

# SENTINEL SURVEILLANCE OF SUBSTANCE ABUSE AND TRAUMA AT ADDINGTON HOSPITAL

1999

FINAL REPORT



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## **Acknowledgements**

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## 1. INTRODUCTION

Over the last couple of years, since the change in government in South Africa, there appears to have been a steady increase in the use and availability of illicit drugs. Longitudinal information on both alcohol misuse and illicit drug use is therefore required to identify changes in the nature and extent of the use of these two substances, particularly their negative consequences, and to determine the effect of interventions.

This study is the first in a series of proposed annual longitudinal Trauma and Drug Studies (TAD) to be conducted at Addington Hospital. Addington Hospital (a secondary hospital on Durban's beachfront) was chosen since it is fairly representative of the population of Durban; it is in an area known to have a relatively high incidence of substance abuse; the logistics of data capture have been tried and tested in this facility; and it would give us trauma epidemiological data which could be compared with that obtained during the Durban Metropolitan Pilot Study conducted there in 19995/1996.

## 2. AIM OF STUDY

The aim of the project was to monitor substance abuse and establish trends among trauma patients by:

- assessing the proportion of patients with fresh trauma who were alcohol positive at the time of their injury;
- assessing the proportion of patients with fresh trauma who had used an illicit drug prior to their injury;
- assessing, by means of the CAGE questionnaire, what proportion of trauma patients were chronic alcoholics.

The two major **objectives** of this study were:

- to monitor substance abuse and trauma trends in a number of cities in South Africa as part of the Injury and Violence Surveillance Project funded by the Department of Arts, Culture, Science and Technology Innovation fund; and
- to include the results in the South African Community Epidemiology Network on Alcohol, Tobacco and Other Drug Use study (SACENDU) which monitors substance abuse trends (in general) at sentinel sites in South Africa.

### **3. METHODS**

#### **3.1 Study Design**

This study was essentially an annual, cross-sectional, descriptive study of the incidence of alcohol (and alcohol dependence) and illicit substance abuse among patients presenting with fresh trauma to the trauma unit at Addington Hospital.

#### **3.2 Sampling**

##### **3.2.1 Study Population**

Patients attending Addington Hospital trauma unit with fresh trauma.

##### **3.2.2 Sampling Framework**

The concept of an 'ideal week' was used at the trauma unit. In other words, each day was divided into four six-hour shifts and one shift was randomly selected per day, i.e. over four weeks the 24-hour period for each day was covered. All patients with fresh trauma attending during these times were included provided they gave written consent and met the inclusion criteria.

##### **3.2.3 Inclusion/Exclusion Criteria**

The following inclusion and exclusion criteria applied to patients.

- Only patients with fresh physical trauma were included, i.e. reattenders were excluded.
- The injury-to-presentation time was set at a maximum of six hours.
- Referrals were included provided they did not obtain significant treatment at the first facility they attended and that their presentation to the study facility was within six hours.
- All patients had to give written, informed consent prior to inclusion in the study. Those patients who refused were excluded but the reason for their refusal was documented. For those less than 18 years of age, permission was requested from a parent or guardian.
- All types of poisoning and non-traumatic attempted suicide (e.g. drug overdose), as well as paediatrics (12 years and below) were excluded.

### **3.2.4 Sample Size**

A total of 205 patients were included in the study for the period 20 June to 17 July 1999.

### **3.3 Instrumentation**

- Each patient was interviewed by a field worker using an adapted Cape Metropolitan Study questionnaire which has been validated in a number of studies in the Western Cape and Kwazulu-Natal (KZN).
- Alcohol usage was assessed using self-report, a breath alcohol test and the CAGE questionnaire. Self-report was conducted by either asking the patient whether he/she had consumed alcohol prior to their injury or by using clinical judgement in unconscious or unco-operative patients. Breath alcohol was assessed using the Lion Alcolmeter SD2 - the use of which has previously been validated in a Cape Town study. The four CAGE questions were included on the questionnaire to assess chronic alcohol usage.
- Self-report was also used to assess drug usage among patients. Furthermore, a urine specimen was taken from the patient. A portion was used to screen for five drugs, viz. amphetamine, cannabis (THC), morphine, cocaine and methamphetamine, using the ACON drug kit. Formal chemical analysis (to test for dagga and methaqualone [Mandrax]) was conducted by the Department of Pharmacology, UCT on the rest of the urine specimen.

### **3.4 Field Workers**

The principal investigator was Margie Peden, Specialist Scientist at the NTRP (Cape Town). She was assisted by a Chief and Senior Research Technologist from the NTRP in Durban.

### **3.5 Ethics**

- Ethical approval for the study was obtained from the University of Natal Ethics committee. Permission was also obtained from the Medical Superintendent of Addington Hospital and final authorization was obtained from the KZN Provincial Administration, Department of Health.
- The data was anonymous but linked to demographic/self report data. All data was kept in the strictest confidence by the primary researcher. No alcohol or drug results were documented in the patient's hospital folder. There was no way of cross-referencing research results to actual patient records.

- Informed, written consent was taken from the patients.

### **3.6 Analysis**

The data was checked and coded by the research team and cleaned before entering into Epi Info version 6.02 (Shareware, Center for Disease Control, 1994). Simple data analysis was conducted using Epi Info.

## 4 RESULTS FOR ADDINGTON

### 4.1 An Overview

A total of 462 patients were seen at Addington trauma unit over the idealised week. Two hundred and five of these patients were included in the study.

<b>Number of patients seen over an idealised week</b> <b>(N = 462)</b>
---

Included (n = 205)	Excluded (n = 257)
<b>Mean age</b>	
30.7 years $\pm$ 13.1	29.0 years $\pm$ 18.4
<b>Gender</b>	
70.2% males and 29.8% females	62.9% males and 37.1% females
<b>Causes</b>	
Violence = 49.8%	Violence = 28.0%
Traffic = 20.0%	Traffic = 14.6%
Non-traffic 'Accidents' = 30.2%	Non-traffic 'Accidents' = 57.3%
<b>Race</b>	
Black = 61.5%	Black = 57.4%
White = 19.0%	White = 20.3%
Coloured = 12.7%	Coloured = 9.7%
Asian = 6.8%	Asian = 12.6%

<b>Reasons for exclusion</b>	
> 6 hours	= 63.9%
Paediatric	= 20.1%
Repeat	= 11.0%
Refused	= 4.2%
Transferred	= 0.8%

Half the patients included, were injured violently, whereas non-traffic 'accidents' were the major cause of injuries in patients who were excluded from the study.

## 4.2 Detail of Injury

### 4.2.1 Overall cause of injury

Violence was the leading cause of injury, accounting for nearly half of all injuries. Three attempted suicides were included under violence since they were considered self-inflicted violence.

Thirty percent of the cases sustained non-traffic 'accidents' and the remaining 20% of cases were involved in traffic collisions (Figure 1).

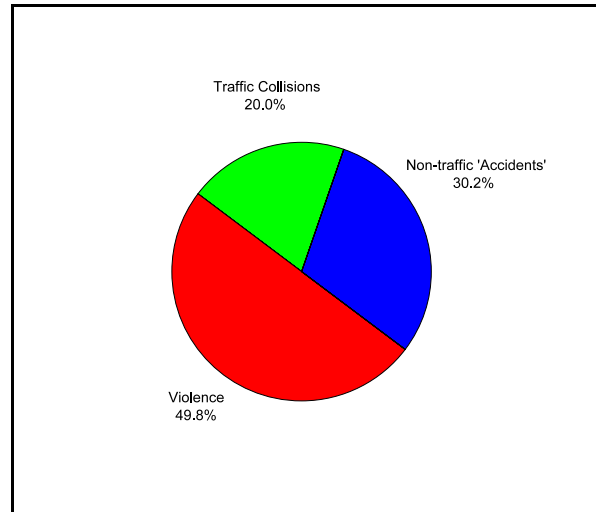


Figure 1 : Overall cause of injury (N=205)

#### 4.2.1.1 Violence-related injury

Of the 102 patients injured as a result of violence, more than half were due to sharp objects. Blunt objects were responsible for a quarter of these deaths while firearms only accounted for just under four percent.

First/feet and 'other' which includes pushed from height, fire and blunt and sharp accounted for the remaining 13.8% (Figure 2).

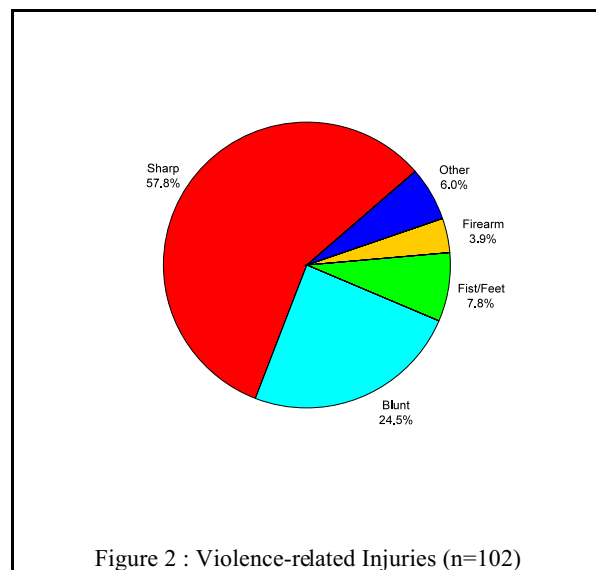


Figure 2 : Violence-related Injuries (n=102)

### 4.2.1.2 Traffic-related Injury

Over half (56%) of the traffic-related injuries involved passengers while pedestrians (26.8%) and drivers (17.1%) accounted for the balance (Figure 3).

Cars and minibus taxis were involved in 80% of the collisions. Of concern, seatbelts were not worn by 87% of the 30 drivers and passengers.

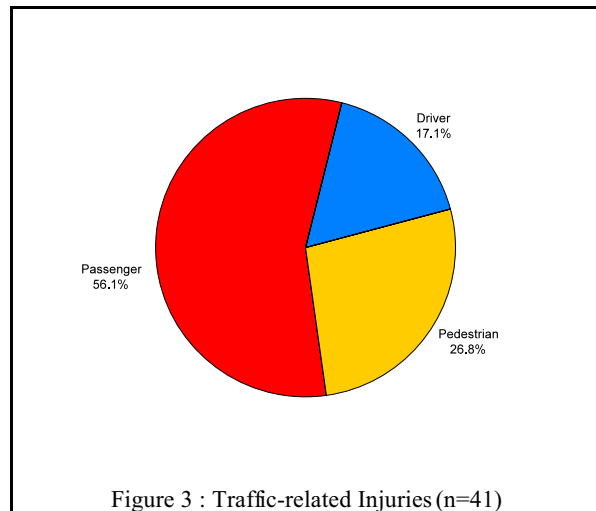


Figure 3 : Traffic-related Injuries (n=41)

### 4.2.1.3 Non-traffic 'Accidents'

Falls accounted for half of this category and the other half was made up of burns, sport and other mishaps such as cutting a finger or spraining an ankle (Figure 4).

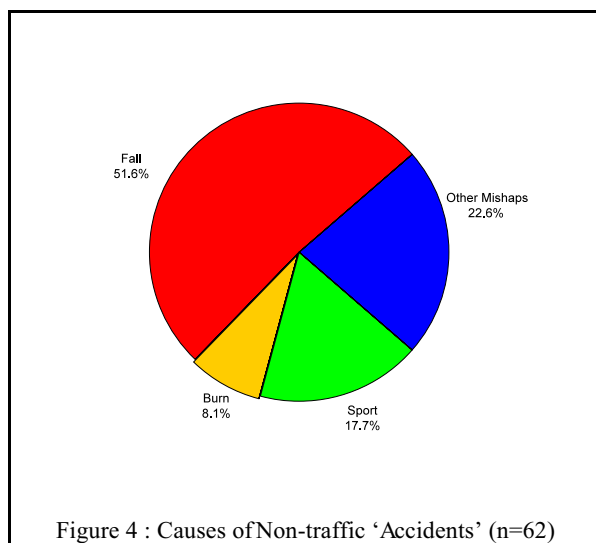


Figure 4 : Causes of Non-traffic 'Accidents' (n=62)

## 4.2.2 Demographics

### 4.2.2.1 Age

The mean age of patients seen was 30.7 ( $\pm 13.1$ ) years. Almost half (46.3%) of the patients were in the 20-29 year age group. Violence was the leading cause of injury in all age groups up to 49 years whereafter 'accidents' predominated (Table I).

	<b>Violence</b>	<b>Traffic</b>	<b>Non-traffic 'Accidents'</b>	<b>Total</b>
12-19	14 (58.3)	1 (4.2)	9 (37.5)	24 (100)
20-29	52 (54.7)	19 (20.0)	24 (25.3)	95 (100)
30-39	21 (45.6)	15 (32.6)	10 (21.7)	46 (100)
40-49	9 (47.4)	3 (15.8)	7 (36.8)	19 (100)
50-59	3 (27.3)	2 (18.2)	6 (54.5)	11 (100)
$\geq 60$	3 (30.0)	1 (10.0)	6 (60.0)	10 (100)
Mean( $\pm$ SD)	28.5 (10.9)	31.3 (9.8)	34.1 (17.3)	30.8 (13.1)

#### 4.2.2.2 Gender

Of the cases studied at Addington trauma unit, 144 (70.2%) were males and 61 (29.8%) were females. Violence was the main cause of injury for both males and females (Table II).

	<b>Violence</b>	<b>Traffic</b>	<b>Non-traffic 'Accidents'</b>	<b>Total</b>
Female	25 (41.0)	16 (26.2)	20 (32.8)	61 (100)
Male	77 (53.5)	25 (17.4)	42 (29.2)	144 (100)

#### 4.2.3 When and Where the Injuries Occurred

##### 4.2.3.1 Time of Injury

The time of injury was unknown in 7 (3.4%) of 205 cases.

For the remaining 198 cases, 36.8% of injuries occurred during office hours, i.e. from 08h00-17h00 while 63.2% occurred between 17h00 and 08h00 (Figure 5).

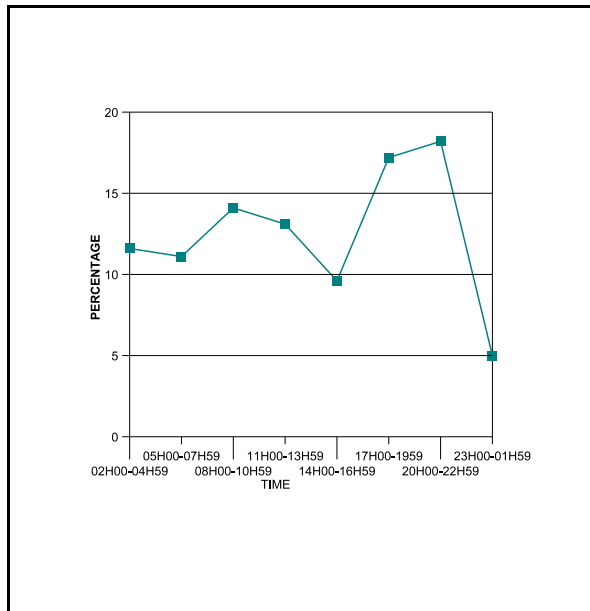


Figure 5 : Time of Injury (n=198)

##### 4.2.3.2 Day of injury

As expected, more than half (55.1%) of the injured patients presented to Addington Hospital trauma unit over the weekend, i.e. from Friday to Sunday (Figure 6).

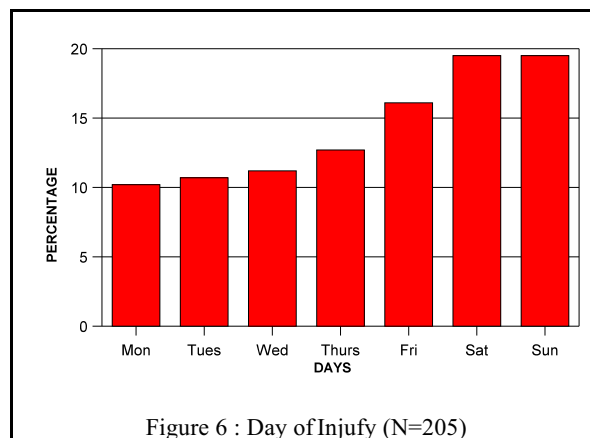


Figure 6 : Day of Injury (N=205)

### 4.2.3.3 Suburb of Injury

Nearly 80% of all patients were injured in the four suburbs indicated in the table below. Durban Central had the bulk of the injuries (60.3%) and over half of these were due to violence (Table III).

	<b>Violence</b>	<b>Traffic</b>	<b>Non-traffic 'Accidents'</b>	<b>Total</b>
Durban Central	63 (52.5)	23 (19.2)	34 (28.3)	120 (100)
Mayville	6 (40.0)	6 (40.0)	3 (20.0)	15 (100)
Durban North	2 (16.6)	5 (41.7)	5 (41.7)	12 (100)
Wentworth	4 (40.0)	2 (20.0)	4 (40.0)	10 (100)

The cells show the number of injuries followed by the percentages (in brackets) by suburb and cause of injury

### 4.2.3.4 Scene of injury

Nearly half of the 205 patients were injured on the road while a further quarter were injured in and around the house (Figure 7).

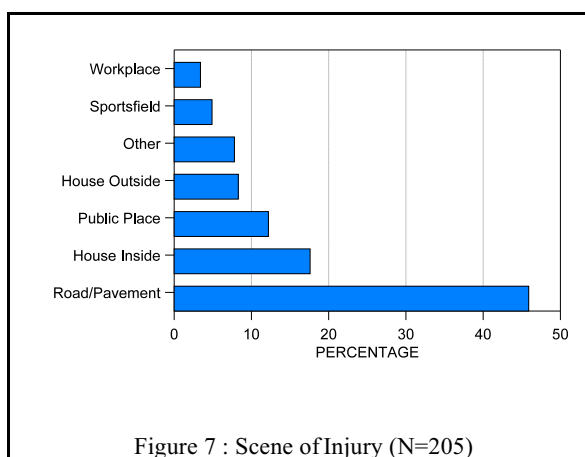


Figure 7 : Scene of Injury (N=205)

### 4.2.4 Type and Severity of Injury

#### 4.2.4.1 Type of Injury

The 205 patients had sustained 304 lesions between them.

Figure 8 shows the body regions involved. The extremities and head were most commonly injured.

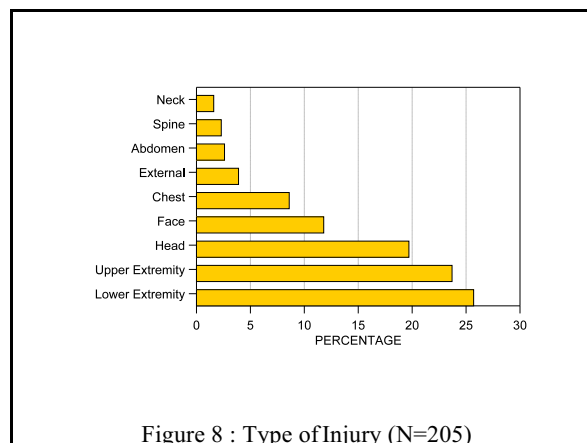


Figure 8 : Type of Injury (N=205)

#### 4.2.4.2 Injury Severity

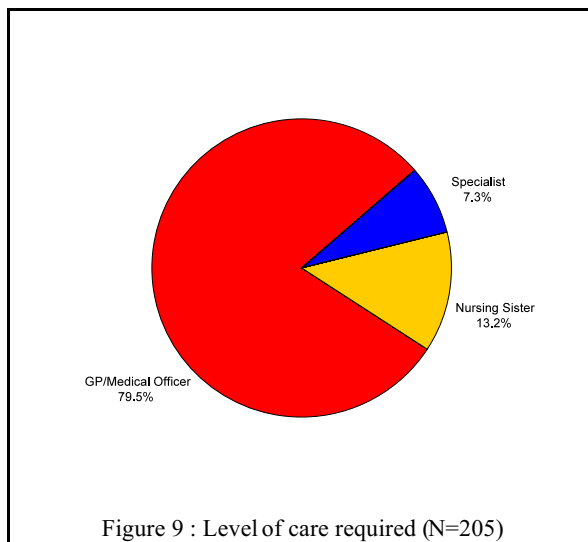
The largest proportion of patients sustained minor injuries (ISS < 9) while only 11.7% had injury severity scores of nine or more (Table IV). No patients sustained injuries which scored 50 and more, and there were no invariably fatal injuries.

NISS Scores	No. of cases	%
1-8	183	89.3
9-15	15	7.3
16-24	4	2.0
25-40	2	1.0
41-49	1	0.5
50-66	0	0.0
75	0	0.0

#### 4.2.5 Care and Placement of Patients

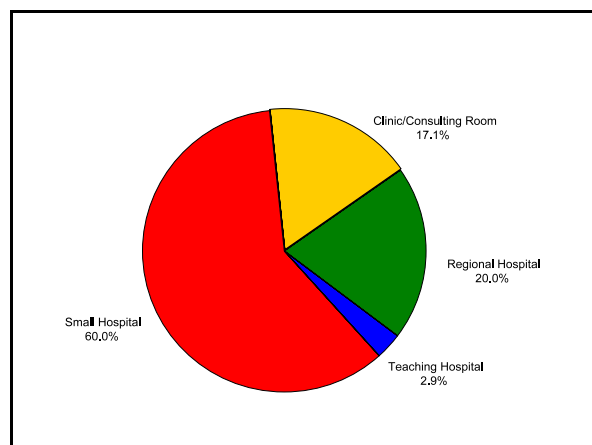
##### 4.2.5.1 Level of Care Required

Although the majority of patients sustained minor injuries, the research team judged that 80% of patients required the services of a medical officer. Thirteen percent could have been adequately managed by a nursing sister (Figure 9).



##### 4.2.5.2 Facility Required

The research team judged that attendance at Addington Hospital was inappropriate in 77% of cases and that these patients could have been treated adequately at a small hospital or clinic/consulting room (Figure 10).



### 4.2.5.3 Placement after Initial Assessment

Over three-quarters of the 205 patients who were seen in the trauma unit were treated and discharged. Only 14% of patients required ward admission. One patient was transferred internally to medical casualty and another to King Edward ICU due to a shortage of beds.

Only 4% of patients required surgical intervention.

**Table V : Placement after Initial Assessment**  
(N =205)

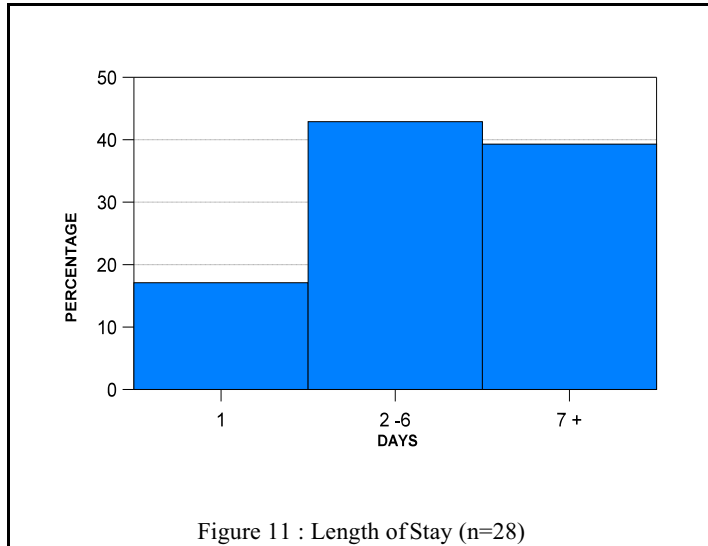
Placement	Number	%
Discharged	172	83.9
Admit: Ward	29	14.1
ICU	0	0.0
Dead	0	0.0
Transferred	2	1.0

### 4.2.5.4 Length of Stay

Fourteen percent of the 205 patients seen in the trauma unit were admitted to a ward.

Just under twenty percent of patients were discharged after 24 hours while over 40% stayed in hospital for two to six days. A further forty percent of patients were hospitalised for a week or more (Figure 11).

The median number of days for patients in hospital was 3.5 (IQR 2.0-9.0).



## 4.2.6 Estimated Disability

### 4.2.6.1 Severity of Disability

Over half of all the patients were judged to have a mild disability while over thirty percent had more severe disabilities (Table VI).

**Table VI : Severity of Disability**  
(N = 205)

Severity	Number	%
None	26	12.7
Mild	110	53.7
Moderate	56	27.3
Serious	13	6.3

#### 4.2.6.2 Time Away from work

Nearly 44% of patients were employed and 36.1% were unemployed. Of those employed, over three-quarters required a week or less off work while one quarter required more than one week away from their job (Figure 12).

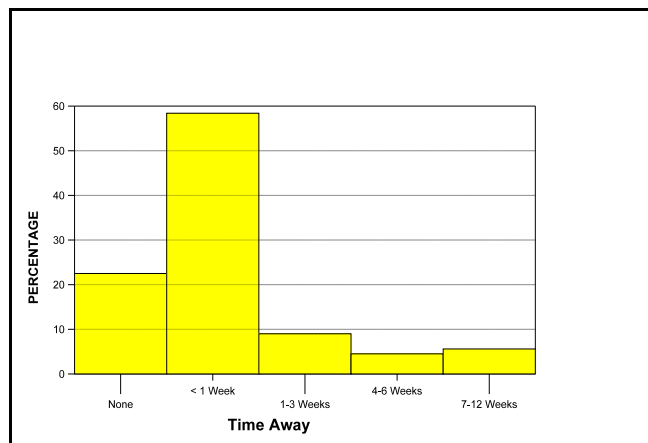


Figure 12 : Time Away (n=89)

### 4.3 Alcohol Usage

#### 4.3.1 Alcohol-relatedness

This parameter was assessed by either asking the patient whether he/she had used alcohol prior to their injury or by using crude clinical judgement in unconscious or unco-operative patients.

Less than one-quarter of the patients acknowledged that they had used alcohol prior to their injury. (Figure 13).

Figure 12 : Time Away (n =89)

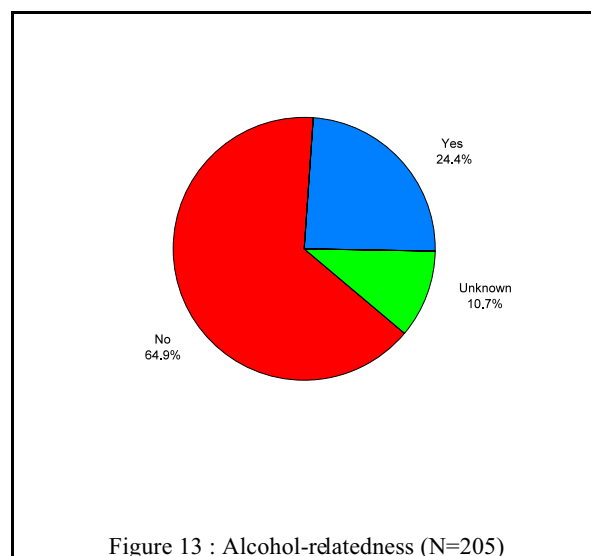


Figure 13 : Alcohol-relatedness (N=205)

#### 4.3.2 Breath Alcohol Analysis

The alcohol levels of eleven patients were unknown. Of the remaining 194 patients, 90 (46.4%) had alcohol levels greater than zero (Figure 14). Fifty of the 90 patients acknowledged using alcohol, giving a self-reporting reliability of 55.6%.

The mean alcohol level for those with positive results was found to be 0.06 ( $\pm$  0.08) g/100ml.

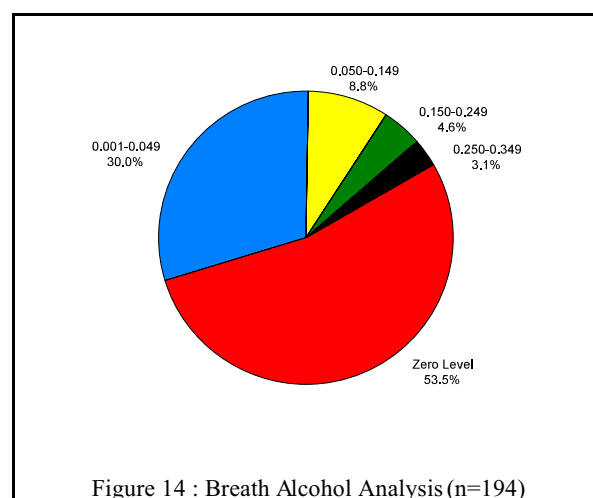


Figure 14 : Breath Alcohol Analysis (n=194)

More than half of violence and more than one-third of traffic collisions were alcohol-related (Table VII).

Two out of seven drivers had an alcohol level greater than or equal to 0.05g/100ml, the legal driving blood alcohol limit.

More than a quarter of non-traffic 'accidents' were alcohol related.

**Table VII : Positive Breath Alcohol Levels by cause of Injury**

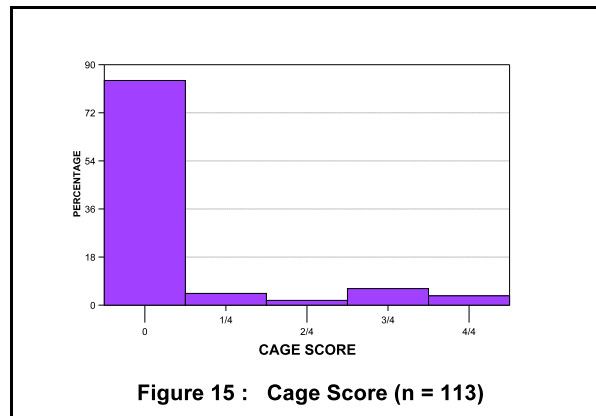
Cause Category	Positive n	%*	Mean BrAC g/100ml(±SD)
Violence	57	60.0	0.076 (0.09)
Traffic	16	41.0	0.051 (0.10)
Non-Traffic 'Accidents'	17	28.3	0.036 (0.05)

### 4.3.3 Chronic Alcohol Usage

Ninety two (44.9%) patients could not be interviewed because of the severity of their injuries, or they were unco-operative or too intoxicated to answer the four CAGE questions.

Of the remaining 113 patients:

- 84.1% had a total CAGE score of zero.
- 11.5% had a total CAGE score of two or more indicating chronic alcohol use (Figure 15).

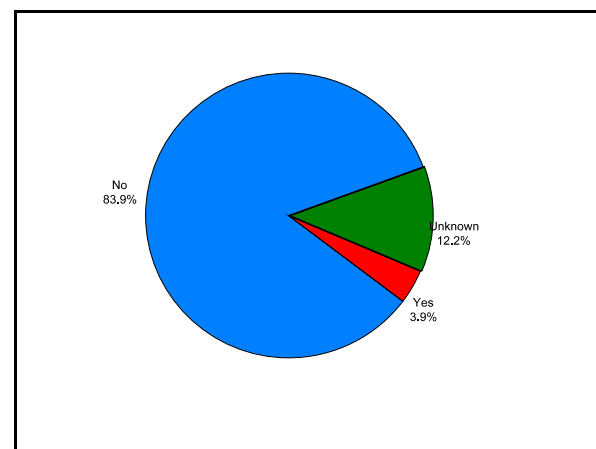


### 4.4 Illicit drug usage

Drug usage was assessed by means of self-report, the ACON drug kit and conventional pharmacological methods.

#### 4.4.1 Drug-relatedness

Only four percent of patients acknowledged using illicit drugs prior to their injury (Figure 16).



#### 4.4.2 ACON Drug Screen Results

The ACON drug kit screens for five drugs using a sample of urine. Sixty (38.2%) of the 157 patients tested, were positive for cannabis, morphine or cocaine (Table VIII).

- Eight of the sixty patients acknowledged using illicit drugs, giving a self-reporting reliability of 13.3%.
- Two-thirds of patients who tested positive for cannabis had been injured violently.
- Non-traffic ‘accidents’ were 40% drug positive with 30% being dagga related.

Drug	Positive result n(%)
Amphetamine	0(0.0)
THC	48 (30.6)
Morphine	7 (4.5)
Cocaine	4 (2.5)
Methamphetamine	1 (0.6)

#### 4.4.3 Pharmacological Analysis

Conventional wet analysis was undertaken on a sample of urine. One-third of the patients used dagga while one-tenth were positive for Mandrax (Table IX).

Sixteen (10.2%) of the 157 patients were positive for both dagga and Mandrax indicating that they had smoked a ‘white pipe’ prior to their injury. Interestingly, none of these patients were injured violently.

Drug	Positive result, n (%)
Dagga	54 (34.4)
Methaqualone	18 (11.5)

#### 4.4.4 ACON Drug Screen Kit vs Pharmacological Analysis

The ACON drug screening kit was found to be accurate. Comparing the kit against the pharmacological ‘gold standard’ produced a sensitivity of 88.9% and a specificity of 100% (Table X).

It can therefore be said that this kit can be reliably used to assess cannabis (THC) in urine.

		Pharmacology		TOTAL
		Y	N	
Acon Drug Screen	Y	48	0	48
	N	6	103	109
		54	103	157

## 5. SUMMARY

To summarise, results showed that:

- injured patients were predominantly young males.
- most injuries were the result of violence.
- most of the patients who were injured violently abused substances primarily alcohol and cannabis.
- one out of ten patients had smoked a 'white pipe' prior to their injury.
- none of the patients who smoked a 'white pipe' were injured violently.
- sharp objects were the major cause of injury.
- most of the patients who were involved in traffic collisions were passengers.
- injuries occurred mostly after hours and on weekends.
- most injuries involved both extremities, head and face.
- patients had injuries which were relatively minor in nature and few of them were left with significant long-term disability.
- a large percentage of patients attended Addington Hospital inappropriately.