



CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN: WHAT WORKS AND WHAT DOES NOT? - REFLECTIONS FROM A NIGERIAN CITY

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Increasingly, urban residents across the globe are adopting formal and informal means to prevent or reduce incidences of crime and victimization within their environments. While these efforts are widespread in Nigerian cities, it is not clear how effective they have been in controlling crime. This study attempts to find this out, using Makurdi, a medium sized urban centre in Central Nigeria. Data were sourced from the residents through a semi-structured questionnaire. The study employed a combination of stratified and random sampling to select the household heads that provided answers to the questions posed. The data collected on types of crime experienced by respondents and the crime control measures they use were subjected to a multiple regression analysis to determine the effectiveness of the measures in crime reduction. The study found that crime prevention and control measures such as fences, special locks and additional reinforcements, dogs, guards and avoiding late nights had different effects on crime reduction in the study area. Fences, special locks, dogs and guards had the propensity to minimally increase opportunities for the occurrence of armed robbery. Relatedly, there was a likelihood of higher levels of victimization and lower incidences of rape where there were higher percentages of residences with fences. Avoiding late nights was not effective in curbing incidences of assault. These findings reiterate the importance of crime analysis aimed at determining what works in crime reduction. This should be considered as requisite knowledge in the design and application of crime prevention and control measures in cities across the globe.

Keywords: crime, crime control, crime reduction, surveillance, target hardening

INTRODUCTION

In response to the growing rates of crime in cities around the world, residents have adopted several measures to control crime and avoid personal victimization. Some of these measures are fencing, gating, dogs, Closed Circuit Television cameras (CCTV), burglar proofs/bars or avoidance of areas perceived to be unsafe at certain times of the day or night. The use of these measures has produced mixed results in crime reduction in cities across the globe. A summary of these results as presented in the literature review section shows that while there are success stories

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on the use of crime control measures in some locations, others have reported no significant decreases in crime due to the use of crime control measures. Thus, researchers have argued that crime prevention strategies would be more effective if based on a rigorous analysis of empirical evidence of their effects on crime control (Williemse and Waard, 1993). Consequently, attempts have been made by advocates of crime prevention through environmental design to bridge this knowledge gap. This is evident in the studies that evaluate the effectiveness of territoriality, surveillance, access control and target hardening measures in crime reduction in cities. For instance, Armitage (2014) noted that recent research within the field of Crime Prevention through Environmental Design (CPTED) is focused on the effectiveness of the applied principles of CPTED measures in reducing crime and the fear of crime.

The question then is, do these measures actually prevent or reduce the incidence of crime in the communities in which they are implemented? This study therefore attempts to evaluate the effectiveness of individual crime prevention strategies initiated and adopted by residents in Makurdi, a medium sized and rapidly growing urban centre located in central Nigeria. Specifically, the paper examines the prevalent types of crime in Makurdi town; identifies the measures used by individuals to prevent crime and victimization and determines the effect of individual measures in reducing specific types of crime in Makurdi town.

With much of the empirical evidence on the effectiveness of crime prevention and control measures emanating from cities of the global north, this paper attempts to bridge the gap in knowledge by drawing insights on crime control measures in a medium sized Nigerian city in the global south. This provides comparative evidence of what works and what does not in cities in the global north and south. The knowledge generated could therefore be used to strengthen policing and policy formulation as cities across the globe grapple with high incidences of crime and victimization.

LITERATURE REVIEW

According to the United Nations Office on Drugs and Crime (UNODC, 2005), available indicators suggest that Africa has a very serious crime problem. The figures for Africa presented by the UNODC showed that the average victimization rates for burglary (8%), assault (6%) and armed robbery (4%) were higher than what is obtainable in other urban areas worldwide. In the early 1990s to 2001, criminal victimization surveys showed that Latin America and Sub-Saharan Africa had the highest rates of robbery (24.84%, 12.92%) and assault (8.58%, 8.86%) (Muggah, 2007).

In Nigeria, victimization surveys conducted by the Centre for Law Enforcement Education, Nigeria (CLEEN) Foundation showed that the most common form of victimization was the theft of mobile phones and money, physical assault, burglary and armed robbery (Alemika, 2013). The results of the victimization survey in 2005 revealed that Rivers, Bayelsa, Kogi, Taraba, Plateau and Benue states had the highest levels of victimization. In 2006, the report indicated that there was a general decline in the incidences of victimization across the country. However, Rivers, Oyo, Abia, Benue and Abuja were top on the list of states with the highest incidences of

victimization. Victimization rates rose in 2011 with Ebonyi state having a record 95%. Ten other states including Benue had victimization rates above 50%.

Generally, crime control measures are physical manifestations of the principles of Crime Prevention through Environmental Design (CPTED) such as territoriality, access control, target hardening and surveillance. Fences, walls and gates could be territoriality, target hardening or access control measures while lighting, Closed Circuit Television (CCTV) cameras, mixed land uses and doors or windows overlooking the streets provide opportunities for surveillance. Farrington and Welsh (2002) conducted a systematic review of literature on the effects of improved street lighting on crime from studies on American and British cities. The results showed that in four American studies, street lighting was effective in reducing crime while four others reported otherwise. From the British studies, five reported a decrease in crime with improved street lighting. The conclusion from the review was that even though street lighting had an effect in reducing crime, it apparently increased community pride more than it increased surveillance. A study of lighting improvements in two English cities, Dudley and Stoke-on-Trent showed that it reduced crime by forty-one percent in Dudley and forty-three percent in Stoke-on-Trent and heightened perceived public safety (Painter and Farrington, 1999). It has been observed that street lighting is particularly effective at night as it improves night time visibility and enhances surveillance within urban areas; thereby resulting in reduced opportunities for crime (Jacobs, 1961; Welsh and Farrington, 2008).

Ratcliffe et al (2009) also found that the introduction of CCTV cameras in Philadelphia was associated with a thirteen percent reduction in crime. They observed that CCTV cameras were more effective in some locations than in others. Piza (2018) also investigated the effect of CCTV cameras on three crime categories - auto theft, theft from automobile and violent crime in Newark, New Jersey. The results indicate that CCTV cameras were effective in deterring auto theft but ineffective on other crime types. This lends support to the report by Welsh and Farrington (2009) that CCTV cameras were more effective in car parks. Thus, Piza (2018) concludes that CCTV cameras could be a viable option in areas where the target is auto theft. A survey of twelve former burglars showed that the most effective deterrents for home burglaries were CCTV cameras and a barking dog while for car theft, CCTV cameras and car alarms were the most effective (Smithers, 2017).

In South Africa, increasing reliance on private security companies has led to a surge in their numbers. Private security employees outnumbered the Police by 2015/2016. Berg and Howell's (2017) analysis of the situation in South Africa shows that by 2015/2016, there were two hundred and seventy-six Police Officers for one hundred thousand people while there were eight hundred and eighty-nine private security guards for the same population. From the literature, it is not clear if these private security personnel have contributed to crime reduction in South Africa. On the basis of a summary of evaluations of previous research findings from the United States of America, the United Kingdom, The Netherlands and Canada, Welsh and Farrington (2009) reported that a combination of measures including security guards were highly effective in reducing crime at a car park in Basingstoke. In this case, it was not possible to isolate the effects of specific measures on the reduction of crime in the area.

Divergent views on the effect of target hardening and access control measures such as fences, gates and locks are replete in the literature even though most of the studies focus on burglary. In Sao Paulo, Caldeira (1996) observed that as a response to crime and the fear of crime, city residents were retreating behind walls and fortified enclaves leaving the streets and other public spaces undefended. While fences are perceived by residents to deter crime, studies have suggested there is no significant difference in crime rates between gated and non-gated neighbourhoods. Liu (2010) noted that high rates of burglary and vandalism are still recorded in many of the gated communities in the United States of America. Tshwane, South Africa presents a similar picture as that of the United States as Breetzke et al (2014) observed high burglary rates in gated communities. Sidebottom et al (2018) found that alley gating is associated with modest but significant reductions in burglary. In Liverpool, installing lockable gates to restrict access through back alley ways proved to be effective in reducing the incidences of burglary (Bowers et al, 2004).

A summary of previous research findings as presented by Portland State University (2010) states that safety measures such as alarms, locking windows and doors are capable of deterring burglars. The review further suggests that homes without any security measure are at higher risk of experiencing burglary. A similar analysis of available evidence in the literature suggests that the risk of repeated burglary can be reduced by improving locks on doors and windows and removing foliage that can conceal burglars (New Zealand Government, 2016).

The findings presented from previous evaluations of the effectiveness of crime control measures imply that location matters as it is a potential contributor to the functionality and effectiveness of a particular intervention designed to reduce crime. For instance, Welsh and Farrington (2004) reported that Closed Circuit Television Cameras were more effective in reducing crime in car parks and were more effective when combined with street lighting and targeted at vehicle crimes. They also reported that CCTV cameras were more effective in reducing crime in the United Kingdom than in North America. Again, these findings suggest that the type of crime targeted should be a key determinant of the intervention(s) that will be applied. As can be seen from the summary of the literature, there is a dearth of knowledge on the effectiveness of crime prevention measures used by urban residents in Africa and Nigeria in particular. Though the use of crime control measures is widespread in cities in Nigeria, it is not clear how effective they have been in preventing or controlling crime. This study attempts to find this out, using Makurdi, a medium sized rapidly growing urban centre in Benue State, Nigeria.

RESEARCH DESIGN AND METHODS

This paper is an extract from a larger study which was designed to interrogate the determinants of the pattern of crime in Makurdi town, Nigeria. Consequently, the information presented in this section covers only issues related to the central theme of the paper. Three issues were central in this paper namely - identifying the types of crime experienced by the residents of Makurdi town; identifying the measures used by the residents to control crime or victimization and determining the effectiveness of such measures in the reduction of crime and levels of victimization. The study adopted a survey design which entailed the use of a semi-

structured questionnaire to elicit information from the residents of Makurdi on the types of crime and the formal and informal measures used in crime prevention and control.

Data collection

Specifically, data was needed on the types of crime that are prevalent in the study area, target hardening or territoriality measures like fences, window grills, electric fences, razor wire; and surveillance strategies such as security guards, vigilante groups or any form of collaborations with Law enforcement agencies. The measures used by residents were identified from the responses obtained. A multi-stage sampling design was adopted for data collection. Makurdi town was first divided into fifty-five spatial units according to the building densities. There were seventeen high density spatial units, thirty-three medium density spatial units and seven low density spatial units. Some of the low density areas include New G.R.A I, Owner Occupier I and Ajaba community; medium density areas include HUDCO North Bank, Low Cost Naka Road, Ankpa Ward I, II and III and Judges' Quarters while high density areas are Logo I & II, Low Level. Wadata and Modern Market Area. A proportionate sampling size was adopted in the ratio 50: 30: 20 (%) for high, medium and low building density areas respectively. The target respondents were household heads. A total of eight hundred and ninety-nine respondents were randomly sampled for the study but only eight hundred and sixty responses were collated.

Data analysis

To determine the effectiveness of the crime control measures adopted by residents of Makurdi town, the multiple regression analysis was used. The percentages recorded against each of the five dominant crime control measures were regressed against the level of victimization and the five types of crime identified in the study area. Statistical Package for the Social Sciences (SPSS) version 15 was used in conducting the analysis. In interpreting the results of the regression analysis, if the p-value is less than 0.05, then the correlation is considered to be statistically significant. This implies that at 95% confidence interval, the relationship between the variables is not due to chance but that the predictor variables (crime control measures) have a significant effect on the dependent variable (crime and victimization). In interpreting the results, coefficients of determination values that were between seventy to one hundred percent meant that the particular crime measure had a strong effect on the occurrence of crime; forty to sixty-nine percent connoted a moderate effect on crime while one to thirty-nine percent indicated a weak effect on crime reduction. A positive relationship indicates that crime will increase when certain measures are deployed while a negative (inverse) relationship suggests that crime will decrease with the application of particular interventions. The unstandardized coefficients (B) provided clarification on the direction of the relationship between the dependent and independent variables.

ANALYSIS AND DISCUSSION OF RESULTS

The average percentage of residents that had experienced crime in Makurdi was 42.1. An average of 14.3% had experienced assault; 4.4% had experienced rape; 26.8% had been victims of burglary; 32.4% had experienced armed robbery while 31.8% had experienced thefts. From the analysis, theft and armed robbery were the

dominant crime types within residential areas in Makurdi town. In order to prevent crime and victimization in their residential environments, residents of Makurdi town adopted measures which can be broadly categorized as target hardening, territoriality or access control and surveillance measures. The specific measures used by residents of Makurdi town include special locks, gates, fences, lighting, security guards, iron doors, burglar proof on all fenestrations, security cameras, membership of neighbourhood associations, vigilante and avoiding late nights. Among these measures, the dominant ones were fences, special locks, dogs, guards and avoiding late nights.

The percentages and distribution of households using the different crime control measures are presented as bar graphs in Figures 2A to 2D. The distribution pattern shows the dominant use of certain measures in some residential areas and the absence of other measures in the residential areas. According to the order of prevalence, fences were the most widely used crime control measure. This was followed by avoiding late nights, the use of special locks and additional reinforcements, the use of security guards and lastly, dogs. Fences, special locks and additional reinforcements, dogs and security guards were measures used to protect against crimes within the home while avoiding late nights was a strategy used by residents to evade street crimes.

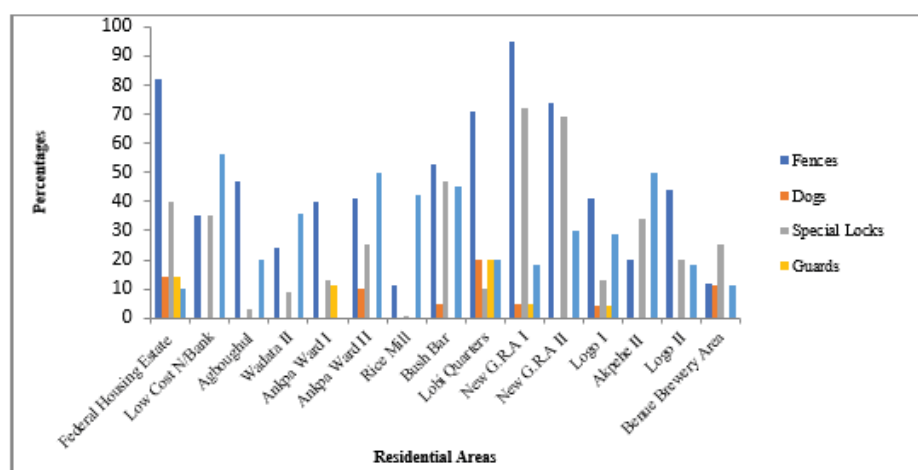


Figure 2A: Percentage of Residents using Different Crime Control Measures

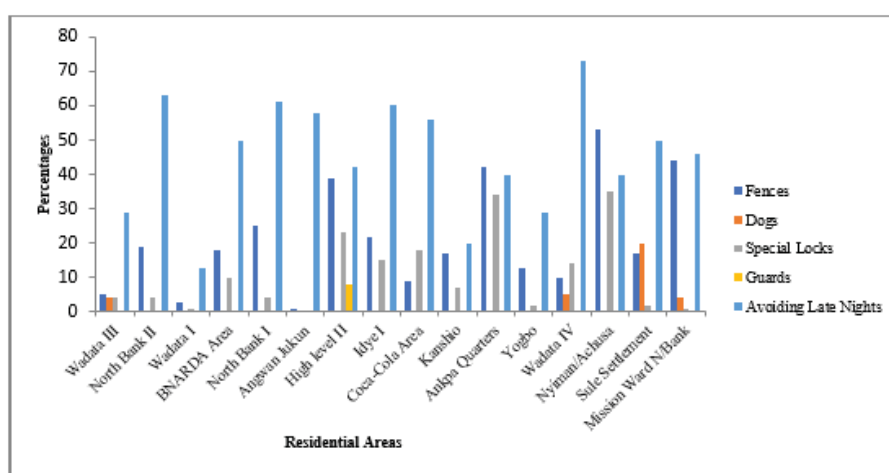


Figure 2B: Percentage of Residents using Different Crime Control Measures

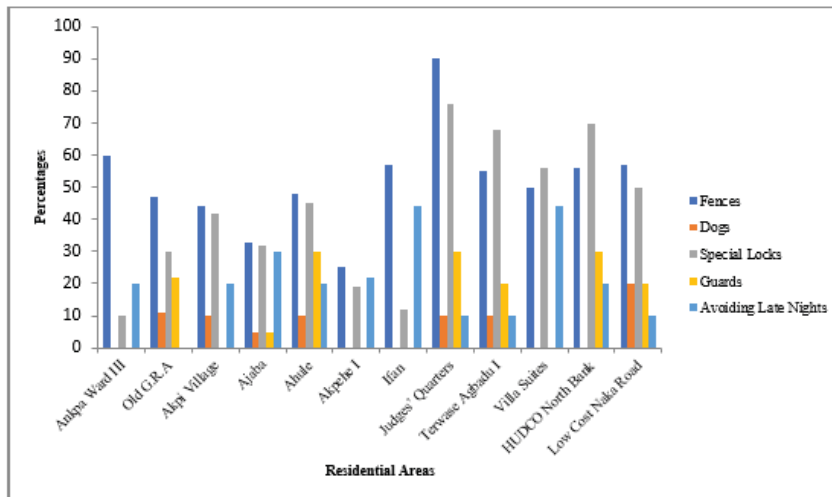


Figure 2C: Percentage of Residents using Different Crime Control Measures

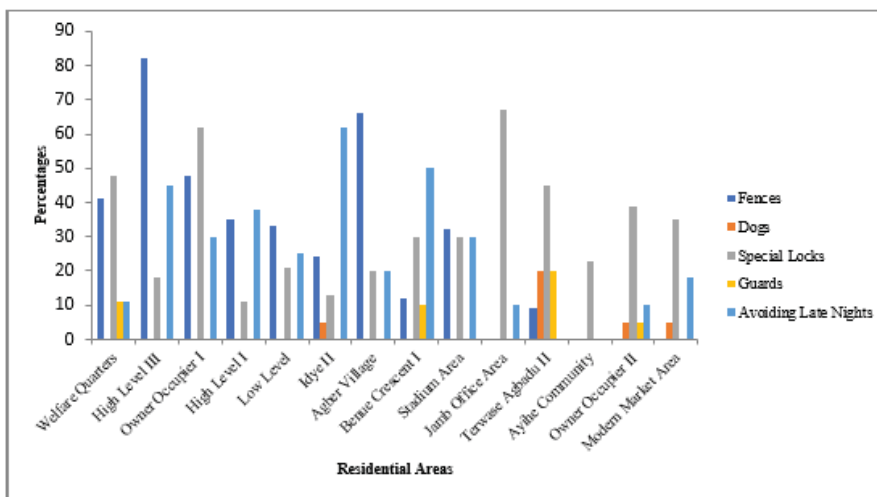


Figure 2D: Percentage of Residents using Different Crime Control Measures

The capacity of these measures to reduce the opportunities for victimization was determined through the application of multiple regression analysis. The results of the analysis (Table 1) indicate the effect each of the measures has on crime reduction.

Table 1: Regression results on the effectiveness of crime control measures

Measures/Type of Crime	Level of Victimization	Theft	Armed Robbery	Burglary	Assault	Rape
Fences	0.03 (0.26)	0.06	0.001 (0.49)	0.79	0.18	0.05 (-0.09)
Special Locks	0.90	0.02 (-0.40)	0.009 (0.42)	0.50	0.19	0.35
Dogs	0.24	0.18	0.043 (1.20)	0.35	0.11	0.25
Guards	0.14	0.07	0.001 (1.40)	0.47	0.07	0.57
Avoiding Late Nights	0.82	0.09	0.014 (-0.46)	0.58	0.01 (0.35)	0.32

Source: Author's Analysis (2015)

Bold figures indicate significant relationship ($p < 0.05$) between the crime control measure and the type of crime

Beta figures (B) showing the direction of the relationship between crime control measures and crime in parenthesis

The effectiveness of fences

On average, thirty-seven percent of the residents of Makurdi town use fences as a protective measure against crime. In Makurdi town, over fifty percent of houses in Lobi Quarters, New G.R.A I, Judges' Quarters, New G.R.A II, Low Cost Naka Road, Ankpa Ward III and Terwase Agbada I had wall fences. These fences are predominantly brick walls ranging from about 2 metres to 3.5 metres, often with razor wire coils installed at the top. Fences separate public spaces from private spaces and serve as physical barriers that limit contact between potential offenders and their target. Fences control access and act to increase the effort and risk of offending.

The results of the multiple regression analysis suggest that the relationships between fences and armed robbery, rape and level of victimization were statistically significant ($p < 0.05$). The presence of fences accounted for 20% of the variation in armed robbery; 7% of the variation in rape and 9% of the variation in the incidences of crime. This means that the presence of fences could only contribute to an insignificant increase or decrease (weak effect) in the incidences of the aforementioned crimes. For the level of victimization and incidences of armed robbery, the relationship was positive ($B = 0.49$ and 0.26). These positive relationships suggest that the presence of fences is likely to increase the levels of victimization and armed robbery in an area. The implication is that fences are not effective in preventing or controlling victimization and armed robbery in residential areas in Makurdi town. Armed robbery was identified as a prevalent street crime in Makurdi town.

The presence of fences could contribute to reduced visibility by limiting the ability of residents to watch the streets from within their homes and also preventing passers-by from observing what is happening within the homes. Thus, fences provide the concealment needed for crime to thrive within the homes and on the streets. This finding provides support for Petherick's (2001) observation that crime will be higher in areas where there are reduced levels of visibility. Fences presumably protect the homes and leave the streets as 'undefended spaces' or 'territorial gaps' which according to Perkins, Meeks and Taylor (1992) are vulnerable to criminal activities. Residential areas like Lobi Quarters, HUDCO Quarters North Bank, New G.R.A, Low Cost Naka Road, Ankpa-Ward III and Judges' Quarters had high percentages of houses with fences and also had significantly high incidences of victimization and armed robbery.

On the other hand, the relationship between the presence of fences and the incidences of rape is negative ($B = -0.09$). This means that the presence of fences could have a marginal (7%) effect in the reduction of incidences of rape in residential areas within Makurdi town. The inference drawn from this result is that the incidences of rape will likely be lower in residential areas where there are more fences. This seems contradictory since rape is a crime that thrives on concealment. However, this finding could imply that incidences of rape within the homes will be reduced since fences restrict access into homes. The results of the victimization survey for Makurdi town show that there were fewer or no reported incidences of rape in residential areas with high percentages of fenced homes.

The effectiveness of special locks and additional reinforcements

Special locks and additional reinforcements are target hardening measures because they increase the effort required by offenders to gain access to their targets. The use of special locks on doors and reinforced burglar proofs were widely reported in Federal Housing Estate North Bank, New G.R.A, Owner Occupier I, Low Cost Naka Road, Judges' Quarters and HUDCO North Bank.

From the results of the analysis, there were statistically significant relationships between the use of special locks and additional reinforcements and the incidences of crimes like armed robbery and theft (Table 1). Special locks and additional reinforcements accounted for 12% and 9% of the variations in the incidences of armed robbery and theft respectively. This implies that special locks and additional reinforcements have a weak (minimal) capacity (12% and 9%) to influence the occurrence of armed robbery and theft in residential areas in Makurdi town. The relationship between special locks and armed robbery was positive while that of theft was negative. The positive relationship suggests that the incidences of armed robbery are still likely to increase even with the use of special locks and additional reinforcements. This can be seen in residential areas such as Judges' Quarters, HUDCO Quarters and Low Cost Estate Naka Road which had the highest number of houses with special locks and additional reinforcement but also had relatively high reported incidences of armed robbery. Thus, special locks and additional reinforcements are not effective in curbing the incidences of armed robbery in Makurdi town.

On the other hand, the negative relationship between special locks and theft suggests that special locks have a limited capability to reduce the occurrence of theft in some residential areas in Makurdi. The least incidences of theft were found in the residential areas which had the highest percentage of residences with special locks and additional reinforcements. However, Owner Occupier I had a high percentage (62%) of residents that had adopted special locks and additional reinforcements, but the area also recorded significantly high incidences of theft. The possible explanation for this variation is the earlier assertion that previous evaluations of crime control measures seem to suggest that location is fundamental to the effectiveness of a particular measure. Though Budd (1999) found that security measures such as deadlocks and window locks or grilles were effective in preventing burglary in Britain, the study in Makurdi did not find any relationship between special locks and additional reinforcements and the occurrence of burglary.

The effectiveness of dogs in crime control

Dogs were used by residents to keep watch over their homes and scare away intruders or potential offenders. For this reason, dogs can be classified as surveillance measures. The use of dogs in crime prevention and control was the least adopted measure in the residential areas of Makurdi town. Residential areas such as Sule Settlement, Low Cost Naka Road, Lobi Quarters and Terwase Agbadu II had the highest percentages of houses with dogs. Only armed robbery had a statistically significant relationship with the presence of dogs. The relationship was weak (7%) and positive (Table 1). This implies that dogs are not an effective measure in the control of incidences of armed robbery. The residential areas which had the highest percentage of residences with dogs also experienced high

incidences of armed robbery except for Sule Settlement North Bank which had no reported case of armed robbery.

As noted earlier, most of the incidences of armed robbery occurred on the streets. This probably explains why dogs were not very useful crime inhibitors in these residential areas since their sphere of surveillance is restricted within the compounds and its immediate surroundings and does not extend to the streets. On the contrary, Krainz (1988) found that dogs could effectively protect one family houses and villas against burglary. This conclusion was arrived at after a study in which more than half of the one hundred and eleven burglars interviewed stated that dogs, regardless of the type were effective deterrents. Aantjes (2012) also reported that the chances of burglary were lower in houses with a barking dog which were close to a busy street. The finding by Aantjes (2012) could imply that barking dogs are not necessarily effective deterrents of burglary on their own except when combined with the presence of human guardians. The results for Makurdi however showed that the presence of dogs was not an effective deterrent for any of the five types of crime studied.

The effectiveness of security guards in Makurdi town

Security guards also fell into the category of surveillance measures. They provide formal policing of the residential areas. Security guards were found in areas such as Low Cost Naka Road, Lobi Quarters, Old G.R.A, Judges' Quarters, Terwase Agbadu II and HUDCO North Bank. In Lobi Quarters and Judges' Quarters for instance, some of the security guards were from the police or military while others were from private security firms. Security guards had a statistically significant relationship with incidences of armed robbery. The relationship was weak (21%) but positive (Table 1). This implies that security guards are not effective in curbing the incidences of armed robbery within the study area.

This is further established by the observation that armed robbery was prevalent in the residential areas where there were more security guards. In Lobi Quarters, twenty percent of the residences had security guards, yet seventy percent of the households reported incidences of armed robbery. Likewise, in Judges' Quarters, thirty percent of the residences had security guards; nevertheless, fifty-seven percent of the households had experienced armed robbery. Like dogs, the sphere of influence of security guards is limited. This possibly accounts for their inability to prevent the occurrence of armed robbery in residential areas in Makurdi town.

Cohen and Felson's (1981) routine activities theory postulates that opportunities for crime are created by the interaction between three variables: the availability of attractive targets, the absence of guardians and the presence of motivated offenders. Capable guardians could be neighbours, watchful parents, lighting, dogs, patrol officers, security guards or CCTV cameras. In the case of Makurdi, the presence of capable guardians in the form of security guards has proven to be ineffective in reducing crime.

The effect of avoiding late nights on crime in Makurdi town

Avoiding late nights was mainly a precautionary measure taken by residents against anticipated risks of exposure to crime. It appeared to be a measure adopted in response to the fear of crime and victimization. The residential areas with the largest percentage of residents that avoided late nights were Low Cost North Bank,

Angwan-Jukun, parts of Wadata, North Bank, Idye and Ankpa-Ward and Akpehe. The analysis suggests that majority of the residents that avoid late nights are either pedestrians or those that depend on public commercial means of transportation. From the information obtained during the fieldwork, pedestrians and commuters on public transportation (particularly motorcycles) were more exposed to street crimes.

On average thirty percent of the residents of Makurdi town were concerned about their safety on the streets at night. This is probably because there were high incidences of night-time crime reported during the survey. This crime control measure had a statistically significant relationship with the incidences of armed robbery and assault (Table 1). The relationship between avoiding late nights and armed robbery was negative while it had a positive relationship with assault. In both cases, avoiding late nights accounted for eleven percent of the variation in the incidences of armed robbery and assault respectively. This implies that avoiding late nights had very little positive and negative effect on the occurrence of armed robbery and assault in residential areas.

The negative association with armed robbery suggests that avoiding late nights could have a minimal (11%) effect in reducing the incidences of armed robbery. This finding is supported by the distribution of incidences of armed robbery within Makurdi town. The areas with the highest percentage of residents who avoided late nights coincided with the areas with either none or lower incidences of armed robbery. Such residential areas were Low Cost Estate North Bank, Idye, Akpehe II and Sule settlement. Ankpa-Ward II was the exception in this case; as it recorded high incidences of armed robbery even with a significant percentage of the residents avoiding late nights. Avoiding late nights appears to have the potential to reduce armed robbery because armed robbery was identified as a night-time street crime. Thus, avoiding late nights reduced the presence of attractive targets (people and valuable objects) on the streets at night and increased the chances of a minimal decrease in the incidences of armed robbery.

The implication of the positive relationship is that avoiding late nights can possibly increase the opportunities for assault to occur within residential areas of the town. A probable explanation is that less activity on the streets leaves the streets deserted and unguarded. Therefore, potential victims are exposed to greater risks of assault. Some of the residential areas with the highest percentage of respondents who avoided late nights also recorded relatively higher incidences of assault. These residential areas include North Bank II, Akpehe II and Idye II. Low Cost Estate North Bank, Ankpa-Ward II, Wadata IV and Sule settlement had high percentages of residents that avoided late nights as a safety measure but had no reported incidences of assault. This is possibly an indicator that other triggers of assault such as the presence of young adults (motivated offenders) are absent in these residential areas. From another perspective, one would think that avoiding late nights might contribute to a reduction of crimes that take place within the homes like theft and burglary. But there was no evidence from the analysis to support this assumption.

CONCLUSION AND RECOMMENDATIONS

This study found that crime prevention and control measures initiated and adopted by residents of Makurdi town such as fences, special locks and additional reinforcements, dogs, guards and avoiding late nights had both negative and positive effects on crime reduction in the study area. The effects of the crime control measures on crime were weak in all cases. Fences, special locks, dogs and guards did not have the capacity to inhibit the occurrence of armed robbery; rather the presence of these measures had the propensity to minimally increase opportunities for the occurrence of armed robbery. Fences had the likelihood of slightly increasing the levels of victimization in residential areas in Makurdi town while avoiding late nights was not effective in curbing incidences of assault. On the other hand, fences had the potential to slightly decrease the incidences of rape; special locks and additional reinforcements had little effect on reducing the incidences of theft while avoiding late nights was capable of causing a slight decline in the incidences of armed robbery in residential areas. These exemplify the usefulness or otherwise of both conventional and unconventional measures in crime prevention and control.

Some of the results did not conform to previous findings in the literature; suggesting that context-specific evaluations are necessary to determine the measures that have the greatest potential for success. Even within the residential areas in Makurdi, some areas with high percentages of residents who avoid late nights had significantly higher incidences of assault while others did not record any incidence of assault at all. This goes to show that criminogenic factors within residential areas in a city may vary; prompting the need to avoid generalizations.

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