

SENTINEL SURVEILLANCE OF SUBSTANCE ABUSE AND TRAUMA AT GSH

FINAL REPORT



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Appendix A

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, and particularly their negative consequences, and to determine the effect of interventions.

In 1997 the first of a proposed annual longitudinal Trauma and Drug Study (TAD) was conducted at Groote Schuur Hospital (GSH) in order to monitor substance abuse trends among trauma patients. The results confirmed that alcohol was still the most commonly misused substance among trauma patients but that almost one-third of the patients had smoked cannabis prior to their injury (Appendix A). Other street drugs such as cocaine and opiates did not appear to be a problem among Cape Town trauma patients but a high incidence of “white pipe” smoking was found, almost exclusively among victims of violence, and as such warrants further investigation.

The Trauma and Drug Study was repeated at the GSH trauma unit in 1999 in order to obtain trend data necessary for decision making and for the development of preventive and training programmes.

2 The Aim of the 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;

Two of the 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's Innovation fund.
- 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

The study is 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 GSH trauma unit.

3.2 Sampling

3.2.1 Study Population

Patients who attended the GSH Trauma Unit with fresh trauma.

3.2.2 Sampling Framework

The concept of an "ideal week" was used at the trauma unit. 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.

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 overdoses) were excluded.

3.2.4 Sample Size

A total of 112 patients were included in the study for the period 31 January to 27 February 1999.

3.3 Instrumentation

- Each patient was interviewed by a field worker using a specially constructed interview sheet
- 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 uncooperative patients. Breath alcohol was assessed using the Lion Alcolmeter SD2 - the use of which has previously been validated in a study in Cape Town. The CAGE questionnaire was included to assess chronic alcohol usage.
- Self-report was also used to assess drug usage among patients. A urine specimen was also taken from the patient, a portion of which was used to screen for five drugs namely amphetamine, cannabis (THC), morphine, cocaine and methamphetamine, using the ACON drug kit. Formal chemical analysis (to test for dagga and methaqualone [Mandrax]) was conducted on the rest of the urine specimen by the Department of Pharmacology, UCT.

3.4 Field Workers

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

3.5 Ethics

- Ethical approval for the study was obtained from the University of Cape Town (UCT) Ethics committee. Permission was also obtained from the Medical Superintendent of GSH and the head of the Trauma Unit.
- 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).

4 RESULTS FOR GSH

4.1 An Overview

A total of 235 patients were seen at GSH Trauma Unit over the idealised week. 112 of these were included in the study.

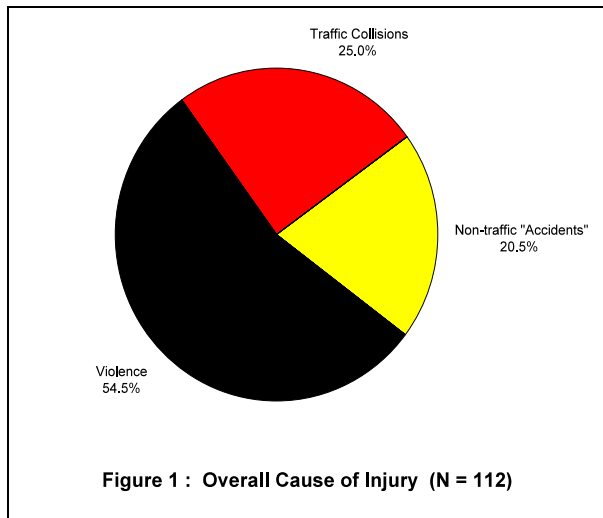
Number of patients seen over an idealised week N = 235

Included (n = 112)	Excluded (n = 123)
Mean age	
33.0 years \pm 12.3 yrs	32.0 years \pm 13.1yrs
Gender	
80.0% males	80.4% males
Causes	
Violence = 54.5% Traffic = 25.0% Non-traffic "Accidents" = 20.5%	Violence = 58.5% Traffic = 6.5% Non-traffic "Accidents" = 35.0%
Reasons for exclusion	
> 6 hours = 51.8% Repeat = 35.8% Refused = 4.9% Staff = 3.3% Minor = 3.3 % Missed = 1.6%	

More than half of the patients who attended the GSH trauma unit were injured violently. This was the case for both the included and the excluded categories. The mean age and gender distribution was similar for both categories. The primary reasons for excluding patients were that their injury had occurred more than six hours prior to their hospital presentation or because they were reattending the facility for follow-up of a previously treated injury. In general, there were no significant differences between the included and excluded groups.

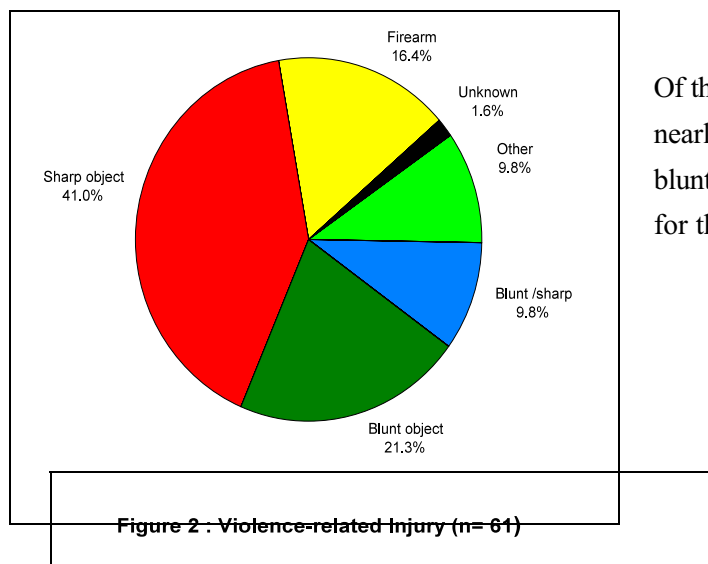
4.2 Detail of Injury

4.2.1 Overall cause of injury

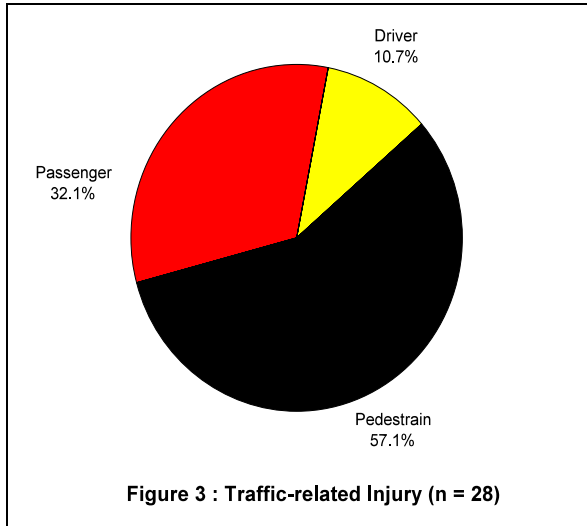


Violence out-numbered traffic as the leading cause of injury, accounting for more than a half of all injuries. One-quarter of the cases were due to traffic collisions while non-traffic “accidents” (which includes falls, burns, sport and other mishaps) contributed to a further one-fifth (Figure 1).

4.2.1.1 Violence-related injury



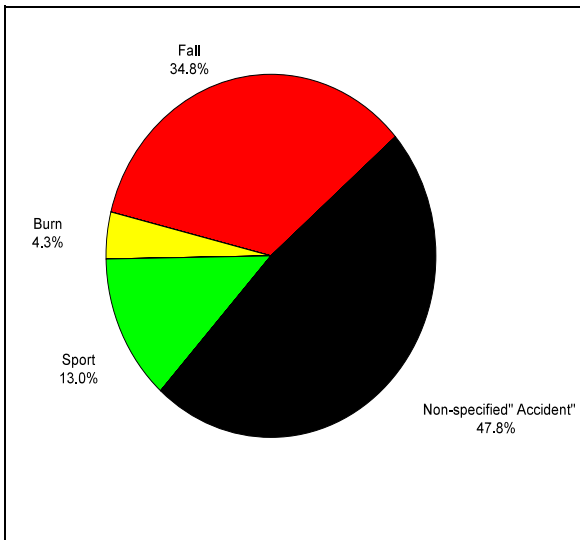
Of the 61 patients injured as the result of violence, nearly half were due to sharp objects while firearms, blunt and blunt/sharp objects combined accounted for the other half (Figure 2).



4.2.1.2 Traffic-related Injury

More than half of the traffic-related injuries involved pedestrians while one-third involved passengers. Ten percent of traffic-related injuries involved drivers (Figure 3).

Cars and minibus taxis were involved in 90% of the collisions.



4.2.1.3 Non-traffic "Accidents"

Non-specified "accidents" accounted for nearly half of this category while one-third of the cases were the result of falls (Figure 4).

Figure 4 : Non-traffic "Accidents" (n = 23)

4.2.2 Demographics

4.2.2.1 Age

The mean age of patients seen was 33.1 (\pm 12.3) years. The largest proportion (86%) were in the age range 15-44 years. These injuries were mainly due to violence. Traffic collisions occurred consistently from 15 to 34 years old whereafter they declined (Table 1).

	Violence	Traffic	Non-traffic "Accidents"	Total
15-24	18(58.1)	8(25.8)	5(16.1)	31(100)
25-34	22(56.4)	8(20.5)	9(23.1)	39(100)
35-44	14(53.8)	6(23.1)	6(23.1)	26(100)
45-54	6(60.0)	2(20.0)	2(20.0)	10(100)
55-64	0(0.0)	2(100)	0(0.0)	2(100)
65-74	1(50.0)	1(50.0)	0(0.0)	2(100)
75+	0(0.0)	1(50.0)	1(50.0)	2(100)

4.2.2.2 Gender

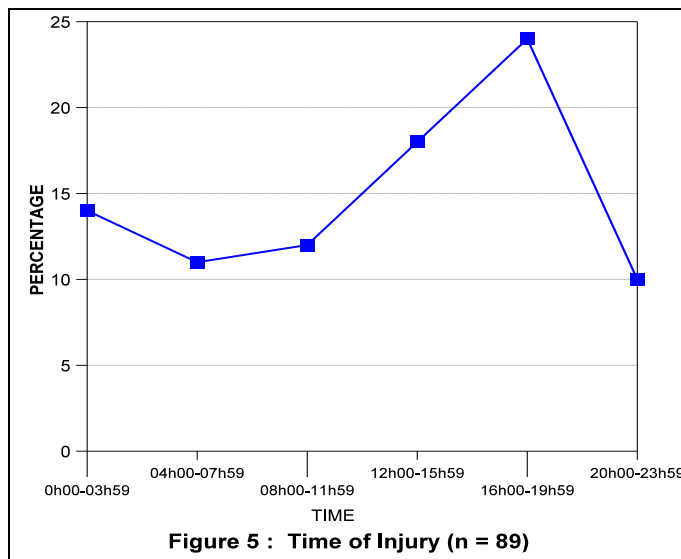
Of the cases studied at the GSH trauma unit, 87 (77.7%) were males and 25 (22.3%) were females. One-third of the females sustained injuries due to violence and a further third due to traffic collisions while 60% of males were injured violently (Table II).

	Violence	Traffic	Non-traffic Accidents	TOTAL
Female	9 (36.0)	9(36.0)	7(28.0)	25(100)
Male	52(59.8)	19(21.8)	16(18.4)	87(100)
				112

The figures show the number of cases and the percentage (in brackets) by gender and cause of injury

4.2.3 When and Where the Injuries Occurred

4.2.3.1 Time of Injury



The time of injury was unknown in 23 (20.5%) of the 112 patients.

For the remaining 89 patients, 40% of injuries occurred during office hours, i.e. from 08h00-17h00 while 60% occurred between 17h00 and 08h00 (Figure 5).

There was a distinct peak of injuries between 16h00 and 19h59.

4.2.3.2 Day of injury

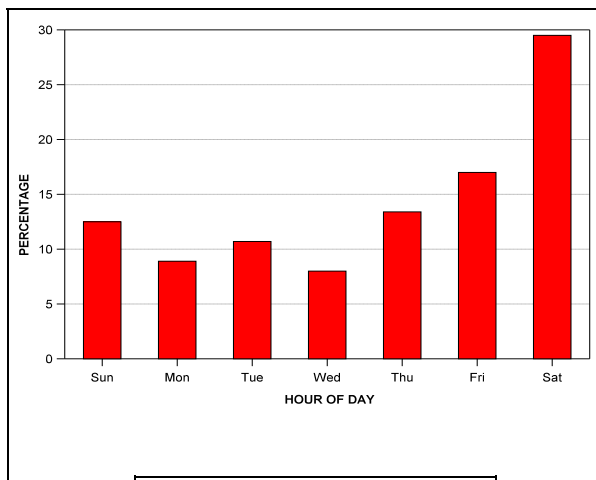


Figure 6 : Day of Injury (N = 112)

As expected, more than half of the patients presenting to the GSH trauma unit had sustained their injury over the weekend, i.e. from Friday to Sunday (Figure 6).

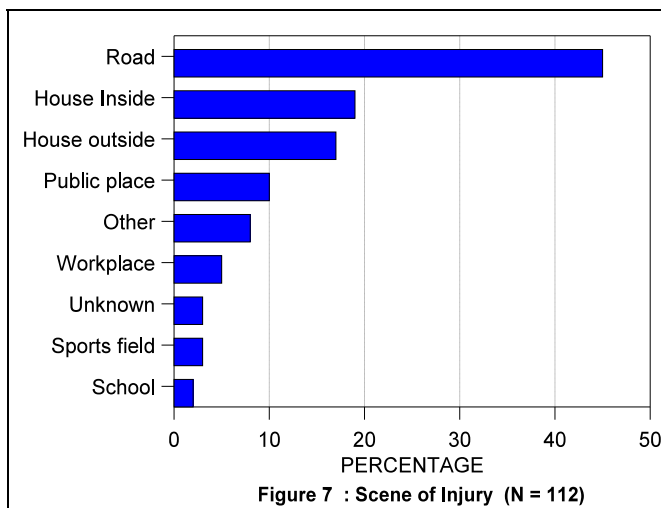
4.2.3.3 Suburb of Injury

Nearly 64% of all patients were injured in the six suburbs indicated in the table below. Injuries that occurred in five of the six suburbs were mainly due to violence. Of interest was that no traffic-related injuries arose in Athlone (Table III).

	Violence	Traffic	Non-traffic Accident	TOTAL
Woodstock	16(64)	4(16)	5(20)	25(100)
Guguletu	6((50)	5(42)	1(8)	12(100)
Khayelitsha	8(80)	2(20)	0(0)	10(100)
Mowbray	2(33)	4(67)	0(0)	6(100)
Mitchells Plain	5(71)	1(14)	1(14)	7(100)
Athlone	4(57)	0(00)	3(43)	7(100)

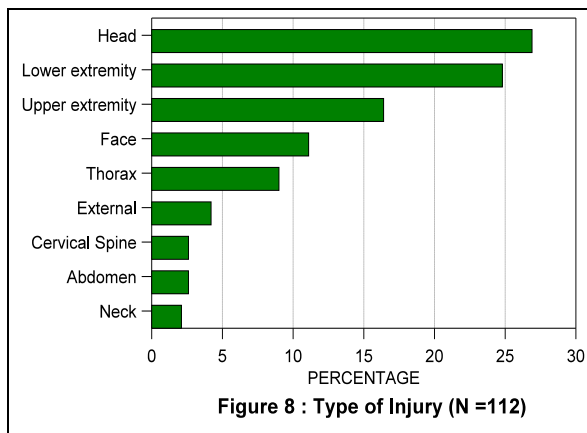
4.2.3.4 Scene of injury

More than 40% of all patients were injured on the road while more than one-third of the incidences occurred in and around the house (Figure 7).



4.2.4 Type and Severity of Injury

4.2.4.1 Type of Injury



The 112 patients had sustained 189 lesions between them. Figure 8 shows the body regions involved. Most commonly injuries occurred to the head, lower and upper extremities.

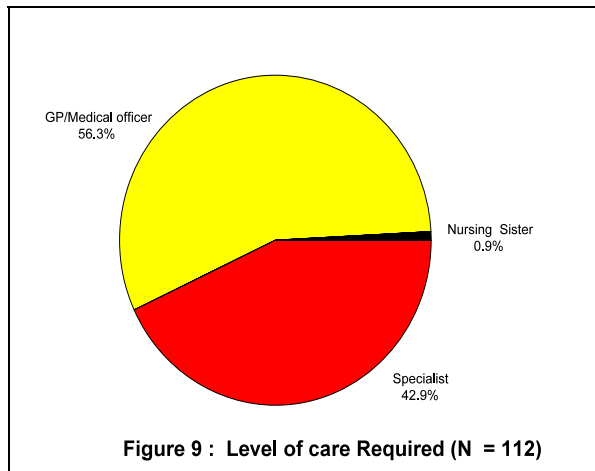
4.2.4.2 Injury Severity

The largest proportion of patients sustained minor injuries (ISS < 9) while just over one-third had injury severity scores of nine or more (Table IV). Although no patients had an injury severity score of 75 (an inevitable fatal injury), five patients (4.5%) died as the result of their injuries.

NISS Scores	No. of cases	%
1-8	71	63.4
9-15	15	13.4
16-24	13	11.6
25-40	10	8.9
41-49	1	0.9
50-66	2	1.8
75	0	0

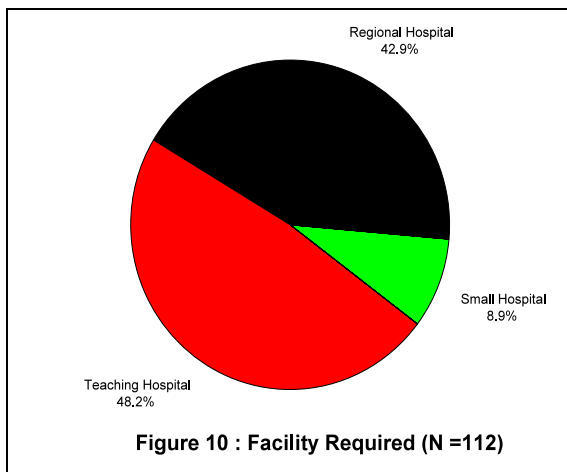
4.2.5 Care and Placement of Patients

4.2.5.1 Level of Care Required



Although the majority of patients sustained minor injuries, the research team judged that only 0.9% could have been adequately managed by a nursing sister and that just over half the patients required the services of a medical officer. Two out of five patients required the services of a medical specialist (Figure 9).

4.2.5.2 Facility Required



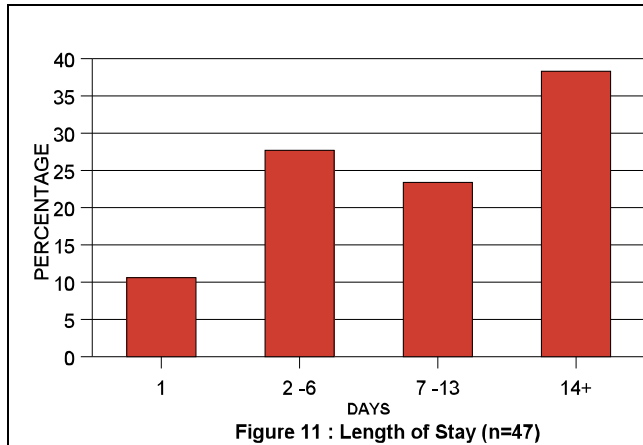
The research team judged that more than half of the patients could have gone to a smaller hospital such as GF Jooste. However, GSH does serve as the primary port of call for the surrounding suburbs (Figure 10).

4.2.5.3 Placement after Initial Assessment

Placement	Number	%
Discharged	59	52.7
Admit: Ward	41	36.6
ICU	6	5.4
Dead	5	4.5
Transferred	1	0.9

Just over half of the 112 patients who were seen in the trauma unit were treated and discharged. However, 42.0% required admission either to a hospital ward or directly to an Intensive Care Unit (ICU). Five patients (4.5%) died while being resuscitated in the trauma unit (Table V). One-quarter of the patients required surgery due to the nature of their injuries.

4.2.5.4 Length of Stay



Forty-two percent of the 112 patients who were seen in the trauma unit were admitted to either an ICU or a ward.

Ten percent of these patients were discharged after 24 hours while nearly one-quarter stayed for up to one week. A further one-third of the patients were hospitalised for two weeks or more. The average length of stay for these 47 patients was 15.5 (± 13.9) days. (Figure 11).

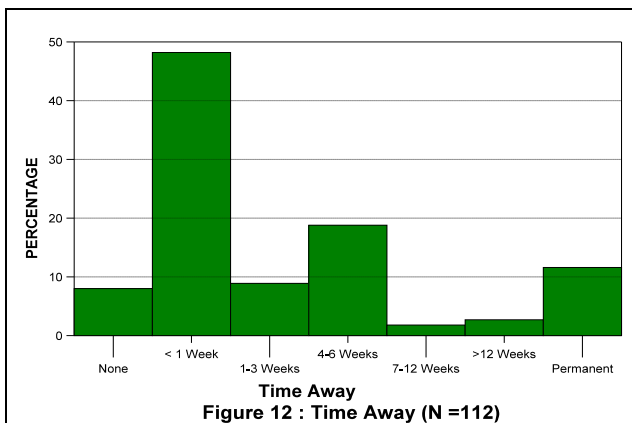
4.2.6 Estimated Disability

4.2.6.1 Severity of Disability

Severity	Number	%
None	6	5.4
Mild	57	50.9
Moderate	25	22.3
Serious	16	14.3
Total	3	2.7
Dead	5	4.5

Half of all the patients were judged to have a mild disability while nearly two-fifths of them had more severe disabilities. Only five patients died as the result of their injuries (Table VI).

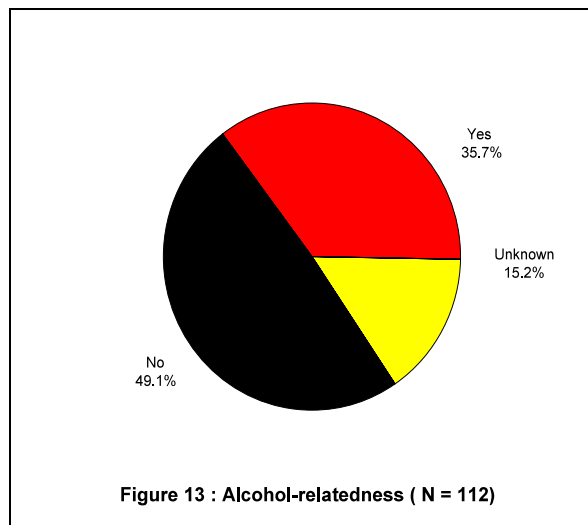
4.2.6.2 Time Away from work



There were as many patients employed as unemployed (36.0%). Of those employed nearly two-thirds of the patients required a week or less off work while one-third required up to 12 weeks off (Figure 12).

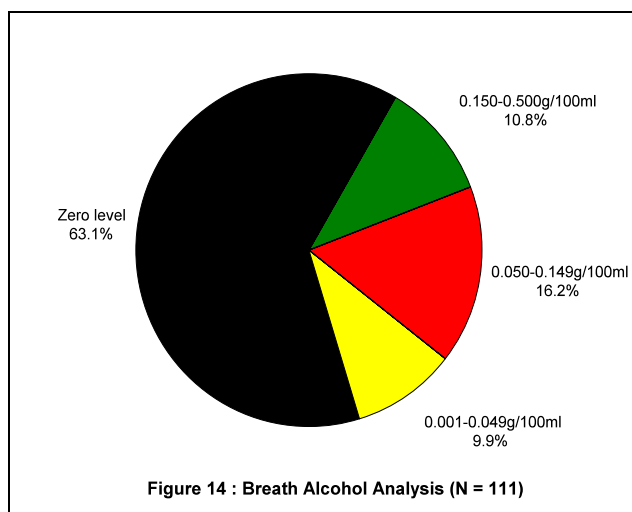
4.3 Alcohol Usage

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 clinical judgement in unconscious or uncooperative patients. More than one-third of the patients had used alcohol prior to their injury (Figure 13).

4.3.2 Breath Alcohol Analysis



The alcohol level in one patient was unknown. Of the remaining 111 patients, 41(36.9%) had alcohol levels greater than zero (Figure 14).

The mean alcohol level for those with positive results was found to be 0.125 (\pm 0.11) g/100ml.

Table IV : Non-zero Breath Alcohol Level

Cause Category	Positives n	%	Mean BrAC Levels g/100ml	\pm Std. Dev.
Violence	30	49.2	0.137	0.12
Traffic	8	28.6	0.076	0.049
Non-traffic "Accidents"	3	13.0	0.133	0.14

Half of the patients injured violently had positive alcohol levels. Patients who were injured due to violence and non-traffic "accidents" had mean alcohol levels of around 0.13 g/100ml while those injured in traffic collisions had much lower levels (Table IV). There were no drivers

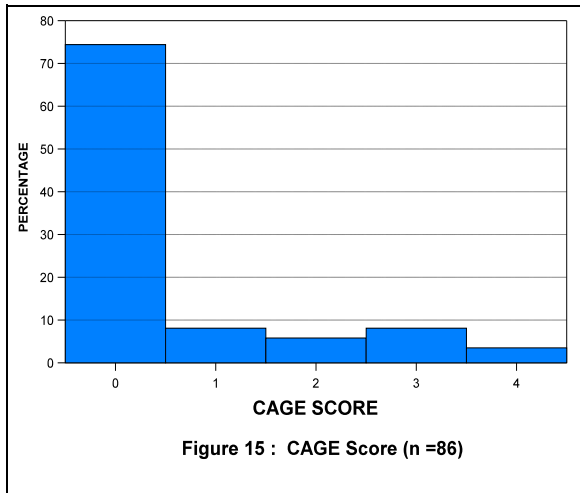
with alcohol levels greater than or equal to 0.05g/100ml, the legal driving blood alcohol limit.

4.3.3 Chronic Alcohol Usage

Twenty-six (23.2%) patients could not be interviewed because of the severity of their injuries or because they were too intoxicated to answer the four CAGE questions.

Of the remaining 86 patients:

- 82.6% had a total CAGE score of zero or one.
- 17.4% had a total CAGE score of two or more indicating chronic alcohol use (Figure 15).



4.3.4 Alcohol Trends

Comparison between the pilot study conducted in 1997 and this study in 1999 show the following:

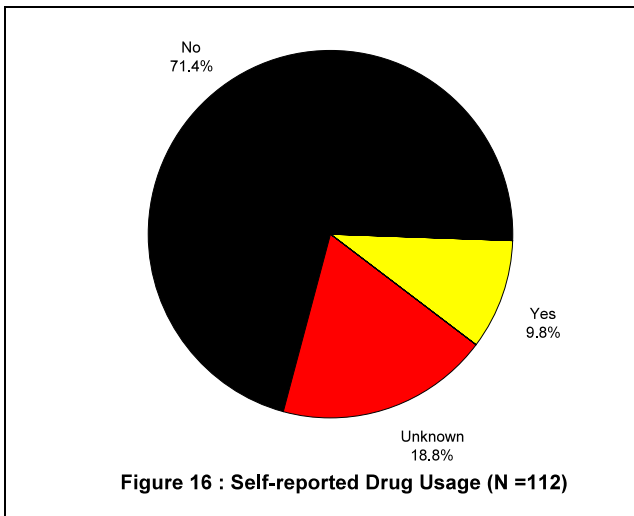
- the proportion of patients with positive alcohol levels dropped from 59% to 36%
- the proportion of patients classified as chronic abusers of alcohol has remained the same

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 Self-reported Drug Usage

Only one in ten patients acknowledged using illicit drugs prior to their injury (Figure 16).



Drug	Positive results n(%)
Amphetamine	0(0.0)
THC	31(29.5)
Morphine	7(6.7)
Cocaine	6(5.7)
Methamphetamine	0(0.0)

4.4.2

ACON Drug Screen Results

The ACON drug kit screens for five drugs using a sample of urine. Forty-four (41.9%) of the 105 patients tested were positive for cannabis, morphine or cocaine (Table VIII).

Sixty-one percent of the cases that tested positive for cannabis and 83% of those that tested positive for cocaine were related to violence.

Drug	Positive result, n(%)
Dagga	32(30.8)
Methaqualone	26(25.0)

4.4.3

Pharmacological Analysis

Conventional wet analysis was undertaken on a sample of urine. Nearly one-third of the patients used Dagga while one-quarter used Methaqualone (Table IX). Twenty-four (23.1%) of the 104 patients smoked a “white pipe” (a combination of dagga and Mandrax) prior to their injury.

Table X : ACON Drug Screen Kit vs Pharmacological Analysis
n = 102

		Pharmacology		TOTAL
		Y	N	
Acon Drug Screen	Y	29	1	30
	N	2	70	72
		31	71	102

4.4.4

ACON Drug Screen Kit vs Pharmacological Analysis

The ACON drug screening kit was found to be very accurate. Comparing the kit against the pharmacological “goldstandard” produced a sensitivity of 93.5% and a specificity of 98.6% (Table X).

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

4.4.5 Drug Trends

Comparison between the pilot study conducted in 1997 and this study in 1999 show the following:

- similar proportions of patients were found to be drug positive. However, the proportions of cocaine positive patients rose from 2% to 5.6% and methaqualone from 13.2% to 25% over the two year period.

5. Summary

To summarise, results showed that:

- patients were predominantly young males.
- most injuries occurred due to violence.
- most of the patients who were injured violently abused illegal substances such as alcohol or cannabis.
- one out of five patients had smoked a “white pipe” prior to their injury.
- sharp objects were the major cause of injury or violence.
- most of the patients who were involved in traffic collisions were pedestrians.
- injuries occurred mostly after hours and on weekends.
- most injuries involved the head, lower or upper extremities.
- more than half of the patients could have gone to a smaller hospital.



- patients had injuries which were relatively minor in nature and few of them were left with significant long-term disability.
- trend-data indicates a drop in the alcohol-relatedness of injuries. This may be a “once off” result or the beginning of a trend. Next year’s data will clarify.
- there are increasing numbers of patients abusing cocaine and methaqualone but no increase in dagga use.