**SOCIO-DEMOGRAPHIC AND CLINICAL PROFILES OF SUICIDE ATTEMPTERS ADMITTED TO HOSPITALS SOUTH OF DURBAN, SOUTH AFRICA**

**Key words:** suicide attempters, characteristics, South Africa

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**Abstract**

**Background:** Suicidal behaviour has become a major public health concern world-wide. Non-fatal suicidal attempts outnumber fatal episodes by wide ranging figures across and within many countries. Approximately 6500 suicides and 130 000 suicide attempts occur annually in South Africa. At least one suicide occurs every 40 seconds in South Africa compared to one suicide attempt every three seconds. All forms of suicidal behaviour occur more commonly in younger persons. This study aimed to analyse characteristics of suicide attempters admitted to two community based state hospitals in the south of Durban, South Africa.

**Methods:** All adult patients presenting at two university affiliated state hospitals following a suicide attempt during a two year period were invited to participate in the study. A WHO standardised questionnaire was used to collect basic data relating to the suicide attempt. All participants provided informed consent. Data was analysed using SPSS®-version 19.

**Results**: The majority of the 688 participants were female, young, single, unemployed, low income earners, of Indian ethnicity, belonging to the Christian faith, and having a primary school education. Four hundred and thirty eight participants (63.7%) were found to be suffering from varying levels of depression. The majority of suicide attempts (97.2%) had taken place within the home environment of the attempters. Self-poisoning emerged as the dominant method used by 92.2% of all attempters.

**Conclusion**: Disturbing levels of non-fatal suicidal behaviour were found in all population groups. A number of modifiable factors were identified. These have implications for health care policy planners and prevention strategies.

**(250 words)**

**Introduction**

Suicidal behaviour has become a major public health concern in South Africa and elsewhere. Reported figures indicate that this phenomenon is listed among the top ten causes of death in many countries. At least one million people commit suicide globally per annum. Based on current trends, it has been predicted that this number will increase to a staggering 1.53 million per annum by 2020.[1](#_ENREF_1) Literally speaking, this would translate to one suicide globally every 20 seconds compared to one every 40 seconds in 2000. Non-fatal suicide attempts outnumber fatal episodes by an equally alarming figure ranging from 10 – 20 times more per year, and in some countries, this figure is as high as 40 times more common than suicides.[2](#_ENREF_2)

In South Africa, approximately 6 500 suicides and 130 000 suicide attempts occur annually.[3](#_ENREF_3) Nearly two-thirds of persons committing suicide are reported to be in the younger age group of 20-39 years of age with a male to female ratio of 5: 1. Accurate and reliable data on adolescent and child suicide in South Africa are not available.[4](#_ENREF_4) However, it has been estimated that 9.5 % of all non-natural deaths in young people are due to suicides, and that this figure closely approximates the adult suicide rate in this country. A recent report in a local daily newspaper also alerted readers to an alarming increase in youth suicide and other forms of suicidal behaviour in Chatsworth,( a suburb in Durban, South Africa, where Indian South Africans are the dominant racial/ethnic group) viz. 67 deaths for the period January-June 2005 compared to 25 for the same period in 2004.[5](#_ENREF_5) [6](#_ENREF_6) Recent studies have provided reliable information that suicidal behaviour among all socio-demographic or ethnic groups has become increasingly prevalent in South Africa, and that the South African figures for non-fatal suicidal behaviour are similar to those reported elsewhere in the world.[1](#_ENREF_1),[4](#_ENREF_4) Community surveys by the World Health Organization (WHO) reported a life time prevalence of non-fatal suicidal behaviour or attempted suicides of 0.4- 4.2%.

The problem of non-fatal suicidal behaviour among young South Africans is very serious.[7](#_ENREF_7) Up to 33% of all non-fatal suicidal behaviours have involved children and young adults. [4](#_ENREF_4) The South African ratio of non-fatal to fatal suicidal behaviour is estimated to be 20: 1 or higher, which is comparable to the WHO’s global reported rates. [2](#_ENREF_2),[8](#_ENREF_8) Generally, three times as many females engage in non-fatal suicidal attempts compared to males.[4](#_ENREF_4)

The extent and characteristics of suicidal attempts in South Africa have been described in a number of hospital and community based studies. For example, a mean age of 25 years for non-fatal suicidal behaviour was reported in a general hospital sample in Johannesburg, South Africa.[9](#_ENREF_9) In another hospital based study, the peak age was recorded in the 20-29 year age group followed by 10-19 year group.[10](#_ENREF_10) In some centres, non-fatal suicidal behaviour had increased significantly by up to 58.10% over the past decade; some reports have indicated that at least 24.5% of the total number of patients admitted following attempted suicides were Black youths aged below 18 years.[11](#_ENREF_11) A study on parasuicide (described by the authors as a form of non-fatal suicidal behaviour where there is no intention to die and is akin to “attention-seeking behaviour”) among Black South African subjects with a mean age of 23.5 years, who presented to a general hospital in 1993 revealed the majority to be women, first-attempters, single and having experienced early parent loss.[12](#_ENREF_12) A community based study done in 1993 among 7 340 high-school students in the Cape Peninsula, South Africa found disturbing levels of non-fatal suicidal behaviour ranging from suicidal ideation (19%) to suicidal attempts (7.8%) in the 12 month period prior to the study.[13](#_ENREF_13) Similar findings were reported by the Medical Research Council in South Africa following a survey of high school learners in KwaZulu-Natal, South Africa, in which 17.9% of the learners considered attempting suicide, 14.2% designed a plan to commit suicide, 15.6% made one or more attempts and 24.6% of suicide attempters required medical treatment.[14](#_ENREF_14)

The current study was undertaken to analyse the prevalence and associations between various socio-environmental and clinical characteristics in a cohort of suicide attempters who required hospital admission to two public hospitals in the south of Durban, South Africa during the study period September 2007-March 2010.

**Method**

This cross-sectional epidemiological study was conducted at two local state-funded and university affiliated public hospitals in the south of Durban during the period September 2007- March 2010. In 2001, it was reported that at least 3.3 million people live in Durban.[15](#_ENREF_15) It is now believed that this figure has grown to at least 4 million mainly because of the increased number of people living in informal settlements. Blacks comprise 69%, followed by Indians (19.9%), Whites (9.0%) and Coloureds (2.8%). The average household income was reported as R44 391 per annum, and the per capita income was given as R8 726.[15](#_ENREF_15) The catchment population of each hospital comprises mainly residents and to lesser extent employees working within the industrial belt adjacent to each hospital. Collectively, both hospitals attend to at least 3000 ambulatory patients daily, the majority of which are of Indian and Black African ethnicity.

The study population comprised all adult patients (18 years and over) admitted to these two hospitals immediately following a suicide attempt during the study period. Following treatment, stabilization and initial counselling, all these patients were invited to participate in the study. This cross-sectional study received ethical approval from the University of KwaZulu-Natal (Reference HSS/0181/06D) and written permission from both state hospitals. Voluntary informed consent was obtained from each participant.

A WHO validated questionnaire was used to elicit socio-demographic data and associated relevant risk factors from each participant.[16](#_ENREF_16) This questionnaire was individually administered by a research assistant and /or the researcher immediately prior to discharge of the participant as a patient from the admission ward. The intake part of the questionnaire included components such as socio-demographic variables, a description of the context or circumstances relating to the suicidal attempt that necessitated admission, previous suicidal attempts, family history and co-morbid illnesses. The purpose of this part of the questionnaire was to evaluate the presenting suicidal behaviour, contextual factors and circumstances as well as co-morbid physical or mental illnesses. The Beck Depression Inventory (BDI) was used to objectively diagnose and categorise depression in these participants [17](#_ENREF_17),[18](#_ENREF_18).

The Statistical Software Package for Social Science® version 19 (SPSS Inc., Chicago, USA) was used for data analysis. Simple descriptive and inferential statistics were used to assess the relationship between variables. Pearson’s Chi Square was used to perform univariate analyses. A p<0.05 was considered statistically significant.

**Results**

Six hundred and ninety suicide attempters were identified as being eligible to participate in the study. Two patients refused to participate for personal reasons. The racial/ethnic composition of the study participants is illustrated in Table 1. One female participant did not divulge her race group. Indian participants constituted the majority, and this was followed by Blacks, Coloureds and Whites. In terms of gender and race, Indian males (14.7%) and Indian females (40.0%) dominated other race groups. Gender analysis per race group reflected a higher composition of females in each group. Generally speaking, the majority of suicide attempters were females (n=516; 75%), younger age i.e. less than 40 years of age (n=578; 84.0%), single (n=450; 65.4%), unemployed including students (n=384; 55.8%), highest educational level being primary school education (n=437; 63.5%), belonging to the Christian faith (n=470; 68.3 %), and low income category i.e. less than ZAR 30 000 per annum (n=598; 86.9%).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Table I: Socio-demographic characteristics of participants (N=688)** | | | | | | |
| **Variable** | **Males** | | **Females** | | **Total** | |
|  | **n** | **%** | **n** | **%** | **N** | **%** |
| **Race/ethnicity:** |  |  |  |  |  |  |
| Black African | **33** | **4.8** | **127** | **18.5** | **160** | **23.3** |
| Coloured | **25** | **3.6** | **81** | **11.8** | **106** | **15.4** |
| Indian | **101** | **14.7** | **275** | **40.0** | **376** | **54.7** |
| White | **13** | **1.9** | **32** | **4.6** | **45** | **6.5** |
| Non-disclosure | **0** | **0** | **1** | **0.1** | **1** | **0.1** |
| **Age(years):** |  |  |  |  |  |  |
| <20 | **26** | **3.8** | **170** | **24.7** | **196** | **28.5** |
| 20-29 | **85** | **12.3** | **172** | **25.0** | **257** | **37.3** |
| 30-39 | **38** | **5.5** | **87** | **12.7** | **125** | **18.2** |
| 40-49 | **17** | **2.5** | **58** | **8.4** | **75** | **10.9** |
| 50-59 | **5** | **0.7** | **24** | **3.5** | **29** | **4.2** |
| >59 | **1** | **0.1** | **4** | **0.6** | **5** | **0.7** |
| Non-disclosure | **0** | **0** | **1** | **0.1** | **1** | **0.1** |
| **Marital status:** |  |  |  |  |  |  |
| Single | **113** | **16.4** | **337** | **49.0** | **450** | **65.4** |
| Married | **42** | **6.1** | **135** | **19.6** | **177** | **25.7** |
| Widowed | **4** | **0.6** | **8** | **1.2** | **12** | **1.7** |
| Divorced/Sep. | **13** | **1.9** | **36** | **5.2** | **49** | **7.1** |
| **Family Type:** |  |  |  |  |  |  |
| Nuclear | **134** | **19.5** | **412** | **59.9** | **546** | **79.4** |
| Extended | **21** | **3.1** | **60** | **8.7** | **81** | **11.8** |
| Living alone | **11** | **1.6** | **16** | **2.3** | **27** | **3.9** |
| Other | **6** | **0.9** | **27** | **3.9** | **33** | **4.8** |
| Non-disclosure | **0** | **0** | **1** | **0.2** | **1** | **0.2** |
| **Occupation:** |  |  |  |  |  |  |
| Student | **27** | **3.9** | **157** | **22.8** | **184** | **26.7** |
| Unemployed | **48** | **7.0** | **152** | **22.1** | **200** | **29.1** |
| Professional | **57** | **8.3** | **135** | **19.6** | **192** | **27.9** |
| Labourer | **31** | **4.5** | **48** | **7.0** | **79** | **11.5** |
| Other | **9** | **1.3** | **24** | **3.5** | **33** | **4.8** |
| **Income p.a.(ZAR):** |  |  |  |  |  |  |
| <30 000 | **127** | **18.5** | **471** | **68.5** | **598** | **86.9** |
| 30 000-70 000 | **31** | **4.5** | **36** | **5.2** | **67** | **9.7** |
| >70 000 | **12** | **1.7** | **7** | **1.0** | **19** | **2.8** |
| Non-disclosure | **2** | **0.3** | **2** | **0.3** | **4** | **0.6** |
| **Education:** |  |  |  |  |  |  |
| Nil | **4** | **0.6** | **16** | **2.3** | **20** | **2.9** |
| Primary | **107** | **15.5** | **330** | **48.0** | **437** | **63.5** |
| Secondary | **30** | **4.4** | **103** | **15.0** | **133** | **19.3** |
| University | **5** | **0.7** | **10** | **1.4** | **15** | **2.2** |
| Other tertiary | **25** | **3.6** | **56** | **8.1** | **81** | **11.8** |
| Other | **1** | **0.1** | **1** | **0.1** | **2** | **0.3** |
| **Religion:** |  |  |  |  |  |  |
| Christianity | **102** | **14.8** | **368** | **53.5** | **470** | **68.3** |
| Hinduism | **49** | **7.1** | **98** | **14.2** | **147** | **21.3** |
| Islam | **11** | **1.6** | **32** | **4.6** | **43** | **6.2** |
| Other | **10** | **1.4** | **16** | **2.3** | **26** | **3.8** |
| Non-disclosure | **0** | **0** | **2** | **0.3** | **2** | **0.3** |

Analysis of the social habits of all participants and other associated contextual features is reflected in Table II. This shows that 41.1% of the total numbers of participants were active smokers at the time of admission, and 34.7% consumed alcohol. Females outnumbered males in both analyses (23% compared to 18.2% in smoking and 18.8% compared to 16.0% in alcohol use). Statistically significant gender differences were recorded for both variables.

**Table II: Associated features in suicide attempters (N=688)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Characteristic** | | **Males** | | **Females** | | **Total** | |
| **n** | **%** | **n** | **%** | **N** | **%** |
| **Social Habits\*** | **Cigarette use\*** | 125 | 18.2 | 158 | 23 | 283 | 41.1 |
| **Alcohol use\*** | 110 | 16.0 | 129 | 18.8 | 239 | 34.7 |
| **Co-morbid**  **Illness** | **Depression** | 99 | 14.4 | 339 | 49.3 | 438 | 63.7 |
| **Medical** | 56 | 8.1 | 153 | 22.2 | 209 | 30.4 |
| **Previous**  **attempts** |  | 61 | 8.9 | 186 | 27.0 | 247 | 35.9 |
| **Place of current**  **attempt** | **Home** | 166 | 24.1 | 503 | 73.1 | 669 | 97.2 |
| **Other** | 6 | 0.9 | 13 | 1.9 | 19 | 2.8 |
| **Method** | **Self-poisoning** | 151 | 22.0 | 483 | 70.2 | 634 | 92.2 |
| **Hanging** | 8 | 1.2 | 2 | 0.3 | 10 | 1.5 |
| **Blunt/sharp object** | 3 | 0.4 | 14 | 2.0 | 17 | 2.5 |

\*P<0.05

Co-morbid long standing medical illnesses such as Diabetes Mellitus, Essential Hypertension, etc. were reported by 30.4% of all participants, and particularly in females (22.2%) compared to males (8.1%).There were no self-reported cases of any form of mental illnesses such as depression. However, 488 (63.7%) were found objectively (using the BDI) to be suffering from varying grades of depression (ranging from mild to severe).The cut-off score using this method to diagnose depression was 10. More females (49.3%) were found to be suffering from depression compared to males (14.4%).

The majority of current suicidal attempts (97.2%) had taken place within the home environment of the attempters. Previous suicide attempts were reported by 247 (35.9%) participants; these comprised 27.0% females and 8.9% males. Self-poisoning emerged as the dominant method used by suicide attempters (n=634; 92.2%).This was followed by self– inflicted injuries with blunt/sharp objects in 2.5% of participants and attempted hanging in 1.5% of all participants.

**Discussion**

The evidence produced in this study enriches our common understanding of a variety of socio-demographic and clinical characteristics prevalent in suicide attempters, and has clinical implications for helping to identify individuals at risk as well as in establishing effective interventions for these vulnerable groups.

It is important to note that this study was conducted in two adjoining suburbs in southern Durban where certain population groups predominate. Indians constituted the majority of suicide attempters admitted to both state hospitals used in the study. This was followed by Black African, Coloureds, and then by Whites. Ethnic or racial categories are a social construct that has historical roots and broadly reflect the diversity of South Africa. Statistics South Africa continues to classify people into ethnic or racial groups.[15](#_ENREF_15) These categories are listed as Black African, White, Coloured and Asian/Indian, and do not represent any intra-group diversity.[3](#_ENREF_3) Certain race groups are highly concentrated in the vicinity of both hospitals; for example, Indians are highly concentrated close to one of the state hospitals used whereas the Coloured population group are found in large numbers close to the other state hospital. Black Africans resident in the extensive catchment area of both hospitals (designated by the provincial department of health) comprise at least 50% or more of the users of these hospitals. The high number of Black African suicide attempters in this study mirrored the increased prevalence in this race group observed in several other studies.[11](#_ENREF_11),[12](#_ENREF_12)

The majority of suicide attempters were of younger age (< 40 years), unemployed, single marital status and living within nuclear family systems. Similar characteristics were found in other community based studies.[4](#_ENREF_4),[9](#_ENREF_9),[10](#_ENREF_10),[13](#_ENREF_13),[19](#_ENREF_19) Additionally, our study showed the majority of suicide attempters to be low income earners. This finding is similar to that found locally[7](#_ENREF_7) and in data from three national surveys in the United States of America conducted between 2001 and 2003, which showed an inverse relationship between income and psychological distress; those in the lowest income bracket demonstrating significant distress.[20](#_ENREF_20)

The vast majority of suicide attempts took place within the micro-environment viz. within the home or usual residence of the attempter. This finding may imply that poor family functioning and inter-personal problems may be at play as a stressor in precipitating the resultant impulsive suicidal behavioural action within or close to the home of the perpetrator. Easy accessibility to agents such as analgesics, prescribed medicines, household detergents and inflammable agents (such as paraffin) available within or close to the home environment and which were used in the suicidal attempts may have also been an influential factor. Similar findings were recorded in a number of studies done in South Africa.[21-24](#_ENREF_21)

A wide range of methods were used by suicide attempters in our study. These included self-poisoning, hanging, blunt/sharp or moving objects, guns and self-immolation. The exact method used generally depends on a number of factors such as intention to die (high or low), intensity of the trigger factor and the ensuing crisis, threshold of tolerance to trigger factors and its relation to the critical turning point, personal and/or popular choices in terms of prior proven effectiveness and producing the desired result, access to the agent or instrument to be used, and the environment where the act is planned to take place. In this study, the majority of suicide attempts took place within the home environment. Accessibility to the agent or instrument used could have influenced the choice of location of the suicide attempt.[4](#_ENREF_4) Self-poisoning emerged as the leading method of choice in all studied groups and particularly in females. The commonly used agents included non-opioid analgesics, anti-pyretics, anti-rheumatic drugs, sedative-hypnotic and psychotropic agents. These findings were also made in a number of other studies.[12](#_ENREF_12),[25-27](#_ENREF_25) The authors of these studies expressed a shared concern that a large number of cases of self-poisoning involved household medicines and agents that were easily available such as paracetamol, anti-diabetic tablets, benzodiazepines, methyl salicylate ointment, paraffin, detergents and insecticides, and have endorsed a call for increased awareness, education and vigilance among parents, families and householders.[4](#_ENREF_4),[11](#_ENREF_11),[28](#_ENREF_28),[29](#_ENREF_29)

A large number of participants (37%) reported previous attempts. Females outnumbered males for this variable. Similar findings were reported in studies done in South Africa and elsewhere.[1](#_ENREF_1),[4](#_ENREF_4),[30-32](#_ENREF_30) Several studies have commented that previous attempts constituted the strongest risk factor predictor for further attempts and completed fatal suicidal behaviour.[19](#_ENREF_19),[33](#_ENREF_33),[34](#_ENREF_34) This finding therefore provides an excellent opportunity for families, clinicians and psychotherapists to intervene timeously and constructively. A collaborative synergistic approach by all identified stakeholders within a multi-disciplinary network working towards holistic personal development and strengthening of individuals at risk and inter-personal relationships have been identified as powerful interventions for prevention.

Analysis of the social habits of suicidal attempters in this study showed that a significant number of both sexes smoked cigarettes (41.1%) and consumed alcohol (34.7%). Statistically significant gender differences were recorded for both variables studied. Risk taking behaviour which includes psychoactive substance use such as cigarette smoking and alcohol has been found to be a significant factor in suicidal behaviour in several studies.[13](#_ENREF_13),[35](#_ENREF_35) A call has also been made for more in-depth studies analysing the associations between substance overdose and suicidal behaviour.[36](#_ENREF_36) Although a minority of participants self-reported long-standing illnesses such as lifestyle diseases (30.4%), a large number (63.7%) was found objectively to be suffering from varying degrees of depression. Other studies had identified various psychopathological variables as co-morbid factors in the pathogenesis of suicidal behaviour.[11](#_ENREF_11),[37-40](#_ENREF_37) In South Africa, mood disorders have been recognised as the most common co-morbid illness in two-thirds of Black patients presenting with non-fatal suicidal behaviour.[11](#_ENREF_11) Generally, patients with affective disorders have been referred to as a high risk category for fatal suicidal behaviour especially during in-patient treatment and in the first year following discharge from hospital.[40-42](#_ENREF_40) Depression has been reported to be the strongest correlate of suicidal ideation and suicide attempts (Wild,L.G. et al,2004).These findings have implications for clinicians, mental health policy makers and designers of appropriate prevention strategies.

***Clinical implications of study findings***

All stakeholders including parents, community and youth leaders, health care providers, educators and education programme planners need to be made aware of these findings which place certain individuals at risk. Early and prompt recognition of these individuals together with selective and sustained therapy (including psychotherapy, family therapy, peer mentorship, buddy support, behaviour modification and strengthening of coping strategies) may contribute to a significant reduction of morbidity and mortality in this target group. For example, objective strategies designed to screen and treat effectively for depression earlier before or even after the first attempt may impact significantly in reducing further attempts.

***Limitations***

The data presented are cross-sectional. Any evidence of associations between suicide attempts and clinical /demographic factors or circumstances should therefore not be interpreted as establishing a causal or temporal relationship. Further, the study was conducted in southern Durban only and although the population demography approximates that in the rest of Durban, the study findings in the different population groups cannot be generalised to the rest of KwaZulu-Natal and other parts of South Africa.

Although the questionnaire used in this study made provision for analysing contextual aspects relating to the suicide attempt, two omissions were identified retrospectively in the questionnaire. These related to precise exploration of the precipitating factors leading to the suicide attempt and in-depth exploration of specific co-morbid illnesses (including communicable illnesses such as HIV/AIDS).

**Conclusion**

Suicide attempters are considered high-risk individuals. Several prevailing clinical and socio-demographic characteristics were identified in this cohort of suicide attempters, and which bear similarities to those found in other studies. Because suicidal behaviour is such a complex multi-faceted phenomenon and process with many interacting variables, intervention and management programmes cannot be implemented on a “one size fits all” philosophy, but rather that these should be adapted and individualised for each and every patient. This study endorses the call for a collaborative synergistic multi-disciplinary approach which is comprehensive and embraces all relevant circumstances or factors that are implicated in suicidal attempts. Large scale longitudinal prospective community and population surveys in South Africa are recommended to provide a greater insight into temporal trends of attempted suicide as well as the associations with identified characteristics or risk factors among the different population groups in South Africa.

**(Total 2828 words excluding Tables)**

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