy drugs. It remains rhetorical if there is an alternative to the security problem without necessarily digging into the pockets of the population who are already burdened. It is against this background that this study sought to

examine the influence of physical environment on crime in informal settlements in context of Kibra in Nairobi, Kenya.

Methodology

The study adopted a cross sectional survey research design that mainly enhances use of quantitative approach in data collection and analysis. A cross sectional survey design is useful in describing the characteristics of a large population, use of large samples, thus making the results statistically significant and generalizable. The design also allows use of questionnaire. This design was also appropriate since the researcher obtained information from those who have practical experience with the problem to be studied.

The study population comprised of 118,276 residents of Kibra constituency, those who were 18 years and above as provided in the independent electoral and boundaries commission (IEBC) voter registration report of 2017. The study used a sample of 225 subjects which were obtained using finite sample size computation formula. Both stratified and simple random sampling techniques were used to choose the individuals that took part in the study. A structured questionnaire was used to collect data needed in the study. Content validity by research experts was used to validate the tool of data collection. Modification on the instruments was made basing on the experts' recommendations. The reliability of the questionnaire was determined using Cronbach's alpha whose score was 0.77. Both descriptive and inferential statistics were used to analyze data. Quantitative responses based on Likert scale were coded in the computer using Statistical Package for Social Sciences (SPSS) version 21. Processed data were summarized in a table and then presented using simple frequencies and percentages.

Since the researcher was a person genuinely concerned about other peoples' quality of life, the study considered people's rights and ethical issues in research throughout the whole research process. For this reason, the researcher strictly observed ethical and legal issues in research like the principle of confidentiality, anonymity, and acknowledgement of other people's input through citations in the whole study.

Results

Demographic Data

The demographic characteristics of the respondents included gender, highest education level, age bracket and crime experience. Nearly two thirds (64%) of the respondents were male while the remaining 36% of them were female. This implies that the respondents were well represented by gender. The study also examined the highest education level of the respondents; majority (78%) had attained either KCPE or KCSE, while only 14% of the them were diploma holders and only 8% of them had a degree or postgraduate qualifications. This implies that all the study respondents were able to read and write, and they were knowledgeable to fill the data collection tool. Further, a vast majority (84%) of the respondents were 35 years and below while the

remaining 16% of them were 36 years and above. This shows that majority of the population living in Kibra are youth. On crime experience, slightly over two thirds (68%) of them indicated that they had been victims of crime, but the other 32% of them had never been involved in a criminal activity. This implies that the security issue in Kibra informal settlement is demanding.

Influence of Physical Environment on Crime in Informal Settlements of Kibra

The study sought to establish the influence of physical environment on crime in informal settlements of Kibra. A five (5) point Likert scale was used to rate the respondents' perception toward the respective physical environment indicators. The scale included: 1-Strongly agree, 2-Agree, 3-Undecided, 4-Disagree, 5-Strongly disagree. Table 1 shows the distribution of the study participants' responses on various items.

Table 1
Indicators of physical environment in informal settlement

Statement	5	4	3	2	1
The presence of bushy riparian boundary and the railway line are risky environments for criminal activities in Kibra;	8%	15%	4%	46%	27%
The narrow and deserted streets are risky sites for criminal activities all the time in Kibra;	7%	10%	2%	50%	31%
Lack of security lighting and dark corners in many parts of Kibra slums contribute to criminal activities;	_	4%	_	54%	42%
Unused land/open spaces are mostly the hotspots of criminals more especially at night in Kibra;	6%	14%	8%	46%	26%
Housing design/typology e.g. houses facing the streets in Kibra slums encourage criminal activities/robbery;	2%	14%	_	48%	36%
There is poor environmental design in Kibra e.g. location of dumpsites, public bridges etc. that turns to criminal sites;	13%	7%	22%	44%	14%
Lack of natural surveillance in Kibra e.g. physical features or activities, makes it difficult for some residents to identify their houses which may expose them to criminals;	8%	32%	6%	36%	18%
Lack of natural access control such as entrances, exits, fencing, and landscaping contributes to criminal activities in Kibra;	2%	16%	14%	41%	27%
Lack of territoriality such as fences, signage, landscaping, lighting, and pavement designs to separate one rental with the other contributes to crime/robbery;	2%	2%	4%	54%	38%
Lack of care and maintenance of rentals and its surroundings by land-Lords encourages robbery in Kibra;	9%	17%	12%	44%	18%
Mixed land uses in some parts of slum encourages criminal activities in Kibra	8%	2%	42%	34%	14%

n= 186

As shown in Table 1, majority (73%) of the study respondents indicated that the presence of bushy riparian boundary and the railway line are risky environments for criminal activities in Kibra, but 23% of them were in a contrary opinion. On whether the narrow and deserted streets are risky sites for criminal activities all the time in Kibra, an overwhelming majority (81%) of the study participants were in agreement. Nearly all (96%) of the respondents felt that lack of security lighting and dark corners in many parts of Kibra slums contribute to criminal activities.

On the other hand, majority (72%) of the respondents were affirmative that unused land/open spaces are mostly the hotspots of criminals more especially at night in Kibra. An overwhelming majority (84%) of the study participants pointed out that housing typology e.g. congested housing in Kibra slums encourage criminal activities/robbery. Further, more than half (58%) of the respondents were affirmative that there is poor environmental design in Kibra e.g. location of dumpsites, public bridges etc. that turns to criminal sites but 20% of them were in a contrary opinion. Another 54% of the respondents were in opinion that lack of natural surveillance in Kibra e.g. physical features or activities, makes it difficult for some residents to identify their houses which may expose them to criminals.

Slightly over two thirds (68%) of the respondents supported that lack of natural access control such as entrances, exits, fencing, and landscaping contributes to criminal activities in Kibra. On whether lack of territoriality such as fences, signage, landscaping, lighting, and pavement designs to separate one rental with the other contributes to crime/robbery in Kibra, nearly all (92%) of the respondents were in consensus. Besides, nearly two thirds (62%) of the study respondents were convinced that lack of care and maintenance of rentals and its surroundings by land-lords encourages robbery in Kibra. Further, despite that nearly half (48%) of the study participants felt that mixed land uses in some parts of slum encourages criminal activities in Kibra, a considerable percentage (42%) of them were undecided.

Discussion

The study found that majority (72%) of the respondents was affirmative that unused land/open spaces are mostly the hotspots of criminals more especially at night in Kibra. The study finding was in agreement with a study conducted by Newman (1996) on creating defensible space that revealed, residents had described the open space in the center of Clason Point, a public housing project in the Bronx of New York City that suffered from high crime rates, to be extremely dangerous for criminal activities. This implies that open spaces in the informal settlement areas could be harbors for criminals.

The study found that majority (84%) of the study participants pointed out that housing design/typology e.g. houses facing the streets in Kibra slums encourage criminal activities/robbery. The study finding was affirmative with a study carried out by Chang (2011) that explored the relationship between burglaries and factors regarding building design in a large metropolitan city in South Korea. The study found that 90 percent of all burglaries occurred in buildings that faced two or fewer streets. Chang further revealed that out of 714 burglaries

investigated by the study, occurring in various building types, 75.2 percent of the burglaries had occurred in single homes and commercial buildings. Therefore, house design could influence criminal activities to take place.

Slightly over two thirds (68%) of the respondents supported that lack of natural access control such as entrances, exits, fencing, and landscaping contributes to criminal activities in Kibra. This is in congruence with previously conducted studies that proposed the additional strategy of natural access control as a preventive measure of crime (Newman, 1972; Crowe, 2000). Further, Crowe suggested that natural access control can be organized through the use of guards, mechanical by the use of locks, or natural through effective spatial definition. This implies that presence of natural access controls could reduce crime in informal settlements areas like Kibra.

On whether lack of territoriality such as fences, signage, landscaping, lighting, and pavement designs to separate one rental with the other contributes to crime/robbery in Kibra, nearly all (92%) of the respondents were in consensus. The study finding concurs with a study that was conducted by Feins, Epstein, and Widom (1997) that found, despite Castle Square, a private apartment complex located in Boston, Massachusetts, having experienced frequent burglaries, prostitution, drug activity, and violent crimes, fencing and gates installed around the complex restricted access in certain areas while permitting residents full access in others by the use of a keycard. Further, the installation of buzzers, intercoms, and surveillance systems allowed residents to control visitor access. In the same vein Brower, Dockett, and Taylor (1983) found that residents perceive that stronger markers/signage indicate a safer environment i.e. the more threatening the environment, the more markers required to make residents feel safe. Therefore, territoriality of the apartments or risky areas in the informal settlements can reduce crime.

Further, despite that nearly half (48%) of the study participants felt that mixed land uses in some parts of slum encourages criminal activities in Kibra, a considerable percentage (42%) of them were undecided. The study finding is in line with a study carried out by Rengert and Wasilchick, (1985) that revealed that changes in land uses, boundaries, and traffic patterns may result in higher or lower crime rates because they affect both potential offenders and users. Further, mixed land uses may alter exposure to potential offenders because they more or less integrate the locale into the offenders' orbits of activity. Thus, mixed land uses affects crime in informal settlements of Kibra in Nairobi County.

Test of Hypothesis

The study sought to establish whether there is a statistically significant association between physical environment and crime in informal settlements of Kibra in Nairobi County, Kenya. The Pearson's Chi-square was computed to establish whether the two variables are statistically significant ($P < .05$) and the results are presented as shown in Table 2. The following hypothesis was tested:

H_0: There is no statistically significant association between physical environment and crime in informal settlements of Kibra;

H_A: There is statistically significant association between physical environment and crime in informal settlements of Kibra;

Table 2
Chi-Square test for the association between physical environment and crime in informal settlements of Kibra

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20.652[a]	12	.002
Likelihood Ratio	22.587	12	.001
Linear-by-Linear Association	.196	1	.658
N of Valid Cases	186		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.91.

As shown in Table 2, there is a statistically significant association between physical environment and crime in informal settlements of Kibra since the p-value is smaller than the level of significance (.05), χ^2 (12, N = 186) = 20.652, P = .002. Thus, the study has enough evidence to retain alternative hypothesis and to reject the null hypothesis. This implies that crime in informal settlements of Kibra in Nairobi County is significantly affected by physical environment.

Conclusion

Crime has been identified as one of the key problems facing informal settlements. From the study it is clear that some places in the informal settlements are safe and that most types of common street crime tend to reoccur at certain locations that are venues known to citizens and to public officials. Thus, planning solutions such as putting more eyes on the street, neighborhood cohesion through segregated planning approach and appropriate lighting can be effective tools to passive surveillance. The study recommends that planners should play a key role in improving the livelihood of people in informal settlements. Further, crime prevention through environmental planning should be implemented since it is not only an effective strategy to prevent crime but also cost effective and fits in the informal settlement.

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