

**SENTINEL SURVEILLANCE OF SUBSTANCE
ABUSE AND TRAUMA AT UMTATA
GENERAL HOSPITAL**

**1999
PROVISIONAL REPORT**



Compiled by

M.Maziko, M. Peden

**National Trauma Research
Programme (NTRP)**

Medical Research Council

P O Box 19070

Tygerberg 7505

Tel: (021) 938 0472

Fax: (021) 938 0381

E-mail: mzimkhulu.maziko@mrc.ac.za

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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, 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. 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.

This study is the first in a series of proposed annual longitudinal Trauma and Drug Studies (TAD) to be conducted in Umtata General Hospital.

2. 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 the casualty department of Umtata General Hospital in Umtata.

3.2 Sampling

3.2.1 Study Population

Patients attending with fresh trauma at Umtata General hospital.

3.2.2 Sampling Framework

The concept of an 'ideal week' was used at each of the casualty departments. 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.

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.
- Referrals were included provided they did not obtain significant treatment at the first facility they attended.
- Children under 12 years were excluded.
- 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 310 patients were included in the study for the period 20 November to 17 December 1999.

3.3 Instrumentation

- Each patient was interviewed by a field worker using a specially constructed interview sheet (Appendix A).
- 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 (Appendix A).
- Self-report was also used to assess drug usage among patients.

- A urine specimen was taken from the patient and a portion was used to screen for five drugs, viz. amphetamine, cannabis (THC), morphine, cocaine and methamphetamine, using the ACON multi- drug kit (Appendix B).
- 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 was Margie Peden, Specialist Scientist at the NTRP (Cape Town). She was assisted by a nursing sister from Port Elizabeth.

3.5 Ethics

- Ethical approval for the study was obtained from the University of Transkei (UNITRA) Ethics committee as part of the Transkei Trauma Epidemiological study currently being conducted by Drs Dhaffala, Mazwai and Peden. Permission was also obtained from the Medical Superintendent of Umtata General hospital by Dr Dhaffala.
- The data was anonymous but linked to demographic/self report . All data were kept in the strictest confidence by the researchers. 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 all the patients.

3.6 Analysis

The data was checked, cleaned and coded by the research team. Epi Info version 6.02 (Shareware, Center for Disease Control, 1994) was used for data capture and analysis.

4 RESULTS

4.1 An Overview

A total of 347 patients were seen at Umtata General trauma unit over the idealised week. Of these, 310 these were included in the study.

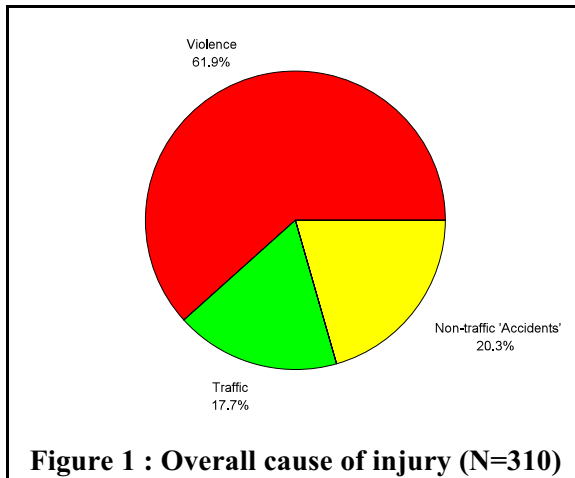
<p>Number of patients seen over an idealised week</p> <p>(N = 347)</p>

Included (n = 310)	Excluded (n = 37)
Mean age	
27.2±13.4 years	6.5± 3.4 years
Gender	
78.6% males	75.2% males
Causes	
Violence = 61.9%	Violence = 58.5%
Traffic = 17.7%	Traffic = 16.1%
Non-traffic 'Accidents' = 20.4%	Non-traffic 'Accidents' = 25.4%
Reasons for exclusion	
Minor = 100%	

There were few differences between those patients who were included and those who were excluded from the study except that exclusions were more likely to have been injured unintentionally. The primary reason for excluding patients was that the patients were minor that were presented at the unit.

4.2 Detail of Injury

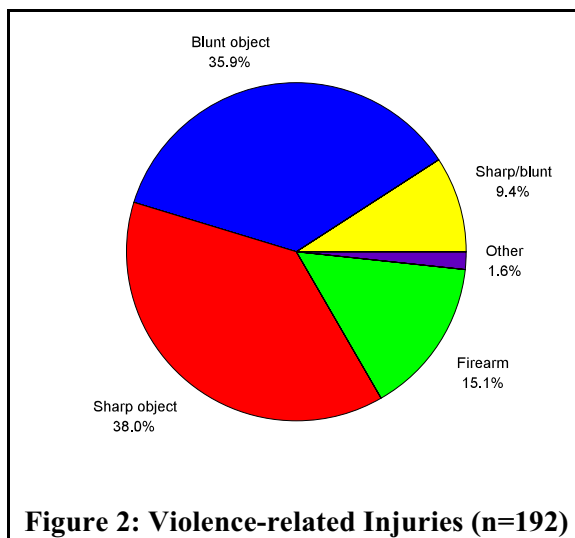
4.2.1 Overall cause of injury



Violence out-numbered traffic as the leading cause of injury, accounting for more than a half of all injuries. Nearly one-quarter of cases were due to non-traffic 'accidents' (which include falls, burns, sport and other mishaps) while traffic collisions contributed to a further 17.7% of the cases (Figure 1).

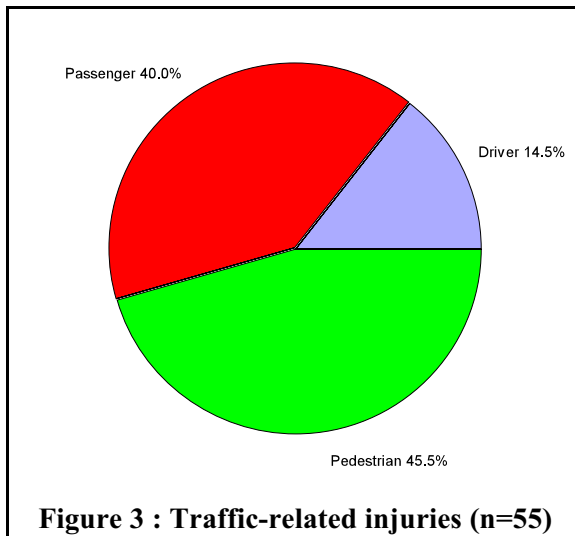
There were no attempted suicides recorded.

4.2.1.1 Violence-related injury



Of the 192 patients injured as the result of violence, more than one-third had been stabbed with a sharp object. A blunt object was used in a further one-third of cases while nearly 10% of patients were injured with a sharp and blunt object. Just over 15% of patients had been shot (Figure 2).

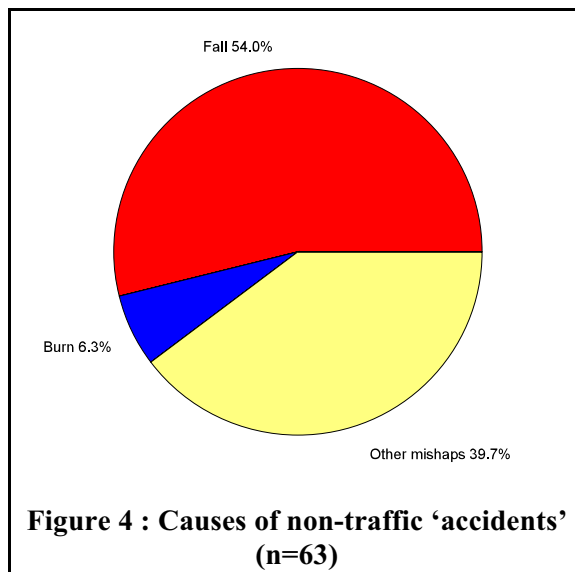
4.2.1.2 Traffic-related Injury



Pedestrians and passengers accounted for nearly 90% of all the traffic-related injuries seen at the UGH. Drivers accounted for only 14.5 %.

As would be expected, cars were involved in 76.0% of the collisions and bicycles in 10.9% of these traffic-related injuries seen at the hospital (Figure 3).

4.2.1.3 Non-traffic 'Accidents'



Nearly 60% of the non-traffic 'accidents were due to falls while 39.7% were the result of other mishaps such as cutting a finger or spraining of an ankle.

Burns accounted for just over 6% of cases (Figure 4).

4.2.2 Demographics

4.2.2.1 Age

The mean age of patients seen was 27.2 ± 13.4 years. Nearly two-thirds of all injuries were sustained by patients in the age range 20 to 39 years - most of these cases were violence-related. In fact, violence was the leading cause of injuries in all the age groups except those over 60 years old. There were, however, too few geriatric cases to comment.

Table I : Cause of injury by Age
(N =310)

	Violence	Traffic	Non-traffic 'Accidents'	Total
<19	50(53.8)	15(16.1)	28(30.1)	93(100)
20-29	89(72.4)	21(17.1)	13(10.5)	123(100)
30-39	29(65.9)	6(13.6)	9(20.5)	44(100)
40-49	14(53.8)	5(19.2)	7(27.0)	26(100)
50-59	3(42.9)	3(42.9)	1(14.3)	7(100)
60+	6(24.0)	15(60.0)	4(16.0)	25(100)
Mean (±SD)	26.6(±11.6)	29.4(±16.2)	26.8(±15.5)	33.8(±13.2)

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

4.2.2.2 Gender

Of the cases studied at Umtata General Hospital trauma unit, nearly 80% were males and 21.3% were females. The main cause of injuries in both males and females was violence (Table II).

Table II : Cause of injury by Gender
(N = 310)

	Violence	Traffic	Non-traffic 'Accidents'	Total
Female	28(42.4)	17(25.8)	21(31.8)	66(100)
Male	164(67.2)	38(15.6)	42(17.2)	244(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 Day of injury

Nearly 60% of the patients were injured over the weekend, i.e. from Friday to Sunday (Figure 5).

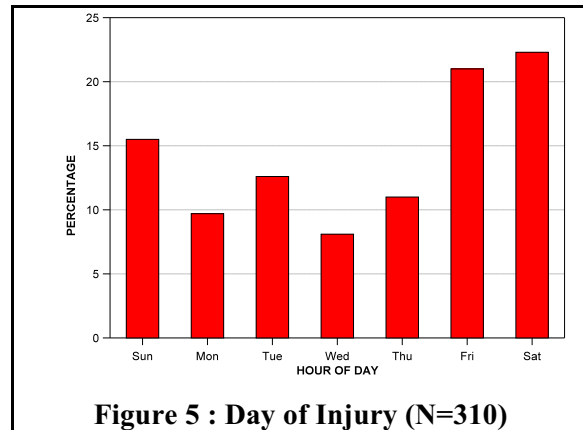


Figure 5 : Day of Injury (N=310)

4.2.3.2 Time of Injury

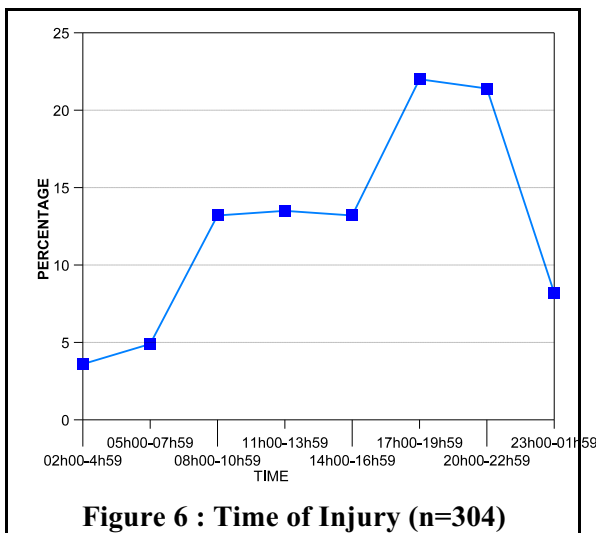


Figure 6 : Time of Injury (n=304)

The time of injury was unknown in six (1.9%) of 310 cases.

For the remaining 304 cases, 39.9% occurred during office hours, i.e. from 08h00-17h00 while 60.1% occurred between 17h00 and 08h00 (Figure 6). There was a distinct peak of injuries between 17h00 - 19h59.

4.2.3.3 Scene of injury

More than half (55.2%) of the 310 patients were injured on the road while another 35.9% of the cases occurred in and around the house.

The term 'other' included shebeen, garage, river, etc (Figure7).

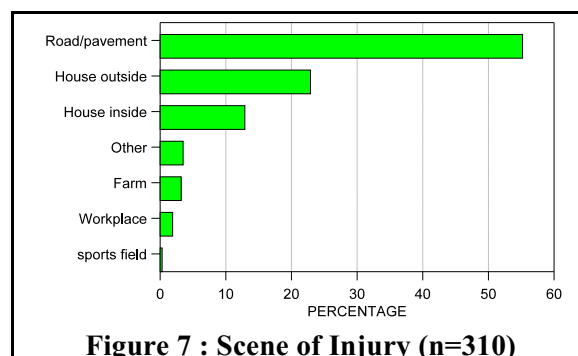


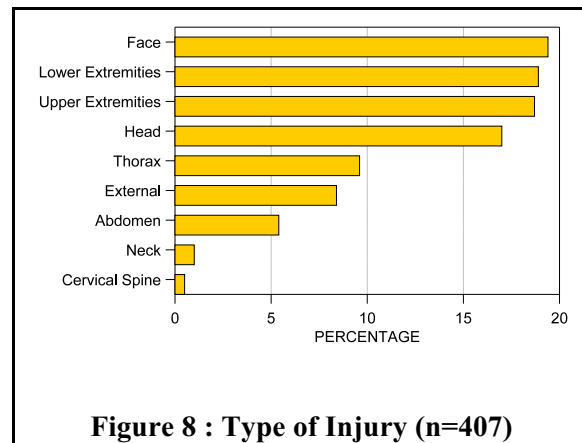
Figure 7 : Scene of Injury (n=310)

4.2.4 Type and Severity of Injury

4.2.4.1 Type of Injury

The 310 patients had sustained 407 lesions between them.

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



4.2.4.2 Injury Severity

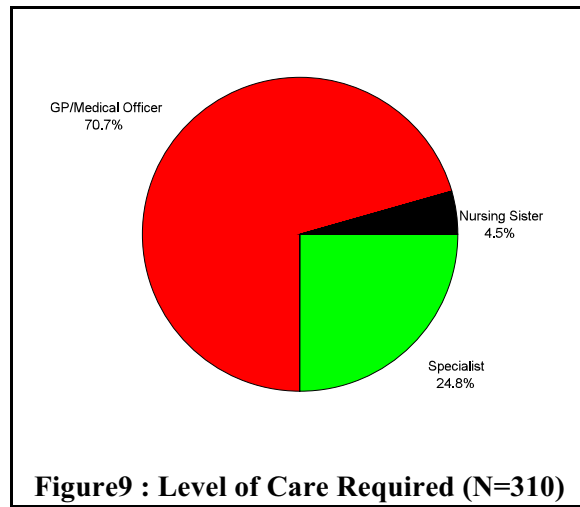
The largest proportion of patients sustained minor injuries (ISS<9) while 21.5% had injury severity score of nine or more (Table III). Even though there were no patients with an ISS score of 75 (an inevitable death), three patients (1.0%) eventually died as the result of their injuries.

NISS Scores	No. of cases	%
1-8	243	78.4
9-15	43	13.9
16-24	17	5.4
25-40	7	2.2
41-75	0	0.0

4.2.5 Care and Placement of Patients

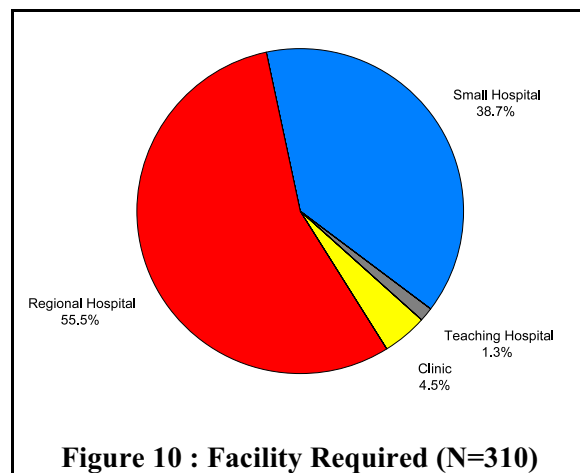
4.2.5.1 Level of Care Required

Although the majority of patients sustained minor injuries, the research team judged that only 4.5% could have been adequately managed by a nursing sister. Nearly three-quarters of patients required the services of a medical officer. A quarter of patients needed to be attended to by a specialist doctor (Figure 9).



4.2.5.2 Facility Required

Nearly 95% of patients attended Umtata hospital appropriately. A small percentage could have been treated at a Clinic and less than 2% required tertiary hospital management (Figure 10).



4.2.5.3 Placement after treatment

Nearly 60% of the 310 patients who were seen in the trauma unit were treated and discharged. However, 23.3% of patients required admission to either a hospital ward or directly to an Intensive Care Unit (ICU). Three patients (1.0%) died while being resuscitated in the trauma unit. 16.5% of patients were transferred to a more sophisticated hospital (in East London) or a specialist hospital (Bedford Orthopaedic) for management of their injuries (Table IV).

Placement	Number	Percentage
Discharged	184	59.4
Ward	52	16.8
ICU	20	6.5
Dead	3	1.0
Transferred	51	16.5

4.2.6 Estimated Disability

4.2.6.1 Severity of Disability

Severity	Number	%
Mild	71	22.9
Moderate	150	48.4
Serious	86	27.7
Dead	3	1.0

Nearly one- third of all patients were judged to have sustained a mild disability as a result of their injury. More than two-thirds had more severe disabilities. Only one percent of patients died as the result of their injuries (Table V).

4.2.6.2 Time Away from work

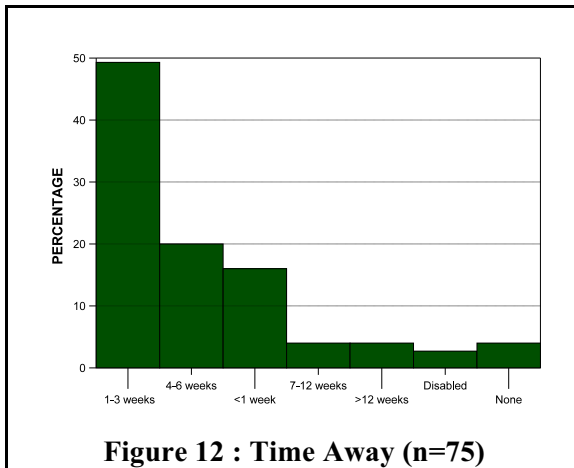


Figure 12 : Time Away (n=75)

Nearly half of the patients were unemployed. Of those employed, nearly 70% required up to a week off work while nearly one-quarter required up to three weeks off. Nearly 3% of patients were so severely injured as to be left permanently unable to work.

4.3 Substances abused by patients

Only 21.5% of patients had not used a substance prior to their injury. 70% of patients had used alcohol - either alone or in combination with drugs. 8.1% of patients had used an illicit drug.

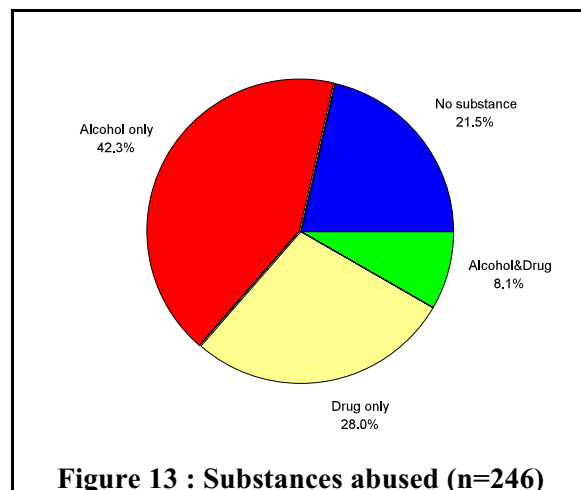
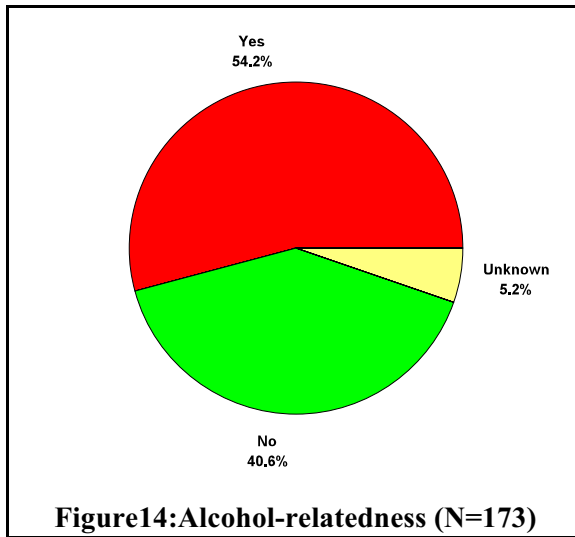


Figure 13 : Substances abused (n=246)

4.3.1 Alcohol

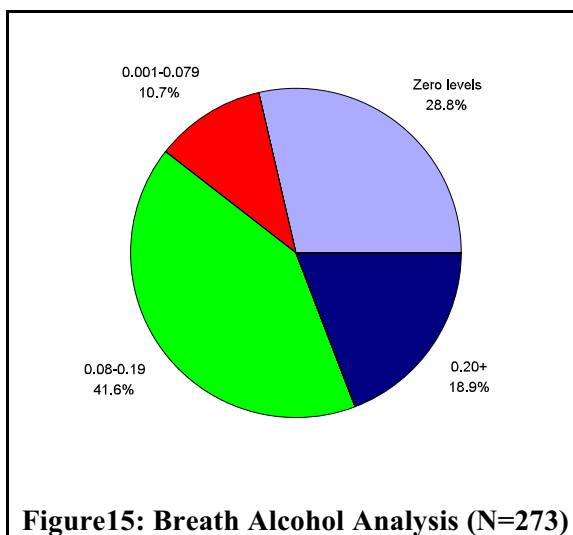
4.3.1.1 Self-reported alcohol consumption



The alcohol-relatedness of injuries 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. More than half of the patients acknowledged that they had used alcohol prior to their injury (Figure 14).

There was 93.7% agreement between self-reported alcohol consumption and breath alcohol analysis.

4.3.1.2 Breath Alcohol Analysis



The alcohol levels in 60 (19.4%) patients could not be tested. Of the remaining 250 patients, nearly 70% had alcohol levels greater than zero (Figure 15).

The mean alcohol level for those with positive results was 0.10 ± 0.07 g/100ml

Table VI : Non-zero Breath Alcohol Levels

Cause Category	Positive n	%	Mean BrAC g/100ml(±SD)
Violence	132	52.8	0.1(±0.07)
Traffic	24	9.6	0.1(±0.06)

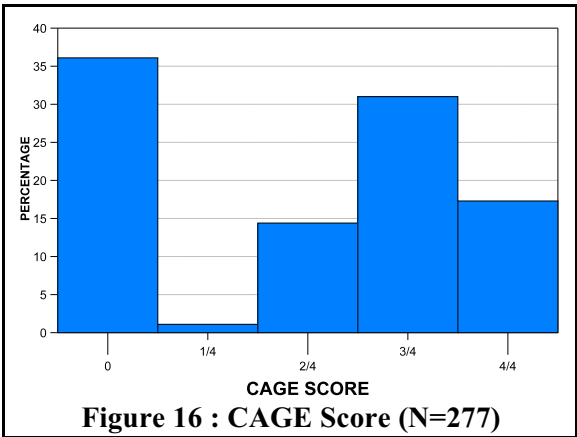
More than a half of the patients injured as a result of interpersonal violence had positive alcohol levels (Table VI).

4.3.1.3 Chronic Alcohol Usage

Thirty-three (10.6%) 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 277 patients:

- 36.1% had a total CAGE score of zero.
- 62.7% had a total CAGE score of two or more indicating problem drinking or possible alcohol dependence (Figure 16).



4.3.2 Illicit drugs

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

4.3.2.1 Self-reported drug usage

Of the 310 cases, only 2.9% of patients acknowledged using illicit drugs prior to their injury.

There was only a 55.6% agreement between self-report and urinary analysis.

4.3.2.2 ACON Drug Screen Results

The ACON drug kit screens for five drugs using a sample of urine (Table VII).

The drugs detected using these kits were cannabis, cocaine, morphine, amphetamines and methamphetamines. Using this method of analysis, one-third of patients were found to be positive for at least one drug - most commonly cannabis. Nearly 40% of patients injured violently had used at least one drug prior to their injury.

Drug	Positive result n(%)
Amphetamine	2(0.7)
THC	61(20.0)
Morphine	23(7.5)
Cocaine	33(10.8)
Methamphetamine	2(0.7)

4.3.2.3 Pharmacological Analysis

Drug	Positive result, n(%)
Dagga	29(10.5)
Methaqualone	0(0.0)

Conventional wet analysis was undertaken on a sample of urine. Only 10.5% of the patients were found to be dagga positive using this method. There were no Mandrax positive results (Table VIII).

4.3.2.4 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 96.6% and a specificity of 90.7% (Table IX).

Table IX : ACON Drug Screen Kit vs Pharmacology Analysis (n = 276)

Acon Drug Screen	Pharmacology		TOTAL
	Y	N	
Y	28	23	51
Z	1	224	225
	29	247	276

5. SUMMARY

To summarise, results showed that:

- injured patients were predominantly young males.
- most injuries were the result of violence.
- sharp objects were the major cause of interpersonal violence.
- most of the patients who were involved in traffic collisions were pedestrians or passengers.
- most of the patients who were injured violently abused substances primarily alcohol and cannabis.
- injuries occurred mostly after hours and on weekends.
- most injuries involved the upper extremities and face, head, thorax and lower extremities.
- patients had injuries which were relatively minor in nature and few of them were left with significant long-term disability.
- 42.3% of injuries were alcohol-related, 28.1% were drug-related and 8.1% were both alcohol and drug-related.
- 22(7%) of 310 injuries occurred at initiation ceremonies. All these injuries were due to violence and most were drug- and alcohol-related.

This study is funded by the Department of Arts, Culture, Science and Technology's Innovation Fund for Crime Prevention. It is conducted by a Consortium of research partners (MRC, UNISA and CSIR). Results are included in the National Injury Surveillance System and the Transkei Epidemiological Study.