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EXPERIENCE WITH ROAD TRAFFIC ACCIDENT VICTIMS AT THE NAIROBI HOSPITAL
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ABSTRACT

Objective: **To evaluate the clinical and epidemiological data on automobile injuries and to assess the adequacy of road trauma documentation at the Nairobi Hospital.**
Design: **A retrospective descriptive study.**
Setting: **The Accident and Emergency Centre of the Nairobi Hospital.**
Subjects and method: **Medical records of randomly selected road trauma patients who presented at The Accident Centre between 1st July 1997 and 31st August 1998 were analysed.**
Results: **The mean age was 32 years with a peak incidence in the 21-30 year age group. Males comprised 63.1% of the injured. The predominant category of the road user injured was the vehicle occupant (70%). Pedestrians only constituted 21.3%. Major city roads or highways were the commonest scenes of injury (38.3%). Most of the responsible vehicles were small personal cars (65.8%). The public service minibuses (popularly known as matatu) caused 20% of the injuries. Most of the injuries were mild and transport of the injured to hospital was uniformly haphazard. A quarter of the injuries were severe enough to warrant admission. Trauma documentation was poor with less than 30% accuracy in most parameters.**
Conclusion: **The pre-hospital and initial care of the injured is not systematized. The study calls for re-orientation of trauma care departments to the care of the injured.**

INTRODUCTION

Motor vehicle crashes (MVC) comprise the bulk of mortality from injuries(1). This mortality is largely preventable. While mortality due to road crashes is reducing in western countries, there is a steady rise in the proportion and absolute number of deaths from MVC in the developing countries(2,3). The aspects of prevention are yet to be developed and reinforced. The preventive strategies employed in the West need to be imported into the developing world. This can only be realised with enough data on the demographics, scene characteristics and the mechanisms of the injury.

In both the field management and the initial hospital care of the injured road crash survivors, triage criteria have proved very essential. Triage decisions determine the level, pace and intensity of the initial management of the multiply injured patient. The criteria have included physiological and anatomical variables and recently, the mechanisms of injury(4). The triaging of these multiply injured is the responsibility of Emergency Departments.

Many studies rely on the Emergency Department data collection for assessing the adequacy of trauma care and designing preventive strategies. But, information regarding collision factors, type and use of restraint, vehicular damage, and ejection and patient position are often missing from Emergency Department data records(5). The current study aimed at providing clinical and epidemiological data on automobile injuries at the Nairobi Hospital and to assess the adequacy of road trauma documentation at the Hospital's Accident and Emergency Department.

MATERIALS AND METHODS

The study was carried out at the 200-bed capacity Nairobi Hospital, one of the major private hospitals in the city of Nairobi. The hospital has a major commitment to Accident and Emergency medicine as evidenced by the recent opening of its multi-million Accident and Emergency Centre. Though not a designated trauma center, the hospital has facilities for a level II center. Most of the physicians at the center have ATLS certification.

The design of the current study is a descriptive retrospective review of the records of road trauma patients seen at the Accident and Emergency Department from 1st July 1997 through to 30th June 1998. A random sample of 160 records was analysed for the following information: demographic data: age, sex, occupation; injury characteristics: scene, time of day, pre-hospital time, vehicle involved, transport method, injury severity score (ISS) region involved and disposition and; adequacy of documentation: collision factors and injury mechanism, patient position, use of alcohol, extrication method, vehicle speed, roll-over, ejection, mangling, seat belt use.

The data was collected in pre-coded sheets and analysed using the SPSS PC statistical software. The data were summarized using frequency tables, means and standard deviations for the different variables.

RESULTS

Demographic characteristics: A total of 160 patients' notes were reviewed in this study. The age range of the patients was five to 85 years with a mean age of 32. The age group most commonly involved in road trauma was 21-30 years (32.1%) (Table 1). Three quarters of the patients were aged below 40 years. Males were affected in 63.7% of the cases and females in 36.3% giving a male:female ratio of 1.7:1. Of the patients whose occupation could be determined 60.26% (47/78) were gainfully employed. A minority (8.97%) were unemployed (Table 1).

Table 1

Road trauma patients' characteristics at the Nairobi Hospital

Characteristic		No.	%	Cumulative %
Age	0-10	16	10.8	10.8
	11-20	18	12.4	22.96
	21-30	47	32.1	54.7
	31-40	33	22.3	77
	41-50	23	15.6	92.6
	51-60	7	4.7	97.3
	>60	4	2.7	100
Sex	Male	100	63.7	63.7
	Female	57	36.3	100
Occupation				
	Office worker	33	42.31	42.31
	Self employed	14	17.95	60.26
	Unemployed	7	8.97	69.23
	Student/child	20	25.64	94.9
	Other	4	5.1	100
	Total	78	100	
Patient category				
	Pedestrian	27	20.4	20.4
	Driver	28	21.2	41.6
	Passenger	67	50.8	92.4
	Cyclist	10	7.6	100
	Total	132	100	

Scene, patients category, vehicle type, transport to hospital, time. Majority of the injuries occurred in major city roads (38.3%). Other scene of injuries included major highways (15.8%), within the residential areas (11.2%) and the city center (3.7%). Thirty-three of the road crash survivors (30.8%) were brought into the A and Emergency center from accident scenes outside the city. Majority of the injured were occupants (72%)(Table 1). Pedestrians constituted only 20.4% (27/132) of the cases. Most injuries occurred during the day (83.7%). The involved vehicles were, small private cars in 65.9% of the cases, public service "matatus" in 20.0%, motorcycles in 5.9% and buses/lorries in 8.2 % of cases. The commonest mode of transport to the hospital was by private vehicles of other road user (18/34). Public transport and ambulances were each utilized in 20.6% of the cases (Table 2).

ISS region: The ISS region most commonly affected was external (63.9%) (Table 3). The proportions of head/neck and extremity injuries were 14.3% and 13.6% respectively. Combination injuries comprised 6.8% of the cases. The pattern of ISS regional injuries is mirrored in the disposition pattern where majority of the patients were treated and discharged (73.4%). Twenty five percent of the road trauma patients were admitted (40/158)(Table 3).

Table 2

Road accident characteristics at the Nairobi Hospital

Characteristic	No.	%	cumulative %
Scene of injury			
Major Road	41	38.32	38.32
Highway	17	15.89	54.21
City Center	4	3.74	57.95
Out of city	33	30.84	88.79
Residential	12	11.21	100
Total	107	100	
Vehicle involved			
Private car	56	65.9	65.9
Matatu	17	20.0	85.9
Lorry/Bus	7	8.2	94
Motorcycle	5	5.9	100
Total	85	100	
Transport to hospital			
Public	7	20.6	20.5
Crash vehicle	2	5.9	26.5
Other drivers	18	52.9	79.4
Ambulance	7	20.6	100
Total	34	100	
Time of day			
Day	103	83.7	83.7
Night	20	16.3	100

Table 3

ISS regions affected and disposition of road trauma patients at the Nairobi hospital

Characteristic	No.	%	Cumulative %
ISS region affected			
External	94	63.9	63.9
Extremities	20	13.6	77.5
Head/neck	21	14.3	91.8
Chest	2	1.4	93.2
Combination	10	6.8	100
Disposition			
Discharged	116	73.4	73.4
Admitted	40	25.3	98.7
Transferred	2	1.3	100

Table 4

Adequacy of road trauma documentation at the Nairobi Hospital

Adequacy parameter		No.	(%)	Cumulative %
Position Inquiry	Yes	131	81.9	81.9
	No	29	18.1	100
Extrication	Yes	5	3.1	3.1
	No	155	96.9	100
Collision factors (speed, rollover, ejection etc)	Yes	30	18.9	18.9
	No	129	81.1	100
Seat belt	Yes	26	27.4	27.4
	No	69	72.6	100
Alcohol	Yes	10	18.2	18.2
	No	45	81.8	100

Documentation adequacy: The overall documentation was poor (Table 4). Inquiry into patient position was made in 81.9% of the cases. Alcohol use inquiry was made in 18.2% of the cases and extrication method in 3.1%. Assessment of collision and impact factors like speed, rollover, ejection and mangling was possible in 18.8% and seat belt use in 27.3% of cases.

DISCUSSION

The demographic profile of the population in this study is similar to the general trauma population. Most of the patients were young with 18.2% aged 15 to 24 years and 75% aged under 40 years. This compares to the general trauma population worldwide, where approximately 20% of patients are between 15 and 24 years of age and those under 45 sustaining almost 80% of all injuries(6). The predominance of males over females is also a worldwide trauma phenomenon. Because trauma affects mainly the young population it results in the loss of more working years than all other causes. The loss, pain, suffering, or incapacitation of the young is tragic. The lifetime cost of injury, which takes into account the cost of acute and chronic care as well as the cost due to loss of economic productivity is about 75% attributable to the injured young. The current study demonstrates that only 8.97% of the injured were not in gainful employment.

The majority of accidents within the city occur in designated major city roads, during the day and involve occupants of small personal vehicles. Such information is important if preventive tactics must be evolved to curb the road carnage. It would identify the danger spots in our road system. In the developed countries, changes in road designs and the strategy of traffic calming have enabled significant reduction in the road crashes. It was shown 17 years ago(7), that trauma mortality has a trimodal distribution with 50% of the deaths being immediate. Improved medical care cannot significantly alter this immediate mortality. Prevention is the key. Knowledge of the risk scenarios and injury circumstances has been used successfully to reduce trauma mortality. The pattern of occupant injury forming the bulk of the victims is a replica of that of economically advanced nations.

The pattern is different from those reported from developing countries where the majority of patients are pedestrians(8,9). In his survey of road accidents in Kenya, Odero found a pedestrian prevalence of 64.5%(9). These findings are similar to studies in Kumasi, Ghana(8), Kampala, Uganda(10), Addis Ababa, Ethiopia(11) and elsewhere in the developing world. It is conceivable therefore that the observed difference between the finding in this study and the latter studies is a function of socioeconomic differences between the trauma populations(8).

The pre-hospital phase of trauma care, encompassing rapid and safe transport to hospitals by use of ambulances, coupled with immediate surgical treatment within trauma systems significantly reduces preventable deaths. Our study indicates that most of the patients reach hospitals by the goodwill of passersby and other road users. The study by Macharia *et al* showed that good Samaritans evacuated 71.2% of Kenyan road trauma victims(12). Kenya lacks a trauma system, be it within the hospitals in the form of designated trauma centers or the pre-hospital phase.

The inadequacy of road trauma documentation revealed in this study corroborates with other studies(13-15). Adequate trauma documentation is helpful in triage, research, trauma care, and the analysis of the quality of trauma care. Further, the practice of medicine has come under more intense scrutiny and therefore, the manner in which it is practiced warrants fiscal and medico-legal responsibility. Concise, descriptive documentation in medical record is crucial for patient and physician alike. Although some may criticize that this may lead to over-triaging, in order not to miss any severely injured patients, some over-triage is necessary. What may however be recommended is the creation of standardized system of collecting trauma inquiry data. The data sheets would facilitate emergency department health care and reduce case documentation burden for the emergency department nurses and physicians. Although there may be arguments that this ultimately is unlikely to affect the patient treatment or outcome, explicit documentation is one of the most useful deterrents to medical litigation(13).

The limitations of the current study stems first from its restriction to a medium size private hospital. This may deny the study the external validity necessary to project the findings to the wider population in terms of patients and demographic characteristics. As stated, majority of the patients here are either employed, self-employed or children. The burden of care is likely to be met through medical insurance schemes or personal funds. But, over 70% of motor vehicle crash victims in this country are treated at public hospitals. Most of these are either casual labourers or unemployed with no medical insurances(16). Thus the greatest burden of care is to the government and the taxpayer. Any data that we failed to capture is consequent on the limitations inherent in retrospective study designs like this one.

CONCLUSION

The study has provided data on road trauma characteristics in a medium size private hospital in Nairobi. The age and sex prevalence is similar to other trauma studies. Evacuation, transport and pre-hospital phase of the care is haphazard with many at the mercy of passersby and other road users. The documentation of trauma on our roads is poor. It is recommended that a trauma system be established with a pre-hospital and hospital phases. The latter may incorporate standardised trauma inquiry forms to be used by all physicians assessing trauma patients.

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