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Enforcing Traffic Laws to Implement Pedestrian Safety Rules in the City of Kisumu, Kenya

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Abstract: ***Legislations on pedestrian safety have been established especially in Kenya. These include the Traffic Act Cap 403 of 2013 and the subsequent amendment of 2014. However, enforcement of such legislations have been found to be inadequate partly explaining the increasing road traffic accidents. The most vulnerable groups to the accidents have turned out to be the pedestrians. Consequently, the study sought to investigate how enforcement of traffic safety laws influenced implementation of pedestrian safety rules in the City of Kisumu. The study adopted a descriptive survey design and sampled 384 road users from a population of 409,928 residents of Kisumu City using Krejcie and Morgan table. The study sample was distributed to include 200 pedestrians, 100 drivers and 84 key informants including engineers, traffic law enforcement officers, children's park managers and parents. The researcher used convenience sampling to select the roads, and the pedestrians, random sampling to select the drivers and purposive sampling to select the key informants. A researcher designed questionnaire was administered to pedestrians and drivers to collect quantitative data while qualitative data was collected using Key informant interview schedules and observation checklist. Quantitative data was analysed using descriptive statistics and inferential statistics particularly Pearson Moment correlation using SPSS V. 22 while qualitative data was analysed thematically. The study found a statistically significant positive relationship (r = 0.281; p = 0.000) between enforcement of traffic laws and implementation of pedestrian safety rules. The study concluded that traffic laws enforcement should be increased to enhance implementation of safety rules.***

Keywords: Enforcement of traffic safety laws, Implementation of pedestrian safety rules

1. Background

Effective enforcement of traffic laws is a critical requirement for road safety. Even with this in place, if the laws are not effectively enforced; fatal accidents increase daily on our urban roads. Corruption poses a threat to enforcement of traffic laws thus there is need to know what this corruption is and how to solve it [1].

Corruption or bribery is to tender and accept a favour for performaning a duty or abusing power entrusted on you for individual benefit. It is mainly concerned with official or non official actions done for some favour or gain. Where corruption is high the levels of respect for the law is reduced. The consequences of being corrupt poses further risk in terms of unsafe conditions on the entire road transport system [1]. Corruption manifests itself in various ways including when motorists drive vehicles that are unroadworthy or over speed yet are allowed to proceed on without penalty from traffic officers which is potentially disastrous to other road users. If the public looses trust in the integrity of its traffic officers, lawlessness of road users dominate the transport system. In the republic of South Africa, police officers and traffic officers are among those regarded as corrupt (Traffic Focus, 2012).

When people fail to respect traffic rules, there is no safety on the roads. Road users have the responsibility of knowing how dangerous corruption is and of ensuring their conduct does not endorse it. However, corruption involves actions of both officials and receivers of bribes in equal measure [1]. In Johannesburg, the two problems that stand out to worry the government most are overall death rate and corrupt law enforcers. Regarding fraud and corruption, there would be zero tolerance approach on speed and safety of pedestrians if well planned.

The classification scheme used to estimate the effectiveness of these measures include voluntary action (counter measures that are designed to train, educate or request some behaviour), Law or regulation (require the behaviour), Laws plus enhancements (high-visibility enforcement of the law) and sanctions and treatment of offenders. This study used sanctions and fines as indicators of enforcement of traffic laws and their possible influence on implementation of pedestrian safety rules moderated by attitude of pedestrians.

The presence of traffic police as a traffic management strategy influences implementation of pedestrian safety rules [1]. Comparatively fewer accidents occur in areas with traffic controls especially manned by traffic police yet areas without effective controls and free access to roads increase the possibility of risk of collisions [1]. This is due partly to the traffic mix on the road seen in all road users with high vulnerability and exposure to risk between intersections with speed differences greatest and police presence handy [1]. In this study, presence of police was investigated under enforcement of traffic laws.

Sanctions and fines as enforcement of traffic laws was addressed in NCHRP (2008) which assists states in selecting programmes, projects and activities that had the greatest potential for the reduction of highway death and injury. The objective was producing a manual on behavioural highway safety counter measures with a developed framework, guidance for estimating costs and benefits, emerging estimation of newly tested, untied and proven behavioural highway safety counter measures.

2. Literature Review

The Traffic Act is a legal document passed into law by parliament to enhance traffic laws. Globally, traffic laws state that it is a must for pedestrians to follow traffic signs,

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control signals and pavement markings when crossing a road [2]. At the same time, pedestrians are not allowed on the busy roadways. Pedestrian "rules of the road" specified by some developed countries was that pedestrians were expected to follow certain rules on the road such as using sidewalks whenever they were safely available.

In a review of the Highway Traffic Act of Toronto, Canada, [3] on pedestrian and driver liability, found that many pedestrians, at their peril, believe they have an absolute right of way when they seek to cross or in some other way, engage upon a roadway. When pedestrians do not observe their safety and that of other road users, courts find them completely or partially responsible for the injuries and collisions that occur. The basis of this premise is that a duty of care is owed by drivers' to pedestrians and pedestrians are also obliged to exercise due care for their own safety and the safety of others. The Highway Traffic Act imposes a reverse onus on a driver who impacts a pedestrian on a public roadway [3]. The study assumed that pedestrians act rationally and reasonably, maintaining proper looks out on the road. It also cites location of pedestrians and simple rules of the road to be considered when assessing pedestrian collisions.

The study by [3] concluded that pedestrians legally crossing at designated crosswalks have much higher rights and higher legal protection than pedestrians crossing elsewhere. It recommended that given the reverse onus, it is extremely important that accidents involving pedestrians be investigated early on. Photographs of the accident scenes are taken right away so that the location specifics are preserved. A statement could be taken from the driver to refresh their memory later, from the pedestrian immediately (if possible) before they had a chance to "revise" their version of events. Independent witnesses need to be located and statements obtained from them. The investigating officer is interviewed so that his or her conclusions and any measurements are obtained. While all these seem somewhat onerous, an early investigation is essential in order to allow one to properly assess liability [3].

The Traffic Act (Cap 403) of 2013 in Kenya as an Act of Parliament was meant to consolidate the law relating to traffic on the roads. The Act indicates traffic laws for road users' but gives more emphasis to motorists at the expense of pedestrians. The Act highlights traffic offences, their penalties and regulation of traffic. The Traffic Act was meant to provide the public with education that would improve the level of compliance with traffic rules. This is, however, not the case as the level of knowledge of the Traffic Act is equally low. Pedestrians, besides other road users have a negative attitude towards the Traffic Act hence implementation of pedestrian safety rules remains low. The culture of impunity plays a role in this hence its inclusion as a variable in this study to improve the level of knowledge of the Traffic Act on pedestrian safety.

The Traffic Act Amendment Bill of 2014 was enacted to ensure safety of children on the road especially around schools or when using school transport and for enhancing speed limit enforcement measures. As an amendment of the Traffic Act, Cap 403 on road safety measures, the Bill was aimed at protecting school children and enhancing enforcement mechanisms for speed limit and connected purposes. The amendment seeks to protect child pedestrians through speed regulations around schools while crossing the road to and from school. The clause obligated the roads authority to ensure that there are traffic calming controls near schools. The clause was intended to reduce significantly the road crashes involving children around schools where they were most vulnerable due to high concentration of child population around schools. It also sets speed control regulations and proposed maximum penalties depending on the level at which one exceeds the speed limit. It spells the intention of improving efficiency in enforcement of offences related to speed and reduce corruption, which emanates from offenders who seek to avoid spending lengthy time in court [5].

Presence of police as cited by [6] is likened to the presence of T-blocks and bollards as "sleeping policeman" in which they state that there is a high rate of vehicles damaged when they hit T-blocks and bollards and the number of drivers who do not manage to keep their vehicles on the road. They therefore argue that if the road furniture can prevent 10% of the damage to vehicles or prevent mishaps then the road furniture was a better intervention [6]. The argument further states that incase the damage caused is related to failed brakes, negligent drivers or unroadworthy vehicles driven when drunk or on an unlit night then T- blocks and bollards served the purpose of a "sleeping police man" which contributed to enforcing the desired driver behaviour. This analogy by De Langen, Opiyo and Tembele [7] describe engineering designs as sleeping policeman and silent teachers. Silent teachers (concrete, but very eloquent) and sleeping policemen (always there and fair) was necessary.

In the Kenyan context, [8] a study conducted to assess how operations in the passenger service were affected by 'new' regulations on road safety in Nairobi which also sought to establish the implementation and enforcement opportunities and challenges posed by the new regulations [8]. The study design was cross sectional, descriptive and comparative with PSV operators sampled to take part in the study. Structured and unstructured questionnaire for owners of PSV, commuters, drivers and their conductors and traffic police, TLB, Ministry of Transport, Local Authority and Matatu Welfare Association as key informants were used as data collection instruments [8]. The sample size included 120 PSV operators and data processed and analyzed using SPSS. Descriptive statistics was used to analyze data and student test for hypothesis testing and presentation done using graphs, means, graphs and text in simple table comparisons. The study found significant changes in input and PSV output of [p=0.05], few changes were noted on the PSV drivers and conductors working conditions, transport service quality with improvement of implemented regulations and key regulation enforcers faced regulation enforcement challenges [8]. The study concluded that the recently set regulations were good, but poorly implemented and enforced hence hindering success. Although this study discussed the vulnerability of passengers and how the new regulations affected them [9] it did not address the pedestrian safety regulations, safe road users, safe vehicles, safe roads and safe speed that this study has filled.

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3. Methodology

3.1 Objective

The main objective of this study was to assess the extent to which enforcement of traffic laws influence implementation of pedestrian safety rules in the City of Kisumu.

3.2 Hypothesis

The null hypothesis was formulated as: *There is no statistically significant relationship between enforcement of traffic laws and implementation of pedestrian safety rules in the City of Kisumu.*

3.3 Research design

The researcher adopted descriptive survey research design in this study which Fraenkel and Wallen [10] define as asking a large group of people questions about a particular issue. Both qualitative and quantitative data was used to answer the study objective.

3.4 Target population

The study targeted pedestrians residents of Kisumu City which was 409,928 [11]. From the total population, pedestrians were classified as pedestrians, drivers and key informants.

3.5 Sample size and sampling technique

From the target population, a sample of 384 pedestrians were obtained using Krejcie and Morgan [12] table and distributed as 200 pedestrians, 100 drivers and 84 key informants who were city engineer, traffic police officer, children's park manager. To obtain the roads and streets where the study would be conducted, convenience sampling was used to select roads with higher pedestrian activity. Similarly, convenient sampling was used to obtain the pedestrians when they had just crossed the road or were walking along the road sections. Simple random sampling was used to access the population of drivers. Purposive was used to access the key informants due to the specific information they had regarding transportation and pedestrian movement [13].

3.6 Data collection instruments

For data collection, the researcher employed a combination of tools and strategies [14]. Quantitative data was collected using researcher designed questionnaire (RDQ) for 1) pedestrians and 2) drivers while qualitative data was collected using key informant interviewed schedules (KIIS) with open ended questionnaires and observation checklist (OCL). The RDQ had three sections: the background information, Enforcement of Road Safety Rules Scale (ERSRS) and the Implementation of Pedestrian Safety Laws Scale (IPSLS). The two scales contained items measured on a 5 point LIKERT format to capture the spectra of responses regarding each item on the scale [15]. The questionnaires were tested for reliability using Cronbach alpha where the instruments were considered to be reliable if they provide a Cronbach alpha => 0.7 [15, 16 & 17].

3.7 Data collection procedure

For data collection, several steps were followed. First the research obtained necessary authorization from various levels of administration and research authorities. This included authorization from the University of Nairobi, authorization from the National Commission for Science, Technology and Innovation and the County director of Education. Consequently, the researcher recruited and trained research assistants who facilitated data collection. Pre visit and pilot study was conducted from where the reliability of the instruments were ascertained, the instruments corrected to meet the requirements hence data collection was done. Pedestrians and drivers were accessed through road side interviews while the key informants were visited at the convenient locations which either their homes or workplace.

3.8 Data analysis

Data analysis involved qualitative and quantitative analysis. The qualitative data obtained was analysed using thematic framework where responses were transcribed, coded and collated into emerging themes. The quantitative data was analysed using quantitative techniques by the help of SPSS v. 22. Specifically, descriptive statistics including frequency, percentages, mean, medium and standard deviation were used to quantify the effect of enforcement and implementation of pedestrian safety rules. Inferential statistics, specifically the Pearson Moment correlation, was used to establish the relationship between enforcement of traffic laws and implementation of pedestrian safety rules. Where p value was less than 0.05, the relationship was considered to be statistically significant.

4. Results, Findings and Discussions

4.1 Pilot testing and Reliability of the instruments

Pilot testing was conducted using a sample of 38 (10%) respondents on the unselected roads within the City of Kisumu. Cronbach alpha test was run for the various scales for the two questionnaires- pedestrian and driver questionnaires. For the pedestrian questionnaire, the analysis gave an overall reliability of $\alpha = 0.765$ while for the drivers questionnaire, a reliability coefficient of $\alpha = 0.71$ was obtained. Thus instruments were considered to be reliable in measuring the enforcement and implementation constructs. Reliability index of the various scales in the two types of questionnaire is shown in table 1.

Table 1: Reliability of the study instruments

Pedestrian Questionnaire	Cronbach alpha
Enforcement of traffic laws scale	0.81
Implementation of pedestrian safety rules scale	0.72
Overall mean	0.765
Drivers Questionnaire	Cronbach alpha
Enforcement of traffic laws scale	0.62
Implementation of pedestrian safety rules scale	0.80
Instrument reliability	0.71

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4.2 Enforcement of Safety Laws

4.2.1 Pedestrians on Enforcement

Two items were used to measure this variable. These were "I am law abiding" and "Drivers should be fined for causing risky behavior". Table 2 shows pedestrians' response regarding these items on a scale of 1-5 where 1 = strongly disagree, 2= disagree, 3=Neutral, 4=agree, 5=strongly agree.

Table 2: Enforcement of Traffic Laws

Statement	*SA*	*A*	*N*	*D*	*SD*	*Mean*	*Std.Dev*
I am law abiding	84(42.0%)	86(43.0%)	21(10.5%)	(3.5%)	(1.0%)	4.215	0.844
Drivers should be fined for displaying risky behavior on the road	119(59.5%)	64(32.0%)	6(3.0%)	5(2.5%)	5(2.5%)	4.425	0.874

Those who strongly agreed with the statement "I am law abiding" were 84(42.0%) while those who agreed were 86(43.0%). A very small proportion 2(1.0%) strongly disagreed. Therefore, pedestrians in the City of Kisumu generally consider themselves as law abiding and so were likely to implement pedestrian safety rules.

Sometimes, drivers cause accidents through carelessness. When asked whether drivers should be fined for displaying risky behaviour on the road, the majority of pedestrians 119(59.5%) strongly agreed followed by 64(32.0%) who agreed as provided in Table 2 only 5(2.5%) strongly disagreed with the statement. This is an indication that pedestrians were generally of the opinion that drivers should be fined for displaying risky behaviour on the road. Information also showed that an overwhelming majority of pedestrians (95.5%) were for the increase in quality of enforcement of traffic laws for pedestrians. This indicates that majority pedestrians were dissatisfied with the quality of enforcement of traffic laws in the City of Kisumu.

In order to establish pedestrians' overall view of enforcement of traffic laws, the mean values for the responses in the items were calculated and the summary of findings shows that the distribution was negatively skewed (Skewness = -1.39), with a mean of 3.8825. This suggests that in general, pedestrians' rating of enforcement of traffic laws was just above average.

4.2.2 Drivers on enforcement

Enforcement of traffic laws for drivers had 4 sub themes with a total of 16 statements. Four statements were on road usage, four were on drivers' opinion regarding issues about roads, three were on drivers' opinion regarding issues about drivers as road users, and five were on drivers' view about traffic police in the city of Kisumu. The results on drivers' opinion on statements regarding road usage are presented on Table 3.

Table 3: Drivers' Opinion on Statements regarding Road Usage

Statements	*SA*	*A*	*N*	*D*	*SD*	*Mean*	*Std Dev*
Drivers who break traffic rules make me angry	53(53%)	40(40%)	4(4%)	1(1%)	2(2%)	4.41	0.793
I am worried when family member is driving	12(12%)	21(21%)	19(19%)	35(35%)	13(13%)	3.16	1.245
There is need for more enforcement of traffic laws	59(59%)	30(30%)	5(5%)	2(2%)	4(4%)	1.62	0.972
Pedestrians violate traffic rules more than drivers	19(19%)	26(26%)	18(18%)	24(24%)	13(13%)	2.86	1.333

The study results on drivers' opinion regarding statements on road usage as presented in Table 3 indicate that the majority of drivers 53 (53%) strongly agreed that drivers who broke traffic rules angered them. This was followed by 40(40%) of the drivers who agreed with the statement. A similar outcome was observed by 59(59%) who strongly agreed that there was need for more enforcement of traffic laws while 30(30%) agreed with the statement. In a similar vein, Traffic Focus (2012) reiterated that corruption in traffic safety enforcement manifests itself when corrupt traffic officials allow motorists who speed, or who drive unroadworthy vehicles, to proceed with their journey, making the consequences for other road users be potentially disastrous.

4.3 Implementation of pedestrian safety rules

4.3.1 Pedestrian view of implementation

Implementation of pedestrian safety rules refers to perceived level of safety, level of pedestrian compliance with safety laws and pedestrian activity level as an outcome variable. Five statements were used to measure implementation of pedestrian safety rules as illustrated in Table 4.

Table 4: Implementation of Pedestrian Safety Rules

No. Statement	SA	A	N	D	SD	mean	Std.Dev
1. I obey traffic rules when walking along the road	82(41.0%)	90(45.0%)	14(7.0%)	7(3.5%)	7(3.5%)	4.17	0.955
2. The level of road safety awareness improves implementation of pedestrian safety rules	123(61.5%)	66(33.0%)	6(3.0%)	4(2.0%)	1(0.5%)	4.53	0.701

Statement 1, which was "I obey traffic rules when walking along the road" had a mean of 4 and a standard deviation of 0.955. The results indicate that the majority of respondents 90(45%) agreed that they obeyed traffic rules while walking along the road, 82(41.0%) strongly agreed 14(7.0%), 7(3.5%) disagreed and 7(3.5%) strongly disagreed with the statement.

Statement 2," the level of road safety awareness improves implementation of pedestrian safety rules" had a mean of 4.53 and a standard deviation of 0.701. This results indicate

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that the majority of the respondents 123(61.5%) strongly agreed, 66(33.0%) were neutral, 6(3.0%), 4(2.0%) disagreed and 1(0.5%) strongly disagreed.

In order to establish pedestrians' overall view on implementation of pedestrian safety rules; the mean values for the responses in the items were calculated. The distribution was negatively skewed (Skewness = -.36), with a mean of 4.0150 and SD=.5811. In general, pedestrians' view of implementation of pedestrian safety rules was above average, with the majority of pedestrians holding a positive view about implementation of pedestrian safety rules in the City of Kisumu. Similarly, the Traffic Act Amendment Bill of 2014 supported the findings as it was meant to provide the public with education that would improve the level of compliance with traffic rules.

4.3.2 Drivers' view on Implementation

Drivers' views on implementation of pedestrian safety rules were measured using 8 statements which were on how often drivers performed certain actions when driving. The statements were on a five point Likert scale of 1-5 where 1=Never, 2= rarely, 3=Sometimes, 4=Often and 5 =Very Often. The respondents were asked questions on how often they performed certain actions when driving. Table 5 shows drivers' responses to the 8 statements.

Table 5: How Often Drivers Performed Certain Actions when Driving

Statements	*Very often*	*Often*	*Sometimes*	*Rarely*	*Never*	*Mean*	*Std.Dev*
Driving when too tired	4(4%)	4(4%)	32(32%)	44(44%)	16(16%)	3.64	0.938
Driving when drunk	6(6%)	1(1 %)	8(8%)	17(17%)	68(68%)	4.40	1.092
Driving too close to a car	6(6%)	9(9%)	33(33%)	30(30%)	22(22%)	3.53	1.114
Breaking the speed limit	7(7%)	5(5%)	33(33%)	30(30%)	24(24%)	3.60	1.124
Driving after taking behavior influencing drug	6(6%)	2(2%)	16(16%)	24(24%)	52(52%)	4.14	1.137
Talking on the phone while driving	3(3%)	5(5%)	31(31%)	34(34%)	27(27%)	3.77	1.004
Driving defective vehicle	3(3%)	5(5%)	8(8%)	33(33%)	51(51%)	4.24	1.006
Traffic mix with high pedestrian activity	4(4%)	16(16%)	22(22%)	27(27%)	31(31%)	3.65	1.192

As shown in Table 5, the highest proportion of drivers (44%) rarely drove when too tired. This was followed by 32% who reported that they sometimes drove when too tired and 16% who never did. This is a positive outcome because not many drivers drove when too tired often or very often. A proportion of 68% indicated that they never drove when drunk while 17% reported that they rarely did so. This is again an encouraging result as only a dismal 8% of drivers reported that they sometimes drove when drank. Similar results were obtained for "Driving too close to a car", "Breaking the speed limit", "Driving after taking drug which influences behavior", "Talking on the phone while driving" and "Driving defective vehicle" as indicated in Table 5. This implies that drivers were keen on implementing pedestrian safety rules.

4.4 Hypothesis Testing

The null hypothesis was stated as *there is no statistically significant relationship between enforcement of traffic laws and implementation of pedestrian safety rules in the City of Kisumu.*

Pearson Product Moment Correlation coefficient(r) was determined to examine if a statistically significant relationship existed between the variables on the sample data at 95% confidence level. The results are presented in Table 6.

Table 6: Influence of Enforcement of Traffic Laws on Implementation of Pedestrian Safety Rules

		Implementation of Pedestrian safety rules
Enforcement of traffic laws	Pearson Correlation	0.281
	Sig. (2-tailed)	0.000
	N	200

The results showed that there was a statistically significant relationship between enforcement of traffic laws and implementation of pedestrian safety rules ($r=0.281$, $p<0.001$). This implies that an improvement in enforcement of traffic laws leads to a statistically significant improvement in implementation of pedestrian safety rules.

5. Conclusion

The study found that pedestrian rating of enforcement of traffic laws was above average. Further, the correlation between enforcement of traffic laws and implementation of pedestrian safety rules was statistically significant at $p < 0.001<0.05$ meaning that as enforcement of traffic laws improves, implementation of pedestrian safety rules also improved. Thus the study concludes that effort should be made to increase enforcement of the existing safety laws so as to ensure enhanced implementation of pedestrian safety rules.

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