

National Non-Fatal Injury Surveillance System

# **G.F. JOOSTE HOSPITAL PILOT STUDY REPORT**

Report prepared

by

Members of the Violence and Injury Surveillance Consortium

May 2000

A DACST Innovation Fund Project



## **Acknowledgements**

Special thanks are due to the Dr Maharaj (Medical Superintendent), Dr Naidoo (Head of Trauma Unit), all the doctors and nursing staff of GF Jooste Hospitals who participated in this study. We are grateful for their candid comments and for providing us with their valuable trauma statistics. We hope that the envisaged surveillance system will eventually play a part in reducing their substantial workload.

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## CONTENTS

	Page
1. INTRODUCTION .....	1
2. THE NATIONAL NON-FATAL INJURY SURVEILLANCE SYSTEM .....	1
2.1 Aims .....	2
2.2 Goals .....	2
2.3 Surveillance Methods .....	3
2.4 The Data Collection Form .....	4
2.5 Piloting of Data Collection Form .....	4
3. GENERAL INFORMATION .....	5
3.1 Data Capture Form - Instruction Manual .....	5
3.2 Form Completion .....	5
3.3 Acceptability of Data Capture Form .....	5
3.4 Computerisation of Data Capture Form .....	6
4. PROBLEMS ENCOUNTERED .....	6
5. RESULTS .....	7
5.1 Accuracy of Forms .....	7
5.2 Demographics .....	8
5.2.1 Gender .....	8
5.2.2 Race .....	8
5.2.3 Age .....	8
5.3 Date and Time of Injury vs Treatment .....	9
5.3.1 Day of Injury/Treatment .....	9
5.4 Scene of Injury .....	9
5.5 Activity at Time of Injury .....	10
5.6 Cause of Injury .....	10
5.6.1 Violence .....	10
5.6.2 Transport-related injuries .....	11
5.6.3 Other accidents/Unintentional injuries .....	11
5.7 Substance Abuse .....	12
5.8 Severity and Placement .....	12
6. SUMMARY .....	12



## 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 fatal and non-fatal injury surveillance to overcome it. 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 data.



## 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 facility 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 therefore unfeasible to monitor all of the 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.) treating the approximately 2.5 million new victims of violence and injury that present to these facilities each year.

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 form 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.

GFJ has completed its first month of piloting this proforma and this report presents some generation 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, explaining how to complete the proforma, was produced and a number were left in the GFJ Trauma Unit for access by doctors completing the data capture forms.

This manual included:

- 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 the GFJ Unit with an injury. The duplicate questionnaire and other pages are retained in the patients file as 'patient notes'. The top copy of the questionnaire is used for surveillance purposes.

Doctors at GFJ were given training on the completion of the surveillance form by MRC staff 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**

Initially the doctors did not complete the forms complaining of 'too much of paperwork' and that the carbon paper used was 'making everything dirty'. Consequently, during the first week of data capture not all trauma patients were included and the forms were completed very haphazardly.

The Head of trauma was revisited and asked for his support and assistance for the success of the surveillance. A retraining session was done and a fair response was noted. Doctors thought that they had to complete the surveillance form and then still write their own notes. They were not aware that the form would replace their previous method of documentation.

After retraining, the pilot study was 'restarted' on the 28 January 2000. Unlike King Edward Hospital where the doctors asked to continue completing the forms after the one month pilot was complete - the doctors at GFJ did not want to continue. Furthermore, about 500 uncompleted forms went missing or were discarded.



### **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**

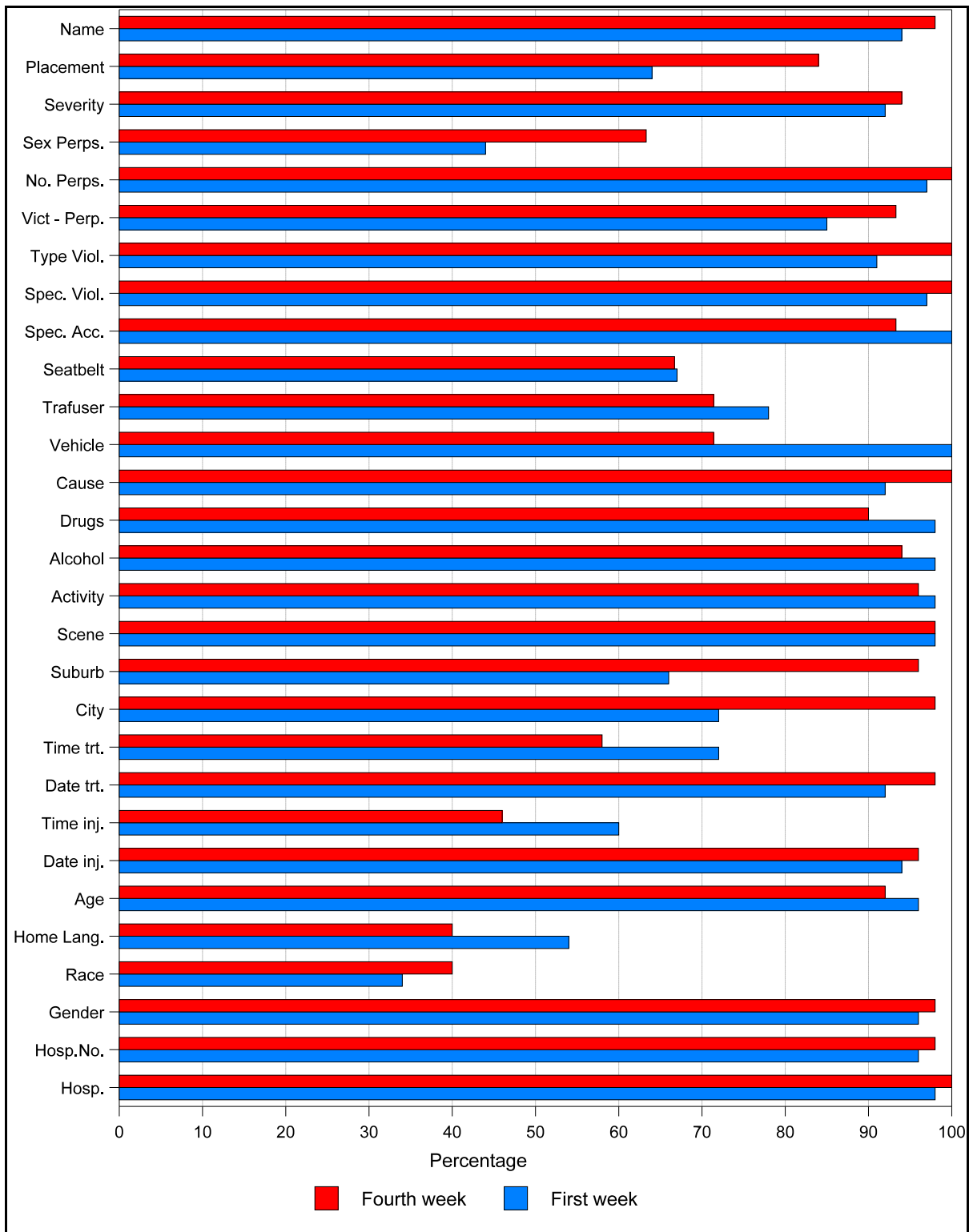
The piloting of the data capture form commenced a week late because the printers encountered problems with the replication of the forms. Also, a self carbonating paper could not be used because of the proforma design and consequently carbon paper had to be used as an interim measure. Despite reprinting 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 are expensive to produce in three colours although very user-friendly

## **5. RESULTS**

### **5.1 Accuracy of Forms**





**Figure 1 : Accuracy of variables completed on Injury Surveillance Form**

After the first week of data capture the forms were assessed for accuracy. Twenty-nine variables were assessed. In 18 (62.0%) 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. After one month, accuracy was reassessed. Twenty (68.9%) of the variables had an accuracy of 90% or more.

A total of 516 forms were completed for the four-week period 28 January to 24 February 2000. However, 860 trauma patients were registered in the casualty register in the GFJ trauma unit for this time period. In other words, in only 60% of cases was a proforma completed for the injured patient.

## 5.2 Demographics

### 5.2.1 Gender

More than two-thirds (67.9%) of the patients presenting to this facility were males.

### 5.2.2 Race/Home language

Race was an optional variable and therefore not completed by all doctors.

Home language was poorly completed. This was possibly because most doctors placed a patient sticker on the form and this variable was obscured as a result. It would be important to obtain this information for prevention purposes.

### 5.2.3 Age

The mean age of patients presenting to GFJ was found to be 28.4±14.0 years. The 15-34 age

**Table I : Ages of patients presenting to GFJ (n=486)** group accounted for nearly 60% of cases (Table I).

Age ranges	n(%)
0 - 14	59(12.1)
15 - 24	161(33.1)
25 - 34	123(25.3)
35 - 44	83(17.1)
45 - 54	39(8.0)
55 +	21(4.3)

### 5.3 Date and Time of injury vs Treatment

Approximately one-third of injuries occurred during office hours (35.9%) and 64.1% after hours. However, only 30.1% of patients were treated during office hours (Figure 2).

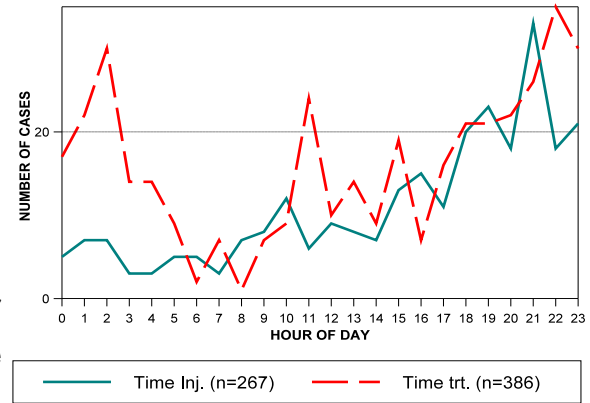


Figure 2 : Time of Injury/Treatment

#### 5.3.1 Day of injury/Treatment

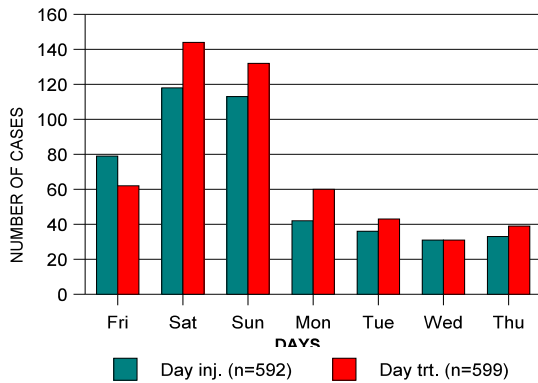


Figure 3 : Day of Injury/Treatment

Two-thirds of all injuries treated at GFJ occurred over weekends (Friday to Sunday).

### 5.4 Scene of injury

As can be seen in Figure 4, the majority of patients were injured in and around the home, in informal settlements or on the road.

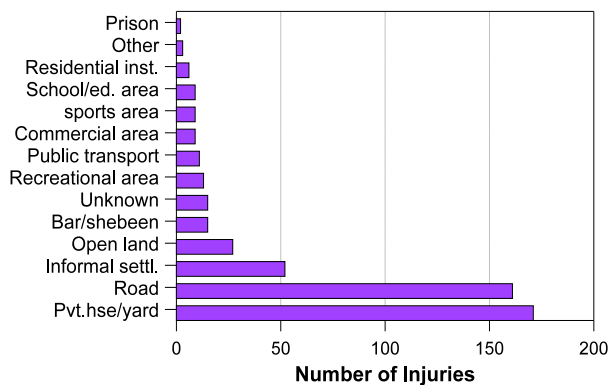


Figure 4 : Scene of Injury (n=508)

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

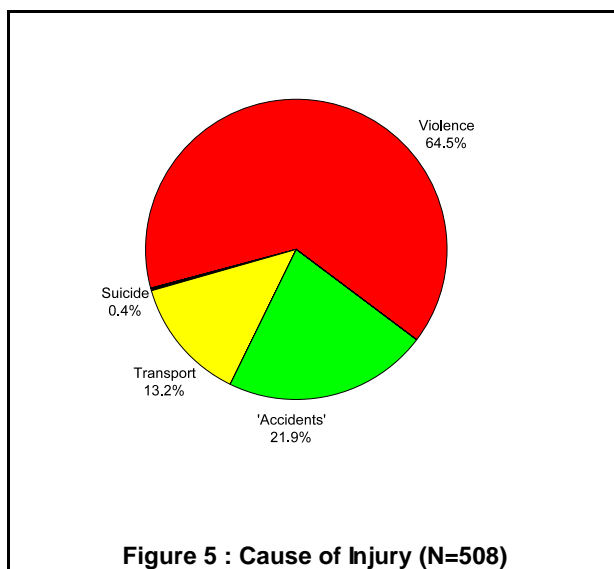
The 'other' scene of injury category included medical service area, bodies of water, commercial area, industrial area and farms.



## 5.5 Activity At Time of Injury

Almost one-third of patients were playing or at leisure at the time of their injury. Twenty percent of patients were travelling and one-quarter of patients stated that they were 'doing nothing in particular' when they were injured.

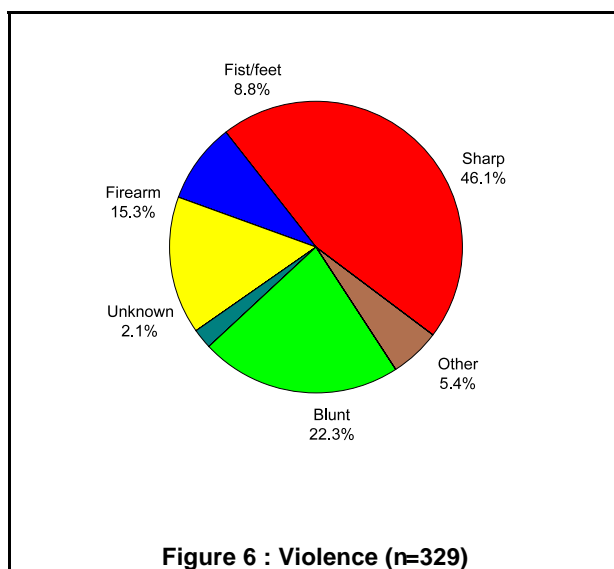
## 5.6 Cause of injury



Violence accounted for nearly two-thirds of all the injuries presenting to GFJ, while unintentional accidents (largely traffic related) accounted for a further one-third of all injuries (Figure 5).

Only two attempted suicide cases were registered in the study.

### 5.6.1 Violence



As can be seen in Figure 6, sharp objects were the weapons used in just nearly 50% of the violent episodes while blunt objects accounted for a further 22.3%. Firearms were only used in 15.3% of violent attacks.

In 67.4% of the violent injuries, the type of violence was classified as interpersonal.

Gangs/syndicates (14.3%), war/civil (1.6%), rape (0.9%) and legal intervention (0.6%) were the other leading types of violence.

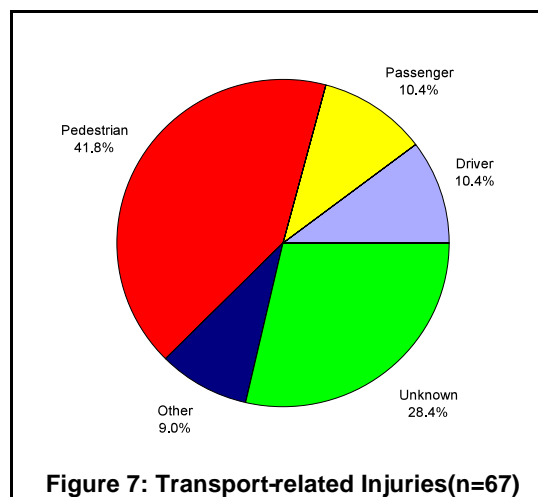
In 34.4% of cases the perpetrator of violence was a stranger while in 17.6% it was a friend. In 11.5% of cases the perpetrator was acknowledged to be a spouse or partner. This might be under-represented because some women are accompanied by the abuser or might be hesitant to implicate their partner.

In nearly two-thirds of cases the main perpetrator of the violence was a male attacking a male. In 27.4% of cases the violence was male on female, in 4.9% it was female on male and in another 5.5% it was female on female.

### 5.6.2 Transport-related Injury

Cars were involved in 65.7% of the transport accidents while minibus taxis accounted for a further 10.4%. Trains were the third highest, accounting for 4.5% of injuries.

Seatbelts were not used in 29.7% of injuries involving passengers or drivers. Only 13.5% were definitely wearing seatbelts. In 57.9% of the cases seatbelt usage was unknown.



### 5.6.3 Other accidents/Unintentional Injuries

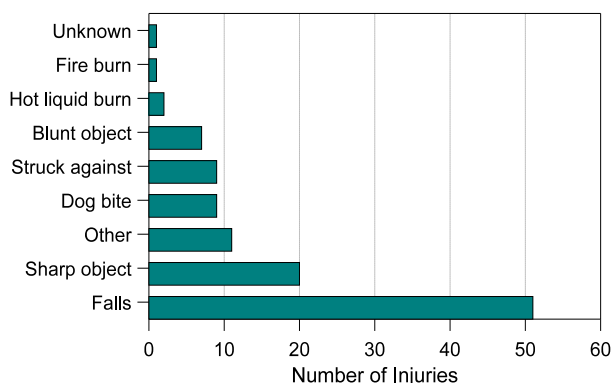


Figure 8 : 'Accidental' injuries (n=111)

Nearly 50% of all accidental injuries were due to falls. The majority of these were among children under the age of 14 years.

There were no near-drownings recorded for the time period. Burn injuries accounted for only 2.7% - however, this pattern would be different had the study been conducted in winter.

## 5.7 Substance Abuse



This variable was assessed by a combination of self-report and clinical judgement. Overall 39.4% of patients were assessed to have consumed alcohol prior to their injury while only 6.9% had used drugs.

52.3% of violent injuries, 27.3% of traffic injuries and 10% of unintentional injuries were found to be alcohol-related. Of the seven drivers who were injured, one had been drinking alcohol and none had used drugs.

## **5.8 Severity and Placement**

50.6% of the injuries sustained by patients were assessed to be minor, 40.8% were moderate and only 8.5% were severe.

Most patients (73.4%) were treated and then discharged. Twenty percent of patients were admitted to a ward. Only 6.5% of patients were transferred to another hospital for further management - usually to a tertiary institution. However, this figure could be somewhat inflated because when patients are sent to other departments for tests/x-rays/consultation the doctors tick 'transferred' because the patients do not come back to Trauma Unit.

## **5. 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 weekends
- victim-perpetrator relationship was predominantly strangers
- the gender of main perpetrator was predominantly male on interpersonal
- The most common activity at the time of injury was leisure/playing.