

SENTINEL SURVEILLANCE OF SUBSTANCE ABUSE AND TRAUMA AT GF JOOSTE HOSPITAL

FINAL REPORT



Compiled by

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September 1999

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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 the victims of violence, and as such warranted further investigation.

Since conducting the pilot study in 1997, GF Jooste (a secondary hospital in Manenberg) opened its doors 24 hours a day for trauma patients. Consequently, the attendance patterns of patients attending GSH changed because those with moderate injuries were now taken to GF Jooste. Hence we included this facility in our Trauma and Drug Study in 1999.

GF Jooste was also included because:

- there were no statistics available on the type and severity of trauma cases seen at this facility; and
- the patients are less severely injured than those at GSH and therefore more able to give detailed qualitative information on their drug usage and violence history.

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 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

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 GF Jooste trauma unit.

3.2 Sampling

3.2.1 Study Population

Patients attending GF Jooste 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 overdose) were excluded.

3.2.4 Sample Size

A total of 124 patients were included in the study for the period 11 April to 8 May 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 unco-operative 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 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 on the rest of the urine specimen by the Department of Pharmacology, UCT.
- An abbreviated version of the World Health Organisation (WHO) Core Questionnaire was used to interview patients with regard to their substance abuse habits.

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 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 GF Jooste. On his request the 'race' variable was removed from the original questionnaire.
- 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 GF Jooste

4.1 An Overview

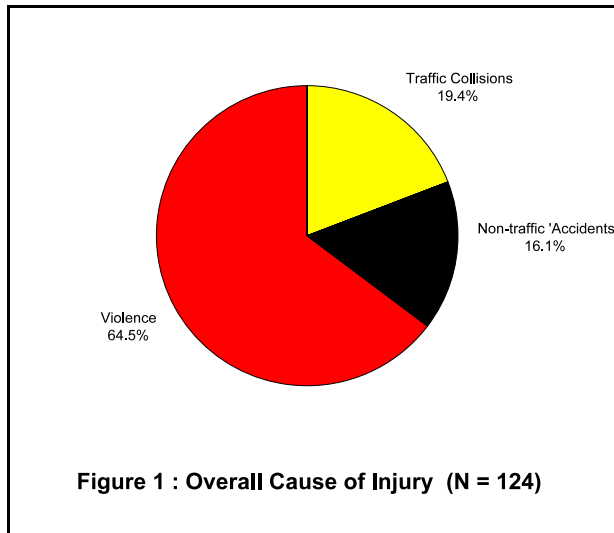
A total of 178 patients were seen at GF Jooste trauma unit over the idealised week. 124 of these were included in the study.

Number of patients seen over an idealised week (N = 178)	
Included (n = 124)	Excluded (n = 54)
Mean age	
31.7 years \pm 11.8	32.7 years \pm 17.7
Gender	
74.2% males	61.1% males
Causes	
Violence = 64.5%	Violence = 53.7%
Traffic = 19.4%	Traffic = 11.1%
Non-traffic 'Accidents' = 16.1%	Non-traffic 'Accidents' = 35.2%
Reasons for exclusion	
	> 6 hours = 51.2%
	Repeat = 11.1%
	Refused = 3.7%
	Transferred = 3.7%
	Minor = 3.3%
	Missed = 1.6%
	Treated before = 1.9%
	Unknown = 1.9%
	DOA = 1.9%

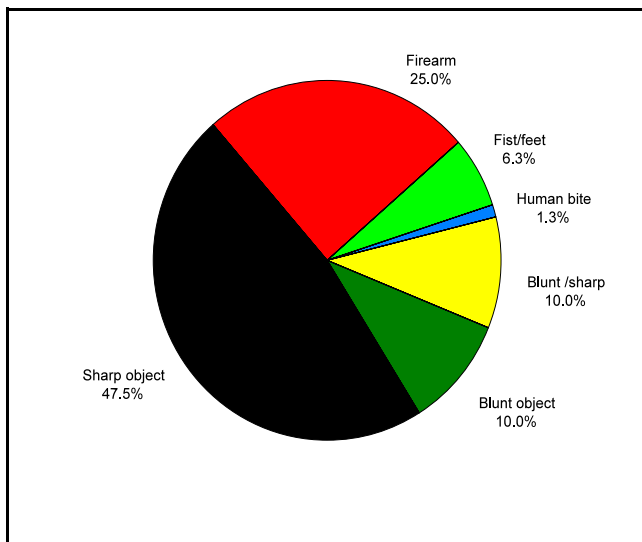
More than half of the patients who attended the GF Jooste trauma unit were injured violently. This was the case for both those included and excluded. The mean age was also similar for both categories. The primary reason for excluding patients was that their injury had occurred more than six hours prior to their presentation at the unit.

4.2 Detail of Injury

4.2.1 Overall cause of injury



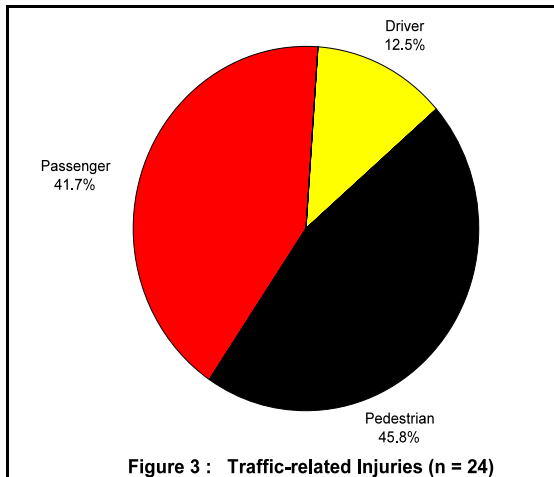
Violence out-numbered traffic as the leading cause of injury, accounting for nearly two-thirds of all injuries. One-fifth of the cases were due to traffic collisions while non-traffic 'accidents' (which includes falls, burns, sport and other mishaps) contributed to a further 16% of the cases (Figure 1).



4.2.1.1 Violence-related injury

Of the 80 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).

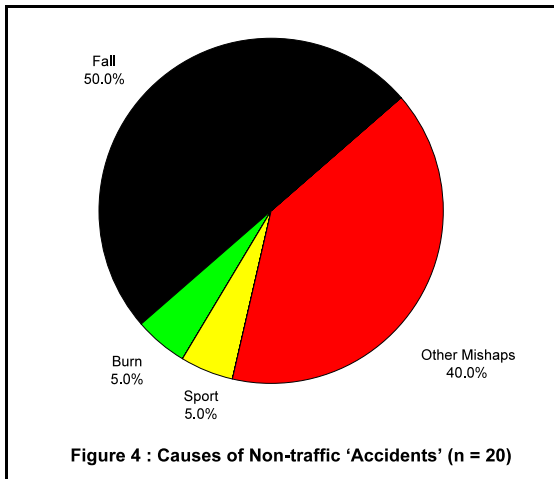
Figure 2 : Violence-related Injuries (n = 80)



4.2.1.2 Traffic-related Injury

Nearly half of the traffic-related injuries involved pedestrians while 42% were passengers (Figure 3).

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



4.2.1.3 Non-traffic 'Accidents'

Falls accounted for half of this category while 40% of the cases were the result of other mishaps such as cutting a finger or spraining an ankle (Figure 4).

Note: the numbers were too small to make any significant comments.

4.2.2 Demographics

4.2.2.1 Age

The mean age of patients seen was 31.7(\pm 11.8) years. Violence was the leading cause of injury in all age groups up to 54 years whereafter 'accidents' predominated (Table I).

Table I : General Cause of Injury by Age
(N = 124)

	Violence	Traffic	Non-traffic 'Accidents'	Total
0-14	1(16.7)	0(0.0)	5(83.3)	6(100)
15-24	23(82.1)	5(17.9)	0(0.0)	28(100)
25-34	31(72.0)	6(14.0)	6(14.0)	43(100)
35-44	18(60.0)	8(26.7)	4(13.3)	30(100)
45-54	5(38.5)	5(38.5)	3(23.0)	13(100)
55-64	1(33.3)	0(0.0)	2(66.7)	3(100)
65-74	1(100.0)	0(0.0)	0(0.0)	1(100)
Mean(\pmSD)	30.6(\pm10.5)	32.9(\pm17.3)	34.4(\pm10.3)	31.7(\pm11.8)

The figures show the number of cases and the percentage (in brackets) unless otherwise indicated

4.2.2.2 Gender

Of the cases studied at the GF Jooste trauma unit, 92 (74.2%) were males and 32 (25.8%) were females. Violence was the main cause category in both males and females. (Table II).

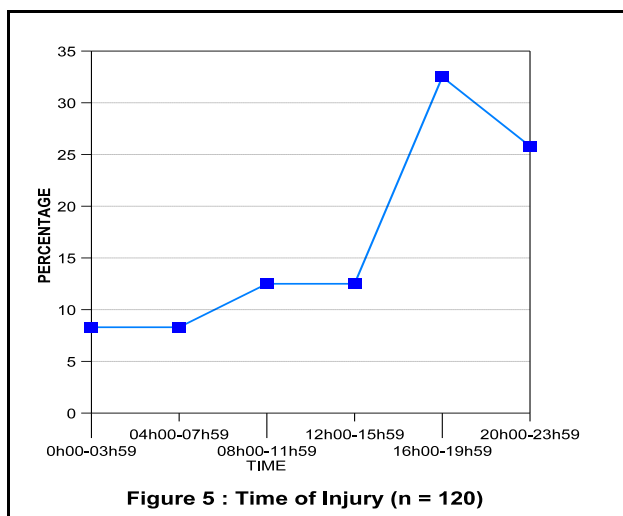
Table II : Cause of injury by Gender
(N = 124)

	Violence	Traffic	Non-traffic 'Accidents'	TOTAL
Female	18(56.3)	8(25.0)	6(18.7)	32(100)
Male	62(67.4)	16(17.4)	14(15.2)	92(100)

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

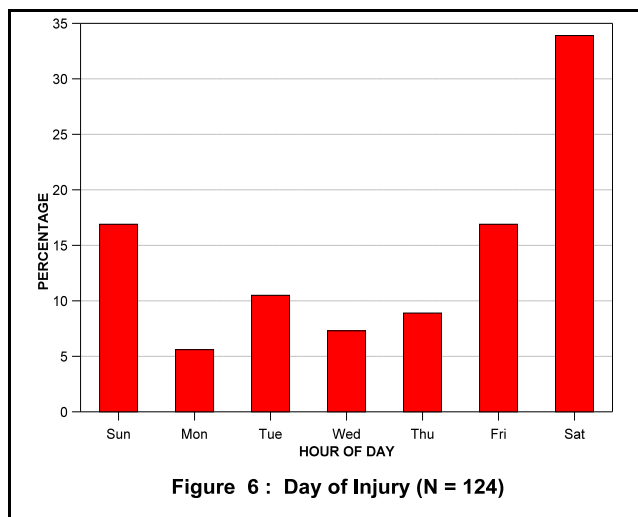


The time of injury was unknown in 4 (3.2%) of 124 cases.

For the remaining 120 cases, 32% of injuries occurred during office hours, i.e. from 08h00-17h00 while 68% 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



As expected, more than two-thirds of the injured patients presented to the GF Jooste trauma unit over the weekend, i.e. from Friday to Sunday (Figure 6).

4.2.3.3 Suburb of Injury

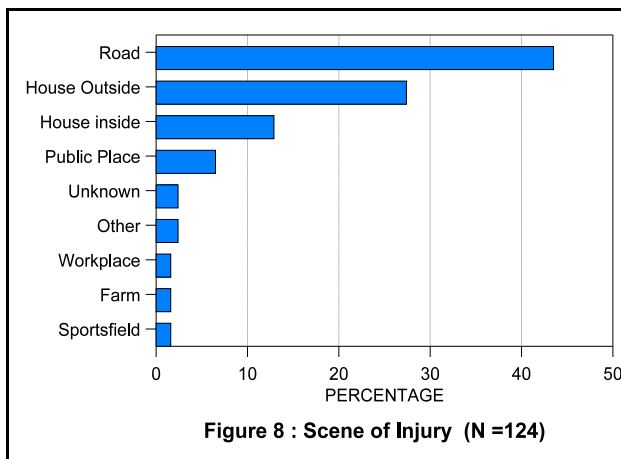
Nearly 92% of all patients were injured in the four suburbs indicated in the table below. Injuries sustained in these suburbs were predominantly due to violence. One-third of injuries in Mitchells Plain were due to traffic collisions (Table III).

Table III : Top Four Areas by Cause of Injury
(n =114)

	Violence	Traffic	Non-traffic 'Accidents'	TOTAL
Manenberg	26(63.4)	4(9.8)	11(26.8)	41(100)
Mitchells Plain	18(51.4)	12(34.3)	5(14.3)	35(100)
Guguletu	20(87.0)	2(8.7)	1(4.3)	23(100)
Khayelitsha	11(73.3)	2(13.3)	2(13.3)	15(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



Forty-four percent of the 124 patients were injured on the road while a further 40% occurred in and around the house (Figure 7).

4.2.4 Type and Severity of Injury

4.2.4.1 Type of Injury

The 124 patients had sustained 146 lesions between them.

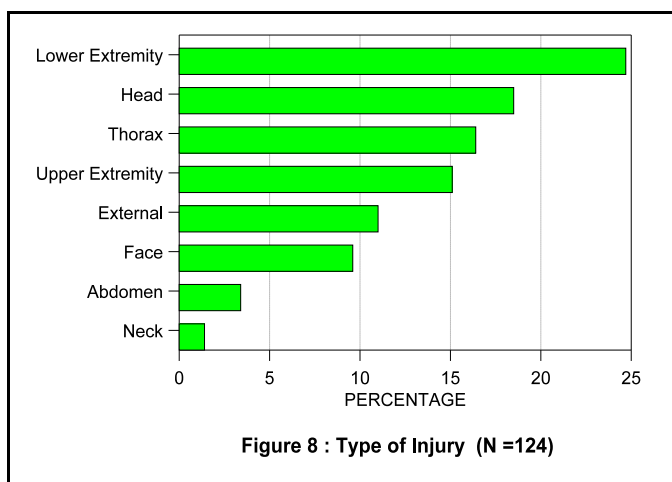


Figure 8 shows the body regions involved. The limbs, head, and thorax were most commonly injured.

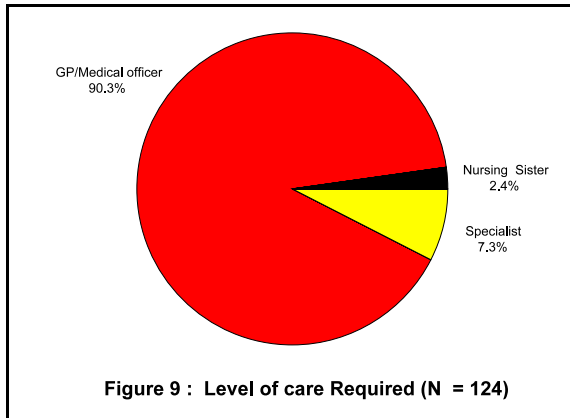
4.2.4.2 Injury Severity

The largest proportion of patients sustained minor injuries (ISS < 9) while nearly 20.0% had injury severity scores of nine or more (Table IV). Although only one patient had a ISS of 75 (an inevitable fatal injury), three patients (2.4%) died as the result of their injuries.

NISS Scores	No. of cases	%
1-8	100	80.6
9-15	18	14.5
16-24	3	2.4
25-40	1	0.8
41-49	0	0.0
50-66	1	0.8
75	1	0.8

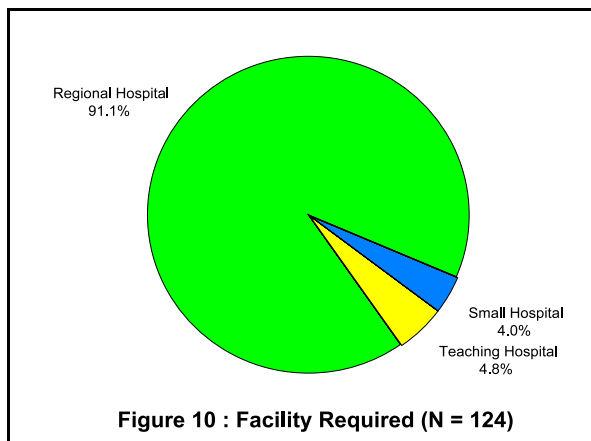
4.2.5 Care and Placement of Patients

4.2.5.1 Level of Care Required



Although the majority of patients sustained minor injuries the research team judged that only 2.4% could have been adequately managed by a nursing sister and that 90% of patients required the services of a medical officer (Figure 9).

4.2.5.2 Facility Required



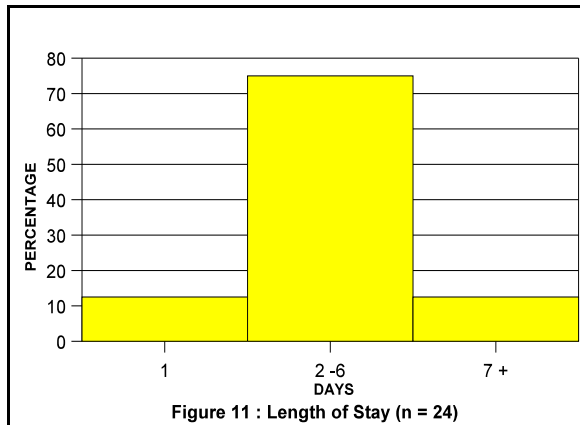
The research team judged that nine out of ten patients attended GF Jooste appropriately but that a small percentage needed to be treated elsewhere (Figure 10).

Placement	Number	%
Discharged	89	71.8
Admit: Ward	23	18.5
HCU	1	0.8
Dead	3	2.4
Transferred	7	5.6

4.2.5.3 Placement after Initial Assessment

Nearly three-quarters of the 124 patients who were seen in the trauma unit were treated and discharged. However, 19% of patients required admission to either a hospital ward or directly to a High Care Unit (HCU). Three patients (2.4%) died while being resuscitated in the trauma unit. Seven patients were transferred to GSH because of the complexity of their injuries (Table V).

Only seven percent of patients required surgical intervention.



4.2.5.4 Length of Stay

Nineteen percent of the 124 patients who were seen in the trauma unit were admitted to either a HCU or a ward.

Just over one-tenth of patients were discharged after 24 hours while three-quarters stayed in hospital for two to six days. A further one-tenth of patients were hospitalised for a week or more (Figure 11).

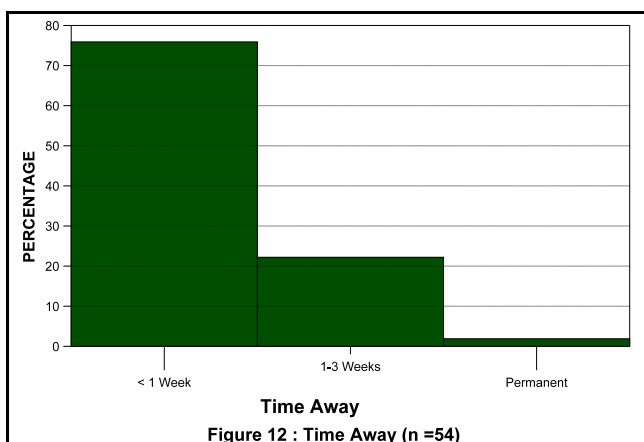
The median number of days for patients in hospital was 2.5 (IQR 2.0-3.5).

4.2.6 Estimated Disability

Severity	Number	%
Mild	98	50.9
Moderate	20	22.3
Serious	3	14.3
Dead	3	4.5

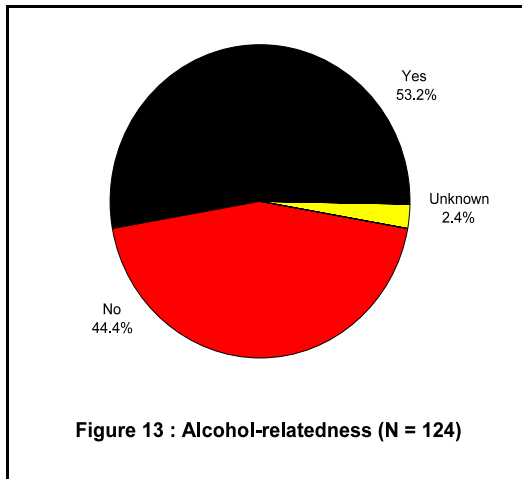
4.2.6.1 Severity of Disability

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



4.2.6.2 Time Away from work

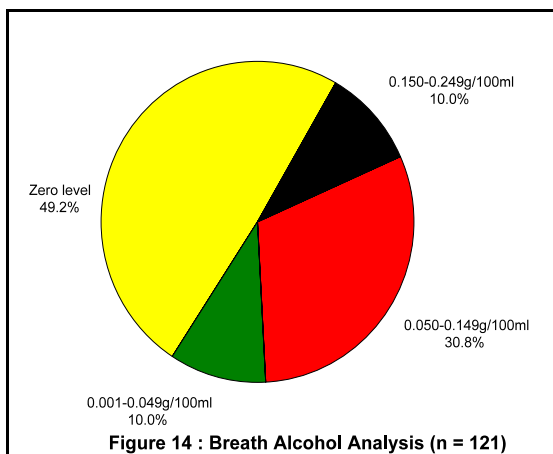
There were as many patients employed as unemployed (43.0%). Of those employed, three-quarters required a week or less off work while 22.2% required up to three weeks off (Figure 12).



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 crude clinical judgement in unconscious or uncooperative patients. More than one-half of the patients acknowledged that they had used alcohol prior to their injuries (Figure 13).



4.3.2 Breath Alcohol Analysis

The alcohol level of three patients was unknown. Of the remaining 121 patients, 51.2% had alcohol levels greater than zero (Figure 14).

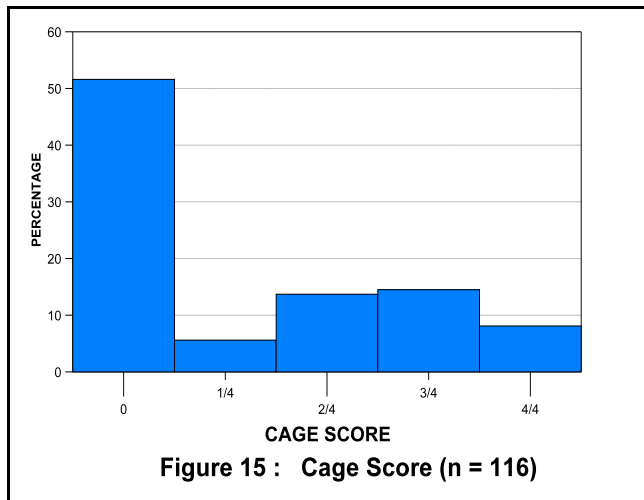
The mean alcohol level for those with positive results was found to be 0.1 (\pm 0.06) g/100ml.

Table VII : Non-zero Breath Alcohol Levels

Cause Category	Positive n	%	Mean BrAC g/100ml(\pm SD)
Violence	52	65.0	0.101(\pm 0.06)
Traffic	9	37.5	0.085(\pm 0.05)
Non-traffic 'Accidents'	1	5.0	0.140(\pm 0.0)

Sixty-five percent of the patients injured violently had positive alcohol levels (Table VII).

Only one driver had an alcohol level greater than or equal to 0.05g/100ml, the legal driving blood alcohol limit.



Only one patient injured ‘accidentally’ was drunk at the time.

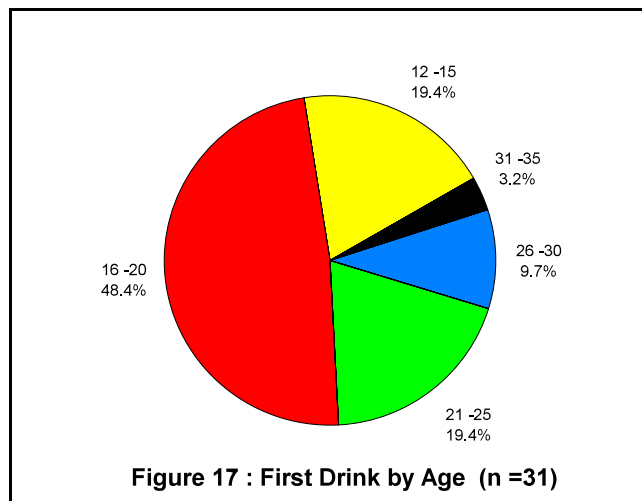
4.3.3 Chronic Alcohol Usage

Eight (6.5%) 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 116 patients:

- 55.0% had a total CAGE score of zero.
- 45.0% had a total CAGE score of two or more indicating chronic alcohol use (Figure 15).

4.3.4 Self-reported Alcohol Usage

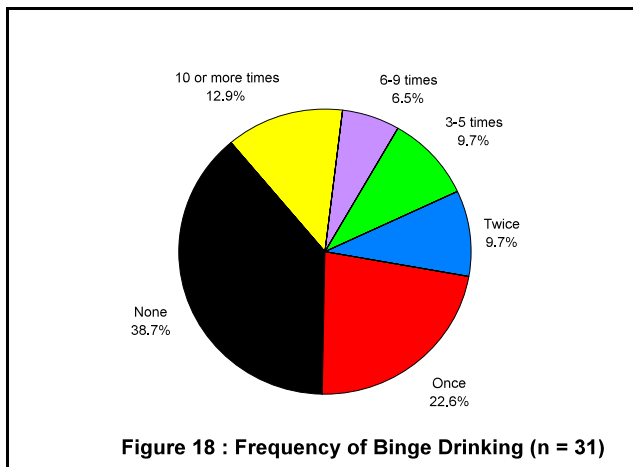


Self-report was used to establish recent trends in substance abuse. For this purpose an abbreviated version of the WHO Model Core questionnaire was used to question trauma patients regarding their abuse of substances. Thirty-one of the 35 patients interviewed said that they used alcohol.

4.3.4.1 First Drink by Age

Nearly half said that they were between the ages of 16 to 20 years when they had their first alcohol beverage (Figure 17). This is much older than has been found in other studies in South Africa. It is

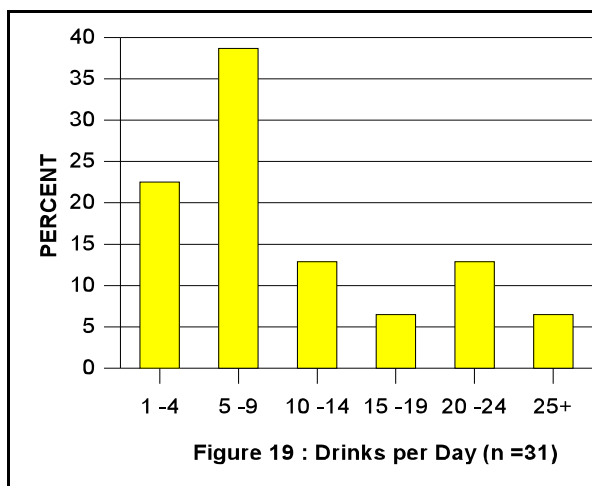
possible that patients misinterpreted the question to reflect the age at which they started drinking regularly and not when they had their first alcoholic beverage.



4.3.4.2 Frequency of Binge Drinking (Five or more drinks)

Patients were asked how often they engage in binge drinking, i.e. have five or more drinks at one sitting. Sixty percent said that they had binged once or more times in the last month. A

disturbing 20% had binged six or more times (Figure 18).



4.3.4.3 Drinks per Day

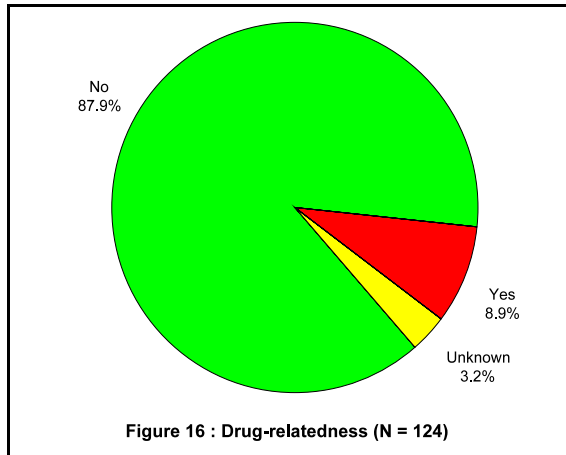
Patients said that on average they consumed about five standard drinks per day. However, a disturbing 39% consumed ten or more drinks a day (Figure 19).

4.3.4.4 Alcohol and Aggression

**Table XI : Alcohol and Aggression
(n = 31)**

	No. of patients	%
Yes	19	61.3
No	12	38.7

Patients were asked whether they felt aggressive after drinking alcohol. Over 60% conceded that this was in fact the case (Table XI).



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

**Table VIII : ACON Drug Screen Results
(n = 110)**

Drug	Positive result n(%)
Amphetamine	0(0.0)
THC	40(36.4)
Morphine	9(8.2)
Cocaine	1(0.9)
Methamphetamine	0(0.0)

4.4.2 ACON Drug Screen Results

The ACON drug kit screens for five drugs using a sample of urine. Fifty (45.5%) of the 110 patients tested were positive for cannabis, morphine or cocaine (Table VIII).

Eighty-eight percent of patients who tested positive for cannabis had been injured violently.

Table IX : Pharmacology (n = 110)

Drug	Positive result, n(%)
Dagga	38(34.5)
Methaqualone	21(19.1)

Table X : ACON Drug Screen Kit vs Pharmacology Analysis (n = 110)

ACON Drug Screen	Pharmacology		TOTAL
	Y	N	
Y	38	2	40
N	0	70	70
	38	72	110

4.4.3 Pharmacological Analysis

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

Twenty-one (19.0%) of the 110 patients were positive for both dagga and Mandrax indicating that they had smoked a ‘white pipe’ prior to their injury. These patients were predominantly injured by violence (88%)

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 ‘gold standard’ produced a sensitivity of 100% and a specificity of 97.2% (Table X).

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

4.4.5 Self-reported Drug Usage

Thirty-five patients who abuse substances were interviewed using the abbreviated WHO questionnaire.

4.4.5.1 Drugs Tried/Used

Table XII : Drugs Tried/Used

	No. of patients	%
Dagga	18	51.4
Mandrax	12	34.3

Eighteen of the 35 substance abusers interviewed indicated that they only used dagga and/or Mandrax. They did not acknowledge using 'harder' drugs like crack/cocaine, heroin etc (Table XII).

4.4.5.2 Drug Usage by Age

Table XIII : Age by Drug Usage

Age	Dagga	Mandrax
0 - 14	3	2
15 - 19	6	5
20 - 24	7	3
25 - 29	2	2
Unknown	2	2
Mean(SD)	18.9(4.1)	19.3 (4.1)

The drug users interviewed said that they first used dagga at 18.9 years and Mandrax at 19.3 years. Again this is much older than has been found in Cape Town previously and possibly reflects the age at which they started using these substances regularly (Table XIII).

4.4.5.3 Drug Usage per Month

Table XIV : Drug Usage per Day

Number of Days	Dagga n = 16	Mandrax n = 11
1 - 7	1(6.2)	2(18.2)
8 - 14	7(43.8)	4(36.4)
15 - 21	5(31.3)	3(27.3)
22 - 28	1(6.2)	0(0.0)
29 +	2(12.5)	2(18.2)

On average patients smoked dagga on 15.3(±8.1) days a month and Mandrax on 15.5(± 8.6) days per month (Table XIV).

4.4.5.4 The “White Pipe”

Twelve of the 35 patients (34.3 %) interviewed smoked a ‘white pipe’. Results from the interviews showed that:

- three-quarters of these patients said that they felt like fighting after smoking a ‘white pipe’.
- two-thirds said that they used alcohol at the same time as smoking a ‘white pipe’.
- eleven (91.7%) said that they had been assaulted after smoking a ‘white pipe’ in the past.

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, cannabis or a ‘white pipe’.
- one out of five patients had smoked a ‘white pipe’ prior to their injury.
- 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.
- most injuries involved the lower extremities, head and thorax.
- patients had injuries which were relatively minor in nature and few of them were left with significant long-term disability.
- those interviewed said that they had their first alcoholic drink at 19 years of age
- most of the patients who said that they consumed alcohol engaged in binge drinking (five or more

drinks at one sitting).

- of those questioned, two-thirds said that they felt aggressive after using alcohol but 75% said smoking a 'white pipe' made them feel like fighting.
- more than 90% of 'white pipe' smokers had previously been assaulted while under the influence of this combination of drugs.