

National Non-Fatal Injury Surveillance System

**KING EDWARD VIII HOSPITAL
DURBAN, KWA ZULU-NATAL
PILOT STUDY REPORT**

Report prepared

by

Members of the Violence and Injury Surveillance Consortium

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Thank you too, to all the doctors who completed proformas and gave valuable input into the amendment of the form.

We hope that the envisaged surveillance form will eventually be adopted permanently and lead to the collation and documentation of accurate statistics from King Edward Hospital.

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1. INTRODUCTION

The lack of reliable national level data on the extent of injury mortality and morbidity makes it difficult to establish its contribution to South Africa's burden of disease.

The effect of this injury information vacuum is an impoverished primary prevention and injury control response. Without appropriate data, resource allocation within the health services will remain inappropriate and ineffective, and it will be difficult to design, establish and evaluate systematic injury prevention and control programmes. Good quality injury data are also fundamental to making health resource allocation decisions, especially in the South African situation where there are substantial disparities between various socio-economic groupings.

Recognising the need for a concerted response to injuries in South Africa, the 1996 Essential National Health Research Congress identified research for injury and violence prevention as the top priority. In February 1997, South African Minister of Health and the US Secretary of Health and Human Services signed a joint statement on collaboration around violence as a public health problem. This formed part of the US-South Africa Bi-National Commission. In July 1997 a consultative conference on health and violence prevention identified the *"absence of valid, ongoing and timeous information about the basic determinants of violence and injury"* as a barrier to effective prevention and control, and thus prioritised the development of a fatal and non-fatal injury surveillance system. Financially supported by the Department of Arts, Culture, Science and Technology's (DACST) innovation fund for crime prevention, the first steps towards overcoming the South African injury surveillance crisis are in the process of being addressed.

A consortium of research partners (Medical Research Council, University of South Africa, Centre for Scientific and Industrial Research) have been charged with the responsibility of setting up a national injury surveillance system incorporating both morbidity and mortality.

2. THE NATIONAL NON-FATAL INJURY SURVEILLANCE SYSTEM

The National Non-fatal Injury Surveillance System will involve violence and injury surveillance through a sentinel system of health facilities in the country. It is estimated that every non-natural death in South Africa is accompanied by around 80 non-fatal injuries, meaning that the approximately 60 000 injury deaths each year are matched by some five million non-fatal cases,

of which between 50 and 60 percent present to health facilities. While perhaps desirable, it is unfeasible to monitor all 2.5 million injuries seen in the health sector, requiring instead that a sampling-based surveillance system be developed. This is known as sentinel surveillance, and the success of such systems depends on the degree to which the facilities used as sentinel sites are representative of the injury profile across all demographic and social sectors. The system will record data for first-time attendees at participating health facilities, and no referrals will be included. It is the objective of this component to establish such a system for South Africa.

2.1 Aims

The National Non-fatal Injury Surveillance System's **ultimate aim** is to establish a permanent system in sentinel hospitals throughout the country in order to register and describe injuries which occur annually in South Africa.

2.2 Goals

The National Non-fatal Injury Surveillance System's goals are:

- To provide ongoing and systematic information about the incidence, causes and consequences of all non-fatal injuries at local, regional and national levels
- To enable the early identification of new injury trends and emerging problems so that adequate interventions can be timeously established
- To determine priorities for injury and violence prevention action, both for high-risk groups and socio-economic risk factors
- To help evaluate direct and indirect violence and injury prevention measures
- To monitor seasonal and longitudinal changes in injury profile
- Policy and decision-making capacity

While the National Department of Health is the primary client for the proposed surveillance system, programme beneficiaries include all state, private and non-governmental agencies formally engaged in violence prevention and injury control who will apply the information in their day-to-day planning and service delivery.

2.3 Surveillance Methods

There are at least 361 public and 383 private health facilities (clinics, hospitals, etc.) which treat the approximately 2.5 million new victims of violence and injury annually in South Africa.

While desirable, it is logistically impossible to establish a comprehensive morbidity surveillance system that covers all injuries at all sites. Internationally, there has been a move away from attempts to achieve this, to strategic sentinel surveillance, a more labour and cost-effective option that is also more sustainable and achieves similar results.

The effectiveness of such a system depends on the degree to which the sentinel sites chosen represent the entire spectrum of violence and injury experiences. Both the amount and the characteristics of violence and injury events and causes differ widely, not only within cities, but also between cities, towns and rural areas. The proposed sampling frame is therefore aimed at identifying sentinel sites to cover all of these contexts.

To select these sentinel sites, all health facilities treating injury victims will be evaluated for inclusion in the study, using the following criteria:

- Geographical location (province, urban, rural, metropolitan).
- Level of care (primary, secondary, tertiary)
- Patient population (head count of trauma units).
- Catchment population (community demographics)
- Public / private status (cost of care)

**The target victims are all first time attendees at a health facility.
No referrals will be included**

2.4 The Data Collection Form

The National Non-fatal Injury Surveillance data collection form has been developed with the guidance of both local and international experts. It incorporates elements of the International Classification of External Causes of Injury (although these have been modified somewhat for the South African situation) in order to obtain data which may be compared with many other countries who use this system.

In order to meet the needs of both researcher and clinician the data collection form has been developed to include doctors notes, forensic drawings and management. The completed form therefore provides a comprehensive summary of the patient's injuries, management and outcome.

The proforma consists of four pages. The first page is in duplicate and is the actual injury surveillance data capture form. It collects the following information:

- hospital, province
- patient demographics
- city, suburb and scene of injury as well as activity at the time of the injury
- alcohol and drug-relatedness of the injury
- cause of injury and specific mechanism as well as perpetrator victim relationship and type of violence
- severity of injury
- placement after initial treatment

2.5 Piloting of Data Capture Form

Two sites were chosen for the piloting of the National Non-fatal Injury Surveillance System data capture form, viz. King Edward VIII hospital (KEH) in Durban and GF Jooste hospital in Cape Town.

KEH has now completed its first month of piloting this proforma (25 January to 22 February 2000) and this report presents some general information, the findings from the study as well as the problems experienced by doctors completing the forms.

3. GENERAL INFORMATION

3.1 Instruction Manual

An instruction manual on how to complete the proforma was produced and a number were left in the KEH Trauma Unit for access by doctors completing the data capture forms.

This manual includes:

- An overview of surveillance.
- An explanation of all variables included on the data capture form
- Some examples.

3.2 Form completion

Forms were completed as a matter of routine by each doctor assessing a patient who had presented to KEH Unit with an injury. The duplicate questionnaire and other pages are retained in the patient's file as 'patient notes'. The top copy of the questionnaire is used for surveillance purposes.

Doctors at KEH were given training on the completion of the surveillance form by MRC staff in Durban during the first week of the pilot project. Regular feedback and encouragement was given throughout the piloting phase.

3.3 Acceptability of Data Capture Form

In general, the doctors were happy with form since they found it relatively easy to complete and it obviated the need for them to write additional notes. They were happy to continue using the form after the one month piloting period was over. Their only complaints were that the carbon paper was making their hand dirty and that they had to staple the proforma to the patients out patient record.

3.4 Computerisation of Data Capture Form

A database was designed in Epi Info 6.04 for the piloting phase and data was punched in and analysed using this programme. However, when all the sentinel hospitals are included in the

surveillance system, something more sophisticated, like MS Access, will need to be used to warehouse the data.

The data punching was out sourced and these personnel were paid to punch in the data. In general, few data punch errors were found. The data was checked, cleaned and analysed by MRC researchers.

Each form completed by the doctor was also assessed for accuracy (or face validity). Each variable on the proforma was assessed for:

- blanks
- complete but incorrect
- wrong category completed

4. PROBLEMS ENCOUNTERED

The piloting of the data capture form commenced a week late because the printers encountered problems with the replication of the forms. Also, a self carbonating paper could not be used because of the proforma design and consequently carbon paper had to be used as an interim measure. Despite reprinting the forms the following problems remain:

- The carbon paper used is very expensive and messy
- The glue used by the printers is useless and so researchers needed to staple the forms together by hand - this was very time consuming
- The writing still comes through from the back pages onto the questionnaire copy
- The forms colour coding makes the forms very user-friendly but understandably very expensive to produce
- At KEH the doctors need to staple the 'Patient Management section' to each patient's outpatient card

Other general problems encountered include :

- Doctors change often and new doctors need to be continuously updated on the correct completion of forms
- Duplication is a problem where the same case information is recorded at three different sources viz. casualty register, cubicle registers and an additional 'door-clerk' which are all

recording the same information incompletely

- Sport as a variable needs to be included under 'accidental' injuries or alternatively correctly coded under the appropriate section of 'activity at the time of injury'.

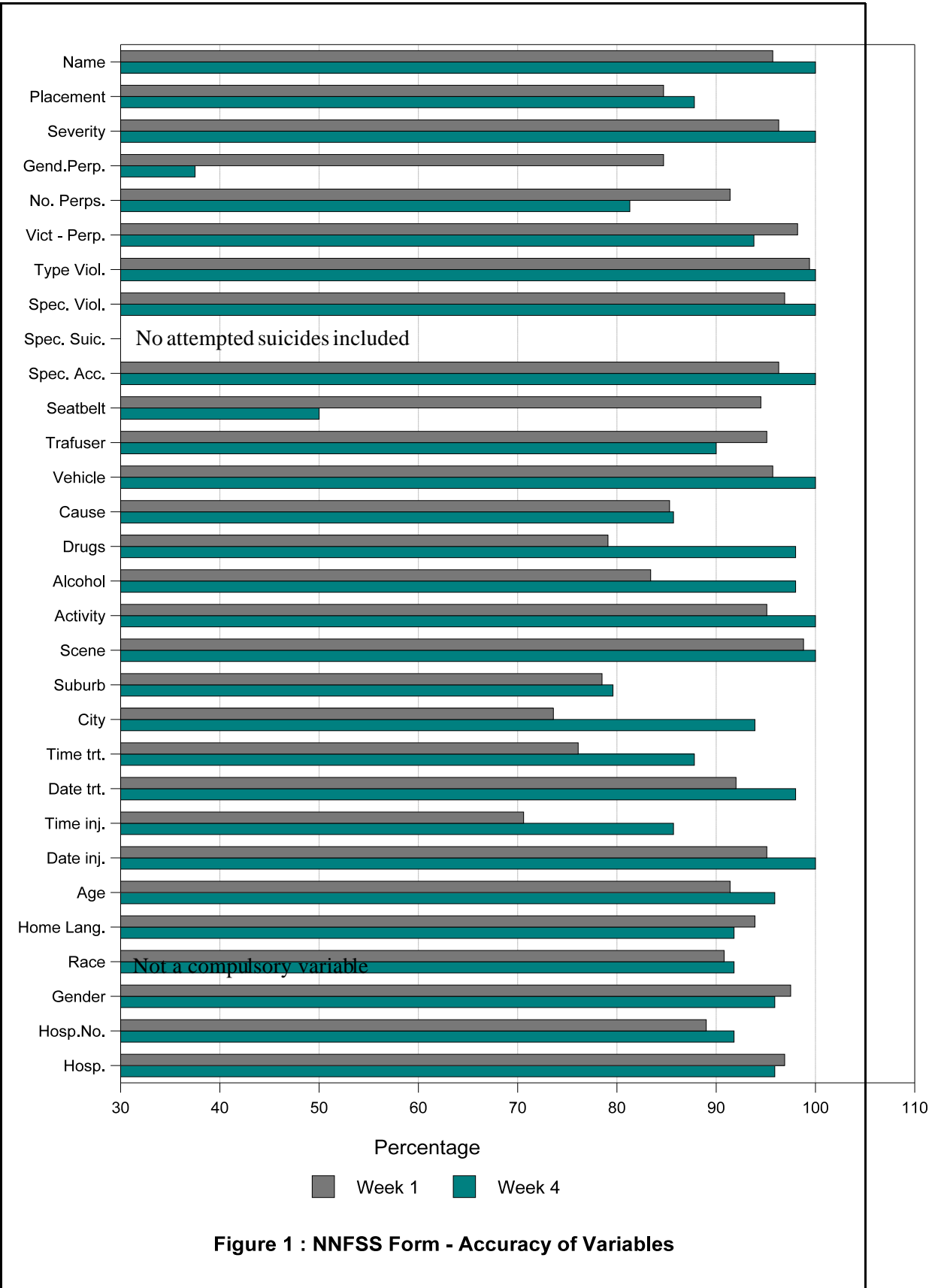
5. RESULTS

5.1 Accuracy of Forms

After the first week of data capture the forms were assessed for accuracy. Twenty-nine variables were assessed. In 21 (72.4%) there was 90% or more accuracy. The poorest variables were time treated, time injured and placement. This information was fed back to the doctors completing the forms.

The last week of the study period was also assessed for accuracy. The accuracy remained the same (72.4% of variables having 90% or more accuracy). The poorest variables here were gender of main perpetrator and safety belt usage.

A total of 606 forms were completed for the four-week period 25 January to 22 February 2000. Eight hundred and thirty two cases were registered in the Casualty logbooks at KEH trauma unit for this time period. In other words 72.8% of patients had Injury Surveillance forms completed.



5.2 Demographics

5.2.1 Gender

Males dominated, accounting for 72.4% of cases.

5.2.2 Race/Home Language

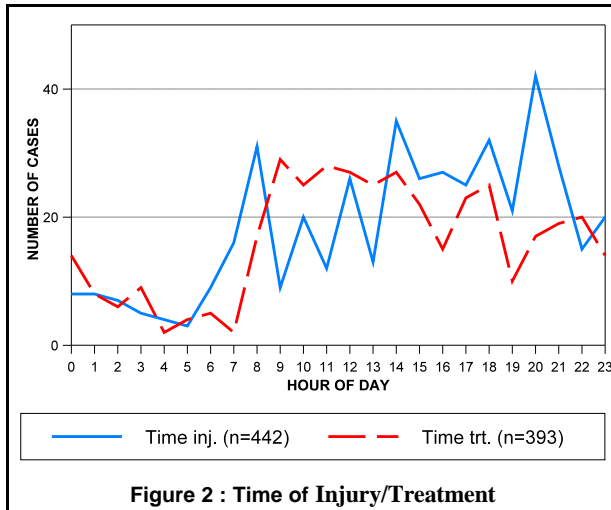
Race was an optional variable and therefore not completed by all doctors. Among those that were completed, 94.4% of patients were Black and 92.4% used Zulu as their home language. Home language is more important for the development of appropriate prevention and control programmes than racial categorisation.

5.2.3 Age

Age ranges	n (%)
0 - 14	87 (15.7)
15 - 24	162 (29.2)
25 - 34	163 (29.4)
35 - 44	78 (14.1)
45 - 54	41 (7.4)
55 - 64	13 (2.3)
65 - 74	7 (1.3)
75 +	3 (0.5)

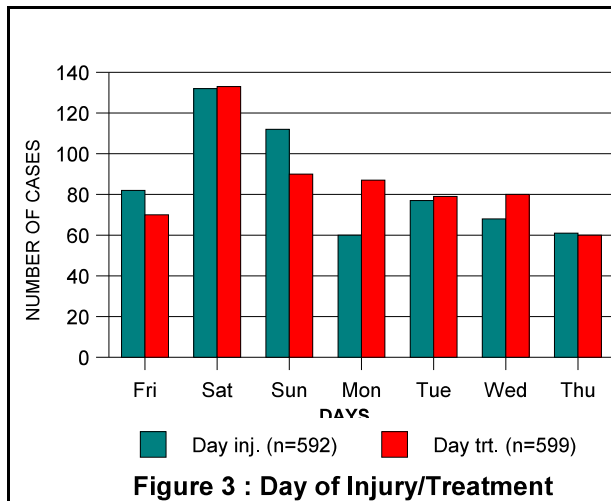
The mean age of patients presenting to KEH was found to be 27.3 (\pm 14.3) years. The 15-34 age group accounted for nearly 60% of cases (Table I).

5.3 Date and Time of Injury versus Treatment



Injuries occurred almost equally during office hours (50.7%) and after hours (49.3%). However, 60.6% of patients were treated during office hours (Figure 2).

5.3.1 Day of Injury/Treatment



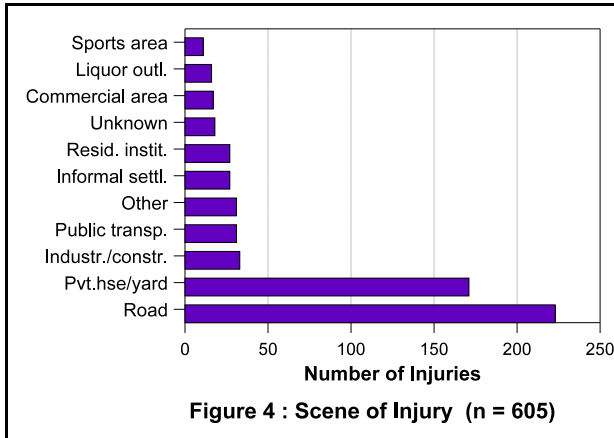
Nearly a quarter of all injuries seen at KEH occurred on a Saturday (22.3%). An almost equal number of patients were treated (22.2%). More than half (55.1%) of all injuries occurred over weekends (Friday to Sunday) whereas slightly less were treated (48.9%).

5.4 Place of Injury

5.4.1 Suburb

Kwa-Mashu was the suburb where almost one-quarter of patients were injured (23.1%). This is not unexpected because of the close proximity of Kwa-Mashu to KEH and the large population in this area. Mayville, Central Durban, Ntuzuma, Umbilo and Umlazi each had between 5 - 9% of injuries.

5.4.2 Scene



As can be seen in Figure 4, the majority of patients were injured on the road (36.9%), or in and around the home (32.7%), including informal settlements.

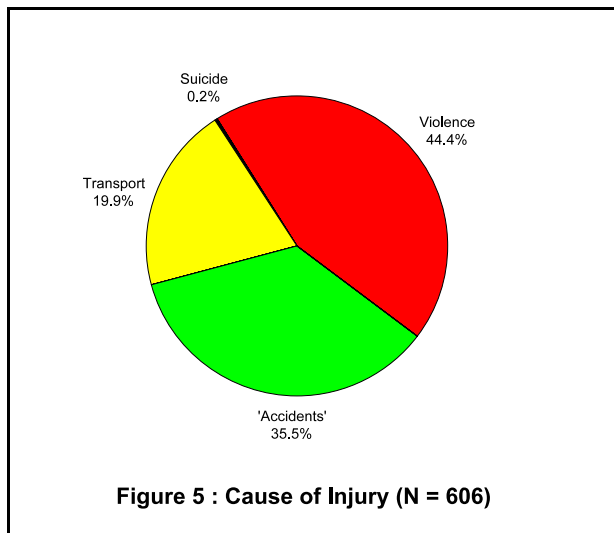
One-third of violent injuries took place at home and another third on the street.

The 'other' category included schools, medical service area, bodies of water, open land, prison/custody and recreational areas.

5.5 Activity at time of Injury

The most common activity at the time of injury was travelling (27.2%), followed by leisure/playing (21.6%) and simply doing nothing in particular (21.3%).

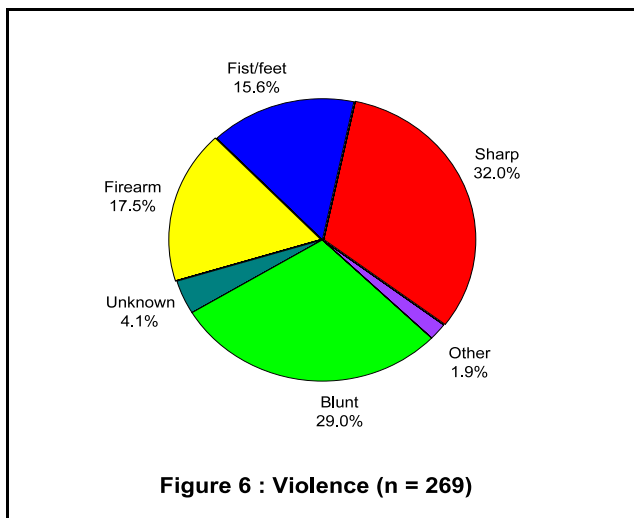
5.6 Cause of Injury



Violence accounted for nearly half of all injuries presenting to KEH, while unintentional 'accidents' accounted for just more than one-third of all injuries (Figure 5).

5.6.1 Violence

As can be seen in Figure 6, sharp objects were the weapon in just under one-third of violent episodes while blunt objects accounted for a further 30%. Firearms were only used in 18% of violent attacks.

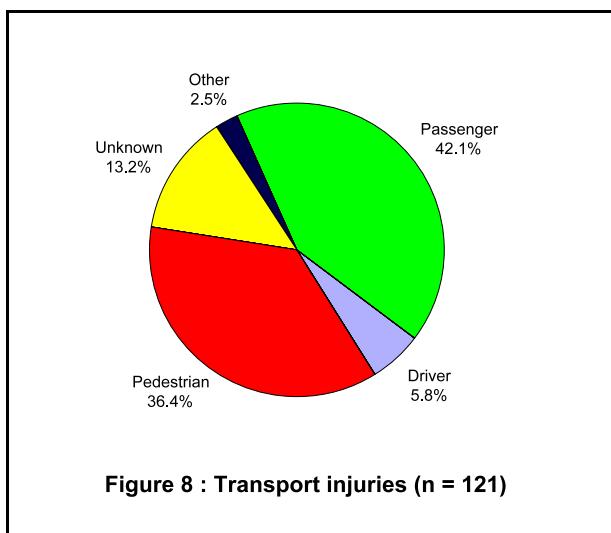


In 68.4% of violent injuries, the type of violence was classified as interpersonal. Gangs/syndicates (8.6%), legal intervention (3.7%) and rape (1.5%) were the other leading types of violence.

In 42.4% of cases the perpetrator of violence was a stranger while in 18.2% it was a friend. In only 5.2% of cases was the perpetrator acknowledged to be a spouse or partner indicating domestic or intimate partner violence. This could, however, be an under-representation since women are often hesitant to implicate partners.

In nearly 75% of cases the main perpetrator of the violence was a male attacking a male. In 18.2% of cases the violence was male on female, in 3.5% it was female on male and in another 3.5% it was female on female.

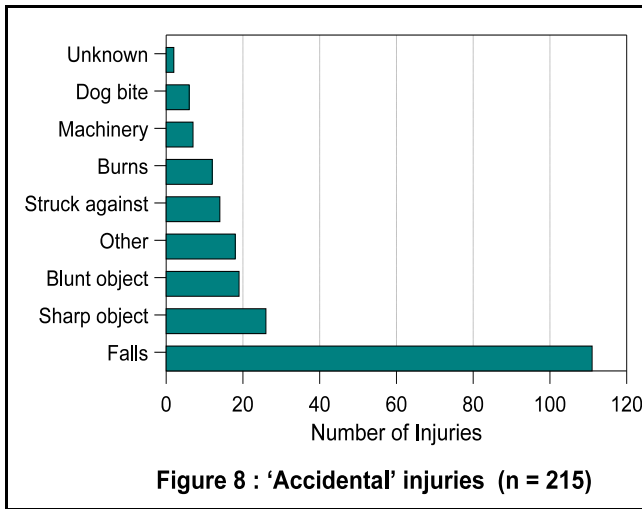
5.6.2 Transport-related Injuries



Cars were the vehicles involved in 50.4% of transport accidents while minibus taxis accounted for 33.1%. Trains were the third highest responsible for 4% of injuries.

Seatbelts were not used in 50% of injuries involving passengers or drivers. Only 12.1% were definitely wearing seatbelts, however, in 37.9% of cases the seatbelt usage was unknown.

5.6.3 Other 'accidents'/ Unintentional injuries



Over half of all non-traffic 'accidental' injuries were due to a fall. One-third of these were among children under the age of 14 years.

No near-drownings were recorded for the time period possibly because the study was conducted after the tourist season. Few burn injuries were registered- these would be higher in winter when fossil fuels are used for heating.

5.7 Substance Abuse

This variable was assessed by a combination of self-report and the *doctors'* clinical judgement. Overall 20.6% of patients were assessed to have consumed alcohol prior to their injury while only 2.3% had used drugs.

Alcohol-relatedness was found in 37.2% violence, 13.2% transport and 3.7% unintentional injuries. Of the seven drivers who were injured, two had been drinking and one had used drugs.

This method of assessing substance abuse generally underestimates the true relationship but is the only method available without more definitive methods such as breath or blood analysis.

5.8 Severity and Placement

Nearly half (49.7%) of the injuries sustained by patients were assessed to be moderately severe, 42.9% were minor and only 7.1% were severe. There were two fatal pedestrian injuries.

Most patients (55.6%) were discharged, or transferred to other departments for further management (28.4%). Sixteen percent of patients were admitted to a ward. The transfer rate at KEH is elevated because this variable also represents internal transfer - at KEH many patients are sent to other departments for tests/x-rays/consultation. In these cases the doctors tick 'transferred' because the patients do not come back to Trauma Unit.

6. SUMMARY

To summarise, these results showed that:

- injured patients were predominantly young males
- most injuries were the result of violence
- sharp objects were the major cause of injury
- most of the patients who were involved in traffic collisions were pedestrians
- injuries occurred mostly after hours and on the weekends
- victim-perpetrator relationship was predominantly strangers
- the gender of the main perpetrator was predominantly male-on-male
- the most common activity at the time of injury was leisure/playing
- many patients had consumed alcohol prior to their injury and a number had also used drugs such as cannabis and mandrax.

7. CONCLUSION

The implications for this and future surveillance data for injury prevention and proper resource allocation are substantial. For the first time KEH will be able to accurately and comprehensively document its trauma cases and this data will be available to all researchers and decision-makers.