THE EPIDEMIOLOGY, PATHOLOGY AND TOXICOLOGY OF SUICIDE.

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DEDICATION

This work is dedicated to everyone who has been touched by the loss of a family member, friend or loved one by his/her own hands.

PREFACE

The study described in this dissertation was carried out in the Department of Forensic Pathology, University of Cape Town, under the supervision of Professor G. Knobel.

This study represents original work by the author and has not been submitted in any form to any other university. Where use was made of the work of others it has been duly acknowledged in the text.

ACKNOWLEDGMENTS

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ABSTRACT

Complete suicides and parasuicides are a major cause of death and disability in South Africa and the rest of the world. The epidemiology, pathology and toxicology of complete suicides were investigated in this study.

All the complete suicide cases, which were presented to Salt River Medicolegal Laboratory over a period of one year (1 January 1997 – 31 December 1997), were analysed. The candidate personally conducted 148 of the alleged 180 suicide cases that presented in this time period (82%). The candidate did all the follow up investigations herself.

The main findings were:

1. The male to female ratio was 5: 1. (131: 26)

2. Shooting and hanging were the most commonly used methods.

3. The racial distribution of violent deaths showed a high rate of suicides amongst the White population.

4. Suicides accounted for the loss of young lives, the average age being 37,8 years. The mean age was 34 years.

5. Most victims committed suicide in and around their own homes.

6. The majority did not leave suicide notes.

7. Psychiatric disorders, poor health, arguments with close family members and friends, financial problems and long-standing relationship problems were the most common reasons for the suicides.

8. Suicides by prisoners accounted for 3,8% of the study (6 cases).

9. Two cases of double suicide (group suicide) were identified.

10. Five cases of homicide-suicide were identified in the study material.

11. One case of an attempted suicide by means of a high-speed motor vehicle accident, followed by the successful suicide by other means, was identified.

REVIEW OF LITERATURE

Definition of suicide

H.G. Morgan compared different definitions of suicide used by different institutions and authors (1). The different definitions all shared similar concepts in the intent of the person to deliberately harm himself/ herself in such a way that the outcome would result in death. This was in accordance with the definition of suicide used by the author, in which it was defined as the deliberate and intentional physical, traumatic and/ or chemical injury inflicted by someone, who knew what he/ she was doing, which resulted in death.

Historical review

Suicide is not a modern day phenomenon. It occurred in Biblical times and long before. Samson died by collapsing the house of the Philistines (2), King Saul fell onto his own sword and his weapon bearer, on witnessing this suicide fell onto his own sword (3). King David's adviser, Agitofel (4) and Judas (5) hanged themselves. In Roman and Greek times suicide was often committed to maintain honour or avoid capture (1). Mass suicides have occurred at regular intervals throughout the centuries, mainly when religious sects were involved (1). In recent times, as early as the 1960's and 1970's, politically motivated reasons for suicides were reported (6). Throughout history it has been debated as to whether suicide was a sin or justifiable (1). St. Augustine (A.D. 354 – 430) pronounced suicide as a "greater sin than any" and fiercely condemned it (1). During the Renaissance of the sixteenth century, suicide was justified by certain apologists under strictly defined circumstances (1). Although we live in a modern society where it is not considered a sin any more, there is still a stigma attached to suicidal deaths.

International statistics

Numerous articles have been published relating to suicide rates in different countries. Comparative studies have been made between different countries, regions of a country as well as different time periods. Internationally we compare well with countries like

Scotland (9,4/ 100 000) (7), Hong Kong (11,3/ 100 000) (8), Norway (15/ 100 000) (9), Denmark (24/ 100 000) (9) and U.S.A (13/ 100 000) (10). The high suicide rate reported in Denmark and Copenhagen was difficult to explain by S. Rodge et al (9), but it was concluded that it could have been linked with the high rate of unemployment.

Methods of suicide

Jumping from a height and hanging predominated all age groups of suicide in Hong Kong (8), while hanging was the most frequent method used in Japan (11). Jumping from a height was also the method of choice amongst the elderly people of Spain (12). In Ireland the methods of suicide amongst the elderly were hanging, drowning and poisoning (13). Amongst the Irish youth the leading cause of suicidal death was hanging (14).

Deliberate drug overdoses accounted for the majority of suicides in Scotland (7), Norway and Denmark (9). Analgesics and tricyclic antidepressants were the most commonly used drugs in Scotland (7).

The percentage of suicides in which firearms were used has increased markedly in America, especially amongst the youth (15). This increase is mainly due to the household prevalence of handguns (16). In Canada the firearm of choice for suicide was the shotgun (17). The availability of guns in the home, independent of the type of firearm or the method of storage, appeared to increase the risk for suicide amongst adolescents (18).

Hanging was the most common method of suicide amongst prisoners in the Netherlands (19) and Finland (20), where it accounted for 88% of prison deaths. An American study had similar findings of hanging, this being the preferred method of suicide amongst prisoners. They also reported that the majority of these deaths occurred at night and within 31 days after imprisonment (21).

Suicidal drowning accounted for 45,5% of all female suicides in the age group of 50 years and above in Newfoundland (22).

Reasons for suicide

The strongest predictor of suicide was psychiatric disease, usually depression. Bipolar disorders and schizophrenia were also associated with a higher risk of suicide. Alcohol abuse played a major contributory role in these suicides (23). A study period of 14 years revealed a positive psychiatric history in 64,5% of all suicides in Wolverhampton (24). According to research by Shah et al, suicide rates amongst psychiatric inpatients are higher than the general population (25). Violent methods were more frequently used. The majority of these suicides occurred during periods of approved leave or patients absconding from the hospital (25).

Depression, social isolation, loss of a loved one and physical illness were all risk factors for suicide amongst the elderly of Britain (26). In the same study it was noted that most of these elderly victims had contact with primary health care workers in the month prior to suicide. In Baranya County (Hungary) 20% of all suicidal deaths amongst men occurred when they could not cope with the loss of their spouse (27).

A study in Ireland concluded that there was a positive association between unemployment and suicide rates amongst the males (13). A comparative study done in Stockholm found a higher suicide rate in the low-income areas (28).

Amongst the American youths the victims were more likely to have broken up with their girlfriends or boyfriends recently, to have known someone who has died violently, moved more often, attended more schools and lived with more parent figures than the control group (29). There was no significant association between suicide and exposure through the media (29). Brent DA et al identified four risk factors prevalent amongst the adolescents; "Bipolar disorder, affective disorder with co-morbidity, lack of previous health treatment and availability of firearms in the home" (30). Research in Finland revealed a high incidence of antisocial behaviour, separation from parents, parental alcohol abuse and parental violence amongst adolescent suicide victims (31).

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ABBREVIATIONS

CO	CARBON MONOXIDE
OD	OVERDOSE
DR	DEATH REGISTER NUMBER
PM	POST MORTEM
M	MALE
F	FEMALE
C.T.	CAPE TOWN
ST	SIMONSTOWN
WB	WYNBERG
N1	NATIONAL ROAD, DIRECTION CAPE TOWN TO PAARL
N7	NATIONAL ROAD, RUNNING PARALLEL TO THE WEST COAST
AFR	AFRICAN
COL	COLOURED
WH	WHITE
H	HOUR
D	DAY
W	WEEK
M	MONTH
ARDS	ADULT RESPIRATORY DISTRESS SYNDROME

CHAPTER 1

INTRODUCTION

Cape Town is one of the major cities of South Africa. It is a city where there is a tremendous mixture of cultural, racial, political and religious groups. Socio-economically it also ranges from the one extreme to the other. Informal settlements consisting of huge squatter camps with a high incidence of unemployment, drug and alcohol abuse, violence and unnatural death, contrast sharply with the suburbs of the wealthy and privileged population groups with the highest levels of education and medical care available. Due to the change in government policy there is at present a concerted effort to improve the socio-economic standards of the whole population through the provision of homes, education and health care to everyone.

Suicides and parasuicides are a major social, medical and public health problem in the community (10), resulting in the loss of young, productive people in the prime of their lives. There is a staggering cost in terms of loss of human life and suffering. The responsibility to recognize, to treat and to attempt to reduce the high suicide rates lies with the government and its health care services. At a symposium held on suicides in America in 1965, it was pointed out to their government that the potential suicide victim will cry out for help and that it is a public health matter to identify this person and so to combat the "disease of suicide" (32).

Suicides occur in all groups of the society – it crosses all religious and cultural borders. It happens to the famous (Michael Hutchence, 37-year-old lead singer of the group INXS, committed suicide in his hotel room in Sydney on 22 November 1997) (33) (34), and the not so famous. It touches all of us. Most individuals, including health care workers, have been confronted with this issue, and may have friends, family members and colleagues that have committed, or are related to someone who has committed or has attempted to commit, suicide. Media reports on suicide cases appear daily. Who are these people? Why do they perform such an "act" of final self-destruction? Why is life so intolerable? These are factors that will be analysed in this study in order to find answers to many of

these questions.

THE AIMS OF THIS STUDY:

This present study analyses the post-mortem findings and background studies of 157 suicides in the greater Cape Town area during 1997. One case, referred for specialist medicolegal autopsy from outside the Cape Town metropole, was included as one of the series investigated.

1.1 EPIDEMIOLOGY

To determine
- The suicide rate in the community.
- The major sex, age and racial groups.
- The reasons for the suicides.
- The methods used.
- The demographical spread.
- The location of the suicide.
- The incidence of previous attempts.
- The number of patients who survived in hospital.
- The presence of a suicide note.
- The verbally communicated wish to die/commit suicide.
- The time of day.
- The presence of another person at the time of suicide.
- Intoxication at the time of suicide.
- Socio-economic class and occupation.

1.2 PATHOLOGY

To analyse the post-mortem findings of the different methods used.

SHOOTING:

- Pathology
- Type of firearm
- Ownership of the firearm

HANGING:

- Material used
- Pathology

CARBON MONOXIDE POISONING:

- Pathology and CO levels

JUMP FROM A HEIGHT:

- Pathology

TRAIN FATALITIES:

- Pathology

BURNS:

- Pathology
- Flammable agent

1.3 SPECIAL CASES AND SPECIAL CIRCUMSTANCES

To look at special circumstances that some of the cases have in common.

PRISON SUICIDES
DYADIC DEATH
SUICIDE PACTS
COMPLEX SUICIDES
SUICIDES IN HOSPITAL
HIV INFECTION AND HOMOSEXUALITY
SUICIDE IN PATIENTS WITH PSYCHIATRIC DISEASE

1.4 TOXICOLOGY

DRUG OVERDOSE:

Drugs used
Type of drug
Level of drugs in the body
Source of the medicinal drug

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CHAPTER 2

METHODS

In South Africa, in terms of the Inquest Act, medicolegal post-mortem examinations must be performed on all non-natural deaths (35). Two mortuaries, namely Salt River and Tygerberg Medicolegal Laboratories, serve the Peninsula. The data analyzed in this study were collected at Salt River Laboratory, which serves the southern suburbs of the metropole, the city center, Khayelitsha and the areas next to the N1, up to the intersection with the N7.

The study was conducted from data collected from all the alleged suicide cases that were presented to Salt River Medicolegal Laboratory during 1997. The initial information with the allegation of suicide was obtained from the mortuary staff responsible for the collection of bodies from the scene. Post-mortem examinations were then performed on all these cases. The candidate personally performed the majority of the post-mortems. (See Annexure A). Where other members of staff performed the autopsies, the results were obtained from the official autopsy reports.

After completion of the autopsies, telephonic and/or personal interviews with the families, the investigating officers and/or state prosecutors were held. The author was responsible for all the interviews. (See Annexure B for an example of the questionnaire that was completed at every interview).

The value of the different interviews:

FAMILIES

The majority of the family members interviewed were very thankful for the personal contact and the opportunity to discuss the reasons for the suicide, the methods used, the mechanism of death and the agonal period. Occasionally some family members were very reluctant to reveal any information about the deceased and the circumstances

surrounding the death. This was very evident in cases surrounding a family argument that led to the suicide, especially where siblings were involved (36). In some cases families were in complete denial and refused to accept that a suicide had been committed (37). This interview also presented an ideal opportunity to conduct bereavement counseling with the families involved.

INVESTIGATING OFFICERS

As a general rule the officers were all very willing to help. Although the mortuary attendance by the police was very poor, telephonic communication was sufficient to obtain the necessary information.

STATE PROSECUTORS

According to South African law, the court must make the final ruling as to the circumstances surrounding the cause of the death. In a few instances details of cases were discussed with the relevant prosecutors.

After completion of the post-mortems and follow up investigations, the information was captured and analyzed in the Excel/ Microsoft office 97 program.

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CHAPTER 3

EPIDEMIOLOGY

Lerer (10) conducted an epidemiological study of suicides in the Cape Town area in 1994. The present study will compare recent figures with those of that period to elicit changes or similarities between the two periods. Where available other figures will be quoted.

3.1 NON-SUICIDES CLAIMED AS SUICIDE

180 cases were presented to the mortuary as suicide cases for the specific time period. After completion of the post-mortems, the relevant toxicology, histology as well as the interviews, 23 cases proved not to be suicides after all. Of these 23 cases, 13 presented as suicide/overdose. The final causes of death were:

- Myocardial infarctions (4)
- Food poisoning (1)
- Acute cocaine poisoning in a "mule" after rupture of the condom (1)
- Accidental intake of battery acid (1)
- Pneumonia (1)
- Asthma (1)
- Accidental organophosphate poisoning (1)
- Emphysema and cardiac failure (1)
- HIV related disease (1)
- Undetermined natural cause (1)

4 suicide/ shot cases turned out to be 3 murders and 1 accident (Russian Roulette).

Others included:

- Accidental gassings in shacks where fires were burning (2)
- Accidental drowning (1)
- Head injury (1)
- Murder as the victim in dyadic death (1)
- Asthmatic patient who stabbed himself in the neck during a bad episode of bronchospasm whilst in the asthma room of the hospital (1)

3.2 SUICIDES CLAIMED AS NON-SUICIDES

The final decision as to the cause and circumstances surrounding the death of the deceased rests with the court. The court will base its findings on factual and circumstantial evidence surrounding the death. There are quite a significant number of drowning, burning, train and motor vehicle accident cases where it is very difficult to rule as to accident or suicide. Where there is doubt the court will rule in favour of an accident. Suicide by means of motor vehicle occurs more frequently than is generally realized, and may be difficult to prove. Murphy points out that in cases which appear to be fatal single-vehicle-single-occupant accidents, it might in fact be a case of suicide at the wheel (38).

The author identified one case where the deceased definitely had suicidal tendencies before his death. On the day of his death another motorist witnessed the deceased being involved in a high speed crash on the freeway. The deceased was alone in his car and no other cars were involved. The deceased crashed into a wall, and although the car was very badly damaged, the deceased managed to crawl from the car with only one minor abrasion of the forehead. Immediately after this incident, the deceased crossed the road, took out his gun and shot himself. Looking at the circumstantial evidence, the motor vehicle accident is viewed as an attempted suicide. If the attempt had been successful, this probably would have been ruled as an accident (39).

3.3 POPULATION DISTRIBUTION

Population statistics were obtained from the Central Statistical Services (40). The results of the latest census, held in 1996 were not available for publication, therefore the adapted 1991 results were used for this study.

The areas serviced by the mortuary fall in 3 major magisterial districts.

The census results for these areas are:

TABLE 3.1: SEX DISTRIBUTION

AREA	TOTAL	MALE	FEMALE
CAPE TOWN	179 537	84 975	94 562
WYNBERG	1 101 668	552 173	549 495
SIMONSTOWN	58 323	28 311	30 012
TOTAL	**1 339 528**	**665 459**	**674 069**

Khayelitsha is included in the Wynberg magisterial district.

TABLE 3.2: RACE DISTRIBUTION

AREA	TOTAL	AFRICAN	COLOURED	WHITE
CAPE TOWN	179 537	7 333	61 462	110 742
WYNBERG	1 101 668	388 918	576 110	136 640
SIMONSTOWN	58 323	2 451	25 656	30 216
TOTAL	**1 339 528**	**398 702**	**663 228**	**277 598**

Khayelitsha is included in the Wynberg magisterial district.

TABLE 3.3: RACE AND SEX DISTRIBUTION

AREA	AFRICAN		COLOURED		WHITE	
	M	F	M	F	M	F
C.T.	3 674	3 659	28 194	33 268	53 107	57 635
WB	206 500	182 419	279 563	296 546	66 110	70 530
ST	1 193	1 257	12 440	13 218	14 678	15 537
TOTAL	**211 367**	**187 335**	**320 197**	**343 032**	**133 895**	**143 702**

Khayelitsha is included in the Wynberg magisterial district.

3.4 SUICIDE AS A NON-NATURAL DEATH

Non-natural deaths can be classified into three main groups namely homicide, accident and suicide. Racial composition shows that homicide and accidents are the major causes of non-natural deaths amongst the African and Coloured groups. Amongst Whites, suicides account for 25,7% of non-natural deaths. During 1994 suicides accounted for 31% of all unnatural deaths in the White group (10).

Table 3.4 gives information concerning the racial and gender composition of non-natural deaths for Cape Town for 1997 (41).

TABLE 3.4: RACIAL AND GENDER COMPOSITION OF NON-NATURAL DEATHS FOR 1997.

	AFRICAN		COLOURED		WHITE		UNKNOWN		TOTAL
	M	F	M	F	M	F	M	F	
HOMICIDE	748	82	429	73	28	8	1	3	1372
SUICIDE	44	5	38	7	49	14	0	0	157
ACCIDENT	504	130	284	124	91	31	2	1	1167
UNKNOWN	32	12	41	21	14	10	3	2	135
NATURAL	334	201	240	98	83	25	2	0	983
TOTAL	**1662**	**430**	**1032**	**323**	**265**	**88**	**8**	**6**	**3814**
TOTAL	**2 092**		**1 355**		**353**		**14**		**3 814**

The suicide rate for the White community of 22,7/100 000 exceeds the 1993 USA baseline rate of 13/100 000 (10). The suicide rate for the White community for 1994 was 20/100 000 (10). The suicide rates amongst the African and Coloured communities are 12/100 000 and 6,8/100 000 respectively. These figures also correlate well with Lerer's study done in 1994, where the suicide rates for the African and Coloured communities were below the American baseline figures (10). The suicide rate for the total population is 11,7/100 000, marginally below the American figure.

WHERE DO WE STAND INTERNATIONALLY?

Cape Town's suicide rate correlates very well with international values. The latest rates for Scotland and Hong Kong are 9,4/100 000 (7) and 11,3/100 000 (8) respectively.

3.5 GENDER, RACE AND AGE

The racial, gender and age distributions of suicides are illustrated in Table 3.5 and figures 3.1 and 3.2. (Pages 12a, 12b and 12c).

3.5.1 GENDER

The male to female ratio is 4,9:1. This compared very well with Lerer's findings of 4,1:1 in 1994 (10). The male to female ratios, in the different racial groups, are:

African – 8,6: 1
Coloured – 5,1: 1
White – 3,5: 1

The male to female ratios in other countries also reveal a male predominance, for example:

Baranya County, Hungary (1983-1987) – 3:1 (27)
Lothian and Borders Region, Scotland (1987-1991) – 2,4:1 (7)
Hong Kong (1971-1990) – 1,3:1 (8)
Cork City, Ireland (1987-1991) – 2,3:1 (14)
Norway (1993) – 1,6:1 (9)
Denmark (1993) – 1,4:1 (9)

In comparison with other countries there is a very high male to female ratio amongst the African people of this region. The population statistics for the region indicates a higher male to female ratio amongst the Africans, compared to the ratio for the White and Coloured communities. Looking at the social background of the African men one finds that a very high percentage of these people migrate from the rural areas, looking for employment. 38,6% of the African men who committed suicide were unemployed. When these men come here, they have left their families behind, leading to relationship problems and extra-marital affairs. Amongst the unmarried group there is also a high incidence of relationship

TABLE 3.5

RACIAL AND GENDER COMPOSITION OF SUICIDE BY AGE

AGE IN YEARS	AFRICAN		COLOURED		WHITE		TOTAL
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	
10 to 19	4	1	5	2	1	0	13
20 to 29	19	2	14	0	11	2	48
30 to 39	16	0	9	4	5	1	35
40 to 49	4	2	5	1	11	3	26
50 to 59	1	0	3	0	12	3	19
60 to 69	0	0	2	0	4	1	7
70 to 79	0	0	0	0	2	3	5
80 to 89	0	0	0	0	3	1	4
TOTAL	44	5	38	7	49	14	157

FIGURE 3.1: RACIAL AND AGE COMPOSITION OF MALE SUICIDES (n=131)

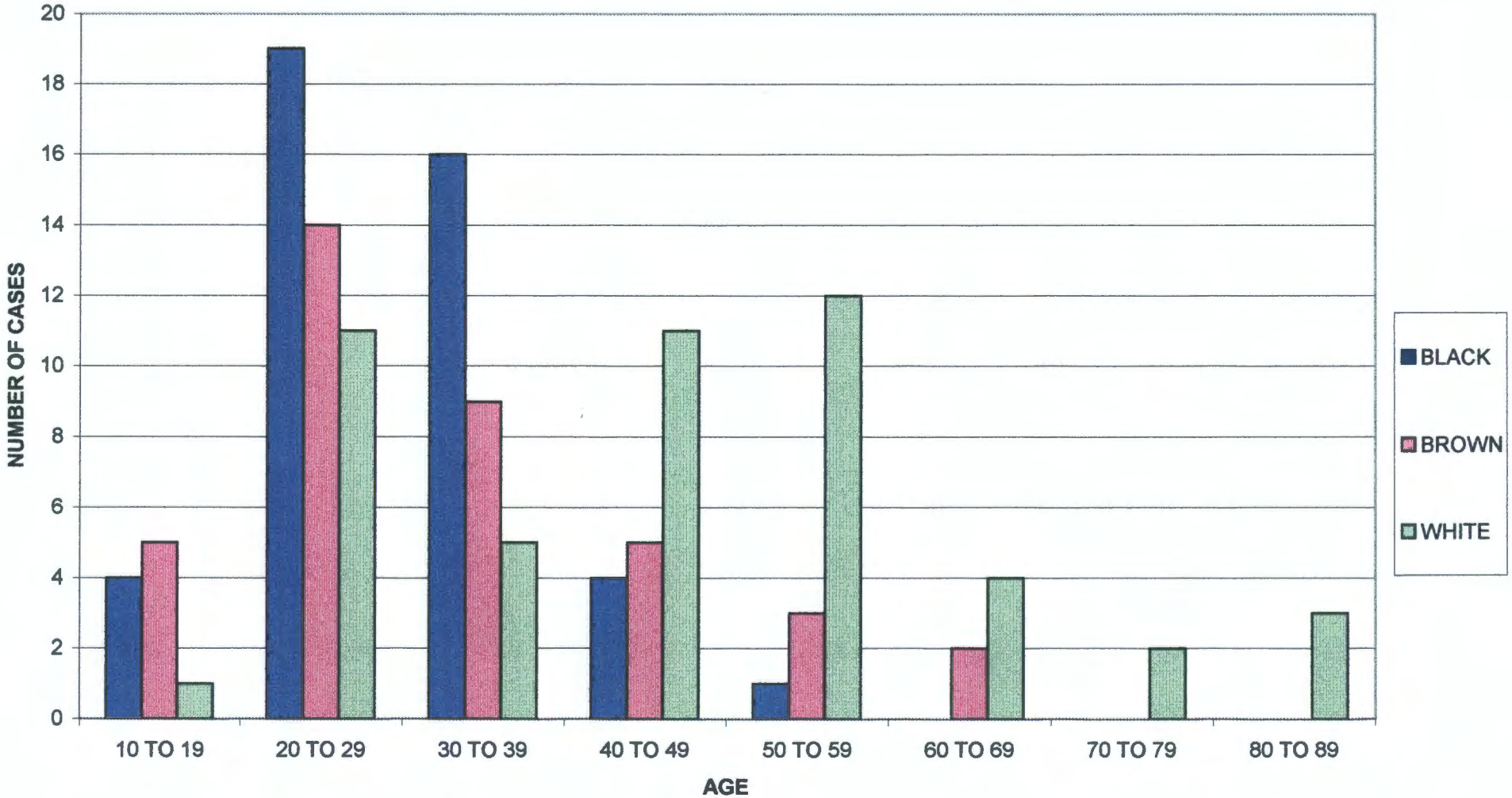
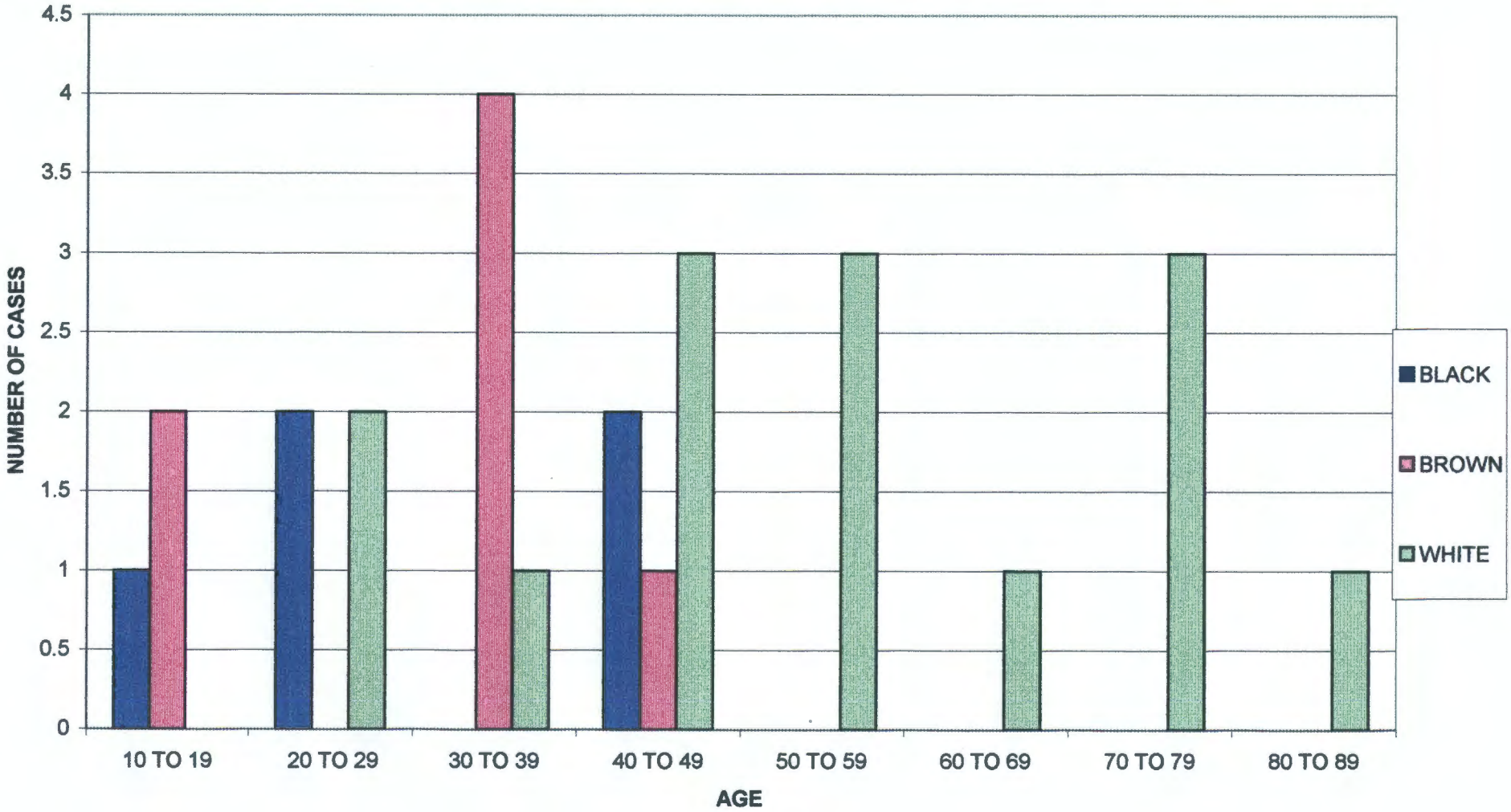


FIGURE 3.2: RACIAL AND AGE COMPOSITION OF FEMALE SUICIDES (n=26)



problems leading to arguments, splitting up and cheating, which was given as reasons for the suicides in 22,7% of the African male material studied. In 15,9% of the African males who committed suicide, the reason/s were unknown to the close family members.

3.5.2 **RACE**

As pointed out earlier, suicide amongst the Whites accounts for a high percentage of unnatural deaths. The racial distribution of all suicides is illustrated in Table 3.4. (Page 11).

Africans account for 31,2%, Coloured people for 28,7% and Whites for 40,1% of the suicide material. Suicide accounts for 25,7% of all non-natural deaths amongst the Whites, 4,4% amongst the Coloured study group and 3,1% amongst the African group.

3.5.3 **AGE**

The age distribution is illustrated in Table 3.5. (Page 12a).

Figure 3.3 illustrates the age distribution of the victims in a fern diagram.

1	3 4 5 777 88 99999
2	000000 111 3333 44444444 55555555 6666 777 888888 99999
3	0000 111 222222 3 44444 555555 66 7 8888 999
4	00000 11 2 333 444 55555 777 888 9
5	000 1111 2 33 44 5 66 8 999
6	00 1 3 4 6 7
7	5 77 99
8	0 1 7 9

The youngest victim was 13 years old and the oldest was 89 years old.
The average age of persons in this study was 37,8 years, with a mean age of 34 years. The worst affected was the young adult group with ages ranging from 20 – 39 years.

The racial and age composition of male and female suicides are shown in Figures 3.1 and 3.2 respectively. These figures once again show the high incidence of suicides amongst the young people. Amongst the male suicides there were no Africans over the age of 60 and amongst the Coloureds there were no suicides over the age of 70. It was also noted that female suicides over the age of 50 years occurred only in White persons. In the group of persons over the age of 60 years, there were no Africans, only 2 Coloured men, and 9 men and 5 women in the White group. The reasons given for these suicides were depression (43,75%), poor health (37,5%) and the loss of a spouse or good friends. This correlated well with other studies. Dennis MS et al found that depression, physical illness, social isolation and loss were all major risk factors in suicide amongst the elderly in the United Kingdom (26). A recent study done in Madrid, Spain also noted a high incidence of depression and coexisting physical disorder (12). Both these studies pointed out the important role of health care workers in identifying the potential victims. They also pointed out the high incidence of contact between the victim and the health care workers prior to the suicides.

3.6 REASONS FOR THE SUICIDES

At the time of writing only 80% (127 cases) of the study material had sufficient background information to form an opinion as to the actual reason for the suicide.

The reasons for the suicides, given by the family members and police, include:

3.6.1 PSYCHIATRIC DISORDERS

Psychiatric disorders were reported in 44 of the cases studied, of which 79,5% suffered from depression. 27 of the 35 patients (77%) who suffered from depression were treated in the time prior to their deaths. Other Psychiatric disorders included Schizophrenia (3 cases), manic-depressive disorder (1 case) and 1 person who allegedly had hallucinations. Four cases had unknown Psychiatric disorders. 33 of the 45 patients were under treatment for their Psychiatric disorders by General Practitioners, Psychiatrists and Psychologists.

3.6.2 PHYSICAL ILLNESS

26 cases suffered from physical illnesses. There was a relatively even spread of cancer, cardiac disease, pulmonary disease and musculo-skeletal disease. Four of the cases in the study material were HIV positive.

3.6.3 INTERPERSONAL PROBLEMS AND CONFLICT SHORTLY BEFORE THE SUICIDE

23 of the cases in the study had recent arguments with their boyfriends/ girlfriends (52% or 12 cases), spouses, parents and/or siblings. One person committed suicide after an argument with his boss.

3.6.4 FINANCES

Financial problems and loss of income/ employment was reported in 17 cases.

3.6.5 LONG-STANDING RELATIONSHIP PROBLEMS

Long-standing relationship problems with the wife (62%) or other close family

members or friends were identified in 13 cases.

3.6.6 CRIMINAL CHARGES

Eight persons were under police investigation for suspected crimes, six of whom were in custody at the time of the suicide.

3.6.7 SUBSTANCE ABUSE

In 7 cases of the study material substance abuse was given as the reason for the suicides. 2 of these cases were drug related, with the other 5 cases given as alcohol abuse. 32 cases of alcohol abuse were reported on direct questioning of the families involved.

3.6.8 LOSS AND BEREAVEMENT

The loss of a spouse, a parent or a friend were given as reasons in 7 cases studied.

Other reasons included a mother dying from cancer, influenced by a movie on TV, stress, rape, involved with gangsters, witnessed his brothers suicide, outcast of the family and under disciplinary investigation by the Medical and Dental Council for alleged misconduct with a patient.

3.7 SUICIDE METHODS

Figure 3.4 (page 16a) illustrates the different methods of suicide. Shootings and hangings accounted for 64% of the cases. Poisoning/drug overdose accounted for 12% of the cases followed by 10% of victims who gassed themselves with exhaust fumes. Other methods included train fatalities, drowning, suffocation, self-incineration, jumps from a height and penetrating incised wounds.

FIGURE 3.4: SUICIDE METHODS (n=157)

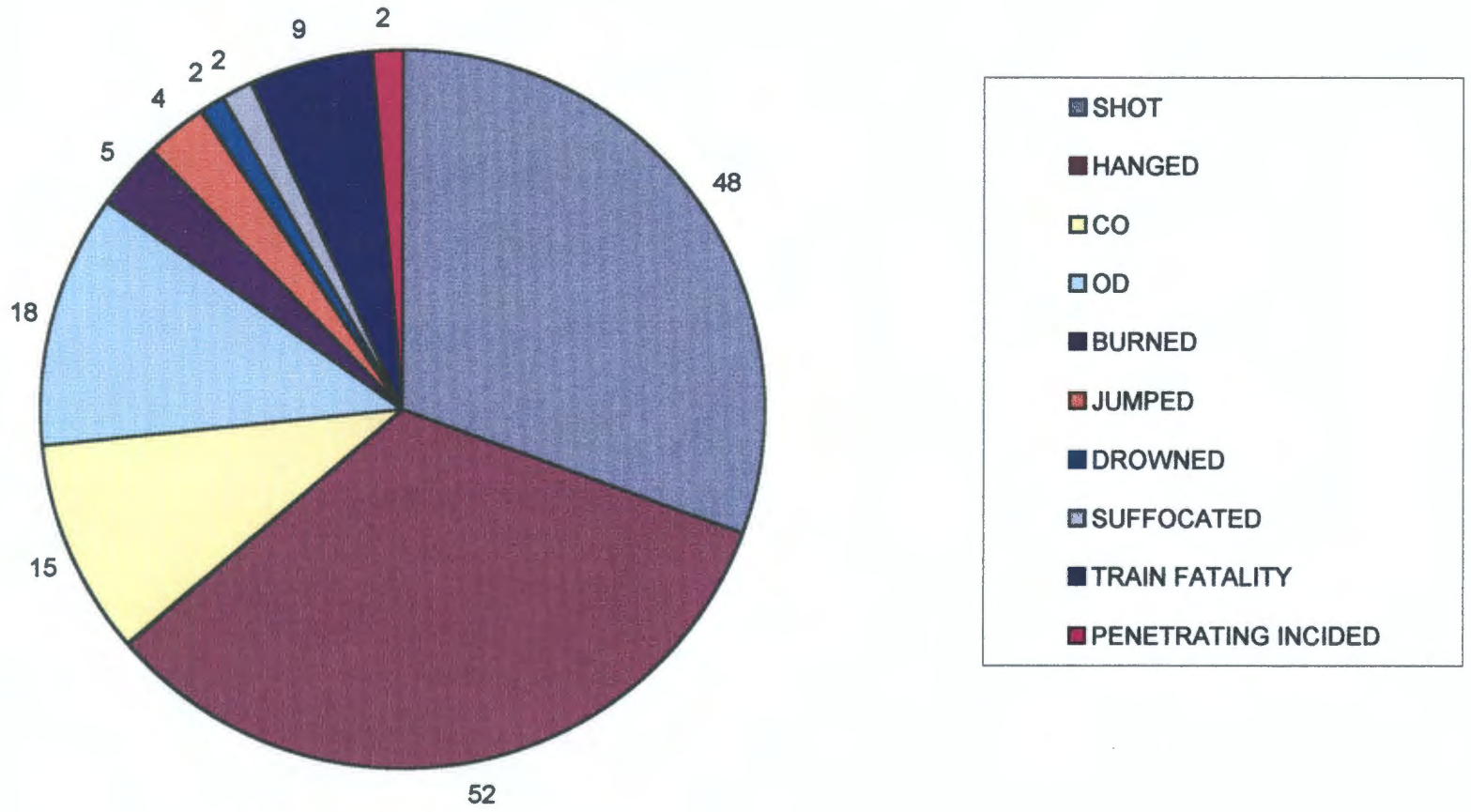


TABLE 3.6

RACIAL AND GENDER COMPOSITION OF SUICIDE BY CAUSE OF DEATH

METHOD OF SUICIDE	AFRICAN		COLOURED		WHITE		TOTAL
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	
SHOOTING	9	0	14	0	21	4	48
HANGING	26	2	12	1	9	2	52
CO-POISONING	0	0	2	0	11	2	15
POISONING	2	1	3	5	5	2	18
BURNING	0	2	2	1	0	0	5
JUMPING	1	0	1	0	1	1	4
DROWNING	1	0	0	0	1	0	2
SUFFOCATION	0	0	0	0	0	2	2
TRAIN FATALITIES	5	0	2	0	1	1	9
OTHER	0	0	2	0	0	0	2
TOTAL	44	5	38	7	49	14	157

TABLE 3.7

AGE CATEGORY COMPOSITION BY METHOD OF SUICIDE

METHOD OF SUICIDE	AGE CATEGORY								TOTAL
	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80 to 89	
SHOOTING	2	20	10	2	8	2	2	2	48
HANGING	5	19	14	10	2	1	0	1	52
CO-POISONING	0	2	0	4	5	2	1	1	15
POISONING	2	1	4	7	3	0	1	0	18
BURNING	3	1	1	0	0	0	0	0	5
JUMPING	1	0	1	1	0	1	0	0	4
DROWNING	0	1	0	0	1	0	0	0	2
SUFFOCATION	0	0	0	1	0	0	1	0	2
TRAIN FATALITIES	0	3	4	1	0	1	0	0	9
OTHER	0	1	1	0	0	0	0	0	2
TOTAL	13	48	35	26	19	7	5	4	157

Tables 3.6 and 3.7 (pages 16b and 16c) illustrate the different methods used in different age, racial and gender groups.

Hanging and burning were the most common methods used amongst the youth. An American study concluded that the availability of firearms and the increased use of alcohol amongst youths might have made a significant contribution to the increase in the suicide rate amongst the youth of their country (42). In this study there were only 2 shooting cases for the age group below 20 years of age. Interpersonal problems seemed to dominate the reasons for the suicides. Some of the reasons included fights/ arguments with the girlfriend (1 case), the parents (2 cases) and siblings (1 case). Single cases included the loss of a mother, influenced by a TV-movie, rape and one case where the victim witnessed the suicide of the brother. Interpersonal conflicts and separation were the most common precipitants in adolescent (aged 13-19 years) suicides in Finland (43). None of the cases in this study had any history of alcohol abuse and/or Psychiatric disorders. Only one case suffered from physical illness, namely Cystic Fibrosis. Alcohol levels were conducted in 5 cases. 2 cases were negative. One shooting case had an alcohol level of 0,06g/100ml, with 2 hanging cases with levels of 0,19 and 0,23g/100ml respectively.

Shootings and hangings were the dominant methods in the young adult group. 50% of the hanging cases were African men. 9,6% of the hangings were women. White men accounted for 43,8% and White women for 8,3% of all the shooting cases. 62,5% of all the shooting cases involved the 20-40 year age group. 82,7% of the hanging cases occurred in the 20-50 years old age group.

Shooting and CO-poisoning were the methods of choice in the elderly. The reasons for the suicides and the sexual and racial distribution, in this particular age group, have been discussed earlier. Only 4 of the 16 cases in this group were widowed. 9 were married, 2 unmarried and 1 divorced. The Madrid study showed

a predominance of widows amongst the elderly women (12). Alcohol levels were only positive in 4 cases, and then it was mild intoxication, ranging from 0,02-0,08g/100ml.

3.8 DEMOGRAPHIC STUDY

The area with the highest number of suicide cases for the time period studied was Khayelitsha with 20 cases. Mitchells Plain followed with 16 cases. The other areas showed much lower numbers – Nyanga 7, Sea Point 7, Cape Town Central 6, Fish Hoek 6, Manenberg 6, Claremont 6, Hout Bay 5, Guguletu 4, Muizenberg 4, Woodstock 4, Constantia 4, Langa 3, Lansdowne 3 and Ocean View 3. There were 2 cases each in Brooklyn, Camps Bay, Diep River, Kenilworth, Kensington, Kirstenhof, Kommetjie, Rondebosch, Simonstown, Steenberg, Table View and Wynberg. The other areas had one case each.

To form an impression of the incidence of suicide in the different areas one needs to compare the number of suicides to the total population of that area. Three different institutions were contacted regarding the total population in these areas. The Medical Research Council and the Central Statistical Services could not supply the necessary information. The office of the City Planner of Cape Town was very helpful, but pointed out that the figures were old (1991) and inaccurate. A major problem in forming a true impression of the exact incidence of suicide per area was that the relevant investigating police districts and magisterial districts did not always coincide so that different population figures were given by the 2 districts.

TABLE 3.8 ILLUSTRATES THE NUMBER OF SUICIDE CASES IN SOME OF THE AREAS AND THE INCIDENCE PER 100 000.

TABLE 3.8: DEMOGRAPHICAL SPREAD

AREA	NUMBER OF CASES	POPULATION	INCIDENCE PER 100 000
ATHLONE	3	11 012	27,2
CONSTANTIA	3	14 100	21,2
FISH HOEK	6	3 000	200
GUGULETU	4	109 500	3,6
HOUT BAY	5	9 470	52
KHAYELITSHA	20	450 000	4
LANGA	3	60 700	4,9
LANSDOWNE	3	15 667	19
MITCHELLS PLAIN	16	16 200	98
MANENBERG	6	39 799	15
NYANGA	7	77 400	9
OCEAN VIEW	3	12 252	24
SEA POINT	7	13 534	51,7

More than one residential area, township and/ or suburb was included in one magisterial district.

Although Khayelitsha was the area with the highest number of suicides, Fish Hoek was the area with the highest incidence with 200 cases per 100 000. Fish Hoek is a small community, consisting mainly of people in the retired group. The main reasons for the suicides were loss of a spouse, physical disease and financial problems.

3.9 LOCATION OF THE SUICIDE

Figures 3.5, 3.6 and 3.7 (pages 20a, 20b and 20c) illustrate the locations of the suicides.

Home suicides

In 64,7% (88 victims) of the cases studied the victims committed suicide at home. Of the home suicides the majority of the victims were found in the bedroom (35,6% or 31 victims). 68% of all home suicides were inside the house, with 9% outside and 15,9% in outside buildings on the premises. In 6 cases it was unknown in which part of the house the victim committed suicide.

Suicides away from home

45,8% of the suicides that occurred away from home happened in public areas like the railway station, parking areas and in the city centre where the victims jumped from buildings. No jumps from Table Mountain were reported in this series. 20,8% of the victims committed suicide next to the roadside. These included mainly exhaust fume gassings and shootings. 6 individuals (12,5%) committed suicide in prison/ or in police custody and 4 cases occurred at the place of work (8,3%). 2 individuals committed suicide in hospital (4%).

In comparison the Madrid studies (12) showed 71,3% of the suicide victims were found at home with 11,4% outside. The Scandinavian studies found 65% of all their suicide victims at home, with 19% (of the 65%) of the victims outside the house. 4% committed suicide in hospital (9).

3.10 PREVIOUS ATTEMPTS AT SUICIDE AND/OR SUICIDAL THREATS

20% of persons in this study had previously attempted suicide, 14 of the 26 had one attempt, 4 individuals had 2 attempts, 1 individual tried 3 times and another individual 4 times. In 6 cases it was unknown how many attempts to commit

FIGURE 3.5: LOCATION OF THE SUICIDES

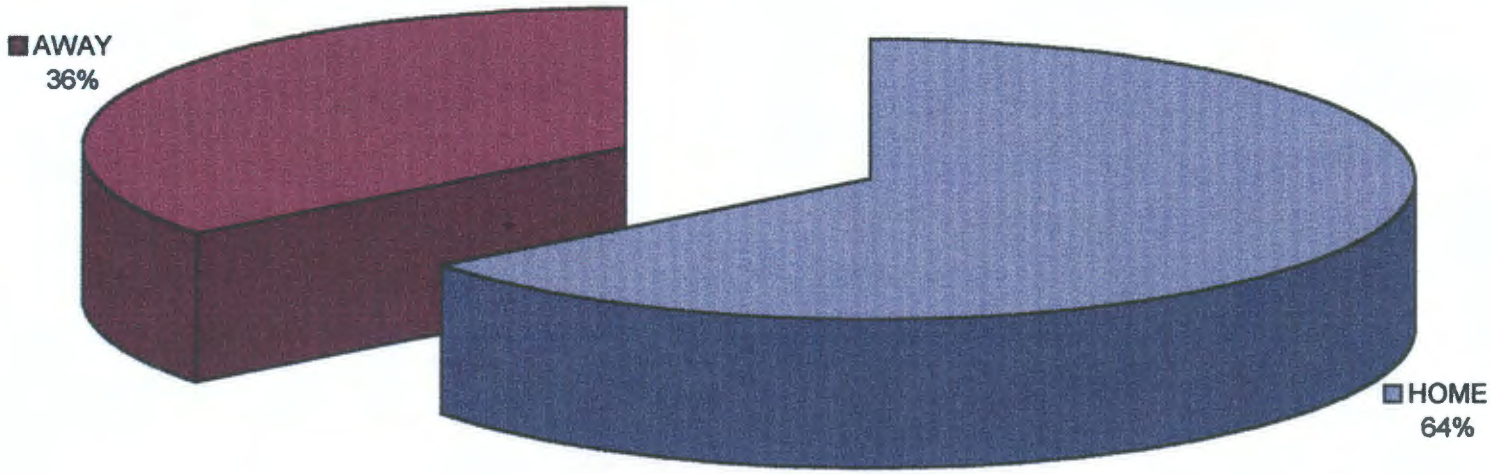


FIGURE 3.6: HOME SUICIDES (n=88)

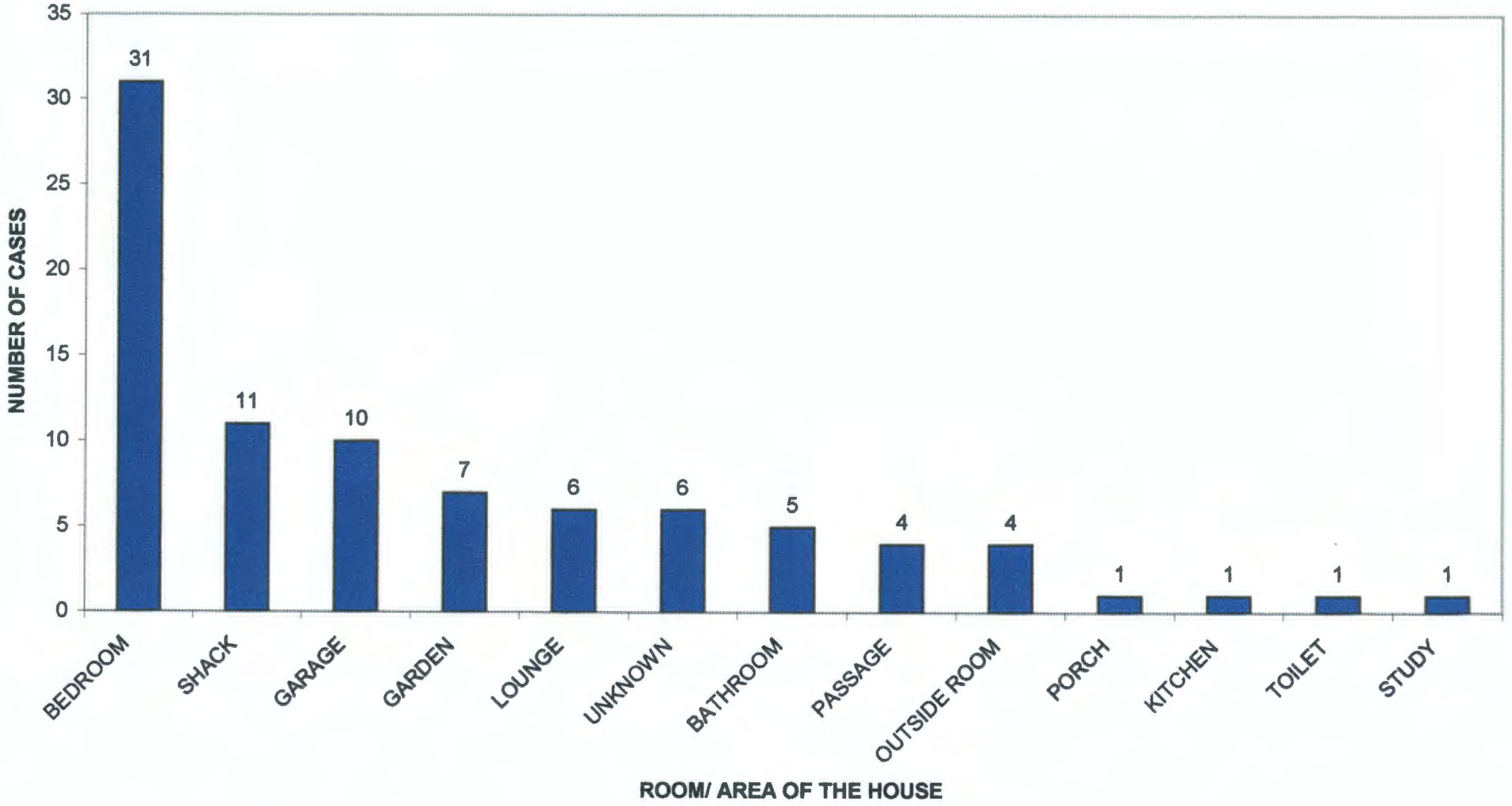
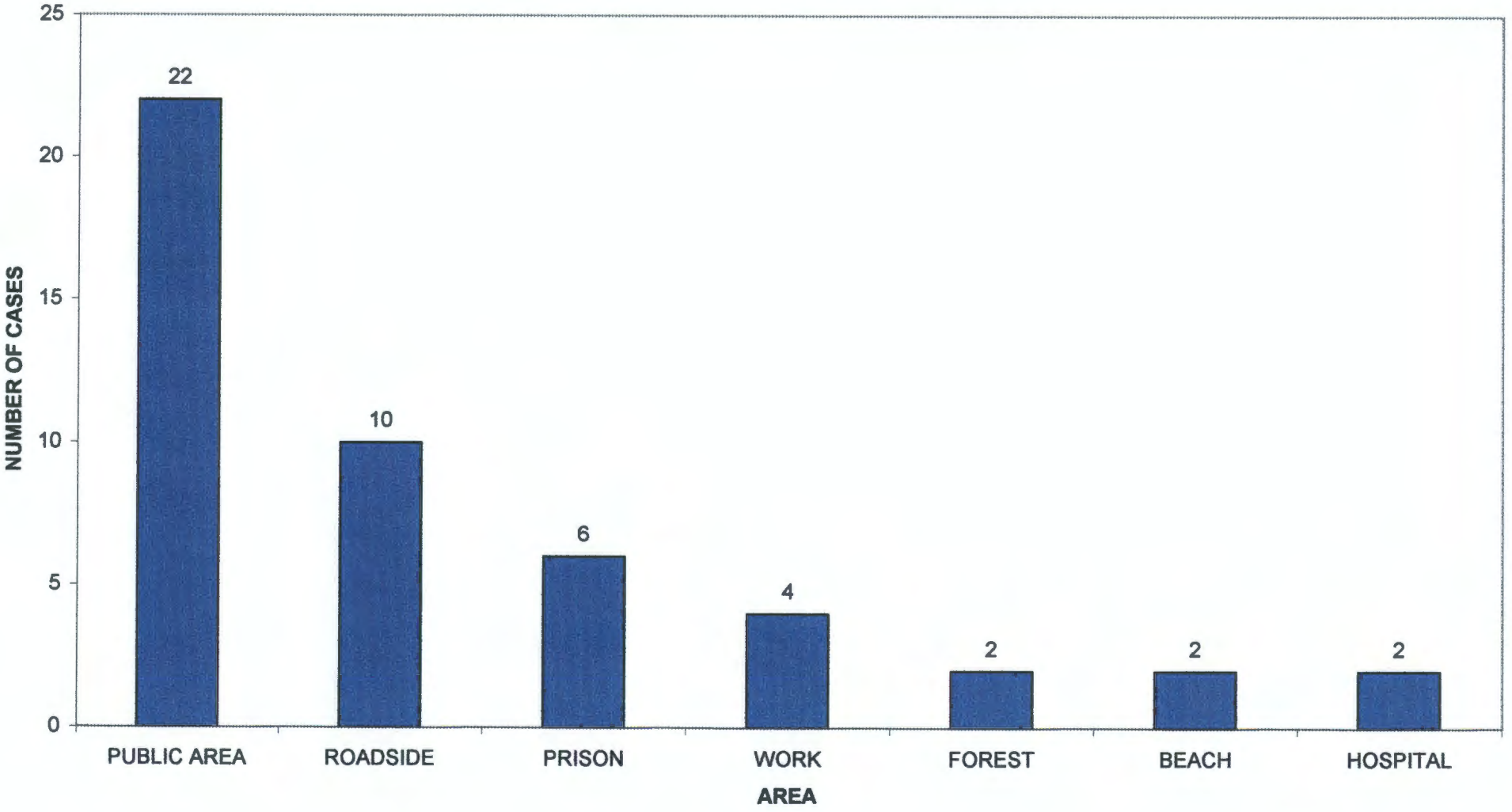


FIGURE 3.7: SUICIDES AWAY FROM HOME (n=48)



suicide took place. Only 15,3% of the cases used the same method of suicide as in their previous attempts.

29,5% of individuals expressed a wish to commit suicide and/or to die prior to the actual suicide. 23,7% of the cases studied left suicide notes. 35,5% of the cases who left notes also expressed the wish to commit suicide.

Table 3.9 illustrates the number of cases in this series where suicide notes were left and/or previous suicide threats were made.

TABLE 3.9: SUICIDE THREATS AND NOTES

	Suicide threat	No suicide threat
Suicide note	11 cases	20 cases
No suicide note	27 cases	70 cases

3.11 SURVIVAL IN HOSPITAL

17,8% of the victims in the study material survived in hospital. Gunshot and overdose cases each accounted for 32% of the cases studied. Burn wounds accounted for 17,9% of the survival cases. Other cases were 3 hangings, 1 CO-poisoning and 1 stab wound. Figure 3.8 (page 21a) illustrates the method of suicide used by the victims who survived in hospital.

39,3% of the initial survival victims died within 12h after admission to hospital.17, 9% cases died between 12-24 hours in hospital. 2 cases survived for more than a month. Figure 3.9 (page 21b) illustrates the duration of survival in hospital.

FIGURE 3.8: METHODS OF SUICIDE IN VICTIMS WHO SURVIVED IN HOSPITAL (n=28)

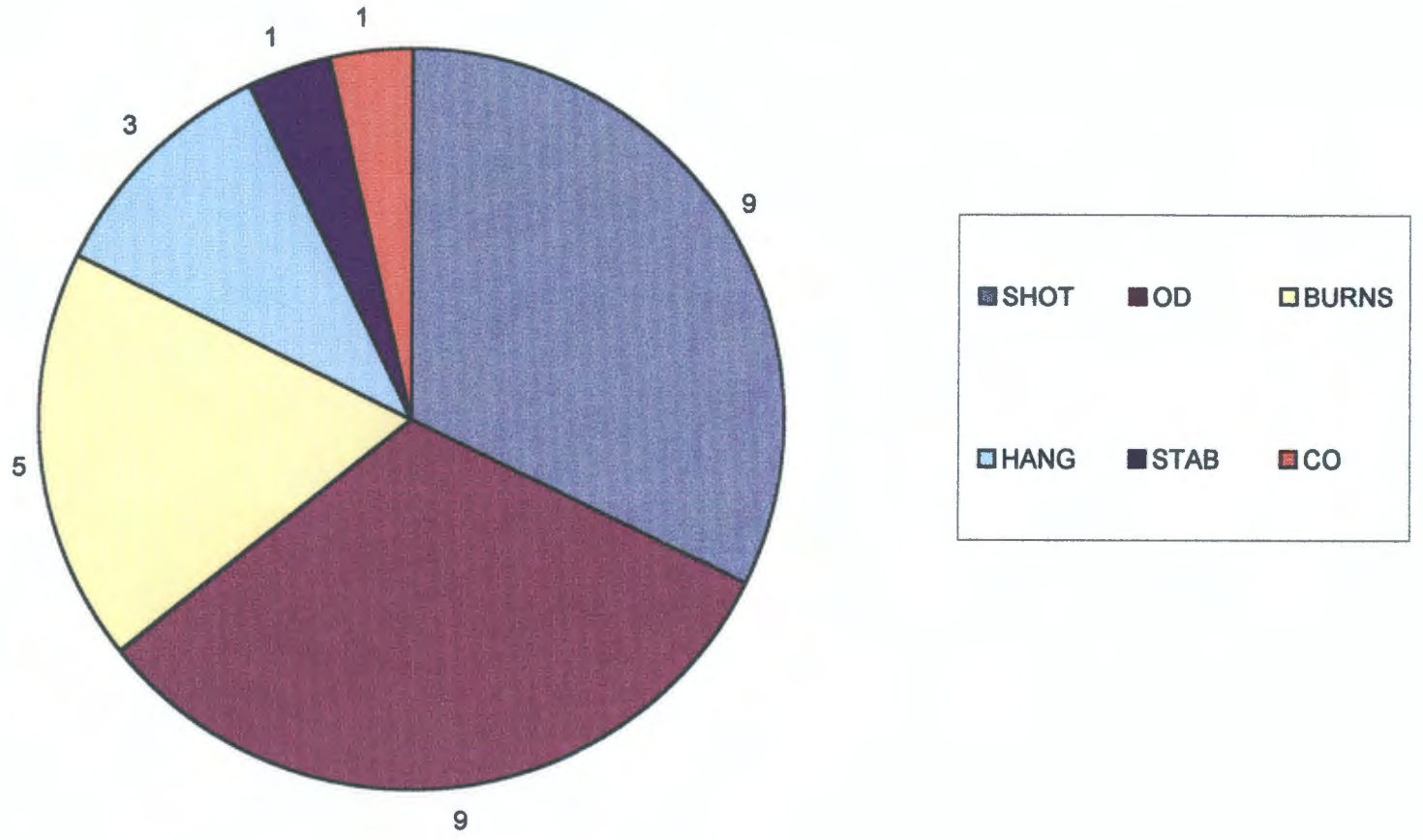
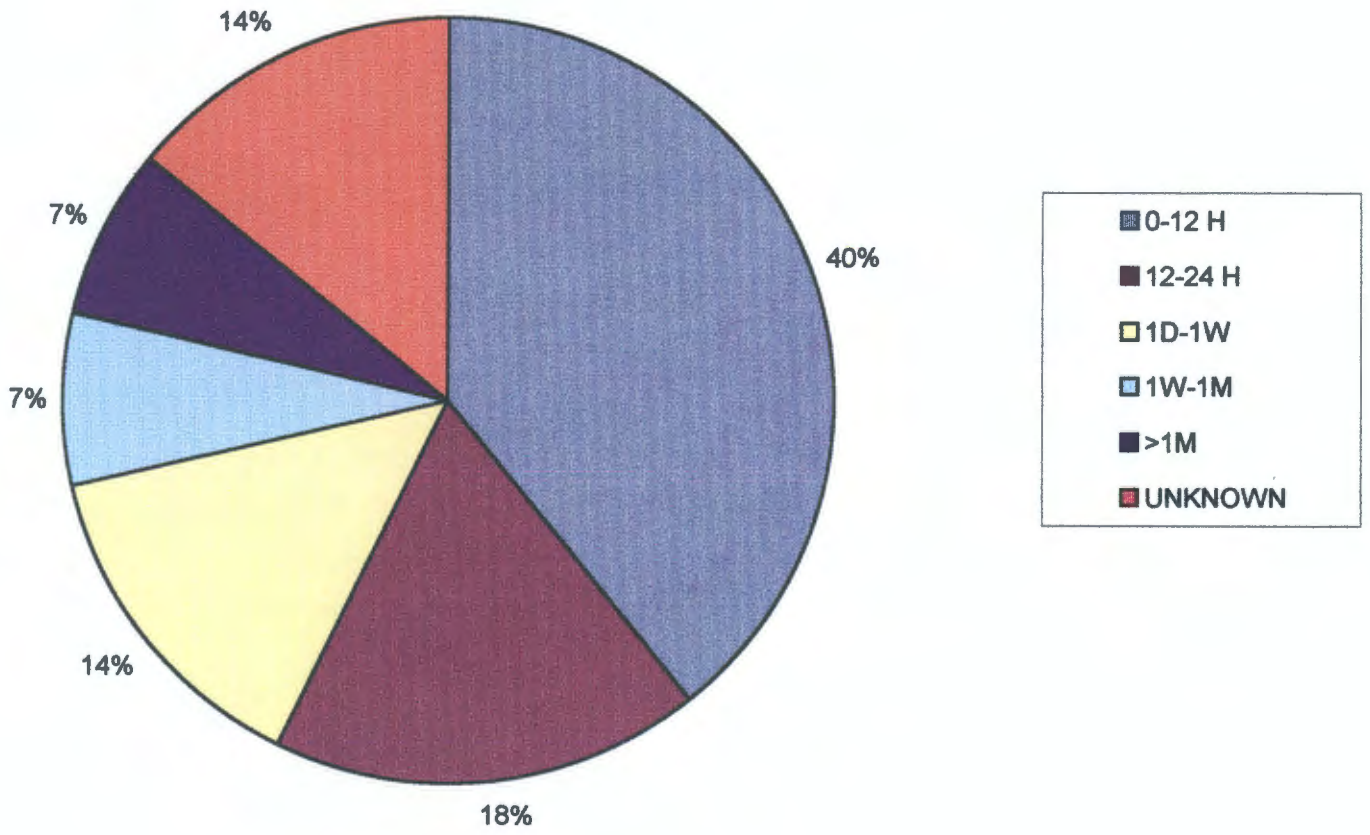


FIGURE 3.9: DURATION OF SURVIVAL IN HOSPITAL (n=28)



3.12 THE TIME OF YEAR

The monthly, weekly, daily and hourly distribution of suicide cases is illustrated in figures 3.10, 3.11, 3.12 and 3.13 (pages 22a, 22b, 22c and 22d).

3.12.1 MONTHLY DISTRIBUTION

The monthly distribution of suicides showed peaks in March, July, September and December. December was the month with the highest number of cases. 7 of the 18 cases (38,9%) occurred in the last week of December. None of the cases happened on Christmas Day. There was 1 case on 31 December. The main reasons for the suicides, for the cases studied for December, were physical disease (41,7%). Other reasons included financial problems, being in custody, relationship problems and alcohol abuse. In one case the reason for the suicide was unknown to the family.

3.12.2 WEEKLY DISTRIBUTION

The week with the highest number of suicides was week 46. Of the eight suicides for week 46, four were White females. 19,2% of all female suicides in the total series occurred in this week. The others were one White male, one Coloured male, one Coloured woman and one African man. The reasons for the suicides were mainly psychiatric disorders, accounting for 4 of the 8 cases. Other reasons included illness and an argument with the mother and the stepfather. The methods were hanging (3 cases), overdose (2 cases), CO-poisoning (2 cases) and jump from a height (1 case).

FIGURE 3.10: MONTHLY DISTRIBUTION OF SUICIDES (n=157)

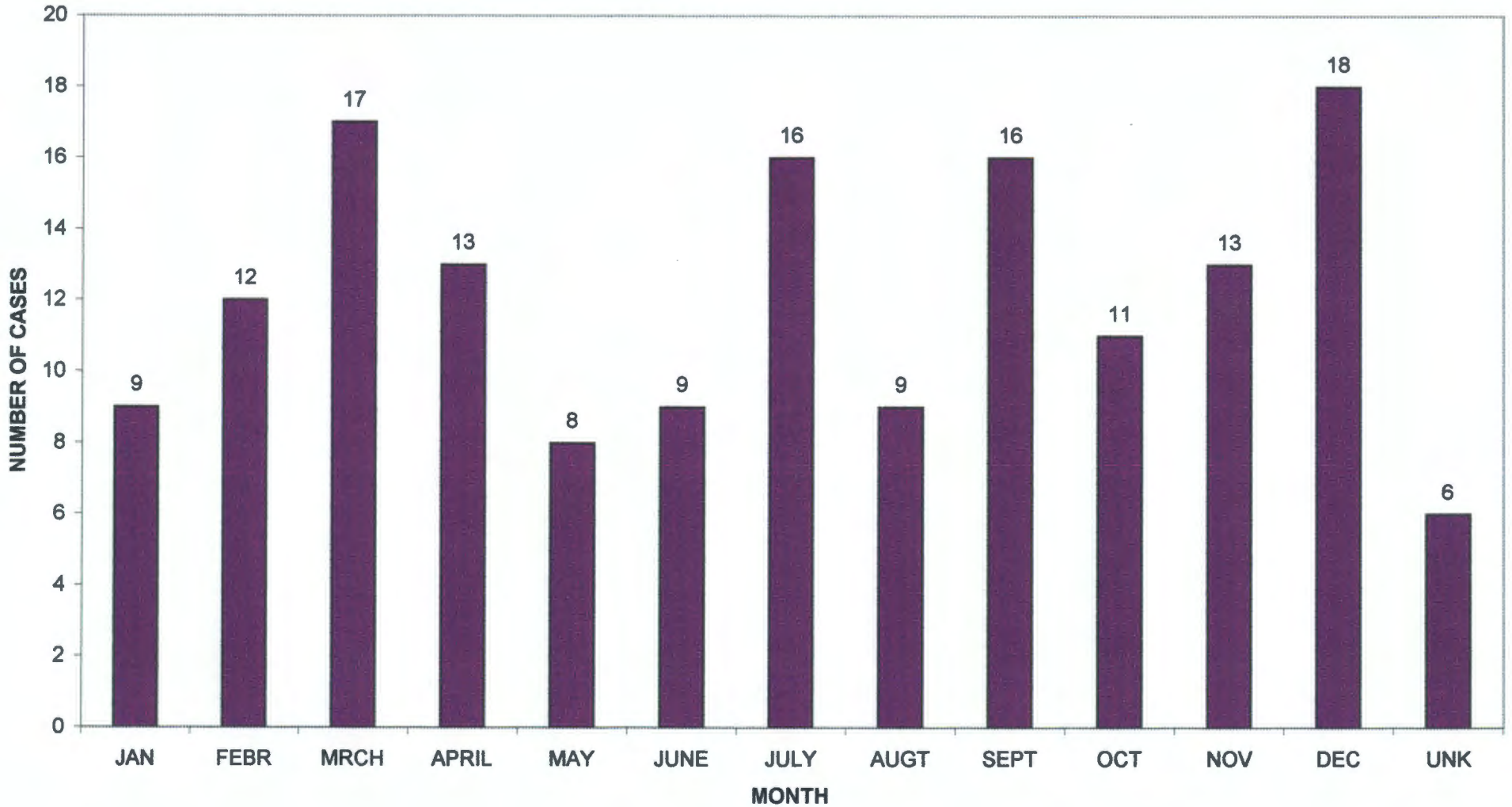


FIGURE 3.11: WEEKLY DISTRIBUTION OF SUICIDES (n=157)

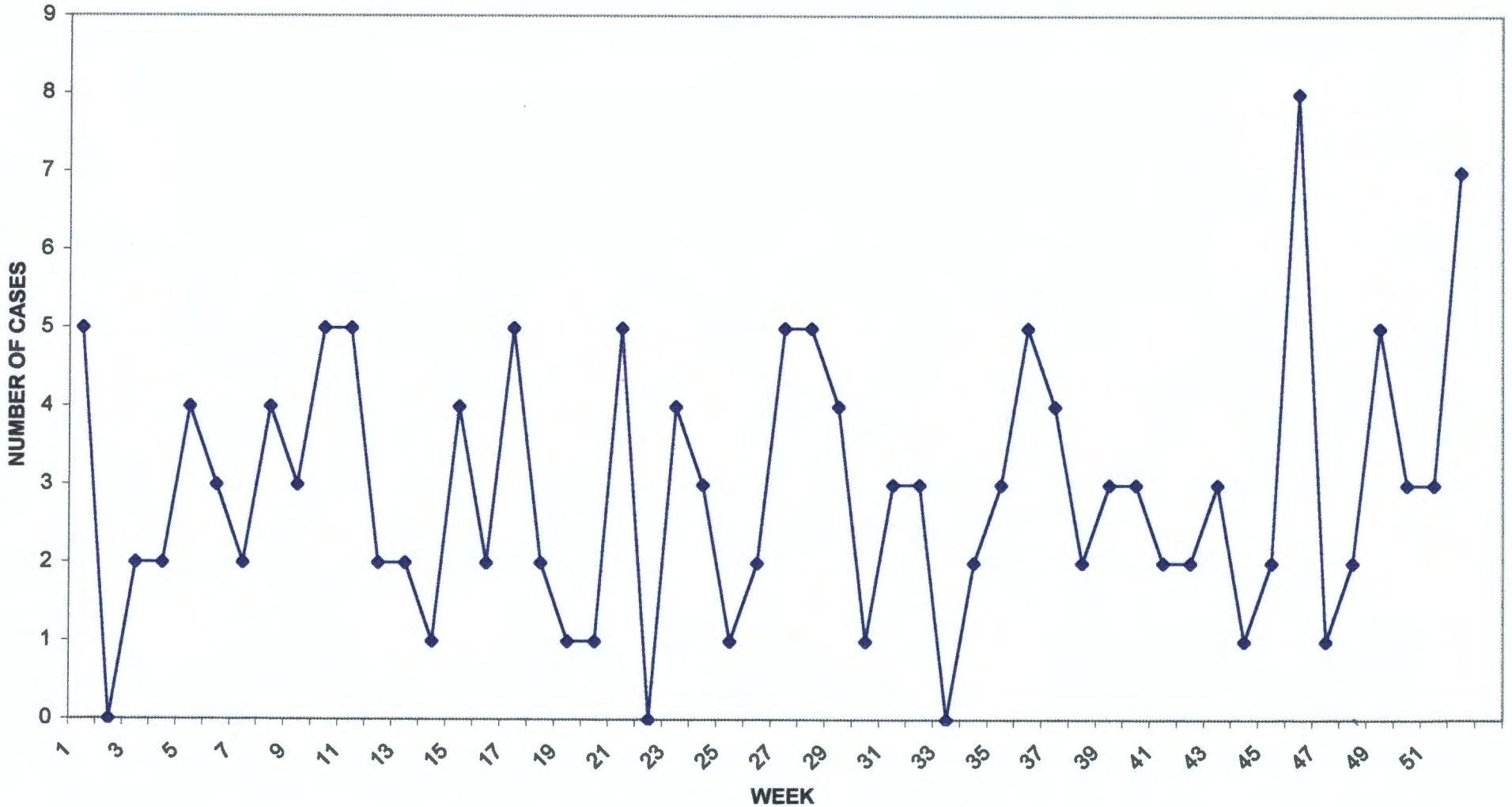


FIGURE 3.12: DAILY DISTRIBUTION OF SUICIDES (n=157)

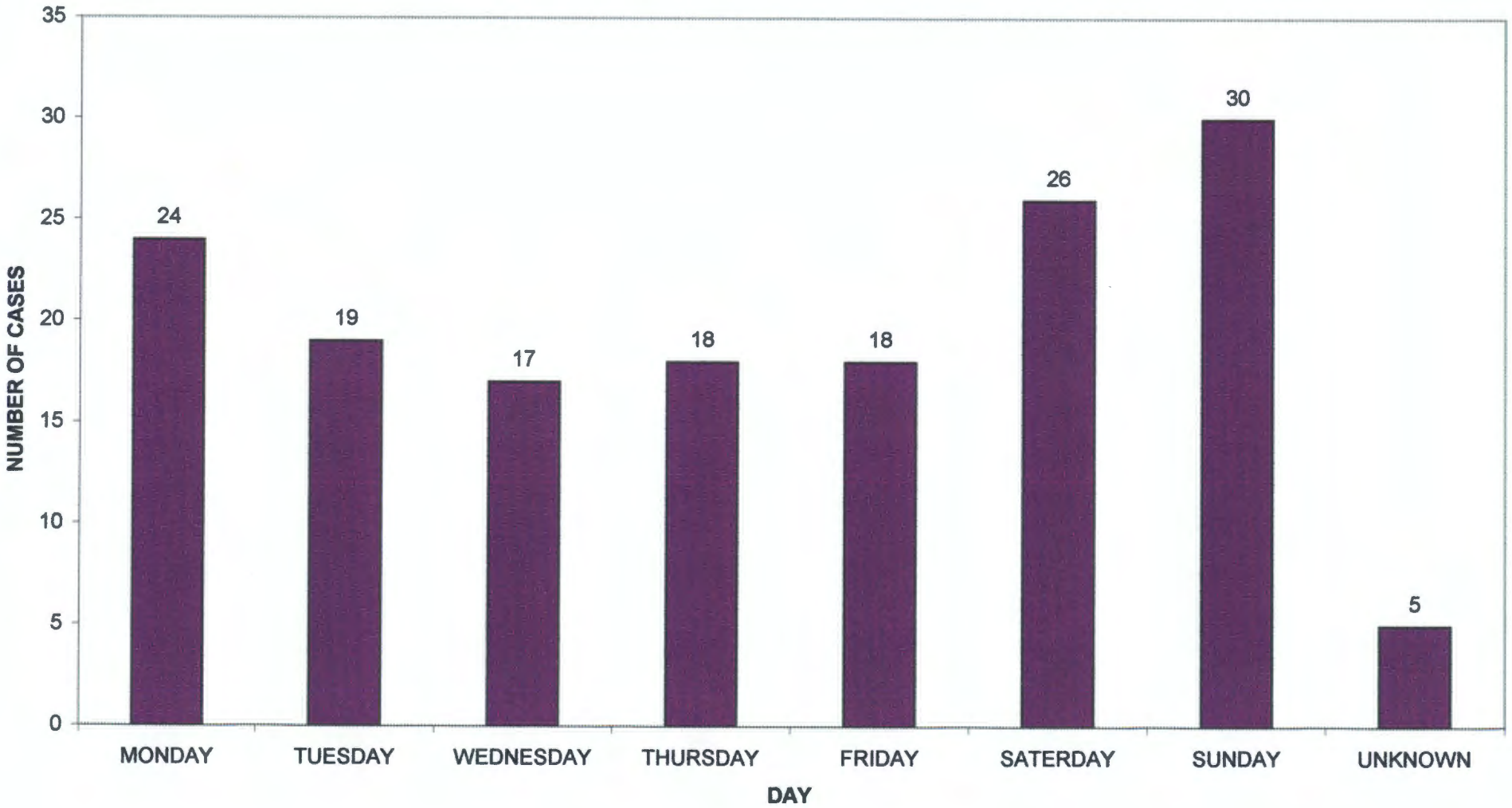
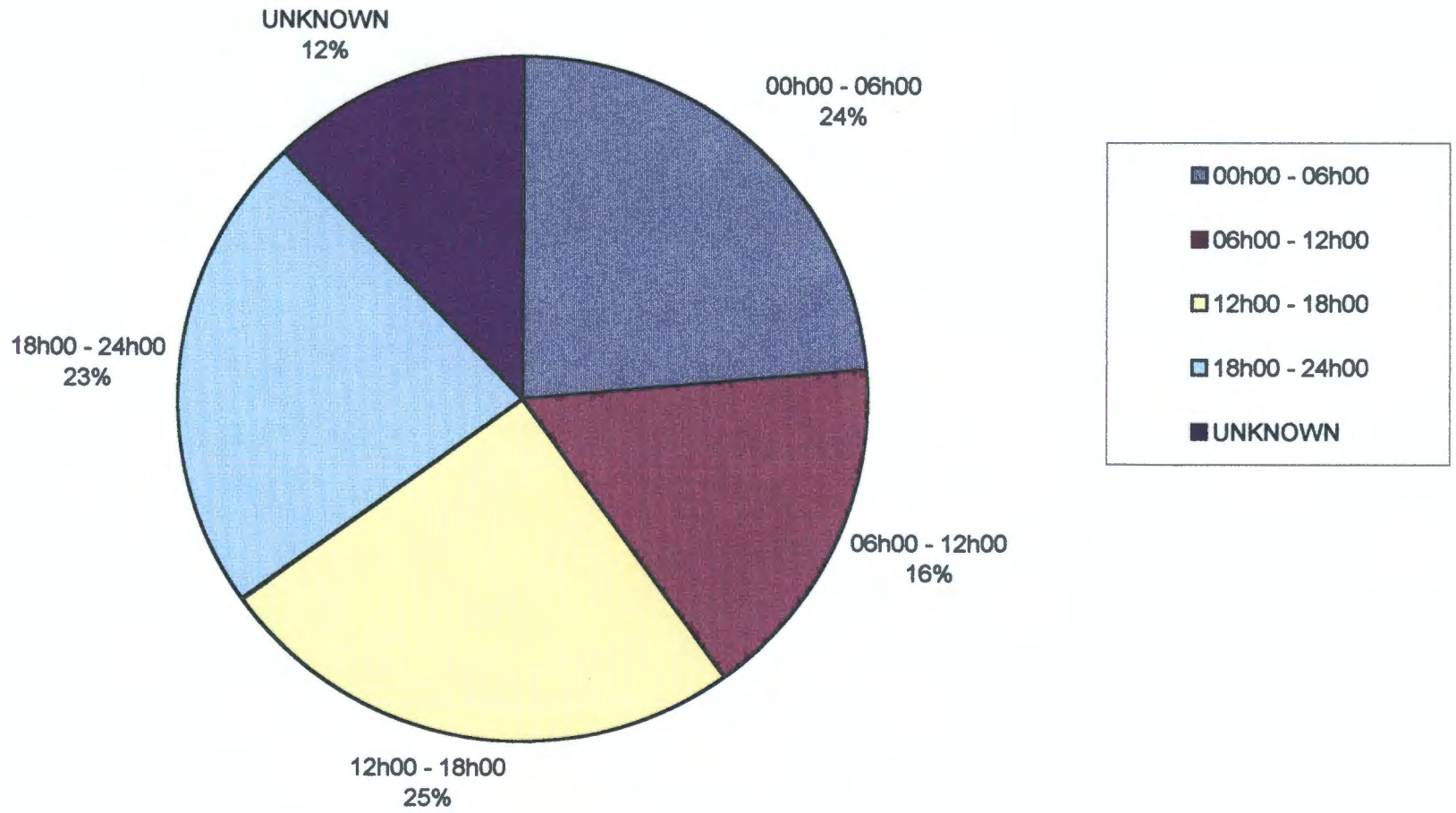


FIGURE 3.13: SUICIDE DISTRIBUTION THROUGHOUT THE DAY (n=157)



3.12.3 DAILY DISTRIBUTION

The day of the week with the highest number of cases was Sunday (19%). Saturday (16,6%) and Monday (15,3%) were the second and third most common days. Wednesday was the day with the lowest number of suicide cases (10,8%).

3.12.4 TIME OF DAY

There was an almost equal distribution between 00h00-06h00, 12h00-18h00 and 18h00-24h00. There was a lower suicide rate in the 2nd time zone of the day. A study done by O'Neill-Kerr in 1991 showed an equal distribution of complete suicides throughout the day, compared to attempt at suicide where there is a definite peak between 18h00 and 24h00 (15). The time of day on a Sunday, the day with the highest incidence in this study, showed 40,9% cases between 12h00 and 18h00, and 36,4% between 00h00 and 08h00.

3.13 MARITAL STATUS

The marital status of the victims is illustrated in Figure 3.14 (page 23a).

Male cases

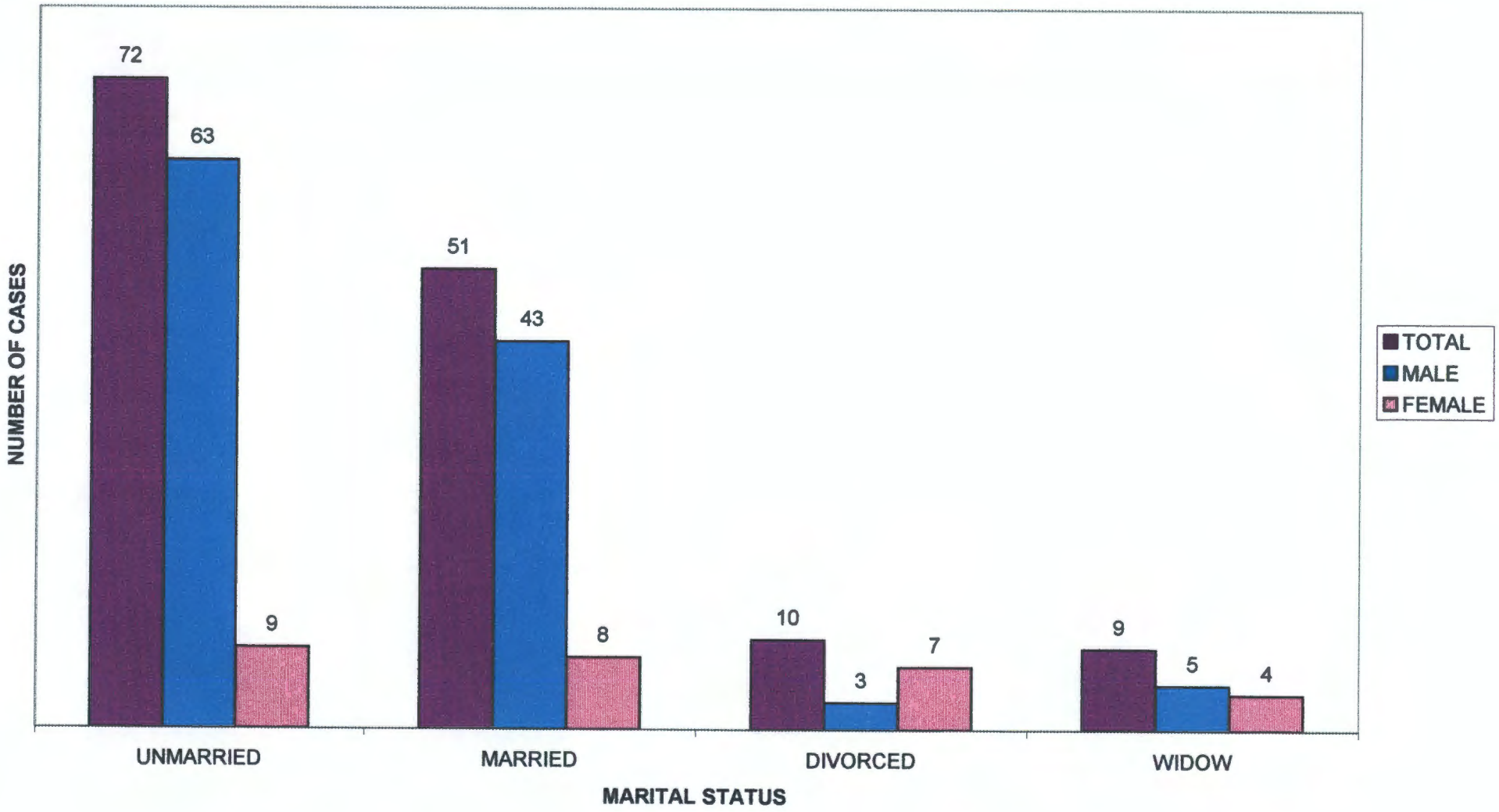
53,5% of the male cases studied were unmarried (21 African, 19 Coloured and 23 White) and 36,4% married (13 African, 14 Coloured and 16 White). 5,9% were divorced (6 White and 1 African) and 4,2% widowed (2 White and 3 Coloured).

Female cases

33,3% of the female cases were married (6 White and 2 African) and 37,5% unmarried (5 Coloured, 2 White and 2 African). 12,5% were divorced (3 White) and another 16,7% widowed (3 White and one African).

These figures correlate well with the Scandinavian study where 32% of the cases

FIGURE 3.14: MARITAL STATUS (n=142)



studied were married (9). The Madrid study showed a higher percentage of cases that were married (46%) (12).

3.14 THE PRESENCE OF ANOTHER PERSON AT THE TIME OF SUICIDE

In 43,8% of the cases studied there was somebody present at the time.

In 40,3% of this group, the suicide was committed in front of people. This group of people included strangers – 60,9% (usually at railway stations and passers by in the streets), close family members – 21,8%, friends – 13% and a spouse - 4,3%.

In the case material where nobody was in the immediate presence of the victim 41,2% of the witnesses were sleeping in the house at the time, 35,3% were busy somewhere else in the house and 23,5% were busy outside.

In the study material where nobody was present at the time of suicide 31,4% of the cases were discovered by family members (36,4% spouses; 18,2% parents; 13,6% children; 27,3% siblings and 4,5% other), 35,8% by close friends and acquaintances (32% friends; 12% neighbours; 24% colleagues; 12% domestic staff; 16% girlfriends and 4% ex-husbands), 31,4% by public members (72,7% general public; 9% hospital workers and 18% police and/or wardens) and 1, 4% unknown.

3.15 INTOXICATION AT THE TIME OF SUICIDE

Figures 3.15 and 3.16 (pages 24a and 24b) illustrate the alcohol levels of the victims.

Blood for alcohol levels was collected from 131 cases (83,4%) and sent to the local Forensic Chemistry Laboratory where it was analyzed. The results showed that 58% of the victims studied were completely sober at the time. The highest

FIGURE 3.15: ALCOHOL LEVELS OF THE SUICIDE VICTIMS (n=131)

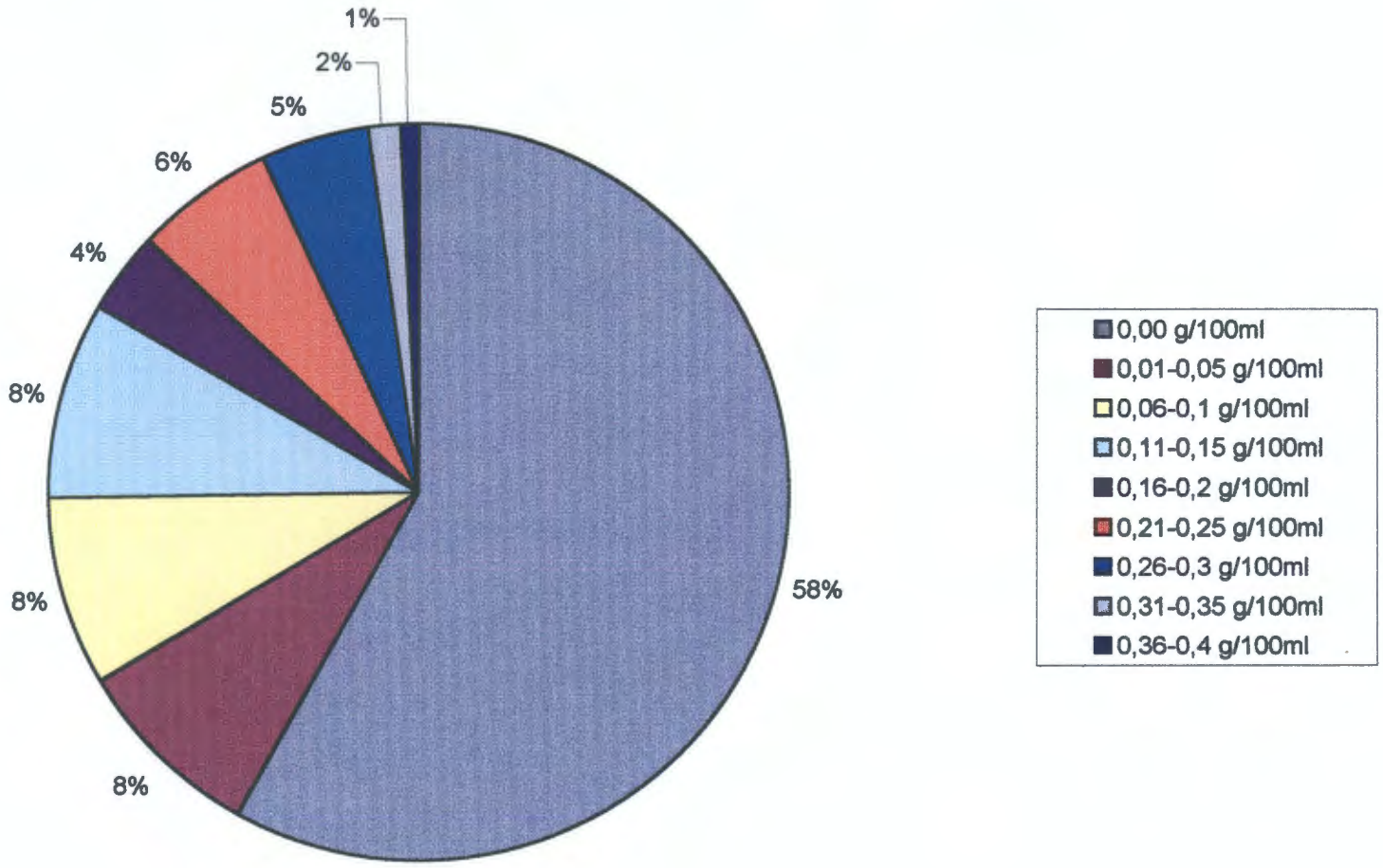
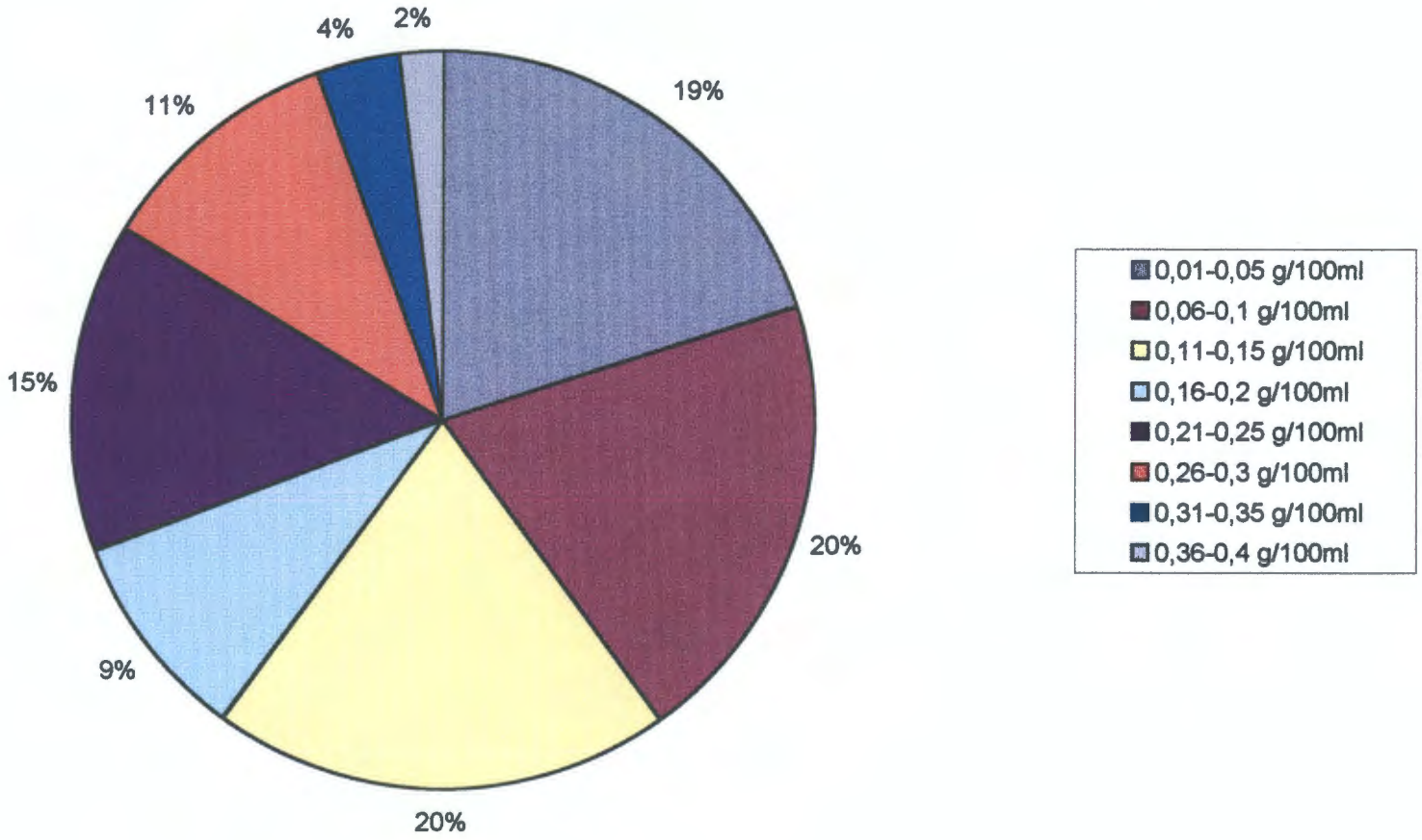


FIGURE 3.16: ALCOHOL LEVELS OF THE INTOXICATED VICTIMS (n=73)



level of intoxication was 0,39g/100ml. Of the intoxicated group (see figure 3.16) 19% can be considered as being "sober" (alcohol level of 0,01-0,05 g/100ml), 20% very slight intoxication (0,06-0,1 g/100ml), 20% mild intoxication (0,11-0,15 g/100ml), 9% with strong intoxication (0,16-0,2 g/100ml), 15% very strong intoxication (0,21-0,25 g/100ml), 11% severe intoxication (0,26-0,3 g/100ml) and 6% in a stuporous state (0,31-0,4 g/100ml) (45).

3.16 SOCIO-ECONOMIC CLASS AND OCCUPATION

The conventional classification, based on employment and occupation, has 5 social classes, namely: (46)

1 – Professional
2 – Lower professional and executives
3 – Skilled manual and non-manual workers
4 – Partly skilled
5 – Unskilled workers

For the purpose of this study the occupational classes were classified and tabled as follows:

TABLE 3.10: OCCUPATIONAL CLASSIFICATION

UNEMPLOYED	29,9%
SCHOLAR/STUDENT	5,1%
UNSKILLED LABOUR	11,5%
PARTLY SKILLED	11,5%
SKILLED MANUAL AND NON-MANUAL	7,6%
LOWER PROFESSIONAL AND EXECUTIVE	10,8%
PROFESSIONAL	5,1%
PENSIONER	9,6%
PRISONER	1,9%
UNKNOWN	7%

Almost 30% of the victims in the study material were unemployed. In the professional group 2 victims were psychologists, while one victim in the student group was doing his masters degree in psychology.

3.17 INCOME GROUPS

The following criteria were used to distinguish the different income groups: qualification, current employment, ownership of a house and/ or car, the value of the house and car, ownership of high technology and electronic devices.

TABLE 3.11: INCOME GROUPS AND RACIAL DIFFERENTIATION

GROUP	%	RACE DIFFERENTIATION
BELOW AVERAGE	41,4%	43% African, 34% Coloured, 23% White
AVERAGE	28,7%	20% African, 28,9% Coloured, 51,1% White
ABOVE AVERAGE	15,3%	8,3% African, 8,3% Coloured, 83,4% White
UNKNOWN	14,6%	

In 14,6% of the cases there was not enough background information available to form an opinion as to the socio-economic background of the victims.

The African group dominated the below average socio-economic class, while the White group dominated the average and above average groups.

3.18 WEATHER PATTERNS AND LUNAR PHASE

Information concerning the daily temperature (minimum and maximum), wind speed and direction, rainfall, the general weather conditions and the lunar phase were obtained from the Weather Bureau, Department of Environmental Affairs and Tourism, Pretoria. The suicide data were analyzed and the days were selected where there was more than one suicide on one particular day. These days were then compared to the weather patterns in those time periods. The final conclusion was that there was no definite correlation between the weather patterns and/ or the lunar phase and the time of suicide. This correlated well with the findings of Scott KW in which he reported that there was no obvious seasonal variation in the suicides of Wolverhampton (24).

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CHAPTER 4

PATHOLOGY

4.1 SHOOTING

As pointed out before, suicide by gunshot accounted for 48 of 157 cases in the study material (31%). 43,8% of this group was from the White male group and 29,2% from the Coloured male group. The male to female ratio was 11:1. The female cases were all from the White group. 62,5% of the cases occurred in the 20 – 39 year age group. 2 out of 13 teenage suicides were by gunshot. 31 of the suicides took place at home (70,8% of the study material), with 19 of these cases (61,3% of the 31) in the bedroom. 12 of the victims expressed the wish to die and/ or commit suicide (25%), while 8 left suicide notes (16,7%). 2 of the victims who left notes also communicated the wish to die. In 6 cases the shootings were impulsive acts.

4.1.1 THE GUN

All the weapons used were handguns. No cases of shotgun, rifles or military weapons were identified. This is similar to the American finding where handguns were the most frequently used firearms in suicide (47). 9mm pistols and .38 special revolvers were the most commonly used firearms, accounting for 53,6% of all the guns used in this study. Other popular firearms used were 7,65 mm, .45, .22 and .32 handguns.

In 60,4% of the cases, the victims were the owners of the guns used. In 25% of the cases the victims were not the owners and the guns belonged to a family member (50%), a friend (16,7%) or the boss (8,3%). In 25% of cases the guns were stolen. A study done by Beautrais et al in New Zealand concluded that

access to a firearm was not associated with a significant increase in the risk of suicide, although such access was associated with an increased probability that gunshot would be chosen as the method of suicide attempt (48). These findings are contradictory to that of Brent et al who concluded that the availability of a gun in the home appeared to increase the risk of suicide (18). In 14,6% of cases the gun ownership and calibre were unknown at the time of writing. Policemen and soldiers who shot themselves with their service firearms accounted for 6,3% of the study material. Of the legal gun owners who shot themselves, only one was a collector of guns. The remainder of the group owned a gun as means of self-protection.

4.1.2 THE SITE OF THE ENTRANCE WOUND

43 of the 48 gunshot cases (89,6%) shot themselves in the head, 2 of the cases in the abdomen and 3 cases in the chest. These findings are similar to findings made by Di Maio where the head, the chest and the abdomen, in that order, were found to be the most common sites of entrance wounds in suicides by handguns (47).

ENTRANCE WOUNDS OF THE HEAD

TABLE 4.1: THE SITE OF ENTRANCE OF GUNSHOT WOUNDS OF THE HEAD

REGION OF THE HEAD	NUMBER OF CASES
RIGHT TEMPORAL REGION	26
MOUTH	10
FOREHEAD	3
CHIN	2
OCCIPITAL REGION	1
LEFT TEMPORAL REGION	1

In this study material 60,5% of the victims shot themselves in the right temporal region, an entrance site typical of suicide. Di Maio found in his study that the most common site for a handgun entrance wound was the right temple (47). In a study done by Druid in Sweden, it was found that shotguns were the most frequently used weapons, with the typical entrance sites being the mouth, followed by the right temporal region and the left chest (49). A Canadian study, done by Avis, had similar findings with a shotgun as the most popular firearm and the mouth the most likely site of entry (17). The main reason for the difference in the findings of shotgun vs. handgun suicides, was the licensing and the availability. In Canada, where there is strict legislation, it is easier to obtain shotguns and rifles, compared to handguns (17).

4.1.3 THE NUMBER OF ENTRANCE WOUNDS

Multiple self-inflicted gunshot wounds of the head are uncommon (50). Only one case in this study showed 2 gunshot wounds. The victim used a Baby Browning and shot himself twice in the mouth. The first bullet lodged in the left cheek, with the second bullet entering the brain (51).

4.1.4 ATYPICAL ENTRANCE SITES

The majority of investigations of the typical suicide by gunshot were straightforward with enough circumstantial and direct evidence to close the case. Every now and again one was confronted with an atypical case, regarding the position of the entrance wound, the wound path and the question of right or left-handedness of the deceased (52), (53).

In the case of the deceased with the entrance gunshot wound in the left temporal region, the deceased was right-handed. The wound was a contact entrance gunshot wound, with a path towards the right and slightly towards the inferior and posterior aspect of the head. All the circumstantial evidence pointed to suicide

and that the deceased deliberately wanted to confuse the police. Bernard Knight also states that it is not true that suicide victims always shoot themselves in the head on the same side as their dominant hand (54).

In the case of the victim with the entrance wound in the right occipital region the deceased was also right-handed with enough circumstantial evidence to indicate suicide.

4.1.5 THE DISTANCE AT WHICH THE SHOT WAS FIRED

All the wounds, with the exception of the patients who survived for a significant time in hospital, showed features characteristic of contact entrance gunshot wounds.

4.1.6 THE DIRECTION OF THE BULLET PATH

Table 4.2 illustrates the entrance site and the direction of the bullet.

TABLE 4.2: ENTRANCE SITE AND DIRECTION OF WOUND TRACK

DR	ENTRANCE	DIRECTION		EXIT	BULLET
373	R TEMP	M	R – L	*	
477	R TEMP	MSP	R – L	*	
778	R TEMP	MSP	R – L	*	
969	R TEMP	MA	R – L		*
1088	R TEMP	M	R – L	*	
1104	R TEMP	MP	R – L	*	
1146	R TEMP	MA	R – L	*	
1154	R TEMP	MA	R – L	*	

1176	R TEMP	MP	R – L		*
1185	R TEMP	MS	R – L	*	
1945	R TEMP	MSP	R – L	*	
2016	R TEMP	MIP	R – L	*	
2035	R TEMP	M	R – L	*	
2107	R TEMP	M	R – L	*	
2414	R TEMP	MP	R – L	*	
2458	R TEMP	MS	R – L	*	
2482	R TEMP	M	R – L	*	
2595	R TEMP	M	R – L		*
2703	R TEMP	MI	R – L		*
3002	R TEMP	M	R – L		*
3021	R TEMP	MP	R – L		*
3106	R TEMP	M	R – L		*
3553	R TEMP	MS	R – L	*	
3694	R TEMP	MS	R – L	*	
3809	R TEMP	MSP	R – L	*	
643	R TEMP	PS	R – L	*	
488	R OCC	AMS	R – L	*	
1976	L TEMP	MIP	L – R	*	
43	MOUTH	PS	STR	*	
303	MOUTH	SP	R – L		*
397	MOUTH	SP	R – L	*	
566	MOUTH	S	STR		*
674	MOUTH	SP	R – L	*	
856	MOUTH	SP	R – L		*
2214	MOUTH	P	STR	*	

2741	MOUTH	PS	R – L	*	
3406	MOUTH	PS	R – L	*	
3535	MOUTH	S	SRT	*	
554	FOREHEAD – L	P	R – L		*
1956	FOREHEAD	PI	STR	*	
3088	FOREHEAD	PI	STR	*	
3122	CHIN	S	STR	*	
20	CHIN	SP	STR	*	
710	CHEST – L	MI	L – R		*
936	CHEST – L	PI	STR	*	
1902	CHEST – L	PI	STR	*	
451	ABDOMEN	UNK		*	
430	ABDOMEN	MPI	R – L	*	

L = left, R = right, M = medial, S = superior, I = inferior, A = anterior, P = posterior, STR = straight, UNK = unknown.

The general direction of the bullets entering the right temporal region was in a straight line towards the left temporal lobe, or with a slight angle towards the posterior and superior aspect of the body. 2 cases with a slight downward angle were also present. A bullet path leading towards the anterior aspect of the head was present in 3 cases. Although an entrance gunshot wound in the right temporal region with a wound track towards the anterior was more likely to be homicide than suicide (49), the circumstantial evidence surrounding these cases once again confirmed the latter.

In the one case with the entrance wound in the left temporal region, the wound track was from left to right, with an angle to the inferior and posterior aspect of the head.

9 of the 10 cases with entrance wounds of the mouth, showed wound tracks of the brain. In only one case the bullet travelled straight back, severing the spinal cord on the level of the 4th cervical vertebra. The majority of the mouth entrance cases showed wound tracks which extended towards the superior and posterior aspect of the body. The majority of the cases showed a right to left track, with the rest showing midline tracks. None of the cases showed a left to right track.

The case material with entrance wounds of the inferior aspect of the chin showed wound tracks straight up or upwards and slightly towards the posterior aspect of the body. The wound tracks were in the midline of the body.

In the victims with entrance wounds of the forehead the wound tracks extended backwards in a straight line to the posterior aspect of the body or at an angle from right to left.

The one case with the entrance wound in the right occipital region had a wound track towards the left, the superior and anterior aspect of the body. The exit wound was superior to the left orbit.

4.1.7 SURVIVAL IN HOSPITAL

Of the 9 cases who survived in hospital the longest survival time was 7 weeks, in a young African man who shot himself in the head. Another person survived for 42 days after a self-inflicted gunshot wound of the abdomen. Of the 9 cases who survived in hospital 6 were gunshots of the temporal region, one of the chin, one of the mouth and one of the abdomen.

4.1.8 ALCOHOL ABUSE AND INTOXICATION

10 cases had features of chronic alcohol abuse at the time of post-mortem. 2 cases had liver cirrhosis and 8 cases had fatty change of the liver. Blood for alcohol analysis was withdrawn from 40 cases. The results are illustrated in table 4.3.

TABLE 4.3: ALCOHOL LEVELS OF THE GUNSHOT VICTIMS.

ALCOHOL LEVEL IN g/100ml	CASES	PERCENTAGE
0,00	24	50%
0,00-0,05	2	5%
0,06-0,1	4	10%
0,1-0,2	4	10%
0,2-0,3	5	20,8%
>0,3	1	4,2%

4.1.9 TOXICOLOGY

Toxicological investigations were done on 4 cases. 3 cases were negative for drugs, medicinal substances and/ or pesticides. One case showed a sub-therapeutic level of Cyclizine, an antihistamine used to prevent and treat motion sickness and vertigo.

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4.2 HANGING

Hanging accounted for 52 of the 157 suicide cases in the study. 50% of the hangings occurred among African males. Coloured males accounted for 23% of the cases. Only 9,6% of the cases occurred in women. 82,7% of the hanging cases occurred in the 20-49 year old age group. The highest incidence was in the 20-29 year old age group, accounting for 36,5% of the cases studied. 32 of the hanging cases occurred at home (61,5%), with 11 in shacks and 5 in the bedroom. 5 cases occurred while in police custody or in prison (9,6%). 12 victims left suicide notes (23%), while 11 expressed the wish to die (21,2%). In 4 cases there were suicide notes as well as the verbal expression of the death wish.

4.2.1 THE LIGATURE

In 52% of the hangings a rope was used as the ligature. Bedding was used in 10% of the cases and electrical cords in 8% of the cases. Other items used included belts (6%), scarves (4%), shoelaces (2%), stockings (2%), strapping material used for sealing boxes (4%), a tie (2%), towels (4%), wire (4%) and plaited wool (2%).

4.2.2 THE PLACE OF HANGING

In 40,5% of the cases, the deceased was hanging from a beam and in 21,5% of the cases, from a tree. Other places included the headboards of beds (2 cases), iron bars and rails (6 cases), doors and door frames (3 cases), pelmet (1 case), a pole (1 case) and the railing of a staircase (1 case). It must be pointed out that in deaths due to hanging the body needs to be suspended, but complete suspension is not a requirement. By tying the ligature around the neck to the headboard, followed by slumping of the body on the floor, death may occur rapidly.

4.2.3 **PATHOLOGY**

The "classic signs of asphyxia" were used for many years as the sole criteria for the post-mortem diagnosis of an asphyxial death. Most of these signs are considered to be quite non-specific and not very reliable (55). In actual practice the presence or absence of these findings at post-mortem were not always well recorded. In the experience of the author fluidity of the blood and engorgement of the right side of the heart are often overlooked and even if present, pathologists tend to interpret it with great care and rarely mentioned it in their reports.

The dominant findings of this study were:

LIGATURE MARK

Ligature marks, with typical perimortal parchment like appearance, were present in 44 cases (84,6%). In 5 cases additional abrasions were present in the neck and in these cases a blanket, a towel, a sheet, a scarf and a rope were used as ligatures. In 2 of the 3 cases where no neck injuries were present the ligatures involved were a piece of cloth and a belt. In 1 case the nature of the ligature used was unknown.

BRUISES OF THE SOFT TISSUES AND MUSCLES OF THE NECK

Only 24 cases had bruises in the tissues underlying the ligature mark (46%).

FRACTURES OF THE HYOID BONE AND/ OR THYROID CARTILAGE

Fractures were present in 9 cases (17,3%). In 6 of the 9 cases a rope was used as a ligature. A belt, a blanket and a scarf accounted for the other cases.

PETECHIAL HAEMORRHAGES

Petechial haemorrhages were present in 18 cases.

CONGESTED ORGANS

Congested organs were present in 39 cases.

4.2.4 ALCOHOL ABUSE AND INTOXICATION

4 cases showed fatty change of the liver, presumed to have been alcohol related and indicative of chronic alcohol abuse.

Blood alcohol analysis was done on 50 of the 52 victims, 26 of whom showed no alcohol in the blood (52% of the cases).

Table 4.4 illustrates the intoxication level of the victims who hanged themselves.

TABLE 4.4: ALCOHOL LEVELS OF THE HANGING VICTIMS

ALCOHOL LEVEL IN g/100 ml	NUMBER OF CASES	PERCENTAGE
0,01-0,05	4	8
0,06-0,1	4	8
0,11-0,2	6	12
0,21-0,3	8	16
>0,3	2	4

4.2.5 TOXICOLOGY

Toxicological examinations were done in 3 cases of the study material and were negative for drugs, pesticides and medical substances.

4.2.6 MASOCHISTIC OR SEXUAL ASPHYXIAS

Careful distinction must be made between suicide, homicide and sexual asphyxia (56). In one case studied the deceased was found hanging from the doorframe of his house. Nylon rope was used as a ligature of the neck, which was tied with a loose slipknot. His hands and feet (right foot to right hand and left foot to left hand) were also tied with slipknots. The zipper of his pants was undone, but his genitalia were not exposed. There was no sign of entry into the house. In view of pornographic material found in the house, the suspicion of sexual asphyxia was raised. 2 suicide notes were subsequently discovered on the scene, and ruled in favour of suicide (57).

4.2.7 HOMICIDE OR SUICIDE

In one case studied the deceased died in prison. The deceased was a patient of Valkenberg Hospital, a Psychiatric Institution, from where he had previously escaped on numerous occasions. The Police arrested him, and seeing that Valkenberg was full at the time, he was sent to Pollsmoor Prison, to await a bed in Valkenberg. At the time of his death he was in the cell with 2 African prisoners. According to other prisoners he was very loud, noisy and "confused". According to his 2 African cellmates, who could not understand him (he was Afrikaans speaking), he climbed onto the washbasin and stared out of the window the whole evening. According to them they fell asleep and woke up later to find him hanging from the iron railings in front of the window. They then took him down, and because they were scared that he might wake up again, they laid him down on his mattress and tied his hands and feet together. The time of death was estimated at around midnight. The post-mortem revealed evidence of blunt trauma, with 900ml blood in the peritoneal cavity and lacerations of the liver. Contusions were also present over the apex of the heart and the left lung. Abrasions and bruises were present on the right side of the neck. A piece of torn blanket that was used as a ligature was present around the neck. A bloodless dissection of the neck

revealed haemorrhages of the muscles and soft tissues underlying the bruises and abrasions of the neck. The conjunctivae were congested. Subepicardial petechial haemorrhages of the heart were present. The ties around the hands and feet were very tight, without any vital reaction of the subcutaneous tissue. On further investigation the 2 cellmates confessed that they had beaten him up earlier in the evening. They claimed that he was too noisy and they could not sleep. After the beating he allegedly quietened down and they fell asleep. They were woken by a banging sound and found him hanging from the bars, with his feet banging into the washbasin. They then took him down and tied him up. The obvious vital reaction present in the ligature site was an indication that the deceased was alive at the time of hanging (58). The absence of any vital reaction around the ankles and wrists indicated that these had been tied after death. In the argument of suicide versus homicide, one would think that if he was murdered and they wanted to create the impression of suicide by hanging, they would have left him hanging. They also tied his hands and feet together, under the impression that he was still alive (59).

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4.3 EXHAUST FUMES/ CARBON MONOXIDE POISONING

11 of the 15 cases were White men (73,3%). The other 4 cases were 2 Coloured men and 2 White women. 5 of the victims were in the 50-59 year old age group (33,3% of the cases) with 4 in the 40-49 year old age group (26,7%). 8 of the cases occurred at home (53,3%) of which 7 took place in the garage. Of the 7 cases that occurred away from home 1 was at work, 2 in parking areas, 2 on Chapmans Peak Drive, 1 in Cecilia Forest and one close to the house of the ex-wife. In 6 cases suicide notes were present (40%) and 6 cases were also reported as having expressed the wish to commit suicide, 3 of which also left suicide notes. All the suicide cases examined were exposed to the exhaust fumes of their own motor vehicles. No suicide cases involved domestic appliances, fires in dwellings or industrial processes.

4.3.1 PATHOLOGY

The typical features of Carbon monoxide poisoning were seen in all the cases, the most striking being the "cherry-pink" discoloration of the skin (60). The only case, which did not show this typical discoloration, was a victim who survived for 15 hours. The organs showed mild congestion and the brain was very soft, with signs of previous berry-aneurysm surgery (61).

4.3.2 ALCOHOL ABUSE AND INTOXICATION

2 of the cases had fatty change of the liver, indicative of chronic alcohol abuse.

Tests for blood alcohol analysis were done on all 15 cases of whom 9 showed no alcohol in the blood. The rest of the victims showed the following results:

TABLE 4.5: ALCOHOL LEVELS OF THE CO-POISONING VICTIMS

ALCOHOL LEVEL IN g/100 ml	CASES	PERCENTAGE
0,01-0,05	3	20%
0,06-0,1	1	6,7%
0,11-0,2	2	13,3%

4.3.3 CARBON MONOXIDE LEVELS

Blood tests for carbon monoxide level determination were done on all 15 cases. In one case, due to insufficient blood available for examination, no result could be obtained. In the case where the victim survived for 15 hours in hospital, the result was 3% saturation. The remaining 13 cases showed the following results:

TABLE 4.6: CO SATURATION OF THE VICTIMS

CARBON MONOXIDE SATURATION	CASES
35%	1
50-59%	2
60-69%	5
70-79%	5

The case with the 35% saturation was an 80-year-old White man with an enlarged heart (606 g), aortic valve stenosis and severe coronary artery disease (62). It is known that older people can die at relatively low concentrations such as 30%. In many cases where the myocardium is already in a fragile state, the additional CO-induced hypoxia will cause it to fail (60).

4.3.4 TOXICOLOGY

Toxicological investigations were done in 4 cases. All 4 showed negative results for drugs, medicinal substances and pesticides.

REFERENCES AND CASE NUMBERS

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4.4 JUMPING FROM A HEIGHT

4 of the 157 cases jumped from a height. All the victims jumped from buildings. The male to female ratio was 3:1. The ages ranged from 18 to 60 years. 3 of the cases jumped in areas away from their homes. In the 4th case the deceased jumped out of a window of her daughter's flat. One case occurred in hospital where the patient was being treated for depression and previous suicide attempts. 2 of the victims jumped from the 6th floor and the other 2 from the 3rd floor. None of the victims left suicide notes. Only 1 of the 4 previously expressed the wish to commit suicide.

4.4.1 PATHOLOGY

All the victims sustained multiple injuries as illustrated in Table 4.7.

TABLE 4.7: INJURIES SUSTAINED DURING JUMPS FROM A HEIGHT

INJURIES	**CASE NUMBER**			
	3298/97	**48/97**	**228/97**	**3609/97**
FRACTURES				
SKULL	VB	B	VB	VB
RIBS	R:1-9	-	R:1-10	R:2-7
	L:1-9	-	L:1-10	-
LIMBS	LLL	-	Rha	-
	RE	-	RW	-
	RH	-	-	-
FACE	-	-	+	-
SPINE	-	-	T 5	-

CONTUSION				
BRAIN	M-TIPLE	CB	M-TIPLE	FRT
LUNGS	LUL	M-TIPLE	M-TIPLE	-
HEART	-	-	-	-
LACERATIONS				
BRAIN	M-TIPLE	-	M-TIPLE	FRT
KIDNEYS	-	-	-	R
SPLEEN	+	-	-	
LIVER	-	-	+	-
LUNGS	-	-	+	-
RUPTURES				
HEART	RV	-	-	-
LIVER	+	-	-	-
HAEMORRHAGES				
BRAIN	SDH	SAH	SAH	SAH
	SAH	-	Ve	SDH
	Ve	-	-	Ve
ASPIRATION OF BLOOD	+	+	-	+

B = base of skull, V = vault of skull, L = left, R= right, LLL = left lower leg, RE = right elbow, RH = right humerus, Rha = right hand, RW = right wrist, T 5 = 5th thoracic vertebra, LUL = left upper lobe, RV = right ventricle, SAH = subarachnoid haemorrhages, SDH = subdural haemorrhages, Ve = ventricles, M-TIPLE = multiple, CB = cerebellum, FRT = frontal.

Head injuries, followed by chest, limb and abdominal injuries were the main injuries sustained by these victims. These findings were similar to those reported

by Li and Smialek who conducted a study on fatal falls and jumps in Maryland (63).

4.4.2 ALCOHOL ABUSE AND INTOXICATION

2 cases showed fatty change of the liver. Blood analysis performed on 2 of the cases were negative for alcohol.

No toxicological investigations were done on any of these cases.

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4.5 TRAIN FATALITIES

9 of the cases in the study committed suicide by standing, jumping or lying in front of moving trains (57,3%). The male to female ratio was 8:1. African men accounted for 5 cases, while 2 Coloured men, 1 White man and 1 White woman accounted for the rest. The ages ranged from 23 to 66 years. Not one of the victims left a suicide note, while only one expressed the wish to die. 8 of the fatalities occurred in the immediate vicinity of a railway station, while the other case occurred between 2 stations.

4.5.1 PATHOLOGY

At times it was difficult to distinguish between accident and suicide (64). The pathologist relied on the police for the background history of all railway-related deaths. There were no specific autopsy features to distinguish between the different types of death (65). Jumping in front of the train, lying across the line and touching the electrical conductors were the usual methods of suicide (64).

In this study 5 of the 9 victims were lying down on the railway line in front of the oncoming train, while 4 victims stood in front, or jumped in front, of the train.

In the cases of the victims that were lying down in front of the train, the following injuries were noted:

TABLE 4.8: INJURIES OF THE VICTIMS LYING IN FRONT OF THE TRAIN

CASES	1961/97	50/97	700/97	2287/97	285/97
INJURIES					
DECAPITATION	*		*	*	
TRANSECTION			*		*
AMPUTATION					
- UPPER LEGS	*		*		
- LOWER LEGS	*	*			
- UPPER ARMS		*	*		
- FOREARMS		*			
FRACTURES					
- RIBS	*		*		
- PELVIS	*	*			
- SKULL			*	*	
- LIMBS		*			

The following injuries were documented in the cases where the deceased stood or jumped in front of the train.

TABLE 4.9: INJURIES OF THE VICTIMS STANDING IN FRONT OF THE TRAIN

CASES	2811/97	2776/97	2816/97	1675/97
INJURIES				
DECAPITATION	*			
TRANSECTION			*	
AMPUTATION				
- UPPER LEGS				
- LOWER LEGS	*			*
- UPPER ARMS	*		*	
- FOREARMS			*	
FRACTURES	*			
- RIBS	*	*	*	*
- PELVIS		*	*	*
- SKULL		*	*	*
- LIMBS		*	*	
- SPINE		*	*	*

4.5.2 ALCOHOL ABUSE AND INTOXICATION

One victim had fatty change of the liver. Blood tests for alcohol analysis were done on 5 of the victims. 3 victims had no alcohol in the blood. The other cases showed levels of 0,06g/100ml and 0,3 mg/100ml respectively.

4.5.3 TOXICOLOGY

Toxicological investigation was done in only one case, and was negative for drugs, medicinal substances and pesticides.

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4.6 DROWNING

Only 2 cases of drowning were present in this study (1,3%). The 2 victims were men, one African and one White. They were 28 (estimated age) and 51 years old respectively.

The 28-year-old African man committed suicide at the Aquarium at Cape Town harbour where people witnessed him tie a rope and a rock around his waist after which he jumped into the water. At the time of writing his identity was still unknown to the police. No family members have come forward to identify him, despite newspaper reports and pictures published. His fingerprints are not on police record either. He left no suicide note or any form of identification. The police suspect that he might have been an illegal immigrant from a neighbouring country. There was no alcohol in his blood. No toxicological examinations were performed (66).

The 51-year-old White man was found in his house, submerged in the bath. Empty wine bottles and some tablets were also found in his house. He left a suicide note. Post-mortem revealed severe fatty change of the liver. The blood alcohol level was 0,03g/100ml and toxicological investigation showed traces of Loprazolam, an active ingredient of Dormonoct, a sleeping tablet. The final cause of death was formulated as "consistent with suicidal drowning" (67).

4.6.1 MISSED CASES

Drowning is reported to be the 4th leading cause of suicidal death in Canada (68). In the absence of a farewell letter or suicidal tendencies beforehand, it can be very difficult to prove that the death was due to suicide (69). A suicide, such as driving the car into a body of water, can be faked as an accident (69). Where there is lack of valuable evidence, the court will most likely rule towards accidental drowning, rather than suicide.

4.6.2 SUSPICIOUS CIRCUMSTANCES SURROUNDING THE DEATH

In suicidal drowning the victim is usually more or less fully clothed (both cases were fully clothed), and may jump into the water from a higher point (69). According to Tedeschi a high percentage of victims of suicidal drowning showed intoxication at the time of death (69). Tedeschi also comes to the conclusion that death in the bath at home is most often suicidal (69). Knight's opinion is that those who kill themselves by submersion often remove their top clothes, hats and spectacles (70).

REFERENCES AND CASE NUMBERS

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69. Tedeschi CG, Eckert WG, Tedeschi LG. Forensic Medicine. WB Saunders Company 1977. p 1330 - 1.
70. Knight B. Forensic Pathology. Edward Arnold, London. 1991. p 217.

4.7 SUFFOCATION

Only 2 cases were identified (1,3%). Both cases were White females. They were 45 and 79 years old respectively. Both were found at home in their bedrooms with their heads covered with plastic shopping bags. The one victim had tried to commit suicide previously by shooting herself while the other one had expressed the wish to die. Neither of the 2 left suicide notes behind, but the elderly victim left her will and her jewelry out for her relatives (71) (72).

4.7.1 WHY THE USE OF PLASTIC BAGS?

In a study done by Haddix et al (73), it was found that suicide by use of a plastic bag was used in a greater proportion in people over the age of 50 years. The preferred use of plastic bags may reflect their ubiquitous presence and the non-violent termination of life they afford. The successful use of a plastic bag requires neither special, nor possibly strenuous, preparations that are necessary for other methods. Failing health was the most commonly reported stressor (73).

In both cases of the study material the victims were house-bound. The one victim was old and Arthritic and her life revolved around the TV. She was also a devoted follower of Lady Diana Spencer (seeing that she was from Britain herself), and she was reportedly devastated by her death. Besides the will that she left, she also left numerous newspaper articles of Diana's death in her room.

The other victim was treated for breast cancer and depression.

Neither of the victims had guns in their homes.

4.7.2 PATHOLOGY

Both the victims had plastic shopping bags over their faces at the time of discovery. Only one victim was presented to the mortuary with this plastic shopping bag still in place. There was moisture on the inside of the bag, indicating that it was put on during life (74). A thin electric cord was present over the bag and around the neck of the victim, with the plastic bag in place. This cord was loosely looped twice around the neck. The knot was also very loose. In the other case the bag had been removed, but a piece of string was loosely tied around the neck. Knight found in many suicides that the open end of the plastic bag was tied around the neck, although this is not necessary for a fatal result (4). No petechial haemorrhages were present in these 2 cases. Mild congestion of the organs was present in both cases. In Knight's study none of the plastic bag suffocation cases had petechial haemorrhages or any signs of asphyxia at all (4).

4.7.3 ALCOHOL ABUSE AND INTOXICATION

Blood tests for alcohol analysis were done on both with levels of 0,00g/100ml and 0,02g/100ml respectively. Neither of the victims had any features of chronic alcohol abuse.

4.7.4 TOXICOLOGY

Toxicological investigations done in one case showed a sub-therapeutic level of Sertraline (active ingredient of Zoloft, an anti-depressant) and a trace of Flunitrazepam (active ingredient of Rohypnol, a hypnotic and sedative, used as a medication to induce sleeping).

REFERENCES AND CASE NUMBERS

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72. DR 2561.97 – Police case, Wynberg MAS 69/09/97.

73. Haddix TL, Harruff RC, Reay DT, Haglund WD. Asphyxial suicides using plastic bags. The American Journal of Forensic Medicine and Pathology. 17(4): 308 - 311, 1996.

74. Knight B. Forensic Pathology. Edward Arnold. 1991. p 327.

4.8 SELF-INCINERATION

Self-incineration is defined as the act of pouring a flammable liquid onto oneself and igniting it (75). 5 cases of suicidal burns were reported (3,2%). The victims were all very young with ages ranging from 15 to 33 years. The average age was 21,6 years. The male to female ratio was 2:3. The 2 men were from the Coloured group and the women were 2 from the African group and 1 from the Coloured group. All the victims survived in hospital, ranging from 5 hours to 4 days. All the incidences occurred at home. These findings were consistent with the findings of Leth et al who reported that most victims set themselves alight at home. They found that self-incineration in a public place is usually politically motivated (75). None of the victims in this study left suicide notes or expressed a wish to commit suicide. Leth also reported that in his study none of the victims left suicide notes (75). One of the victims made a drawing in one of his schoolbooks before he committed suicide. The drawing showed a person crying and clouds in the sky. The drawing was in black and was signed by him. The victims poured petrol (2 cases), thinners and paraffin over themselves before they set themselves alight. In one case it was unknown what liquid the deceased had poured over himself. None of the victims had a background of mental illness. 3 of the cases were reported to have had arguments with the husband, boyfriend and brother respectively. One of cases was a teenager and pregnant. In one case the reason for the suicide was unknown. In a study done by Leth and Hart-Madsen they found that the victims often suffered from mental disorders (75). During the 1960's and 1970's politically motivated cases of self-incineration were very popular (6).

4.8.1 PATHOLOGY

The following findings were made on post-mortem examination:

TABLE 4.10: INJURIES OF THE VICTIMS WHO SET THEMSELVES ALIGHT

CASE	GRADE	% OF BODY SURFACE	LUNGS	OTHER PATHOLOGY
3571/ 97	III	80%	CONGESTED	CONGESTED ORGANS
1165/ 97	II-III	70%	ARDS	PALE AND SWOLLEN KIDNEYS
			INHALATION BURNS	PREGNANT – 24 weeks
1913/ 97	III	80%	INHALATION BURNS	SWOLLEN KIDNEYS
506/ 97	III	75%	INHALATION BURNS	
803/97	III	85%	CONGESTION	FATTY CHANGE

4.8.2 ALCOHOL ABUSE AND INTOXICATION

Due to the survival in hospital of all the cases involved, no investigations as to blood alcohol levels, carbon monoxide levels and/or toxicological substances were done on any of the victims. Only one case showed fatty change of the liver.

REFERENCES

75. Leth P, Hart-Madsen M. Suicide by self-incineration. The American Journal of Forensic Medicine and Pathology. 18(2):113 - 118, 1997.

6. Crosby K, Rhee J, Holland J. Suicide by fire: a contemporary method of political protest. International Journal of Social Psychiatry. 1977; 23: 60 - 9.

4.9 PENETRATING INCISED WOUNDS

2 cases were identified where self-inflicted penetrating incised wounds were identified as the cause of death. One case survived in hospital for 2 hours. The other victim was discovered at home in the bath, with the bath half-filled with water. He slit his arms. One victim left a suicide note. Neither of them was known to have expressed the wish to commit suicide. Both cases were from the Coloured male study material. They were 25 and 35 years old respectively (76) (77).

4.9.1 PATHOLOGY

One victim had multiple superficial penetrating incised wounds of the arm. One of the deeper wounds penetrated and cut the right radial artery. According to eyewitnesses the bath was covered in blood. The organs, especially the kidneys, were very pale.

The second victim had two penetrating wounds of the left side of the chest, with 5 tentative wounds surrounding these wounds. Two perforating wounds of the lungs and 2 sutured penetrating wounds of the heart were present. An additional penetrating incised wound of the abdomen was present. This victim was a suspect in a murder case.

These findings were consistent with those of Knight who reported the predominant sites for self-inflicted incised wounds as the throat, the anterior chest and the arms. He also found that these wounds are typically multiple and often accompanied by tentative incisions (78).

4.9.2 ALCOHOL ABUSE AND INTOXICATION

Tests for blood alcohol analysis were done on both victims and revealed levels of 0,00g/100ml and 0,06g/100ml respectively. Neither of the victims showed features of chronic alcohol abuse.

4.9.3 TOXICOLOGY

Toxicological investigations were done on one case only. This was negative for drugs, pesticides and medicinal substances.

REFERENCES AND CASE NUMBERS

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77. DR 3762.97 – Police case, Manenberg 468/12/97.
78. Knight B. Forensic Pathology. Edward Arnold, London. 1991. p 213 - 216.

CHAPTER 5

SPECIAL CIRCUMSTANCES SURROUNDING THE SUICIDE

5.1 PRISON DEATHS/ DEATH IN CUSTODY

Six suicides in this study occurred while the victims were in police custody or in prison. All 6 cases were men, 3 Coloured, 2 African and 1 White. The ages ranged from 28 to 47 years. None of the victims left suicide notes or expressed the wish to die. 5 of the victims were unmarried and 1 was a widower. In 4 of the cases the victims were alone at the time of suicide and in the other cases they were with 2 and 35 other prisoners respectively. 5 victims hanged themselves and one took an overdose of medication. 2 torn blankets, 1 torn sheet, a rope and a belt were used as ligatures. 2 of the victims had a background history of mental illness. In the one case the deceased should not have been in prison, but in a mental institution, where he belonged. In 4 cases the suicide was committed within 24 hours of arrest. In one case the deceased was imprisoned for less than a week. In the 6th case the period of imprisonment was unknown. The reasons for imprisonment/ arrest were 2 charges of assault, 2 charges of murder, 1 for stealing a car and causing an accident and one case was merely sent to prison because the mental institution was full. Other studies have shown the predominance of hanging as means of suicide in prison (79), (80), (81), (21). Studies done by Marcus et al and Green et al showed the tendency for suicides to occur within days of court appearances and sentencing (79), (80). A study done in Finland showed that there was no concentration of suicides at the beginning of confinement (20).

5.1.1 CASE STUDIES

CASE 1/ DR 373.97

A 44-year-old White man who was in custody for brutally assaulting his mother. He also suffered from depression and was on Amitriptyline. On the day of his arrest he was taken to court where a trial date was set. The court ruled that he should await trial in Pollsmoor Prison and that bail was not allowed. Before he had to go to prison he had to see the District Surgeon who apparently instructed the warden to take the medication away and to hand it to the patient in the cell as prescribed. Somehow the medication was never taken away from the deceased. When they arrived back at the prison the deceased was found dead in the back of the transport truck. The post-mortem revealed aspiration of stomach contents. No injuries or any disease was present. The alcohol level was 0,00g/100ml. The toxicological investigation revealed a toxic level of Amitriptyline, an antidepressant. No illegal drugs were found.

CASE 2/ DR 1034.97

A 34-year-old African man who was in custody for armed robbery and murder. He was 1 of 2 suspects who was followed and arrested by the police in Prince Albert. They were taken to the local police station where they were questioned and placed in separate cells. The deceased was on his own in the cell. The policeman who unlocked the cell found the deceased hanging from the railing in front of the window. A belt was used as a ligature. The body was brought from Prince Albert to the Salt River Medicolegal Laboratory for specialist investigation. The clothes and ligature had been removed before the investigation started. Although no ligature mark was present, haemorrhages of the soft tissues and muscles of the neck as well as a fracture of the hyoid bone were present. Petechial haemorrhages of the conjunctivae and heart were present. The organs were congested. The alcohol level was 0,00g/100ml and the toxicological investigation was negative.

CASE 3/ DR 1747.97

A 47-year-old Coloured man who was in custody for assault, with the intent to kill his girlfriend. The day before he committed suicide he had to appear in court. Apparently he was very upset in court when his girlfriend refused to speak to, and turned away from, him. The following night he committed suicide by hanging himself from the railing in front of the window. He used a torn sheet as a ligature. Post-mortem revealed no injuries to the body. A ligature mark was present. The rest of the bloodless dissection of the neck was unremarkable. There was mild congestion of the organs. No petechial haemorrhages were present. The alcohol level was 0,00g/100ml. Toxicological investigations were not done.

CASE 4/ DR 3234.97

A 34-year-old African man who was not in custody but committed suicide on police premises. The deceased caused a motor vehicle accident with a vehicle that he had stolen shortly before. After the accident the community was very angry and they threatened to kill him. He was taken away by the police, but the angry crowd followed them. The police left the deceased in a back room of the police station with the intent to first calm the crowd and then to charge him. When they went back he was hanging from an iron railing. He used a rope as a ligature. Post-mortem investigation showed a ligature mark of the neck, haemorrhages of the muscles, congested organs and petechial haemorrhages of the eyes. The alcohol level was 0,21g/100ml. No toxicological investigation was done.

CASE 5/ DR 3265.97

A 28-year-old Coloured man who was held at Pollsmoor Prison. The case was discussed earlier in chapter 4.2.7.

CASE 6/ DR 3781.97

A 40-year-old Coloured man who had been arrested the day before his suicide. He was in custody at the local police cells. He had been charged with 3 murders. He

was found hanging from the bars in front of the windows. He used a torn piece of blanket as a ligature. The post-mortem revealed a ligature mark of the neck, congested organs, fractures of the thyroid cartilage and haemorrhages of the soft tissues and muscles of the neck. No petechial haemorrhages were noted. The alcohol level was 0,00g/100ml. No toxicological investigations were done.

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5.2 DYADIC DEATH

Dyadic death or homicide-suicide is the suicide of a person shortly after he/ she had committed or attempted to commit a murder.

5 cases of homicide-suicide were present in this study (3,2%) (82)(83)(84)(85)(86). In all 5 cases it was the men who killed, or tried to kill their spouses, children or girlfriend respectively. The ages ranged from 19 to 44 years. 3 of the men were from the African group and 2 from the Coloured group. 4 of the 5 were married. In 3 of the cases the homicide-suicide took place at home. In one case the deceased wrote a suicide note dated 2 months prior to the homicide-suicide. The same person also expressed the wish to die. 3 of the cases had relationship problems with their wives. One's wife had left him, one had an argument with his girlfriend and the last one had financial problems. In 3 cases the means of homicide-suicide was by gunshot. In 2 of the 3 cases the suicide victims killed their victims and in the 3rd case the victims were only injured. In one case the suicide victim hanged himself after he had brutally assaulted his wife, leading to her death. In the 5th case the father took his son from his wife's custody and walked in front of an oncoming train with the child. Blood alcohol levels were determined on all 5 victims. The results were 0,00g/100ml, 0,02g/100ml, 0,05g/100ml, 0,06g/100ml and 0,13g/100ml respectively. Toxicological investigations were not performed on any of these cases. These findings are similar to those of Milroy who reported that it is usually the men who kill their wives and/ or children with a firearm. He also found a breakdown of the spousal relationship the most common motive for these types of death (87).

REFERENCES AND CASE NUMBERS

82. DR 349.97 – Police report, Khayelitsha MAS 180/2/97.
83. DR 554.97 – Police report, Khayelitsha MAS 6/3/97.
84. DR1956.97 – Police report, Khayelitsha MAS 267/7/97.

85. DR 2035.97 – Police report, Mitchells Plain MAS 921/7/97.

86. DR 2816.97 – Police report, Manenberg MAS 10/10/97.

87. Milroy CM. The epidemiology of homicide-suicide (dyadic death). Forensic Science International. 71 (1995) 117 - 122.

5.3 SUICIDE PACTS

2 cases of pact suicide were present in the study material (2,5% of the suicides).

In one case an elderly White couple gassed themselves with exhaust fumes. They were 80 and 77 years old respectively. They were found at home in the garage. They did not leave suicide notes, nor did they express the wish to die. The wife suffered from severe depression for which she was being treated. The husband was very devoted to his wife. Neither of them had any alcohol in their blood. The carbon monoxide saturation was 35% and 75% respectively (88).

The 2nd instance involved 2 brothers from the Coloured group, 19 and 21 years old respectively. The suicides happened at home where they shared a room. The older brother had an argument with his sister after which he shot himself. When the younger brother, who was mentally retarded and very devoted to his brother, saw this he took the same gun and shot himself. Both shot themselves in the right temporal region. The younger brother survived in hospital for 5 hours. The gun involved was a stolen gun. No suicide notes were left and neither of the victims had expressed the wish to die. The blood alcohol level of the older brother was 0,11g/100ml (89).

Suicide pacts are rare (90), (91) and almost always occur in families, with the majority between married couples (90).

REFERENCES AND CASE NUMBERS

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89. DR 3002.97 and DR 3021.97 – Police report, Steenberg MAS 165/10/97.
90. Brown M, Barraclough B. Epidemiology of suicide pacts in England and Wales, 1988-1992. BMJ. 315 (7103): 286 - 7, 1997 Aug 2.
91. Avis SP, Hutton CJ. Dyadic suicide. A case study. American Journal of Forensic

Medicine and Pathology. 15(1): 18 - 20, 1994 Mar.

5.4 COMPLEX SUICIDES

The main difference between planned complex suicide and combined suicide lies in the complex mechanism used by the victim as a protection against a failure in one of the mechanisms (92). 2 case studies have been reported in the literature. The one is of a young man who was found hanging by his neck with a gunshot wound of his head. All the circumstantial evidence pointed to suicide (92). The second was a case of suicidal hanging where the deceased also stabbed himself several times in the neck and chest before hanging himself. Once again all the circumstantial evidence pointed to suicide (93).

None of the cases in this study fell into this category. In 3 cases the investigating officers suspected the intake of medicinal substances in combination with the inflicted suicide method. In all 3 cases the intake of the medicinal substances proved to be insufficient to have caused the death and the causes were given as suffocation, drowning and gunshot of the head respectively.

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5.5 SUICIDE IN HOSPITAL

2 cases of suicide in hospital were included in this study.

In both cases the victims were White males. They were 31 and 77 years old respectively. The younger of the 2 had made 2 previous attempts at suicide by hanging, and by slitting of his wrists. He was admitted to hospital for HIV infection and suicidal tendencies. He jumped from the hospital window. In the other case the deceased had a melanoma removed about 10 years prior to his death. At the time of his suicide he had been admitted to hospital for investigations and earlier in the day he was informed that widespread metastases of the melanoma had occurred. He took an overdose of his heart tablets, Verapamil, which were kept next to his bed and not handed to the nursing staff. Post-mortem examination confirmed the widespread metastases of a malignant melanoma. The final cause of death was consistent with an overdose of Verapamil (94)(95).

REFERENCES AND CASE NUMBERS

94. DR 48.97 – Police case, Sea Point MAS 38/1/97.

95. DR 1102.97 – Police report, Cape Town MAS 717/5/97.

5.6 HIV AND HOMOSEXUALITY

In 4 cases identified, involving White males, the deceased persons were known to have been HIV positive and gay. None of the victims had clinical signs of AIDS. They were 25, 31, 35 and 50 years old respectively. 1 gassed himself, 2 shot themselves and one jumped from a height. One of the shooting cases survived in hospital for 6 days. None of the victims left suicide notes, while 2 had expressed the wish to die. In one case the victim had 2 previous suicide attempts. 2 of the victims were under treatment for depression prior to death. One of the victims was a masters student in psychology. Two of the suicides were committed at home, 1 in hospital and 1 in the parking area of a shopping center. Blood alcohol levels determined on 3 of the victims showed levels of 0,00 g/100ml in 2 cases and a level of 0,02g/100ml in the other case. Toxicological investigations were done in 2 cases, one of which was negative. A sub-therapeutic level of Cyclizine was present in the second case. None of the victims had been notified of their HIV status recently. Studies done amongst intravenous drug users revealed that notification of positive HIV status does not appear to lead to a sudden and substantial rise in suicide or "accidental" overdose death (96).

REFERENCES

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5.7 SUICIDE IN PATIENT WITH PSYCHIATRIC DISEASE

As mentioned before, 44 of the victims were known to have had a psychiatric disease or complaint. 36 of the victims were being treated for their illness. In 8 cases the victims had signs and symptoms of depression, but failed to go for treatment.

Table 5.1 illustrates the number of patients with psychiatric disease and whether they were treated or not.

TABLE 5.1: PSYCHIATRIC DISEASES AND TREATMENT OF THE VICTIMS

DISEASE	TREATED	NOT TREATED	NUMBER OF CASES
DEPRESSION	27	8	35
SCHIZOPHRENIA	3	0	3
MANIC-DEPRESSIVE	1	0	1
HALLUCINATIONS	1	0	1
UNKNOWN	4	0	4
TOTAL	**36**	**8**	**44**

Psychiatric disease has been reported as the strongest predictor of suicide. Bipolar disorders and schizophrenia were also associated with a higher risk of suicide (23). Alcohol abuse has also been reported to play a major contributing role in these suicides (23).

The ages ranged from 19 to 79 years. The average age was 44,6 years

The gender and racial distribution of the victims are illustrated in table 5.2.

TABLE 5.2: RACIAL AND GENDER COMPOSITION OF THE VICTIMS WITH PSYCHIATRIC DISEASE

RACIAL GROUP	GENDER		TOTAL
	MALE	FEMALE	
AFRICAN	4	0	4
COLOURED	8	1	9
WHITE	22	9	31
TOTAL	**34**	**10**	**44**

14 of the victims had made previous suicide attempts. 10 had left suicide notes while 16 had expressed the wish to die.

The methods of suicide are illustrated in table 5.3.

TABLE 5.3: THE METHOD OF SUICIDE AMONGST VICTIMS SUFFERING FROM PSYCHIATRIC DISORDERS

METHOD	CASES
SHOOTING	11
OVERDOSE	8
CO-POISONING	9
HANGING	8
TRAIN FATALITIES	3
JUMP	2
SUFFOCATION	2
DROWNING	1
TOTAL	**44**

5.7.1 ALCOHOL INTOXICATION

Blood alcohol analysis was done on 38 of the victims.

The alcohol levels are illustrated in table 5.4.

TABLE 5.4: THE POST-MORTEM ALCOHOL LEVELS OF THE VICTIMS WITH A BACKGROUND OF PSYCHIATRIC DISEASE

ALCOHOL LEVEL	CASES
0,00g/100ml	23
0,01-0,05g/100ml	4
0,06-0,1g/100ml	1
0,11-0,2g/100ml	5
0,21-0,3g/100ml	4
>0,3g/100ml	1

5.7.2 TOXICOLOGY

Toxicological investigation of the 8 victims who allegedly took tablets or chemicals showed one victim having taken a poisonous substance, namely Jeye's Fluid. The other victims all took medicinal substances. Only 2 cases used Paracetamol, the rest using prescription medication namely Amitriptyline (antidepressant), Xanor (anxiolytic), Imovane (hypnotic and sedative), Librax and Indural.

REFERENCES

23. Hirschfeld RMA, Russell JM. Assessment and treatment of suicidal patients. The New England Journal of Medicine. 1997, September 25: 910 - 915.

5.8 THE AGED VS. THE YOUNG

13 of the victims were younger than 20 years and 16 of the victims were 60 years and older. The gender and racial differentiation is illustrated in table 5.5.

TABLE 5.5: THE RACIAL AND GENDER DIFFERENTIATION OF THE YOUNG AND ELDERLY VICTIMS

	AFRICAN		COLOURED		WHITE	
	MALE	**FEMALE**	**MALE**	**FEMALE**	**MALE**	**FEMALE**
< 20 Y	4	1	5	2	1	0
> 59 Y	0	0	2	0	9	5

The reasons for the suicide in the younger group were predominantly related to personal and relationship problems and arguments. One young girl was pregnant while another one had been raped. Only one of the victims in this age group suffered from a physical disease. In 2 of the cases in the young male group the reason for the suicides were unknown to their families. In both cases there was a strong suspicion of tendencies toward homosexuality, but both families denied it. In the older age group the reasons for the suicide were mainly mental and physical disease and the loss of a spouse.

The methods used are illustrated in table 5.6.

TABLE 5.6: THE DIFFERENT METHODS USED IN THE DIFFERENT AGE GROUPS

METHOD	AGE	
	<20	>59
SHOOTING	2	6
HANGING	5	2
BURNS	3	0
JUMP	1	1
OVERDOSE	2	1
SUFFOCATION	0	1
TRAIN FATALITY	0	1
CO-POISONING	0	4
TOTAL	**13**	**16**

The suicide methods of choice for the elderly people of Spain and Ireland were jumping from a height, hanging, drowning and poisoning (12) (13). The leading cause of suicide amongst the Irish youths was hanging (14) and firearm injuries amongst the Americans (15).

4 people in the elderly group left suicide notes and only 1 youngster left a note. 10 of the elderly group and 6 of the youngsters committed suicide at home.

5.8.1 ALCOHOL LEVELS

Blood alcohol levels were determined on 12 victims in the elderly group and 6 in the young group. 8 of the elderly group had alcohol levels of 0,00g/100ml. The other 4 had relatively low levels namely 2 of 0,02g/100ml, 1 of 0,07g/100ml and 1 of 0,08g/100ml respectively. In the younger group 3 cases showed levels of 0,00g/100ml, while the others showed levels of 0,06g/100ml, 0,19g/100ml and 0,23g/100ml respectively.

REFERENCES

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CHAPTER 6

TOXICOLOGY

18 of the 157 victims died due to an overdose of medication or poisoning (11,5%). The age group ranged from 19 to 77 years, with an average age of 40,7. The gender and racial distribution is illustrated in table 6.1.

TABLE 6.1: THE RACIAL AND GENDER DISTRIBUTION OF THE VICTIMS WHO TOOK AN OVERDOSE OF MEDICATION OR POISON

	MALE	FEMALE	TOTAL
AFRICAN	2	1	3
COLOURED	3	5	8
WHITE	5	2	7
TOTAL	**10**	**8**	**18**

The reasons for the suicides were mainly psychiatric disorders (44,4%), followed by individual cases of the loss of a spouse, financial problems, physical illness, rape and an argument with the parents. 9 of the victims survived in hospital, the time ranging from 30 minutes to 17 days. 72,7% of the cases in the study material did not leave notes behind, while 60% expressed the wish to die. 72,7% of the cases studied committed suicide at home. 40% of the study material were unmarried, 26,7% married, 13,3% divorced and 20% widowed.

6.1 THE DRUGS AND CHEMICALS INVOLVED:

Table 6.2 illustrates the different drugs used by the victims who overdosed.

TABLE 6.2: DRUGS USED BY THE VICTIMS WHO OVERDOSED

DRUG/ CHEMICAL	TYPE OF DRUG	CASES
AMITRIPTYLINE	PRESCRIPTION DRUG	6
PARACETAMOL	OVER THE COUNTER DRUG	4
XANOR	PRESCRIPTION DRUG	1
LIBRAX	PRESCRIPTION DRUG	1
IMOVANE	PRESCRIPTION DRUG	1
INDURAL	PRESCRIPTION DRUG	1
VERAPAMIL	PRESCRIPTION DRUG	1
JEYE'S FLUID	CHEMICAL	1
CLOZAPINE	PRESCRIPTION DRUG	1
BRAKE FLUID	CHEMICAL	1
TRICYCLIC	PRESCRIPTION DRUG	2

In all the cases except one the medication was prescribed to or bought by the deceased. A Scottish study showed analgesics and tricyclic antidepressants were the most commonly used drugs (7).

6.2 ALCOHOL ABUSE AND INTOXICATION

2 cases had fatty changes of the liver and one had cirrhosis. Blood alcohol levels were determined on 13 of the 18 cases. 8 cases had alcohol levels of 0,00g/100ml. The other 5 cases had levels ranging from 0,13g/100ml to 0,19g/100ml.

6.3 TOXICOLOGY IN CASES WITH OTHER MEANS OF SUICIDE

Toxicology screens were also performed on 15 other cases. These victims committed suicide by means of CO-poisoning (4), drowning (1), hanging (3), shooting (4), stabbing (1), suffocation (1) and train fatality (1). 9 of these cases

showed negative results. The 3 positive cases showed traces and sub-therapeutic levels of Cyclizine (antihistamine), Loprazolam (hypnotic and sedative), Sertraline (antidepressant) and Flunitrazepam (hypnotic and sedative).

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CHAPTER 7

SUMMARY AND CONCLUSION

Suicide is a major health issue that should be addressed by the government.

Suicide can easily be overlooked and viewed as an accident. One should give careful consideration to the circumstances surrounding the death and the background of the deceased. Forensic Pathologists should always have an open mind about autopsy findings and correlate them with the history supplied by the police. Autopsies on suspected or known suicide cases should never be brushed off as easy cases and left in the hands of the most junior staff members who might overlook something crucial. The magistrate of the Inquest court will make the final decision as to the cause of death and the evidence and opinion of the pathologist as expert witness plays a crucial role in the process to determine whether a death was due to suicide, homicide or an accident.

The groups that stand out in this study are the White population, especially the elderly Whites, as well as the young African men. It is interesting to note that in both groups loneliness played a major role. In the African group the loneliness stems from their lifestyle of leaving the rural area to come and look for employment in Cape Town. Once here they often cannot find work and have to live in a shack that they often have to share with other people. They miss their families and wives and may engage in extra-marital affairs. As a result of all these factors a conflict may start building up involving these issues. In the elderly White group the loneliness stems from the loss of a spouse, illness and family that has basically rejected them.

A very high percentage of the victims had a background of psychiatric disease

with the majority of the patients being treated by health care workers.

Most of the suicides occurred around the house with the majority of victims not leaving notes and/ or expressing the wish to die.

There is absolutely no correlation between the weather patterns and the lunar phase and the incidence of suicide. Sunday is the day of the week with the highest incidence, with the afternoon as the peak time.

The majority of the victims were unmarried.

There was a high percentage of unemployment and people from the below-average income group.

The majority of the victims were sober at the time of death.

The majority of the victims who shot themselves used their own guns. The guns were bought as means of self-protection. The head was the preferred site to inflict the injury.

Train fatalities and hangings as means of suicide were of major concern amongst the African men.

Suffocation and drowning, as a means of suicide, is relatively rare in South Africa, but 4 cases were identified in this study. In all 4 of these cases there was no reason to suspect anything but suicide by these means.

Self-incineration proved to be a suicide not restricted to one racial group.

CHAPTER 8

RECOMMENDATIONS

The health care workers should have resources and infrastructures available to recognize and treat potential victims. There should be awareness of the high number of patients who were being treated for their psychiatric disorder at the time of their suicides. Also to be noted is the fact that patients used their prescribed medication as the means to their suicides. One should consider giving medication in smaller amounts of tablets or maybe to dispense it to a family member who can oversee the taking of the medication on a daily basis. Care should also be taken where the suicidal patient is admitted to hospital. Even if the patient is hospitalised on the ground floor, without careful supervision he can use multiple methods of suicide in hospital. There should also be infrastructures available for the potential victims in the poorer communities where there is a severe shortage of health care workers.

Gun legislation might reduce the number of gunshot cases. In cases where the victim is very desperate, he/she will use any means available. In cases where the suicide act was an impulsive decision, fatalities can be avoided.

The majority of the train fatalities occurred at the railway station. There should be stricter control of access to stations and railway lines.

Prison suicides are always a problem for the prison authorities. Procedures should be applied to identify the potential victim. In cases where the prisoner is identified as a suicide risk consideration should be given to close-camera surveillance in a single cell. Ethically it would not be acceptable to keep a prisoner under surveillance, but in view of its life-saving potential it should be considered. The

role of the clinical psychologist, employed by the department of Correctional Services, is underrated and not valued.

Support systems for the bereaved family members should also be implemented. Urgent attention should be given to the possibility of appointing a full-time psychologist and/or nurses at all medicolegal laboratories in the country in order to supply and offer bereavement support and counseling to care for the emotional needs of bereaved families.

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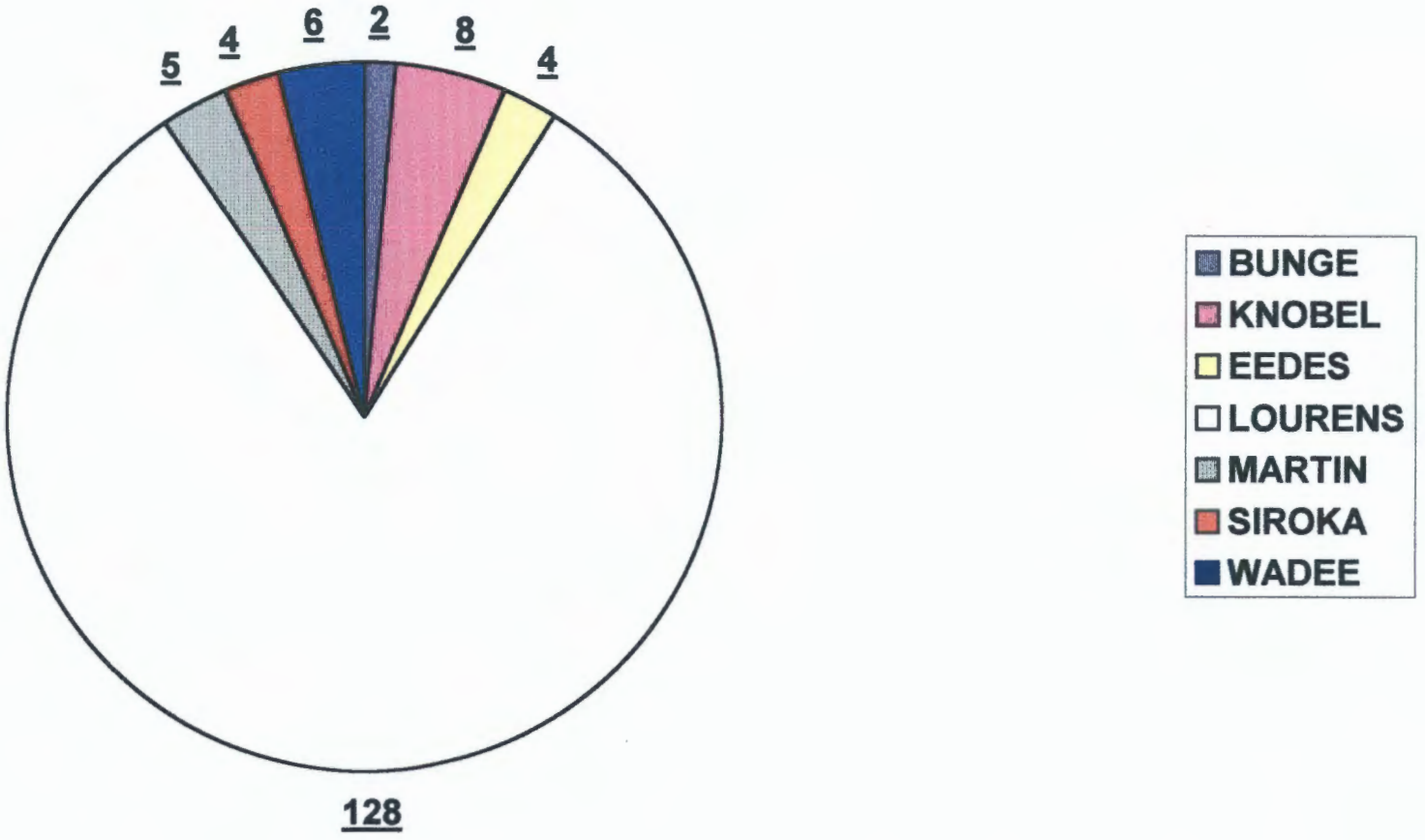
ANNEXURE A: CASE DISTRIBUTION AMONGST PATHOLOGISTS



ANNEXURE B

DR **PATHOLOGIST** K W B E L M S

AGE RACE B C A W SEX M F

METHOD OF SUICIDE

SHOT *Own gun?* Y N
Calibre
Region of body

HANG *Ligature*
From what?

CO

JUMP *From where?*
How high?

BURNS *Flamable agent*

OD *Agents*

Over the counter
Prescribtion
Drugs
Poison

Who's tablets?

DROWNING

TRAIN

OTHER

SURVIVED IN HOSPITAL?

YES

Date of attempted suicide:
Time of attempted suicide:
Day of attempted suicide:

NO

Date of suicide:
Time of suicide:
Day of suicide:

MARITAL STATUS

Married	Unmarried	Divorced	Widow/er

JOB

SOCIO-ECONOMIC CLASS

Below average	Average	Above average

REASON FOR SUICIDE

Financial
Health
Loss of spouse or family member
Fight with boyfriend / girlfriend
Depression
Stress
Alcohol abuse
Other

ANNEXURE B

PREVIOUS ATTEMPT | Yes | How many times?
Methods used?

| No |

SUICIDE LETTER | Y / N |

COMMUNICATED THE WISH TO COMMIT SUICIDE | Y / N |

WHERE?

AT HOME Room /Area

AWAY FROM HOME

WAS SOMEBODY PRESENT AT THE TIME? | Y / N |
In front of the witness? | Y / N |
If not, where was the witness?

WHO DISCOVERED THE BODY

HISTORY OF ALCOHOL ABUSE | Y / N |

POST - MORTEM

Evidence of chronic alcohol abuse? | Y / N |
If yes, what is the evidence.
Alcohol level
Toxi
Pathology

SHOT	Area of body
	Direction of wound path
HANG	Signs of anoxia
	Fractures of the thyroid cartilage or hyoid bone
CO	Level
	Signs of anoxia

AREA

INFORMATION FROM: | SAP | FAMILY | COURT |

ANNEXURE C

LABORATORY INVESTIGATIONS

BLOOD ALCOHOL LEVELS

All the blood samples collected from the individual bodies were collected from the femoral vessels, to obviate the problem of postmortem diffusion of alcohol from the stomach to the central vessels. The blood collected was preserved in a glass bottle that contains 100mg Sodium fluoride and 22mg Potassium oxalate. The former prevents bacterial fermentation and the latter acts as an anti-coagulant. The blood samples were analysed by the Forensic Chemical Laboratory, where each sample was analysed in duplicate on different gas chromatographs. These results where then compared and only accepted if the difference was less than 0,001 g/100ml. In cases where the results were unaccepted, the tests were redone.

CARBON MONOXIDE LEVELS

Blood for carbon monoxide analysis was also obtained from the femoral vessels, although any blood from any site of the body would be accepted as a representative sample. The blood samples were sent to the Forensic Chemical Laboratory in the same bottles as the blood for alcohol analysis. The carbon monoxide levels were determined once by means of gas spectrometry.

TOXICOLOGY

Where the cases came in as definite suicides due to an overdose of tablets and/or poison, the stomach, the stomach contents, the liver, the kidneys, femoral blood and urine (if available) were sent for analysis. The specimens were placed in chemically cleaned plastic bottles and sealed in toxicology boxes. These boxes were sent to the Forensic Chemical Laboratory for analysis. In cases of suicide by other means, but with the suspicion of an intake of a medicinal substance and/or a poisonous substance, femoral blood was sent for analysis to the same laboratory. At the laboratory the samples would

be weighed, minced and a representative extract would be collected. All the specimens were screened for all known chemicals, pesticides and narcotics. This general screen was done with gas chromatography. Drug/poison quantification would only be done after identification of the specific drug.