

**The State of Suicidology in South Africa:  
A Content Analysis**

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## **ABSTRACT**

This study reviewed 166 articles related to suicidality in South Africa, published between 1952 and 2003. From these, a table of summarized information was created and then coded. Thereafter, a statistical content analysis was conducted. The results suggested that the field of suicidology requires further specific research into suicidal ideation and murder-suicides. Blacks are under-represented and Indians are over-represented in the publications. The representation of Coloureds in South African suicide research is negligible. Increased research efforts could focus on suicidality (especially suicidal ideation) in relation to masculinity and use male-only samples. There is a need for research to focus on prevention and intervention and to increase the use of qualitative methodologies. These suggestions may prevent the duplication of well-researched areas and refine future research agendas.

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## **FREQUENTLY USED ABBREVIATIONS**

### **Race:**

|    |                                       |
|----|---------------------------------------|
| B  | Black                                 |
| C  | Coloured                              |
| I  | Indian                                |
| MC | Multicultural or 'race not specified' |
| W  | White                                 |

### **Sex:**

|    |               |
|----|---------------|
| F  | Female        |
| M  | Male          |
| MF | Male & female |

### **Suicidal behaviour:**

|      |                              |
|------|------------------------------|
| FSB  | Fatal suicidal behaviour     |
| NFSB | Non-fatal suicidal behaviour |
| SB   | Suicidal behaviours          |
| SI   | Suicide ideation             |

### **Research Aim:**

|   |                       |
|---|-----------------------|
| D | Definitive            |
| E | Explanatory           |
| I | Intervention oriented |
| P | Preventative          |

**Methodology:**

- Q Quantitative and qualitative analysis combined
- Ql Qualitative analysis
- Qt Quantitative analysis

## **Chapter 1. INTRODUCTION**

The increasing prevalence of suicide in South Africa in all ethnic, gender and age categories constitutes a serious challenge to health care professionals and society at large (Schlebusch, 2000). This has stimulated projects and research focusing on statistics, causes, intervention and prevention of suicide-related behaviour and resulted in four international suicidology conferences in South Africa to date.

Suicidal behaviour is not only a major health problem for the individual displaying the behaviour but for family and friends who may be deeply impacted upon by it both personally (Schlebusch, 2000) and by becoming victims of the consequent stigma that is placed upon them (Pretorius, 1989).

Furthermore, suicidal behaviour has major economic implications, placing strain on hospitals for high treatment costs of non-fatal suicides. In this regard Schlebusch (2000), the South African representative to the International Association for Suicide Prevention (IASP), notes that suicide awareness and prevention are gaining increasing prominence and will ultimately save the government and public health system millions in treatment costs.

The study of suicidology has proceeded for some time in South Africa. However, no attempt has to date been made to collect, review and analyse South African suicidology work. This study will attempt to do this.

## **Chapter 2: Literature Review**

The following literature review will aim to provide an overview of general academic knowledge on suicide according to current theories and research data.

### **2.1 Issues of Definition**

Suicidology is “the science of self destructive behaviours” (Maris, Berman & Silverman, 2000, p. 62) and involves many suicide related behaviours including suicidal ideation, indirectly self-destructive behaviour, non-fatal and fatal suicide with varying levels of suicidal intent and outcome. Despite numerous academic discussions on the subject, no final classification system within the field of suicidology exists. There has been much confusion within the field of suicidology regarding terms and definitions. This has resulted in many research studies that are not directly comparable to one another due to the lack of a categorized system for the reliable gathering of data on suicidal behaviour (Soubrier, 1994). The earliest recorded studies on suicide by Durkheim defined three different types of suicide: altruistic, anomic and egoistic. Altruistic suicide referred to suicide that was motivated by the intention to “sacrifice oneself for the good of others”, anomic suicide referred to suicide motivated by the individual’s sense that his/her life no longer has meaning or from a “loss of contact with the norms and values of society”. Egoistic suicide referred to suicide that was motivated by a “deep sense of personal failure” and “a feeling that one is personally responsible for not living up to societal and personal expectations” (Reber & Reber, 2001, p. 724).

The need for a standard nomenclature in suicidology research has been stated repeatedly. Rudd (2000) points out the benefits of such a nomenclature as follows (pp. 58-59):

1. To improve clarity, precision, and consistency of communication between clinicians regarding issues of risk assessment, ongoing management, and treatment
2. To improve clarity in documentation of suicide risk assessment, clinical decision making, related management decisions, and ongoing treatment
3. To eliminate inaccurate and potentially pejorative terminology from our clinical lexicon
4. To improve communication and rapport between the clinician and patient
5. To eliminate the goal of prediction by recognizing the importance and complexity of implicit and explicit suicide intent in determining ultimate clinical outcome
6. To improve clinical practice and research efforts, ensuring some degree of comparison across studies (pp.60-61)

O'Carroll et al. (1996) have suggested a standard nomenclature for describing suicide-related behaviours. According to this nomenclature, suicide-related behaviour refers to "potentially self-injurious behaviour for which there is explicit or implicit evidence *either* that

- a. the person intended at some (nonzero) level to kill himself/herself, or
- b. the person wished to use the *appearance* of intending to kill himself/herself in order to attain some other end" (p. 247).

“Suicide-related behaviour can be divided into two broad categories comprising *suicidal acts* and *instrumental suicide-related behaviour*” (*Ibid*, p. 247). Instrumental suicide-related behaviour involves zero intent to die and suicidal acts involve the intent to die.

Suicidal behaviour, fatal suicidal behaviour, non-fatal suicidal behaviour, suicidal ideation and murder-suicide represent broad categories, which may classify suicidal behaviour. This thesis will make use of these categories, which will be based on the defining criteria presented below:

### 2.1.1 Suicidal Behaviour

Suicidal behaviour is the broadest of the terms and encompasses all of the other terms except for murder-suicide. It refers to all forms of suicidal acts, thus including fatal and non-fatal suicidal behaviour, instrumental suicidal behaviour and suicidal ideation (O’Carroll et al., 1996).

### 2.1.2 Fatal suicidal behaviour

According to Mayo (as cited in Maris et al., 2000), suicide necessarily includes the following criteria:

- i) a death occurs in which
- ii) the agency may be active or passive and this death is
- iii) self-inflicted with the
- iv) intention to end one’s own life.

### 2.1.3 Non-fatal suicidal behaviour

Non-fatal suicidal behaviour refers to what is commonly termed attempted suicide or parasuicide. It refers to any form of intentional self-injury in which the person “does not die and is, thus, available for treatment” (Maris et al., 2000, p.18). It therefore includes any form of deliberate self - harm independent of the level of motivation to die.

According to the World Health Organization, non-fatal suicidal behaviour involves “an act with non-fatal outcome, in which the individual deliberately initiates a non-habitual behaviour that, without intervention from others, will cause self-harm, or deliberately ingests a substance in excess of the prescribed or generally recognized therapeutic dosage, and which is aimed at realizing changes which the subject desired via the actual or expected physical consequences” (van Heeringen, Hawton & Williams, 2000, pp. 50-51).

In addition, non-fatal suicidal behaviour includes risk-taking behaviours and indirectly self-destructive behaviours. These include intentional actions, which may create significant risk to the physical integrity of the person performing the actions. Risk - taking behaviours may include high-risk sports and recreational activities, pathological gambling and self-destructive behaviour, self-mutilation, alcohol and substance abuse, unprotected sexual behaviour, driving recklessly and autoerotic asphyxia. The person engaging in such behaviour is either operating defensively, denying his/her suicidal intent or ignorant of it. The behaviour may be “chronic and repetitive, with the risk for premature death increasing over the term of the behaviour, for example, as in drug abuse or non-compliance with a prescribed medical regimen (such as diabetes treatment).

At the same time each has a certain degree of acute risk, with an increased risk of immediate death or injury attending each and every act” (Maris et al., 2000, p. 427).

#### 2.1.4 Suicidal Ideation

Suicidal ideation refers to “thoughts, ideas, ruminations or fantasies about one’s suicide or overt verbal threats to kill oneself. It refers to cognitions that can vary from fleeting thoughts that life is not worth living, to concrete, well-thought out plans for killing oneself, to an intense preoccupation with self-destruction” (Rutter cited in Madu & Matla, 2003, p. 126).

Suicidal ideators are “individuals who think about or form an intent to suicide of varying degrees of seriousness but do not make an explicit suicide attempt or complete suicide” (Maris et al., 2000, p. 20). Suicidal ideas may be constructed as non-specific, specific, intentional or with a plan for death. The intention to die is “a crucial component in suicidal ideas” but is also a difficult component to measure. In this regard, Beck for example, has developed the Scale for Suicide Ideation, which measures hopelessness, depression, suicidal intention, lethality and availability of the intended method of suicide and protective factors that mitigate suicide (Beck, Kovacs & Weissman, 1979). These components provide an operational estimate of an individual’s level of suicidal ideation.

#### 2.1.5 Murder-Suicide

The concept of murder-suicide has suffered a similar lack of definitional clarity, as have other suicidal related phenomena. Whilst the term *family - murder* is commonly used in academic

literature in South Africa, it has been used interchangeably with other terms such as murder-suicide and extended-suicide. For the purposes of this thesis, the term *murder - suicide* will be used to indicate “when one member of the family kills or attempts to kill the spouse and one or more of the children and subsequently commits suicide.....there has to be an attempt on the life of all members or an intention to kill those members of the family who survive... the family has been destroyed to such an extent that it no longer functions as a family system” (Graser, 1992, p. 13). Family murder and extended-suicide categories fall within the broader category of murder-suicide.

The 1980's saw an increase in awareness of the phenomenon of murder-suicide in South Africa due to the increasing levels of family violence. Much research in the late 70's had been based on speculation (Graser, 1992) and murder-suicide was often misperceived as a predominantly Afrikaner syndrome due to media coverage at the time (Olivier et al., 1991). In a study of newspaper reports, however, Osborne (2002) contradicted this finding.

Most murder-suicides have, been found to be perpetrated by married males who have a lower educational level than their spouse. Alcohol and drug abuse, population and language group and the working hours of the murderer may not play a significant role in the murder. The murderer or family members often sought professional help prior to the incident (Olivier et al., 1991). Graser (1992) adds that the perpetrators of murder-suicides in his study were unemployed, socially isolated, and showed symptoms of depression. The spouses who were murdered were mostly wives, and child victims were an average of seven years old.

Commonly found precipitating factors to murder-suicide may include depression, social isolation, marital, financial and employment problems. Osborne (2001) further specifies amorous jealousy as the most common motive for murder-suicide. Other motives for murder have been shown to include feelings of hopelessness and despair, an attempt to gain control, revenge and the idea that killing one's children means that they will not be abandoned after the intended suicide (Olivier et al., 1991).

## 2.2 Perspectives on Suicide

Maris et al. (2000) trace the first use of the word *suicide* to 1651 deriving from the Latin "*sui* (of oneself) and *cide* or *cidium* (a killing)" (p.30). Since then suicide has accumulated various definitions based on different philosophical, sociological, psychological, existential and legal interpretations. These perspectives will be presented below by beginning with reference to generally accepted international explanations and then by exploring articles that have contextualized these perspectives within the local South African environment.

### 2.2.1 Sociological Perspectives

Durkheim found that social and cultural factors played a role in risk for suicide. His sociological hypothesis suggested that suicide may be correlated with an individual's degree of social integration into his/her social group. He considered suicide to be a result of either a lack of social integration, excessive integration with society or economic and social adversity (Kaplan & Sadock, 1995, Maris et al., 2000). Following Durkheim's hypothesis, that suicide is a form of

social disintegration, Sonnabend (1948) also concluded that suicide depends on social factors. Specifically, he referred to the closeness and security of economic groups, and the strength of the traditional institutions of a society, such as family and religion, as factors that mediate the incidence of suicidal behaviour in South Africa.

From this perspective, Schlebusch (2000) points out the need for cross-cultural research and the need to understand the role of changing social role expectations and health beliefs within South Africa in order to comprehend suicide. For example, research by Wassenaar, Pillay, Descoins, Goltman & Naidoo (2000) links changing role expectations with suicidality and suggests that black people may be the most affected. This contradicts earlier pre-apartheid reports whereby this population group may have been under-represented. The increasing prevalence of suicide amongst black people may be indicative of the increasing levels of stress in South African society due to acculturation processes and the adoption of western life styles by traditional communities within a rapidly changing socio-political environment. Suicidal behaviour may also be seen as self-directed violence parallel to the rates of violence in the social sphere (Deonarain & Pillay, 2000). These studies thus point to the integral role of the social system in mediating suicidal behaviours as well as the role of social discourses in constructing suicide in specific ways.

According to Olivier et al. (1991), the victim families of family murders have been shown to be isolated from larger meso and macro social systems yet over-involved with the extended family. They tend to experience stress at work and financial mismanagement. They also tended to be from smaller communities with a high incidence in mining towns (Graser, 1992). Graser noted

that the surviving relatives with whom he conducted interviews had experienced the event as severely traumatic with vivid memories of the surrounding events. He noted a common element of incredulity and denial among surviving members of the family and the ripple effect of traumatization on the neighbourhood, community and society.

### 2.2.2 Psychological Perspectives

Freud was the first theorist to explain suicide in psychological terms. He believed that suicide “represented aggression turned inward against an introjected, ambivalently cathected love object” and was necessarily a result of an “earlier repressed desire to kill someone else”.

Following from him, Menninger described suicide as a *retroflexed murder*, that is, a wish to kill whereby the victim’s anger is “turned inward”. This elaborated on Freud’s concept of *thanatos*, ie a self directed death instinct that consisted of three components: revenge, guilt and depression or hopelessness, that is, the wish to kill, to be killed and to die (Kaplan & Sadock, 1995, pp. 1740-1; Maris et al., 2000).

Schneidman’s more recent *theoretical cubic model of suicide* saw suicide as an attempt at problem solution by which the individual hopes to terminate consciousness and sees this as the only means to end their psychological pain (Schneidman, 1999). He argues that suicidal persons are not just depressed but hopeless and helpless about change and have frustrated basic psychological needs. Although they are ambivalent about their conflicting wishes to die and to live, the act of suicide is an attempt to flee their current situation. Schneidman claims that all

suicides will communicate their suicidal intent (even if only ambiguously) and mostly have chronic self-destructive coping patterns, called a suicidal career.

South African academics, expert in the field of suicidology, draw largely on the generally internationally accepted psychological perspectives on suicide in a biopsychosocial manner. For example, Appalsamy presents a Suicide Processional Model (SP Model), which attempts to provide an explanation for the short-term development of suicidality. This model suggests that predisposing factors to suicide potential work in conjunction with protective factors and that this process develops through three stages:

1. The Ideational Dominance Phase - characterized by excessive suicidal ideation and ambivalence leading to an increase in suicidal preoccupation.
2. The Affect Dominance Phase - characterized by the predominance of suicidal affect (depressed feelings due to suicidal ideation), which lead to plans of suicide, a suicidal act or alternatively an attempt to cathart the suicidal affect.
3. The Satiation Phase - characterized by a “relative mental calm, physical exhaustion, cognitive clarity and emotional stability” (Appalsamy, 2000, p. 155) as a result of the incongruent cathartic process.

Each phase is dominated by a focus on specific qualities of thinking and feeling and the person may repeat the cycle if catharsis is not successful. This model points to the role of catharsis in moderating suicidality.

### 2.2.3 Legal Perspectives

For forensic purposes it is necessary to classify manners of death. Psychologists who have expertise in the area of suicide may be required to investigate a deceased's suicidality as it has implications for life insurance payouts. Furthermore, a psychologist may be held accountable for malpractice if he/she was negligent in handling a client's suicidality (Maris et al., 2000).

McQuoid - Mason (1988) presented a paper at the first South African conference on suicidology explicating the implications of suicidal behaviours according to South African law. He summarizes this into five pointers:

- a. Suicidal behaviours are not considered to be crimes
- b. It is illegal to actively assist others to commit suicide by, for example, colluding in suicide pacts or with someone to kill him/herself. In such cases, the person who plays the active role in the cause of death will be liable for murder as well as to the dependents of the deceased.
- c. If a person commits suicide, his/her dependents may not be able to claim for life insurance or for loss of support against a third party.
- d. People who intervene, to prevent suicide will usually be protected by the law even if their conduct is technically "unlawful".
- e. Psychiatrists are required by law to report a patient's intent to commit suicide and failure to do so is regarded as professional negligence with consequences for criminal liabilities and civil liabilities to the dependents of the deceased.

#### 2.2.4 Ethical, Religious and Philosophical Perspectives

The notion of death is closely affiliated with ethical, religious and philosophical questions regarding the rights of the individual versus the authority of traditionally accepted moral codes. Questions include, for example, whether some suicides may be more 'rational' than others, such as in the case of an individual with a terminal illness and whether physicians should be given the right to assist death in such cases (Bosch, 2003; Maris et al., 2000). Szasz (as cited in Lasich, 1988) maintains that the right to die should be considered a basic human right and that any attempt by a professional to intervene is an infringement of this right. Health care professionals may be guided by their professional codes of ethical conduct from their respective fields (Bosch, 2000).

Suicide is "not only a functional problem but an existential one" (Lasich, 1988, p.193). This begs the question of whether suicide is a mental illness or a rational choice (Bosch, 2000).

Furthermore, suicide, which necessarily involves the issues of mortality and the 'after-life', hinges on religious convictions. In their study of adolescent suicidal behaviour, Madu and Matla (2003) found that adolescents in South Africa who were affiliated to a religious group were less likely to engage in suicidal behaviour or cognitions. This has been found especially for Islam, which strongly sanctions suicide (Flisher & Parry, 1994).

## 2.3 The Epidemiology of Suicide in South Africa

This section aims to outline the epidemiology of suicide in South Africa. All statistics in this section are specific to South African data.

### 2.3.1. Prevalence

A profile of fatal injuries in South Africa showed suicide to be the third leading cause of death (8%) after homicide and accidents. Most victims were between the ages of 20 and 30 and male (Butchart, 2000). Thus, suicide in South Africa, which was previously shown to be most prevalent amongst the White population, is steadily increasing amongst other population groups, especially Black people (79.2%) and it has been reported that suicidal behaviour among black South Africans showed an increase of 58.10% over a ten year period (Schlebusch, 2000). Mortality rates recorded for 2000 reflected suicide rates to be the “highest in East London (19/100 000), followed by Pretoria (17/100 000) and Port Elizabeth (15/100 000)” (Sukhai & Matzopoulos, 2001, p. 37). In 2001, 2 500 suicides were reported on the National Injury and Mortality Surveillance System (NIMSS) database (Donson & van Niekerk, 2002).

### 2.3.2 Race and Culture

Cultural psychology recognizes that suicide may be conceptualized as a “cultural phenomenon within a post-Apartheid context” (Laubscher, 2003, p. 133) and must be “situated in socio-historical space and time” (p. 141). It may also be highly associated with economic constraints

and social factors (Meel, 2002). Rabe (1993) found Coloured people to be at highest risk for parasuicide and White people to be at higher risk for completed suicide. In a similar vein reasons for not committing suicide have been found to differ across cultures (Pyke, 2001).

A study in the 1980's showed White people to have higher rates of suicide than other racial groups (Lester, 1989). On the other hand, black people are seen as more likely to express their emotion somatically and may be protected by strong family ties and cultural taboos that prohibit suicide (Flisher & Parry, 1994; Levin, 1992; Schlebusch, 1988). However, a more recent study by Laubscher (2003) indicates an increase in suicide amongst Black people. Bateman (2001) provides a possible explanation for this increase in a study of young Black females attempting suicide. The findings suggest that suicide may be increasing in relation to the urbanization of young Black youth post-apartheid. Bateman (2001) ascribes this to a loss of family cohesion and the lack of black role models within a rapidly changing culture. In addition it may be a result of the sudden increase in pressure to achieve amongst Black South Africans and resulting stress (Laubscher, 2003). Similarly, Madu and Matla (2003) found rates of attempted suicide to be highest in the urban areas of South Africa. They attribute this to acculturation, the breaking of family ties and increases in social misconduct due to the erosion of cultural and traditional values in such areas.

From a similar cultural perspective the South African Indian population has been named an *acculturating* community. Many studies link the high incidence of suicidal behaviours among Indian adolescents with culturally rooted restrictive parenting styles and the strong effects of acculturation on the youth (Pillay & Schlebusch, 1987). For example, Indian youth are

increasingly being influenced by western values of individualism, entertainment and relating which may be in stark contrast to traditional notions thus creating conflict within the family and a resulting experience of hopelessness in the dependent child (Pillay & Wassenaar, 1991).

### 2.3.3 Age

#### 2.3.3.1 Children

The increasing prevalence of suicidal behaviours in South African children is cause for concern. In 2001, the youngest victims of suicide recorded on the NIMSS database were ten years old (Donson & van Niekerk, 2002). Investigations into the psychosocial profiles of children presenting with suicidal behaviours suggests that suicidal behaviours predominate at age nine and eleven for males and age twelve for females. Suicide has been found to be concentrated in the younger age groups except in the White racial group (Burrows, Vaez, Butchart & Laflamme, 2003). Suicidality in children may be associated with academic difficulties, interpersonal problems and poor self-esteem. Family violence, non-intact family structures, child abuse, loss and family histories of suicide have been noted as significant risk factors. Common diagnoses have included mood disorders, sexual abuse, ADHD, conduct disorder and parent-child relational problems (Noor-Mahomed, Selmer & Bosch, 2000).

### 2.3.3.2 Adolescents

A high percentage of all forms of suicidal behaviours involve adolescents (Madu & Matla, 2003; Pillay & Wassenaar, 1997; Schlebusch, 2000). The increasing rates of suicide in youth may be linked to increases in alcohol and drug abuse and firearm availability (Noor-Mohamed & Karim, 2000). Self-poisoning has been shown to represent a common method of self-destructive behaviour amongst adolescents and youth (Mhlongo & Peltzer, 1999; Pillay, 1988). Various studies have addressed adolescent suicide with key correlates including ineffective communication, poor family dynamics and unrealistic outsider expectations (Naidoo, 2000). Other studies however, note how high parental and self-expectations and favourable external conditions, such as economic status, may also increase the likelihood of suicide (Mayekiso and Ngcaba, 2000).

### 2.3.3.3 Adults

A profile of fatal injuries in South Africa in 1991 reflected that the majority of suicide victims were between the ages of twenty and thirty years (Butchart, 2000). In a study of adult hospital admissions, Bosch, Schlebusch and Wessels (1987) found that the incidence of non-fatal suicidal behaviours peaked in the 20-29 year age group and then declined with increasing age. Graser (1992), in his study of family murder found the mean age of the murderers to be 36.3 years. Marital conflict is the most commonly cited precipitating factor for suicidal behaviour in women over 25 years of age, especially in marriages characterised by spousal alcohol abuse and violence (Pillay & Van Der Veen, 1995; Pillay, Van der Veen & Wassenaar, 2001; Pillay & Vawda,

1989). Collings (1992) points out the correlation between childhood experiences of sexual abuse in cases of adult self-destructive and suicidal behaviours in men and women. This suggests the importance of considering the possibility of such undisclosed experiences in treatment planning for suicidal adults.

#### 2.3.3.4 Parents as Secondary Victims

Feelings of guilt and self-blame are common in the parents of children who commit suicide. For example, parents may feel that somehow they were to blame for the suicide or that they should have noticed the preceding signs and symptoms. Pretorius (1989) further suggests that these feelings are exacerbated by the parents' experience of victimization and stigmatization from society. This is over and above the tragedy of their actual loss. Societal attitudes may condemn suicide and consider its discussion taboo. Thus the grieving family does not have access to the usual social support following a death in the family and are often avoided by others, suffer blatant or subtle accusations or endure incriminating speculation and gossip. This stigmatization may be real or imagined or aggravated by a parent's interpersonal withdrawal. Parents may thus withdraw from social involvements, move residence and experience various symptoms of depression. Thus, they become secondary victims of the suicide.

#### 2.3.3.5 The Elderly

Suicidal behaviours in old age are also common, but this remains a very under-researched area. Rabe (1993) found that in the Port Elizabeth / Uitenhage magisterial district, although

parasuicide mostly occurred in the 20 - 29 year age bracket, those between the ages of 60 and 69 were at highest risk for completed suicide. In a study of longitudinal suicide mortality trends in South Africa over the 1968 - 1990 period, Flisher, Laubscher and Lombard (1998) found significant increases in the rates of suicide for White males aged 25 - 34 but also for White people aged 65 years and over.

Certain age - specific adjustments such as retirement, relocation, decline in health, loss of social support, spouses and friends may aggravate underlying features of mood or personality disorders and thus increase risk for suicide. Self - destructive behaviours or non - compliance with medical treatment may also constitute a form of indirect suicidal behaviour. Risk factors in this older age group, however, are largely unobserved and treatment interventions may be less specific despite the finding that elderly persons have been shown to have stronger intentions to die than young suicidal persons (Levin, 1992). Pearson (2000) points out that this may be due to general attitudes about aging and the perception that suicide later in life is of less significance than youth suicide, resulting in minimal research studies for the aged.

#### 2.3.4. Gender

Suicidal behaviour is considered to be gender normative (Maris et al., 2000). Suicide rates are usually found to be higher in men than in women (Butchart, 2000; Flisher & Parry, 1994) with males accounting for 82.4% of reported suicides in South Africa in 2001 (Donson & van Niekerk, 2002). Generally, females display higher rates of suicidal ideation but males have higher mortality rates from suicide (Canetto, 2000). Other studies contradict this finding,

however. A study of attitudes toward suicide in the Northern Province of South Africa indicated a higher rate of parasuicide for boys than for girls (Peltzer, Cherian & Cherian, 1998). Maris et al. (2000) also note that non-conformity to traditional gender identity prescriptions or gender role stereotypes may also increase suicidal risk.

In a study based on non-fatal suicide attempts Schlebusch (2000) noted the high percentages of women (71.3%) in the sample. A significantly higher proportion of females to males make non-fatal suicide attempts across cultures (Pillay, Wassenaar & Kramers, 2000; Rabe, 1993). Thus, the common female: male ratio of nonfatal suicidal behaviour is 2:1 but for fatal suicidal behaviour is 1:4 (Wassenaar, van der Veen & Pillay, 1998). Madu and Matla (2003) consider that this may be because conceptions of gender construct completed suicide to be 'masculine' and attempted suicide to be 'feminine' in nature. For example, failing a suicide attempt may be socially constructed as non-masculine and is especially criticized by other males resulting in more completed suicides by males as opposed to females (Canetto, 1995).

Tensions as a result of socio-cultural transition may play a role in the high rates of suicidal behaviour among South African Indian women (Wassenaar et al., 1998). For example, due to acculturation, many Indian women are challenging traditional patriarchal systems by pursuing tertiary education, resisting arranged marriages and establishing their autonomy. However, these changing attitudes may create considerable tension for the individual who may still feel trapped in her system and thus create conflict within the traditional family structure. This may result in a high incidence of suicidal behaviours amongst these women.

### 2.3.5. Methods of Suicide

The most frequently cited methods of suicide via a general review of the South African literature include: firearms, ingestion of drugs, hanging, jumping, gassing, cutting/stabbing, drowning, self-immolation and vehicles. Deaths recorded on the NIMSS database, reflected hanging to account for more than half of the suicides in East London with firearm suicide being the most common method in Pretoria (Sukhai & Matzopoulos, 2002). Various methods of family murder are cited (Olivier et al., 1991) with guns being the most commonly used (Graser, 1992; Osborne, 2001).

Choice of method may differ according to gender with males using more lethal and violent methods of suicide than females (Madu & Matla, 2003). In 2001, hanging accounted for 46.4% of male suicides and firearms accounted for 31.4% as opposed to 22.7% and 20.6% respectively in females (Donson & van Niekerk, 2002). For females, poisoning (35.1%) and hanging accounted for the majority of deaths by suicide.

Similarly, cultural differences exist in choice of method. For example, firearm use is the most common method of suicide for white people (45%) and hanging is the most common method in Asian, African and Coloured people (Donson & van Niekerk, 2002). Thus the interplay of gender and ethnicity on methods of suicidal behaviours is evident. For example, Indian males have been found to use hanging, whilst Indian females use hanging and poisoning as the main method of suicide (Wassenaar et al., 1998).

Maris et al. (2000) note that the choice of a suicide method is determined by the following factors (p. 289):

- i. The accessibility and availability of the means
- ii. The user's knowledge, experience and familiarity with the means
- iii. The meaning, symbolism and cultural significance of the means
- iv. Suggestion, contagion, or modelling factors
- v. The potential suicide's state of mind

#### 2.3.6 Seasonal Trends

Various studies have noted the impact of seasonal factors on suicidal behaviour. Mortality surveillance in 2001 showed a peak in suicidal behaviour in March and a low in May. There is a high incidence of suicides on weekends but most suicides occur on Mondays. It was also noted that in December 2001, all suicide trends according to method had increased (Donson & Van Niekerk, 2002). Flisher, Parry, Bradshaw and Juritz (1997) found that the warmer seasons of spring and summer represented the seasons of highest risk for suicides for all racial and age groups and in both genders. This pattern was less pronounced in more urbanized groups, suggesting that this pattern may be attributed to socio-demographic factors. Murder-suicides occur mostly in the day and appear to be spontaneous whereas individual suicides are more often planned and occur at night whilst the family is asleep (Graser, 1992).

In their study of meteorological variables and suicide in Pietermaritzburg, Descoins and Wassenaar (2000), found a positive relationship between ambient temperature and suicide and humidity and suicide, and a negative relationship between hours of sunlight and suicide. Thus, they suggest that, “bioclimatic factors affect circannual rhythms in specific biochemical processes that are associated with vulnerability or resistance to stress” (p. 181). Therefore, temperature, sunlight duration and humidity may mediate suicidality. Other studies however, have found there to be no statistically significant seasonal trends by month or day of the week (Wassenaar et al., 2000).

## 2.4 Aetiology and Risk Factors

Research into the aetiology of suicide has shown it to be related to depression, interpersonal problems (Cassimjee & Pillay, 2000), intrapersonal factors (Noor-Mahommed & Karim, 2000) and the impact of stressful events. Other correlates include physical health problems, substance abuse, genetics and unemployment (Donald, 1988). Risk factors may include age, gender and the presence of physical and mental suffering (Deonarain & Pillay, 2000).

### 2.4.1 Biological Factors

Studies have demonstrated that biological factors may be associated with suicide. For example, clinical studies have demonstrated that a family history of suicidal behaviour is significantly associated with suicide and attempted suicide, especially if the suicidal behaviour was violent. This phenomenon could be related to non-genetically transmitted learned behaviours within the

family or to the genetic transmission of other Axis I disorders associated with suicidal behaviours. However, twin studies have shown that monozygotic twins are more likely to share suicidal tendencies than dizygotic twins (Carstens et al., 1988).

The genetic component to suicidal behaviours has also been demonstrated by adoption studies and genetic studies have indicated “a variant in the gene coding for tryptophan hydroxylase, the rate-limiting enzyme in the synthesis of the neurotransmitter serotonin” to be related to suicidal behaviour (Roy, Nielsen, Rylander & Sarchiapone, 2000, p. 210). Post-mortem studies have further indicated a deficiency of serotonin or its metabolite in the CNS of suicide victims. However, this may be representative of underlying depression and not of the suicide *per se* (Maris et al., 2000).

Mitchell, Mitchell & Berk (2000) suggest that the catecholamine system plays a significant role in suicide as well as major depression and alcoholism and that these disorders are thus genetically linked. Thus, treatment aimed at the individual’s biological predisposition to suicide needs to be considered in the treatment and prevention of suicidal behaviours.

#### 2.4.2 Psychological Factors

The interplay of stressful events and predisposing factors may mediate suicidal behaviours. In a sample of Indian female parasuicides, Boya (1990) found coping and personality to be interrelated with parasuicidal behaviour. She found that parasuicidal Indian females lacked problem-focused coping skills and noted the presence of dysfunctional personality patterns

including schizoid, avoidant, passive-aggressive and borderline as well as depression. The positive correlation may be between passive coping styles and suicidal ideation (Meyer, 2002). Hopelessness has been shown to represent a significant risk factor for suicide in the person suffering from depression (Pillay & Wassenaar, 1997a; Schlebusch, Wessel, & Wessels, 1988). Thus, level of hopelessness is essential in suicide risk assessment and appears to be the mediating factor in suicidal behaviours arising from depression (Schlebusch et al., 1988).

Cognitive risk factors that have been identified as leading to suicidal behaviour include hopelessness, helplessness, negative self-concept, errors in logic, cognitive distortions, cognitive rigidity, dysfunctional assumptions and limited reasons for living (Weishaar, 2000). Research into cognitive therapy, especially the work of Beck and his associates has led to the development of various psychometric scales that assess suicide risk status based on cognitive factors. These include the Beck Depression Inventory, the Dysfunctional Attitude Scale, the Scale for Suicide Ideation, the Suicide Intent Scale, the Beck Hopelessness Scale and the Beck Self-Concept Test (Maris et al., 2000).

Similarly, studies suggest that family murderers tend to suffer from symptoms of depression, stress and burnout, which intensify prior to the incident. The murderers have shown aggression, lack of assertiveness, incongruent behaviour and communication toward others. Common personality traits include emotional immaturity, poor self-concept, dependency, antisocial personality traits, inadequacy, feelings of inferiority, feelings of hopelessness, jealousy, impulsiveness, a need to control others, rigidity and paranoid traits (Olivier et al., 1999).

Malmquist (cited in Marchetti, Haasbroek & de Jongh van Arkel, 1992) identifies three common features of family murderers (p. 8):

- i) Difficulties in separation and individualizing
- ii) The breakdown of obsessive defences resulting in a paralysed ego state
- iii) The breakdown of guilt

#### 2.4.3 Psychiatric Factors

Psychiatric disorders may be correlated with suicidality (Bulbulia, 2002; Maris et al., 2000). Of these, the most often cited disorders include mood disorders, schizophrenia, personality disorders, anxiety disorders, substance abuse disorders. However diagnosis of a mental disorder is often given as a result of the presenting suicidal and causality may be difficult to establish (Canetto, 1995). Of the clinical diagnoses, depression is the most established cause and concomitant of suicidal behaviours. In their review of family murder, Marchetti et al. (1992) found that the majority of studies of perpetrators showed them as having psychiatric symptoms associated with depression, introverted, neurotic, vulnerable or dependent personality disordered traits and jealous rage.

#### 2.4.4. Social Factors

Poverty, legal or work-related problems, economic recessions, political instability and the psychological consequences of physical or sexual abuse in childhood may create increased risk

for suicidal behaviour (Bulbulia, 2002). In women, suicidal behaviour may be mediated by persistent oppressive patriarchal social structures (Pillay & Van Der Veen, 1995). Similarly, with family murder, Olivier (1988) identified unemployment, fear of dismissal from work, financial problems, marital problems, lack of support systems and worries about the children to be the common sociological factors associated with family murder. Rapid social change is usually considered destabilizing to family structures, marriage and home life, thus increasing feelings of isolation and hopelessness in family members (Cheetham, 1988). On the other hand, Levin (1992) notes that the greater housing density among Black people due to disadvantage may have actually served as a protective factor in reducing suicide for this population group. She also notes the correlation between increased Black political activism and reduced suicide rates in this population group.

#### 2.4.5 HIV Status

The relationship between HIV / AIDS and suicidality remains an underdeveloped area of research in South Africa and internationally. The diagnosis of HIV creates considerable distress for the infected individual who may become subjected to social stigmatization and the breakdown of intimate relationships. The individual is not only forced to face the life-threatening nature of his/her illness but is required to make substantive changes to his/her behaviour and lifestyle. This makes him/her vulnerable to anxiety and depression. A study of suicidal risk in patients diagnosed with HIV demonstrated a 67.47% incidence of suicidal ideation. More suicidal ideation than actual attempts (30.12%) were noted. Although more HIV positive females report suicidal ideation, more males make suicide attempts. Fears of being dismissed from work

due to HIV status, interpersonal problems and a lack of social support have been identified as major risk factors (Noor-Mahomed & Karim, 2000).

Maris et al. (2000) note that AIDS related suicides may be a result of the individual's distress at facing a terminal disease but also that the HIV infection may disturb CNS functioning in the infected individual in such a way as to predispose him or her to changes in mood, memory and impulse control, thus increasing the risk of suicide. Apart from HIV, the onset of other acute or chronic illnesses or disabilities may increase an individual's risk for suicide. However, these are usually mediated by other factors such as the presence of a pre-existing psychopathology, the direct effect of the illness on functioning and the person's ability to manage stress and seek social support. Other factors that increase risk of suicide include fears of dismissal from work and interpersonal disruptions related to HIV status and misunderstandings about the implications of HIV and AIDS (Noor-Mahomed & Karim, 2000).

#### 2.4.6 Family Dynamics

Family discord or pathology has been found to be associated with suicidal behaviour (Meel, 2002; Wood, 1987; Pillay & Wassenaar, 1991; Pillay & Wassenaar, 1997). Family discord includes "disturbed role functioning, poor problem solving, communicational processes and general functioning, problematic affective involvement and excessive behavioural control by parents" (Wood, 1987, p. 104).

A high incidence of parasuicide among Indian adolescents may be associated with issues of family dynamics. In their studies, Pillay and Wassenaar (1991 & 1997) note that Indian families characterized by rigid discipline, firm boundaries that restrict individuation, faulty communication patterns, lack of family cohesion, over-involvement, social insulation and resistance to change are more likely to experience adolescent parasuicidal behaviours. This behaviour may be seen as the adolescent's attempt to extricate him / herself from family enmeshment. As noted earlier, Wood (1987) highlights how Indian South African youths are caught in the conflict of socio-cultural transition whereby they are influenced by western values of individualism, which creates conflict with the parental generation whose values of involvement and constraints may differ.

The spouses of family murderers have been found to be emotionally abusive, domineering, confrontational, judgmental, superior, rigid and stressed (Olivier et al., 1991). The marital relationships of family murderers have been shown to be characterized by ineffective communication styles, superficiality, emotional and physical abusiveness, jealousy, lack of trust, emotional estrangement between the partners, disrespect for each other and a marital structure of diffusion. There has also been evidence of pathological dependency, extramarital relationships and serious marital conflict (Graser, 1992).

#### 2.4.7 Alcohol Abuse

The literature on the role of alcohol abuse in suicidal behaviours is contradictory. It is well established that "alcohol is a mood altering, central nervous system depressant which, ... affects

behaviour" (Lasich, 1995, p. 39) and that "many suicidal individuals consume alcohol in the hours immediately before their suicidal act" (Maris et al., 2000, p. 360). This may increase the risk of suicide by making it easier for the person to commit suicide and by increasing the lethality of other ingested substances. Alcohol abuse may exacerbate suicidal behaviours by increasing the risky combination of depression and emotional withdrawal with the freeing up of inhibitions. Thus, a suicidal individual who abuses alcohol may be more likely to act out on their suicidal ideation. Furthermore, alcoholism itself may be considered a pathological self-destructive habit and thus, an indirect suicidal behaviour with resulting disruptions in personal, family and occupational life (Nattrass, 1995).

Alcohol abuse may create stress within the family creating disruptions in family life. A high proportion of married parasuicidal women report their husbands' alcohol abuse and associated violent behaviour to have precipitated their suicidal behaviours (Pillay & Vawda, 1989). Marchetti et al. (1992), in their review of research on family murder noted the high incidence of correlations between alcohol abuse and the perpetrators. However, mortality surveillance in 1999 showed that less than half of all reported suicides had elevated blood alcohol content (Butchart, 2000) and in 2001 reflected that 63,2% of suicides had zero blood alcohol content across all racial groups (Donson & Van Niekerk, 2002). There has also been shown to be a relation between positive life ideation and alcohol misuse in University students though not necessarily between negative life ideation and alcohol misuse (Routledge, 2001).

## 2.5 Intervention

### 2.5.1 Prevention

Suicide prevention generally addresses risk reduction and health promotion and draws from a public health model (Maris et al., 2000). In this regard, various suggestions based on research studies have been made. These have emphasized the importance of advocacy for policies supporting suicide prevention and research efforts (Madu & Matla, 2003), stricter firearm control (Donson & van Niekerk, 2002) and tightening up the prescription of antidepressants to minimize the possibilities for overdose (Flisher & Parry, 1994).

Schlebusch (2000) emphasizes the importance of cultivating teacher awareness of suicide and implementing preventative strategies in schools. These include the education of pupils, parents and educators regarding the identification of high-risk pupils and the importance of intervention (Madu & Matla, 2003). Madu and Matla (2003) further suggest that periodic screening tests should be administered to secondary school pupils to intervene swiftly, if suicidal ideation is suspected. Pillay and Wassenaar (1997b) note the importance of taking family conflict and dissatisfaction and feelings of hopelessness in adolescents seriously as a preventative measure for suicidal behaviour.

Marchetti et al. (1992) note the importance of identification and treatment of psychiatric illnesses as a preventative measure against family murder. They also suggest that special attention be

given to increasing an understanding of the specific nature of the grief experienced by the survivors of this particular type of suicidal behaviour.

Interventions need to address the underlying social causes and risk factors in the prevention of suicidal behaviours. Thus, Donson and van Niekerk (2002) suggest that educational suicide prevention strategies should be included as part of life skills programmes for those at high risk. They also suggest peer support programmes, crisis centres and hotlines, post suicide intervention programmes and the important role of research in refining prevention strategies.

### 2.5.2 Assessment and Treatment of Suicidal Patients

Treatment begins with careful assessment of suicide risk factors according to population and individual factors, personality structure and psychopathology. This ensures careful diagnosis that focuses therapeutic treatment on the symptoms underlying psychiatric disorder (Goldblatt & Silverman, 2000; Grossman & Kreusi, 2000; Lasich, 1995). Depending on the lethality of the suicidal intention, graveness of the suicidal thoughts, presence of social supports, impulsivity and risk factors in the patient, the health care practitioner needs to decide whether or not the patient should be hospitalized or receive outpatient care.

Generally treatment strategies either treat the underlying mental disorder assumed to be creating the suicidality or target the suicidal behaviour directly through behaviour modification techniques and medication (Linehan, 2000). The treatment plan may include family intervention and a psycho-educational component. The use of cognitive behavioural therapy (Rudd, 2000) or

cognitive therapy (Grossman & Kruesi, 2000; Weishaar, 2000) as a therapeutic method is highly advocated for the suicidal client. Intensive follow-up treatment or outpatient treatment is prescribed for those at high risk for suicidal behaviour (Rudd, 2000). Treatment approaches may include (Maris et al., 2000):

- i) Crisis intervention to minimize the immediate distress for the client and maximise safety precautions
- ii) Solution focused brief therapy to shift the client's focus toward solutions and competencies
- iii) Cognitive - behavioural therapy attempts to modify the client's dysfunctional cognitions and behaviours
- iv) Dialectical behaviour therapy uses a problem solving strategy through behavioural techniques as well as psychodynamic interpretation
- v) Psychoanalytic and psychodynamic approaches aim to assist the client in gaining insight into his/her unconscious dynamics
- vi) Electroconvulsive therapy is usually used if other psychotropic medications have not been effective. It aims to alter serotonin metabolism
- vii) Family therapy aims to address the family dynamics from which suicidal behaviours may have stemmed and thereby improve the functioning of the family system
- viii) Group therapy may provide an opportunity for a social support network in which the client may share problems and learn interpersonal and life skills.

Acknowledging the patient's "ultimate right to choose death" (p. 192) poses an ethical dilemma for the health care practitioner treating suicidal patients. However, Lasich (1988) points out that autonomy should not be confused with impulsivity and that the practitioner should negotiate with the patient to exercise some caution by postponing the decision to take his/her life.

The parents of children who have committed suicide may also require focused treatment. In this regard, Pretorius (1989) suggests that therapists, in planning treatment, need to consider the stigmatization that these parents may experience from society. Thus the typical emotional response to bereavement may be exacerbated by the parents' experience of negative responses from others. Therapists should thus include a focus on how the parents may handle responses from others as well as encourage recognition of the many other extra - familial possibilities that may have caused the suicide.

### 2.5.3 Medication

Psychopharmacotherapy aims to manage the underlying disorder that may be predisposing the client toward suicide such as mood disorders, anxiety disorders, bipolar disorder and schizophrenia. Commonly prescribed medications include the SSRI antidepressants, lithium, carbamazepine, benzodiazepines, neuroleptics and antipsychotics (Maris et al., 2000). However, because anti - depressant medication is frequently used by suicidal patients for self-poisoning, it is necessary that the least toxic, but quickest - acting medication is prescribed. Studies have shown the SSRI antidepressants to be the most effective in managing the suicidal patient and treating the underlying depression (Lasich, 1995).

### **Chapter 3: Rationale and Aims of the Study**

A preliminary review of the literature on suicide shows a minimal number of studies specific to the South African context in relation to the extensive development of this area of mental health as a whole. The increasing awareness of the problem of suicide in South Africa points to the need to keep suicide research up to date and therefore able to address the changing trends of suicidal behaviour unique to the South African context. This requires the ongoing availability of accurate, relevant and timely information and literature that produces productive and increasingly efficient ways of tackling this insidious health care problem. This follows from the suggestion that every academic field should at times, self - reflect and consider its history, its current status and its future directions (Buboltz, Miller & Williams, 1999).

Thus, this study will review the field of suicidology in South Africa by forming a clear, comprehensive tabulation of the scope, correlates and theories of suicide offered by the South African suicide literature. The study will then analyze statistically the trends according to gender, race and method of these studies. The ultimate aim of this study will be to analyze and critique the implications of current suicide literature in South Africa. The analysis will aim to provide suggestions for directing future research towards unanswered questions and better research designs.

Following Buboltz et al.'s (1999) stated implications and values of a content analysis, this study aims to (p. 497):

1. Provide an objective set of content categories, which thus invites further investigation into the validity of findings and conclusions for professional, academic and public evaluation. Future researchers may therefore refine and improve on these content categories.
2. Provide “operational definitions of content categories” which may “promote parsimony, clarity, and communication, thereby enhancing understanding among professionals”.
3. Identify the most commonly researched areas in the field including specific demographics such as race, sex, age of research participants and types of suicidal behaviours that have been focused on in research publications.
4. Identify “trends in the field” over time.
5. Identify the common methodologies that have been used by research efforts and thus identify how suicidal behaviours are generally conceptualized in the field.

Further aims of the tabulation of data include:

6. To provide an organized table that will allow for a straightforward means of quick reference to results and discussions offered by the various research studies thus far.
7. To provide a bibliography of the various research studies produced in South Africa including those studies that were unable to be included in the table due to time constraints.

Thus, the aim of this dissertation is to provide data on which areas have been neglected and which have been over-researched in South Africa and to discover which areas and concepts are

considered to be focal, in the field of suicidology. Through critical analysis, these findings will be located within a South African political context and hypotheses made about the effect of these trends in the general conclusions drawn about South African populations.

From a preliminary overview, it can be seen that the vast majority of suicide literature emphasizes factors such as family interactions, social factors, cultural factors, characteristics of the individual, developmental features and psychological interpretations. All of these factors are important and have contributed to our understanding of the problem. However “no theory of suicide is incorrect, but all are incomplete” (Nel, 1981, p. 5). So speaking, there has not yet been a study that attempts to systematically pull together and examine the suicide literature as a whole. Such a project has the potential to provide insight into the core values and principles in the field, highlight trends in the direction that research is taking and question whether this is appropriate or not.

From the above discussion, it can be seen that, whilst important developments and attention has been given to the field of suicidology in South Africa, a study that comprehensively reviews previous research and systematically integrates research findings may be required. This will help to locate factors associated with suicide that are unique to the socio-political and cultural context of South Africa, prevent repetition of well researched areas, refine future research agendas and highlight neglected issues or populations. Reviewing the field of suicidology and the literature it has thus far produced may increase our understanding of suicide as a whole and assist with strategizing about how to prevent and intervene in suicidal behaviour.

## Chapter 4: Methodology

### 4.1 Content Analysis

The content analysis method, which lends itself to the study of communication, was used for this study. This research method is a technique for systematically and objectively describing data and making quantitative, empirical assumptions about this data (Berelson, 1971; Stemler, 2001). It is an *unobtrusive measure*, as the data gathered for analysis is obtained without directly involving research participants (Kellehear, 1993). The use of unobtrusive measures assumes “that entities move through time and space and through social and physical encounters, all the while shedding signs that, taken cumulatively, reveal their true nature” (Babbie & Mouton, 2002, p. 375).

This is done by, classifying the *manifest content* of data into observable measures (Berelson, 1971; Stemler, 2001). Berelson explains that content analyses are categorized under major headings, which refer to the characteristics, causes and the consequences of content. By identifying the frequencies of units of selected categories, making comparisons between these units and mapping their incidences over time, the content becomes meaningful. Quantitative methodology contributes to the precision of research findings and allows for the precise and concise reflection of results (Kerlinger, 1986).

Content analysis combines qualitative and quantitative aspects. Thus, it involves defining the categories of the data as well as subsequent coding and statistical analyses. The resulting conclusions about the data should therefore be replicable and valid within their context

(Krippendorff, 1980). Categories must therefore be mutually exclusive. They are *mutually exclusive* in that each unit must be clearly distinguished from other units and may not be categorized simultaneously in two categories (Reber & Reber, 2001).

#### 4.2 Reliability and Validity

Potter and Levine - Donnerstein (1999) state that the issues of reliability and validity in content analysis can only be addressed in relationship to the nature of the content to be analysed and the role of theory in the study. They differentiate between latent and manifest content, *manifest content* being “that which is on the surface and easily observable” and in which “the locus of meaning is contained in a discrete element”. *Latent content*, on the other hand “shifts the focus to the meaning underlying the elements on the surface of the message” (p. 259). Manifest content is the type of content being analysed in this study. The analysis of manifest content increases the objectivity by which rules for coding content are constructed in content analysis. It also implicates the scientific method in which the researcher begins with systematic observations of the content and thereafter presents rational generalizations. The content analysis used for this study is not based on a particular theory. Rather, its purpose is to provide a description of the field of suicidology according to various categories via “a description of the counts or percentages of one variable at a time” (Potter & Levine - Donnerstein, 1999, p. 262). Potter and Levine-Donnerstein propose that if theory does not guide the design of a coding scheme, then, it is essential that researchers provide brief and precise definitions of all terms used to enhance clerical recording accuracy. This suggestion is followed in the study.

According to Scott (as cited in Kellehear, 1993), three requirements that ensure that conclusions drawn with content analysis are reliable and valid include the following:

1. *Comprehensiveness*, ie., including all relevant sources and not merely those that support a particular theory.
2. *Specify and Clarity*, ie., categories must be independent of each other to minimise ambiguity and maximise reliability, and,
3. *Clear definitions* to ensure precise and reliable allocation of data into categories.

Furthermore, Krippendorff (1980) suggests the following checks of reliability:

1. *Stability* may be checked by test-retest procedures to ascertain if the coder's judgements of content remain unchanging over time. However good stability may merely be a reflection of coder memory.
2. *Reproducibility* may be checked by test-retest procedures using different coders to analyse the same data
3. *Accuracy* may be tested, by checking the coder's judgements against a standard to ascertain if the process is reliable. This is the most appropriate test of reliability when analysing manifest content.

It is also important to note that, in the analysis of manifest content, coder fatigue is the greatest threat to reliability (Potter & Levine - Donnerstein, 1999), and that reliability is a "necessary but not sufficient condition for validity" (p. 272).

According to Potter and Levine - Donnerstein (1999), establishing validity requires two steps: Firstly, the development of a coding scheme that elucidates the variables to be analysed, their

definitions and delimiters in the content being coded. This assists in the assignment of data into the correct categories and provides a guide and standard by which coders analyse the content of the study. In this study, the absence of theory requires that the coding scheme reduce the complexity of the units into a limited set of central variables. A sound and systematic coding scheme will contribute to face validity. Secondly, establishing validity requires a comparison of the “coding decisions made by coders against some standard” (p. 270). In the case of manifest content, the standard is objective and the analysis may be considered valid if the coding accords with the standard.

#### 4.3 Ethical Considerations

Although this research was non-reactive in nature and therefore did not directly involve participants, it may, nevertheless have various ethical implications. It was therefore necessary to ensure ethical considerations regarding the handling of research literature. In this regard, copyright restrictions were adhered to, to protect the ownership rights of authors of the research literature. All attempts were made to not falsify or misrepresent any of the articles on which the analysis was based. Dissemination of research findings in professional circles will be considered essential to ensure usefulness of the proposed project and to invite professional criticism.

#### 4.4 Procedure

The present study therefore required a comprehensive search of all research publications related to suicidal behaviour in South Africa and involved a process of coding, categorising, classifying, comparing and concluding. Firstly, a literature review was conducted to determine the classification systems generally used in reviews and textbooks on suicidology. The units of

analyses (the South African publications) were then accessed and explored to determine a classification system to which the units of analyses could be assigned. Thereafter, meaningful codes were created to specify the units of analyses within these categories. Coding required a test of inter-rater reliability whereby a second rater classified and coded the units in order to check that the units of analysis had been unambiguously assigned to the designated categories and codes. Sub-categories were then compared and relevant statistical analyses were conducted. Finally, conclusions were drawn about the content within its context.

The descriptive method of content analysis attempts to identify what exists (Mapukata, 1998). In this project, the content of all articles were analysed consistently and divided into coded sub-categories. The descriptive format aimed to identify trends and profiles of suicidology information. The database for the content analysis was constructed using the computer program Microsoft Excel version 2000 produced by Lernout and Hauspie Speech Products N.V. Each article was analysed and tabulated according to various suicide typologies and methodological characteristics and explanations produced by the data.

#### 4.5 Sample

A literature search utilizing PsychINFO, EBSCOhost, SABINET and UKZN library catalogues yielded the sample units used for this study. These unit studies included research on suicidal behaviour specific to South Africa or related to South Africa. The articles under review by the content analysis ranged from 1952 to 2003. The earliest article to be traced within the South African literature was published in 1952 and authored by B.J.F. Laubscher. The first conference literature may be dated to 1988 when we hosted the first South African Conference on Suicidology. It is important to note however, that this does not preclude the fact that previous

research studies on suicidal behaviour in South Africa may have been done before this date but not accessed by the researcher. A total of 166 articles were therefore reviewed in this study.

#### 4.6 Content Design

Both inductive and deductive procedures were used to determine the categories used in the content analysis. The researcher in collaboration with her research supervisor Dr. Doug Wassenaar established the classification system for the publications inductively via the simultaneous process of reviewing the sample of publications and tabulating the data. The categories were therefore not predetermined but generated via the process of data capturing. Deductively, various other content analysis studies were consulted to provide guidelines and to compare types of categories previously employed, for example in Buboltz et al. (1999) and Mapukata (1998).

#### 4.7 Unit of Analysis:

Each published research study or academic article included in the analysis was considered to constitute a unit of analysis.

#### 4.8 Classification System

Parallel to Buboltz et al.'s (1999) study, after each article was placed into the table, a number of content categories were created and characteristics of these tabulated.

Preliminary categories were created to provide information on the authors of the articles and the year of publication. The purpose of this was to ensure that the information provided by the table

could be easily referenced to its source. Categories were also provided to describe the nature of each article, (ie., whether it was presented as a research article or an abstract) and the type of publication it received (ie., whether it was presented in a book, a journal, a thesis or as a conference paper).

Further categories for the purposes of generating systematic information on the state of suicidology in South Africa included the following:

i. Region:

The publications were either categorized as relevant to the South African context as a whole or according to the specific South African province in which the research was conducted.

ii. Age group:

This category, if applicable, referred to the age ranges of the sample under discussion in each publication.

iii. Subjects:

This category referred to specifics of the sample used (eg., hospitalized, Zulu speaking, HIV positive, individuals seeking therapeutic assistance, etc.) or the specific subject of the article (eg., religious culture, ethics, insurance, etc.).

iv. **Race:**

The ethnic group on which the study focused was classified according to the broad racial terminology of Black, White, Indian, Coloured or multicultural. If race was not specified in a publication it was considered to be 'not applicable'.

v. **Sex:**

This category, if applicable, referred to the sex of the research participants in each study or in the focus of the article, ie., Male, Female or Male and Female. If sex was not specified in a publication it was considered to be 'not applicable'.

vi. **Suicidal Behaviour:**

This category was created as an attempt by the researcher to organize the differing terms used for suicidal behaviours according to a standard terminology. The descriptions for suicidal behaviours that were used by the authors of each publication were analysed according to the definitions provided and placed into a set of broad categories of description. These included suicidal behaviour, fatal suicidal behaviour, non-fatal suicidal behaviour, suicidal ideation and murder-suicide. These categories were based on the defining criteria elucidated in the "Definitions" section above.

vii. **Aim:**

This category referred to the main aim of the research study or discussion in each publication. The material was categorized in accordance with the challenges set out by the World Health Organization's communique on violence and health (Department

of Injuries and Violence Prevention, Geneva, 2002). These underscore four interrelated steps that encourage the movement from problem to solution according to the public health approach. This method for understanding research on violence was thus applied to the concept of suicidal behaviour. Articles were therefore categorized according to whether their primary focus was concerned with definition, exploration, prevention or intervention.

a. Definitive:

Articles were deemed definitive if their aim was to “define the problem through the systematic collection of information about the magnitude, scope, characteristics and consequences of suicidal behaviour”.

b. Exploratory:

Articles were deemed exploratory if their aim was to “establish why suicide occurs using research to determine the causes and correlates of suicidal behaviour, the factors that increase or decrease the risk for suicidal behaviour, and the factors that could be modified through interventions”.

c. Preventative:

Articles were deemed preventative if their main aim was to “find out what works to prevent suicidal behaviour, by designing, implementing and evaluating interventions”.

d. Intervention Orientated:

Articles were considered to be concerned with intervention, if their main aim was to “implement effective and promising interventions in a wide range of settings and, through ongoing monitoring of their effects on the risk factors and the target problem, to evaluate their impact and cost-effectiveness” (Department of Injuries and Violence Prevention, Geneva, 2002, p. 3).

viii. Method:

This category classified articles as quantitative, qualitative or both. If a methodology was not specified in the study it was considered to be ‘not applicable’.

ix. Procedure / Instruments:

This category described the research procedure (eg., statistical analysis or academic paper), instruments used to create data (eg., BDI, MSE etc) or evidence used (eg., mortuary reports).

x. Results:

This category provided a brief summary of what the researcher believed to be the most significant results yielded by the study or discussion.

xi. Discussion:

This category provided a brief account of the article authors’ explanations for their results and the most distinctive recommendations yielded by the study.

## **Chapter 5: Results and Discussion**

The previous chapter outlined the methodology that has informed the results presented in this chapter. This chapter describes and contextualizes the results of the content analysis conducted on the retrieved publications.

Consistent with the aims of the study, this thesis has produced a comprehensive tabulation of the 166 retrieved publications on Suicidology in South Africa. The table, to be made available on CD-ROM and hard copy provides an accessible site to gain an overview of research in the field as a whole (see Appendices for extracts of the tabulated data, coded data and the full bibliography). Thus, a researcher will be able to locate a particular study and use the table to obtain a concise outline of the sample, aims, research design, results and discussion of that study. Similarly, if a researcher chooses a particular topic of interest such as suicidal ideation, he/she will be able to use the table to locate publications relevant to that area and thereafter follow up on the details of those publications.

This chapter will begin with a description of the frequencies of publications according to the specified content categories. The data within each content category will then be presented. This will start with types of suicidal behaviours represented in the retrieved publications, method of data analysis, sex and research aim under separate headings. The description of the data will be integrated with the discussion due to the large number of research findings presented. Category definitions may be referred to in section 4.9.

### 5.1 Inter-Rater Reliability

To establish the dependability of the categorization decisions, an inter-rater reliability check was conducted by the author and her research supervisor. One author coded all the items and the second author independently coded a 7% ( $n = 12$ ,  $N = 166$ ) random sample of those items.

Table 1

Percentage Agreement between Coders

| Article   | Race | Sex | SB  | Aim | Method | Mean   |
|-----------|------|-----|-----|-----|--------|--------|
| 1         |      | X   | X   |     |        |        |
| 2         |      | X   | X   |     |        |        |
| 3         |      |     |     |     |        |        |
| 4         |      |     |     |     |        |        |
| 5         |      |     |     |     |        |        |
| 6         |      |     |     |     |        |        |
| 7         |      |     |     |     |        |        |
| 8         |      |     | X   |     |        |        |
| 9         |      |     |     |     |        |        |
| 10        |      |     |     |     |        |        |
| 11        |      |     |     |     |        |        |
| 12        |      | X   |     | X   |        |        |
| Agreement | 100% | 75% | 75% | 92% | 100%   | 88.40% |

\* X indicates where the coders disagreed on their categorization decisions

Table 1 presents the results of the inter-rater reliability check for the five content categories analysed in this study. For 3 of the 12 sampled publications, the researchers did not agree on their coding for the Sex and Type of Suicidal Behaviour categories. For 1 of the 12 sampled publications, the researchers did not agree on their coding for Aim. The 'Agreement' row presents the percentage agreement between the coders for each of the five categories. There was a mean of 88.4% agreement between the coders for all five categories. As there was a high mean percentage agreement the original coders decisions were used to conduct the statistical analyses.

## 5.2 Description of the Data Set

Table 2

Content Categories in Retrieved Publications

|         | Race | Sex  | SB   | Aim  | Method |
|---------|------|------|------|------|--------|
| Valid   | 166  | 166  | 160  | 155  | 166    |
| Missing | 0    | 0    | 6    | 11   | 0      |
| Mean    | 1.51 | 0.42 | 1.53 | 0.79 | 1.01   |

Table 2 presents the percentages of the publications that were classified in the five content categories analysed in this study. The ‘Missing’ row indicates the number of publications per content category that could not be classified, as the content category was not relevant to the article. For example, in 11 of the 166 publications a research aim could not be coded according to the specified classification categories.

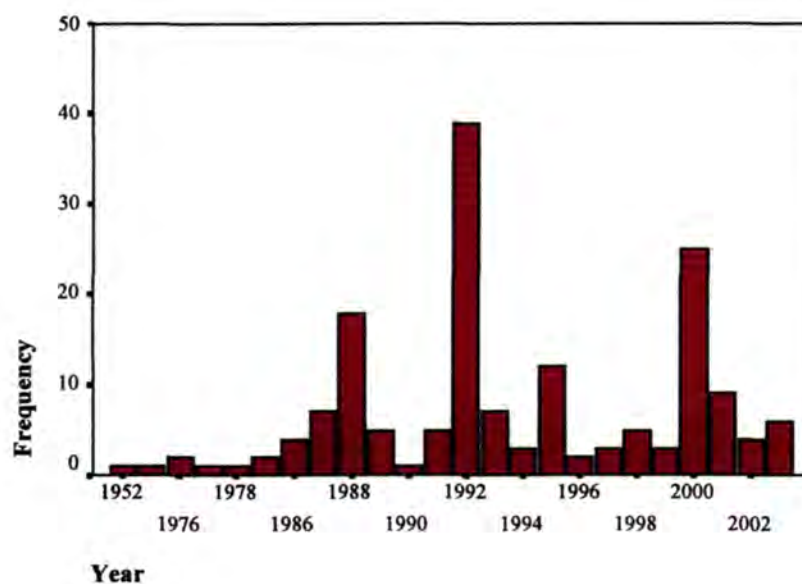
**Fig 1: Year by Retrieved Publications**

Fig 1 presents the frequencies of retrieved publications that were published from 1952-2003. From this, it can be seen that the majority of publications were published in 1988, 1992, 1995 and 2000. The higher counts of publications during these years may be due to the corresponding Suicidology Conferences.

### 5.3 Types of Suicidal Behaviours Represented in Retrieved Publications

Table 3

Type of Suicidal Behaviour by Retrieved Publications

|         | Frequency | Percent | Valid<br>Percent |
|---------|-----------|---------|------------------|
| FSB     | 42        | 25.3    | 26.3             |
| NFSB    | 52        | 31.3    | 32.5             |
| SI      | 11        | 6.6     | 6.9              |
| SB      | 49        | 29.5    | 30.6             |
| MS      | 6         | 3.6     | 3.8              |
| Missing | 6         | 3.6     |                  |
| Total   | 166       | 100     | 100              |

**Fig 2: Type of Suicidal Behaviour by Retrieved Publications**

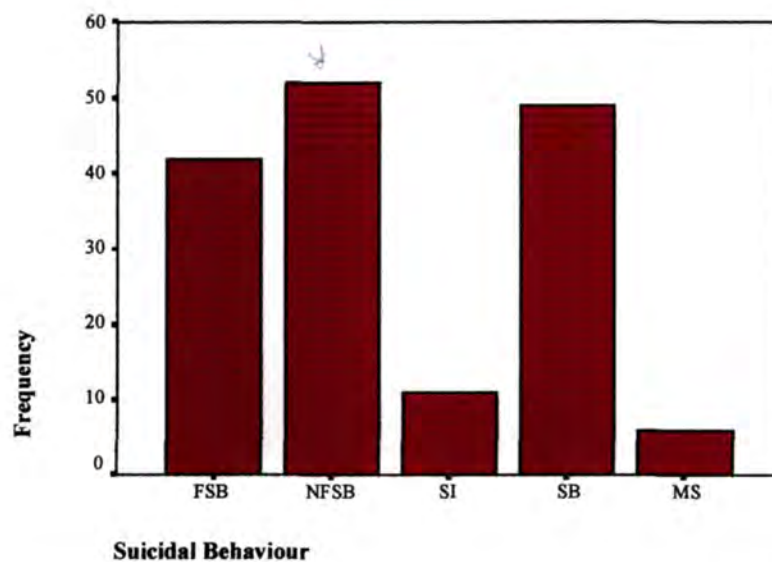


Table 3 presents the frequencies and percentages of publications according to their focus on a particular type of suicidal behaviour. Non-fatal suicidal behaviour (NFSB) was represented the most in the literature (31.3%), followed by publications that represented suicidal behaviour (SB) (29.5%). Suicidal ideation (SI) appears to be significantly under-researched, being represented by only 6.6% of the research publications and Murder-suicide (MS) is very poorly represented, by only 3.6%. Fig 2 provides a graphic representation of the low incidence of publications on SI and MS in comparison to Fatal suicidal behaviour (FSB), NFSB and SB. Considering that suicidal ideation is most often the precursor to actual suicidal behaviours (fatal and non-fatal), research in this area may contribute significantly to preventative strategies and case management.

**Fig. 3: Type of Suicidal Behaviour and Year in Retrieved Publications**

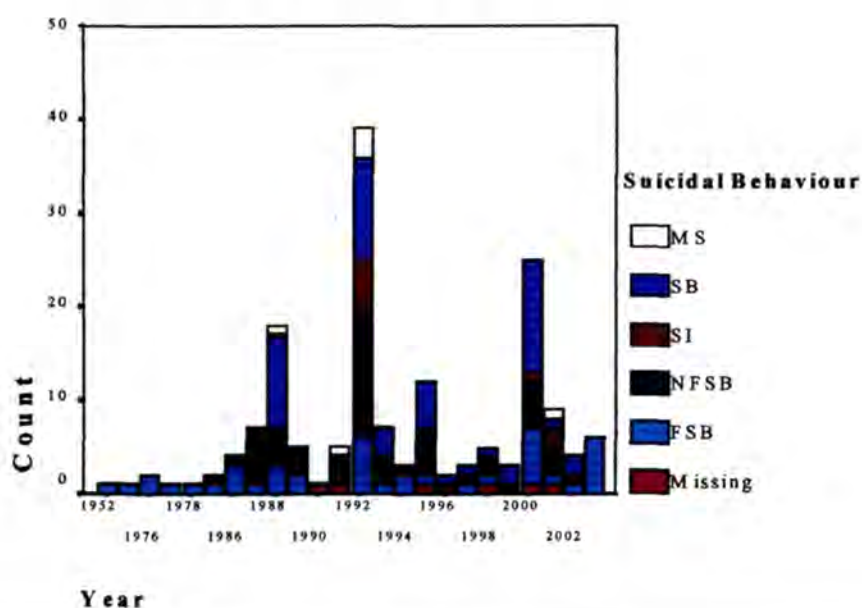


Fig 3 represents the frequency by which suicidal behaviours have been reflected in the literature, over time. The peaks in this graph over 1988, 1992, 1995 and 2000 are attributable to the conferences that were held in these years in South Africa, thus encouraging a substantial contribution of publications from authors. Fatal suicidal behaviour is almost consistently reflected in the literature, whilst murder-suicide publications only appear in isolated doses in 1988, 1991 and 2001. Suicidal ideation also only appears sporadically in 1992, 1996 and 2000-2002. It is interesting to note that non-fatal suicidal behaviour only appears in the literature from 1979 as prior to this it may not have been recognized as a field of scientific or clinical study in South Africa.

#### 5.4 Method of Data Analysis used in Retrieved Publications

Table 4

Method of Data Analysis in Retrieved Publications

|           | Frequency | Percent | Valid<br>Percent |
|-----------|-----------|---------|------------------|
| Qt        | 101       | 60.8    | 60.8             |
| Ql        | 11        | 6.6     | 6.6              |
| Qt and Ql | 6         | 3.6     | 3.6              |
| n/a       | 48        | 28.9    | 28.9             |
| Total     | 166       | 100     | 100              |

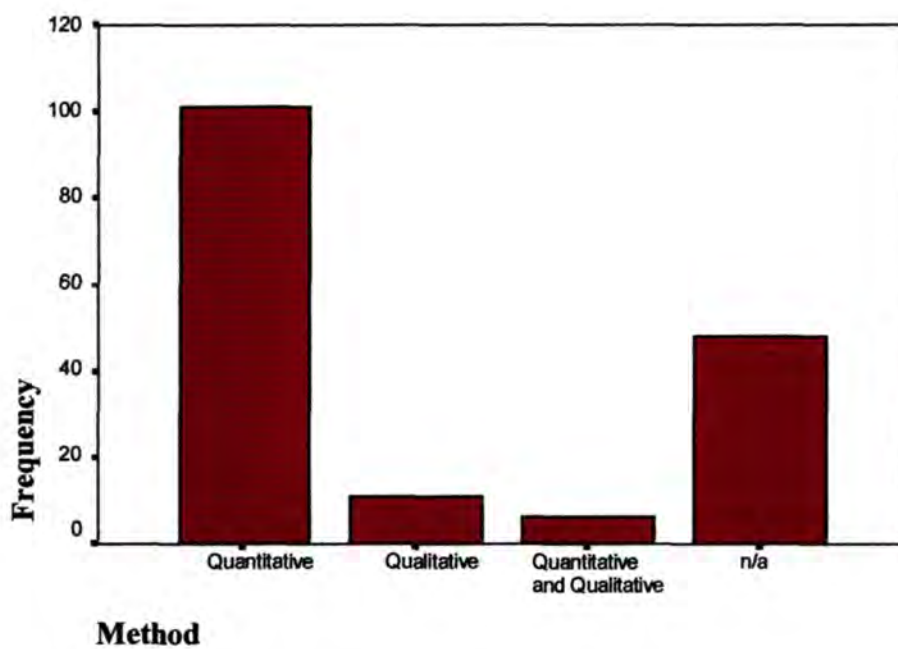
**Fig 4: Method of Data Analysis in Retrieved Publications**

Table 4 represents the frequencies and percentages of the various methods of data analysis used in the studies depicted in the retrieved publications. Quantitative statistical analysis accounts for the largest percentage of methodology type used in suicidology research (60.8%) with qualitative analysis only occupying 6.6% of the research. The combined use of quantitative and qualitative analysis is hardly evident in the literature (3.6%). Fig 4 indicates the dominant use of quantitative methodologies (Qt) over qualitative (Ql) and the combined use of quantitative and qualitative methodologies (Qt & Ql).

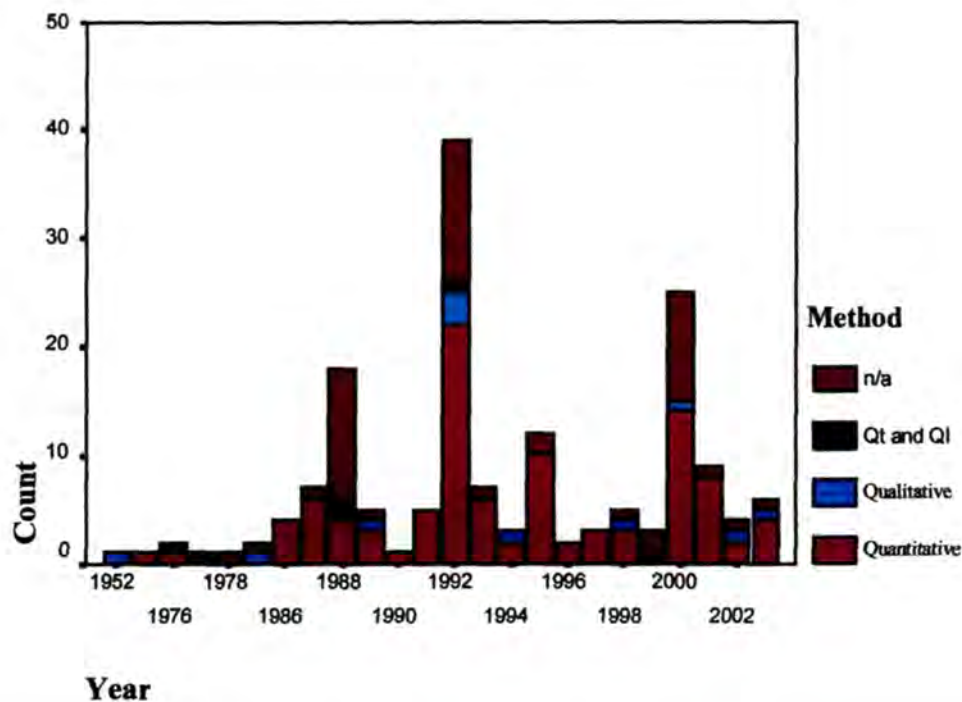
**Fig 5: Method of Data Analysis by Year**

Fig 5 represents the proportions of research methodologies used in the retrieved publications according to year. The qualitative research method has increasingly been endorsed, within the scientific community, as a valuable alternative or adjunct to traditional quantitative research methods (Parker, 1995). This is largely because qualitative methods offer an interpretive and inductive approach that seeks to understand complexity and context through exploration and discovery (Mertens, 1997). This may therefore extend the scope of research beyond quantitative outcomes. However, in suicide research the use of qualitative analysis and the combined use of quantitative and qualitative analysis does not follow an increase over time as might be expected.

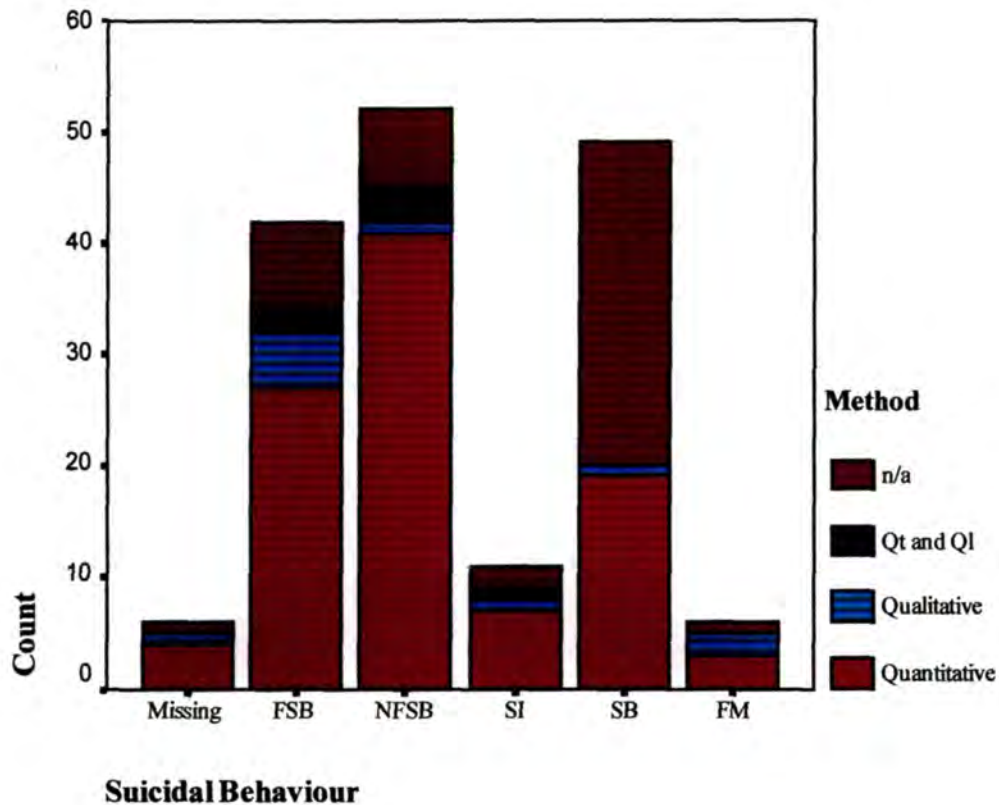
**Fig 6: Method of Data Analysis by Type of Suicidal Behaviour**

Fig 6 represents the types of research methodologies most frequently used in the study of the various suicidal behaviours. Thus, it can be seen that across all studies on suicidal behaviours, quantitative analysis is predominant. The use of qualitative analysis is only dominant in the investigation of FSB. The combined use of quantitative and qualitative methodologies is relatively consistent across FSB, NFSB and SI, but mostly evident in the study of NFSB. The combined use of quantitative and qualitative analysis is not at all evident in the investigation of MS or SB. This may be due to the limited state of knowledge in these areas whereby researchers

are still collecting reliable epidemiological data and hence qualitative analysis is predominantly employed.

### 5.5 The representation of Race in Retrieved Publications

Table 5

The Representation of Race in Retrieved Publications

|                | Frequency | Percent | Valid<br>Percent |
|----------------|-----------|---------|------------------|
| Multi-cultural | 94        | 56.6    | 56.6             |
| Black          | 15        | 9       | 9                |
| White          | 2         | 1.2     | 1.2              |
| Indian         | 21        | 12.7    | 12.7             |
| Coloured       | 1         | 0.6     | 0.6              |
| N/a            | 33        | 19.9    | 19.9             |
| Total          | 166       | 100     | 100              |

Table 6

The Representation of Race in Retrieved Articles by Population Statistics

|          | Frequency | Publications<br>(Percent) | Population<br>(Percent) | Discrepancy |
|----------|-----------|---------------------------|-------------------------|-------------|
| Black    | 15        | 38.3                      | 79.3                    | - 41        |
| White    | 2         | 5.1                       | 9.7                     | - 4.6       |
| Indian   | 21        | 54                        | 9                       | + 45        |
| Coloured | 1         | 2.6                       | 2                       | + 0.6       |

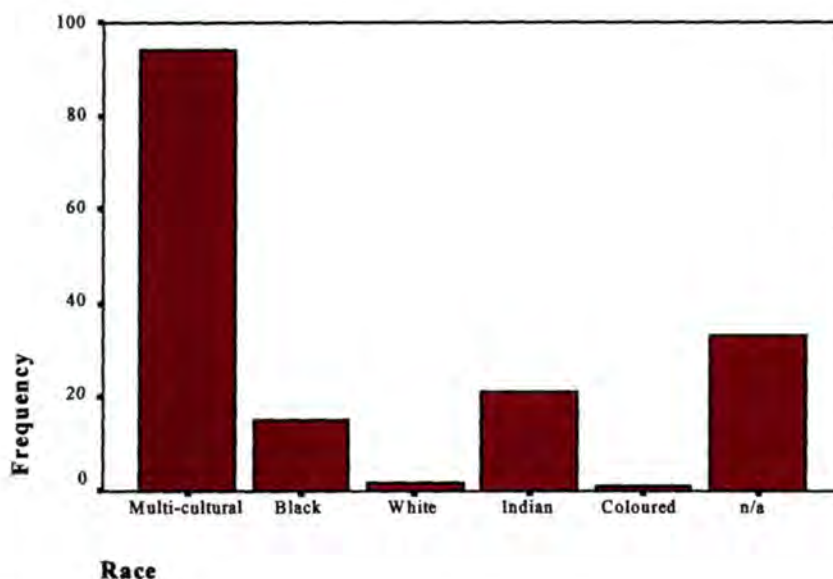
**Fig 7: The Representation of Race in Retrieved Publications**

Table 5 represents the frequencies by which, race was reflected in the retrieved publications.

Multicultural samples characterise most (56.6%) of the retrieved publications. For research that focuses on a specific racial group, Indian people are most represented (12.7%). The Black population is represented in 9% of the publications, the White population in 1.2% and the Coloured population in 0.6%.

According to the mid-2004 population estimates of *Statistics South Africa*, Black people constitute 79.3% of the total South African population. The white population is estimated to constitute 9.7%, the Coloured population to constitute 9% and the Asian population to constitute 2% ([www.statssa.gov.za/keyindicators/mye.asp](http://www.statssa.gov.za/keyindicators/mye.asp), 23/09/2004). For the purpose of this thesis, the racial categories used by *Statistics South Africa* will be corresponded with the categories used in

this thesis although the terms differ slightly, ie., African will be taken to correspond to Black and Asian to Indian.

Table 6 presents the percentages of race, as reflected in the publications, in comparison to the percentages of the racial population statistics in South Africa. This comparison shows which racial groups are over or under represented. For example, although Black people comprise 79.3% of the population, they are only represented in 38.3% of the retrieved publications that focused on race. White people comprise 9.7% of the population but are only reflected in 5.1% of the retrieved publications. Indian people, on the other hand, only comprise 9% of the population yet are represented in an overarching 54% of the retrieved publications. Coloured people comprise an estimated 2% of the population and are represented in 2.6% of the retrieved publications.

The Discrepancy column in Table 6 presents the racial population percentages minus the percentage of representation of each race in the literature. Thus, it can be seen that Black people are significantly under-represented (a discrepancy of - 41) in the publications and White people are slightly under-represented (a discrepancy of - 4.6). Indian people are highly over-represented (a discrepancy of + 45) in the literature and Coloured people are slightly over-represented (a discrepancy of + 0.6). This has resulted in Indian people, for example, being identified as a racial group that are highly associated with suicidal behaviours. A possible reason for this over-representation may be because KwaZulu-Natal has the highest Indian population outside of India and in South Africa and most of the retrieved publications that specified a province ( $n = 101$  of  $N = 166$  publications) have been based on studies conducted in KwaZulu-Natal (66/101). That Black people are under-represented may be a reflection of the legacy of apartheid research

whereby Black people may have represented a marginalized population group in South Africa consigned to artificial non South African 'homelands'.

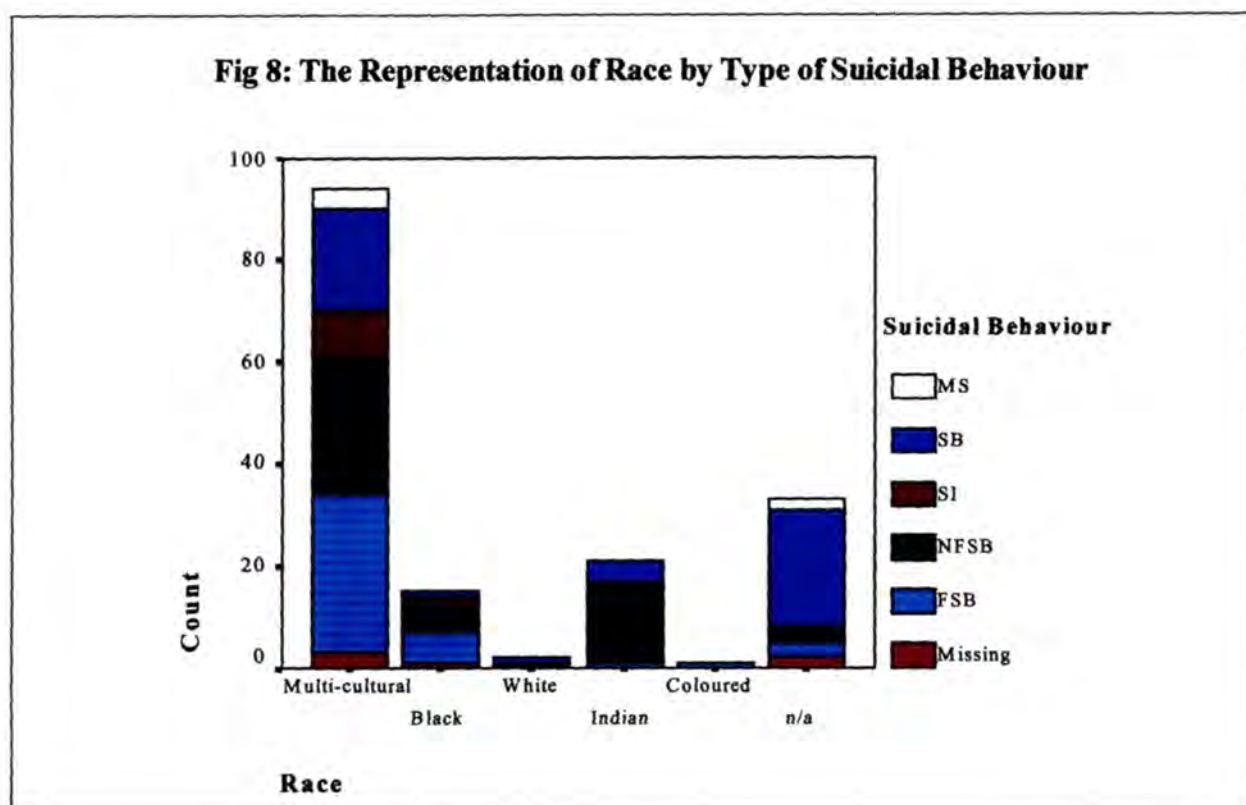


Fig 8 depicts the frequency by which race is reflected in the retrieved publications according to the specified types of suicidal behaviours. Thus, it can be seen that Coloured people have only been investigated as a distinct group with regards to FSB. This representation in the FSB category may only be due to standard national mortality statistics and not due to academic enquiry. This makes the finding that they are under-represented in the literature even more alarming. Except for Black people, suicidal ideation has not been studied in its diversity according to race. As mentioned above, in the discussion of Fig 7, Indian people are over

represented in the literature. Fig 8 depicts that this is largely within the area of NFSB and Indian people may thus be commonly regarded as a population group at high risk for NFSB. One potential problem of disproportionately relying on one group for a large amount of research in a field of study is that the field becomes identified with the experience of only this group, which may be generalised to other unique populations inappropriately.

**Fig 9: The Representation of Race in Retrieved Publications by Year**

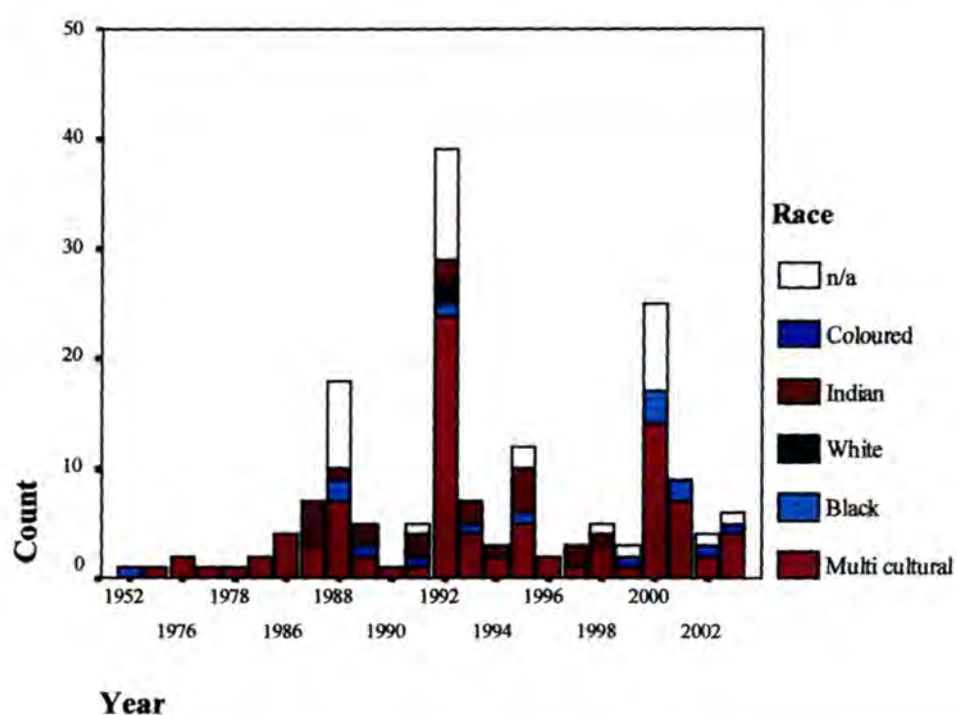


Fig 9 depicts the frequency by which race is represented in the retrieved publications from 1952-2003. An alarming finding with regard to Coloured people is that they have only begun to be represented in the literature as a specific group since 2003. Black and Indian people have almost

consistently been researched since 1952 in the retrieved publications. White people are only represented as a distinct racial group in 1992. As a whole, reporting with reference to ethnicity is minimal in comparison to reporting on the population as a whole. This may reflect a greater awareness of multicultural issues among individual authors and the discipline. However, increasing research efforts that focus on ethnicity may improve the precision and detail of our understanding of suicidal behaviours with regard to diverse groups across a variety of settings. An investigation into historical data on the various racial groups may provide a valuable archive of multi-cultural information with which to compare current research on fatal and non-fatal suicidal behaviours, suicidal ideation and murder-suicides.

**Fig 10: The Representation of Race in Retrieved Publications by Sex**

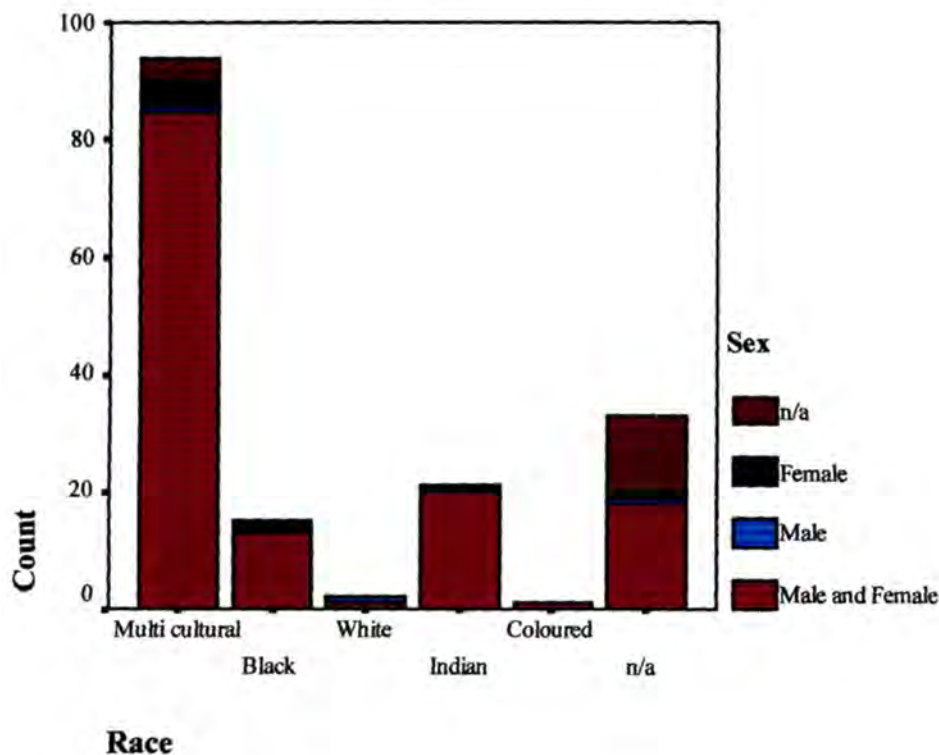


Fig 10 depicts how race is reflected in the retrieved publications according to the sex of the sample/target of the studies. Black and Indian males and White females appear to be poorly represented in the literature. For Coloured people, few studies focus specifically on distinct groups according to gender, again indicating the lack of representation of Coloured people as a cultural group in suicide research and the consequent poor understanding of the nuances that may affect suicidal behaviours in this group.

**Fig 11: The Representation of Race in Retrieved Publications by Method of Study**

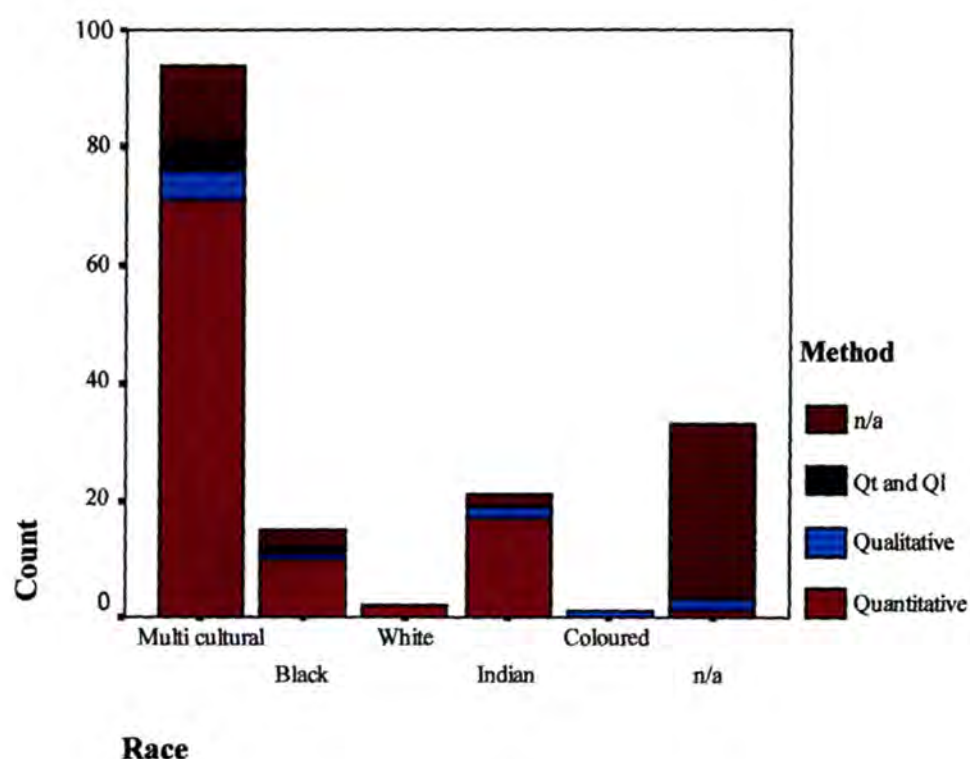


Fig 11 depicts how race is reflected in the retrieved publications according to the method of study employed. Multicultural research is predominantly quantitative with a small proportion of the retrieved publications using qualitative methods or the combined use of qualitative and quantitative methods. Whilst qualitative research as a whole is lacking in the field of suicidology, this is particularly so for research on White people. No studies on White people have been conducted using qualitative methodology. On the other hand, no studies on Coloured people have been conducted using quantitative methodology. For Black people, predominantly quantitative methodologies have been used and qualitative studies are minimal. Therefore research on suicidal behaviours among Black and White people should favour the use of qualitative methodologies and research on suicidal behaviours among Coloured people should favour the use of quantitative methodologies.

## 5.6 The Representation of Sex in Retrieved Publications

Table 7

The Representation of Sex in Retrieved Publications

|               | Frequency | Percent | Valid Percent |
|---------------|-----------|---------|---------------|
| Male & Female | 138       | 83.1    | 83.1          |
| Male          | 3         | 1.8     | 1.8           |
| Female        | 8         | 4.8     | 4.8           |
| n/a           | 17        | 10.2    | 10.2          |
| Total         | 166       | 100     | 100           |

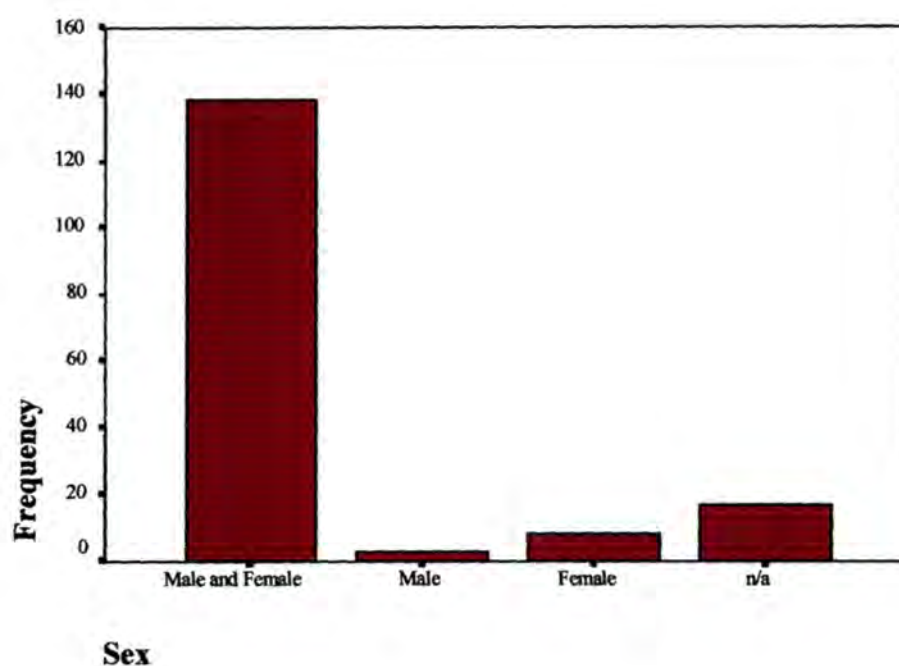
**Fig 12: The Representation of Sex in Retrieved Publications**

Table 7 represents the frequencies by which sex was reflected as a variable for study in the retrieved publications. Research that encompasses suicidal behaviours across the sexes is predominant at 83.1%. The ratio of M:F research is 1.8:4.8. However, as noted in the literature review, completed suicide rates are usually higher in men than in women (Butchart, 2000; Flisher & Parry, 1994). This finding, however, needs to be interpreted according to the specific type of suicidal behaviours, as men account for most fatal suicides and women for most non-fatal suicidal behaviours. Although fatal suicide is considered to be predominant in males, limited research has been done on suicidality in relation to masculinity. Fig 12 depicts the predominance of research that does not specify sex and the minimal reflection of male specific research.

**Fig 13: The Representation of Sex in Retrieved Publications by Type of Suicidal Behaviour**

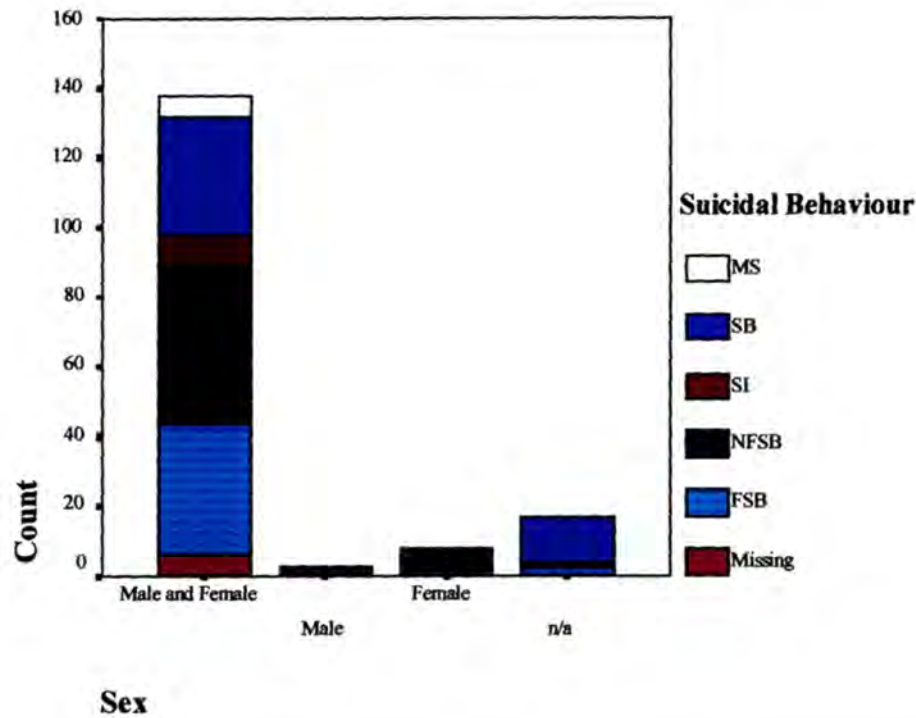


Fig 13 depicts how sex is reflected in the retrieved publications as a representation of specific types of suicidal behaviours. Although males account for a significantly higher proportion of reported fatal suicides, the frequency of research on fatal suicide is equal for males and females in the literature. On the other hand, females account for a higher proportion of non-fatal suicidal behaviours. This difference is represented in the literature by a higher percentage of studies of NFSB being conducted on female populations. An interesting finding is that no research has been conducted on males with suicidal ideation. As males who are experiencing suicidal ideation are more likely to use fatal means to carry out their suicidality, that this area of research has been neglected represents a serious breach in the literature.

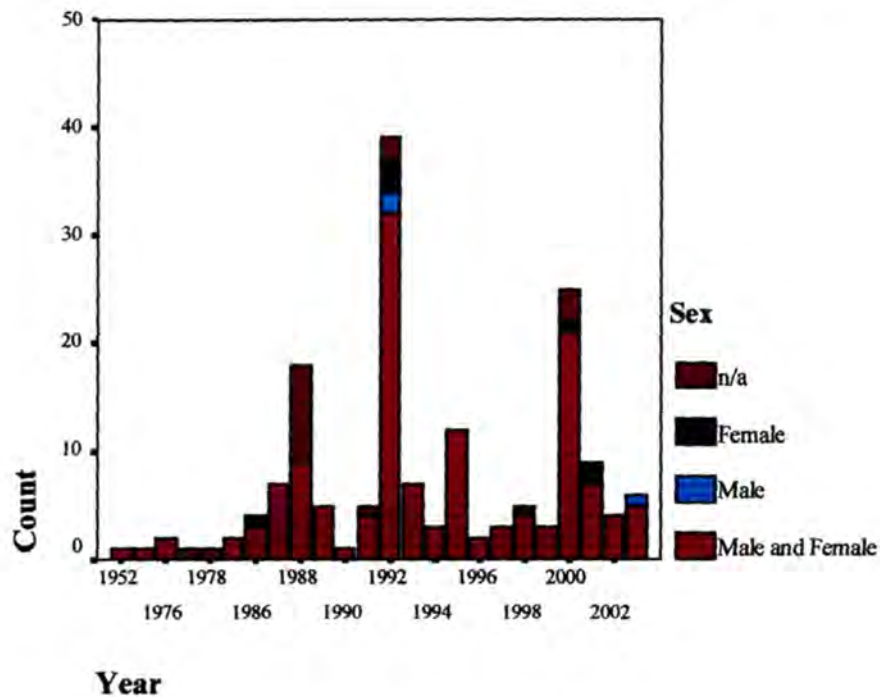
**Fig 14: The Representation of Sex in Retrieved Publications by Year**

Fig 14 reflects the frequency by which sex is represented in the retrieved publications from 1952-2003. Studies that combine the study of suicidal behaviours of both males and females appeared consistently in the literature since 1952, except in 1977 and 1978. However, information about patterns of suicidal behaviour in men is very limited because studies do not usually break down the data by gender, and none in South Africa have used exclusively male samples.

## 5.7 Research Aims Represented in Retrieved Publications

Table 8

Research Aims in Retrieved Publications

|                       | Frequency | Percent | Valid Percent |
|-----------------------|-----------|---------|---------------|
| Definitive            | 62        | 37.3    | 40            |
| Exploratory           | 73        | 44      | 47.1          |
| Preventative          | 11        | 6.6     | 7.1           |
| Intervention-Oriented | 9         | 5.4     | 5.8           |
| Missing               | 11        | 6.6     |               |
| Total                 | 166       | 100     | 100           |

Fig 15: Research Aims in Retrieved Publications

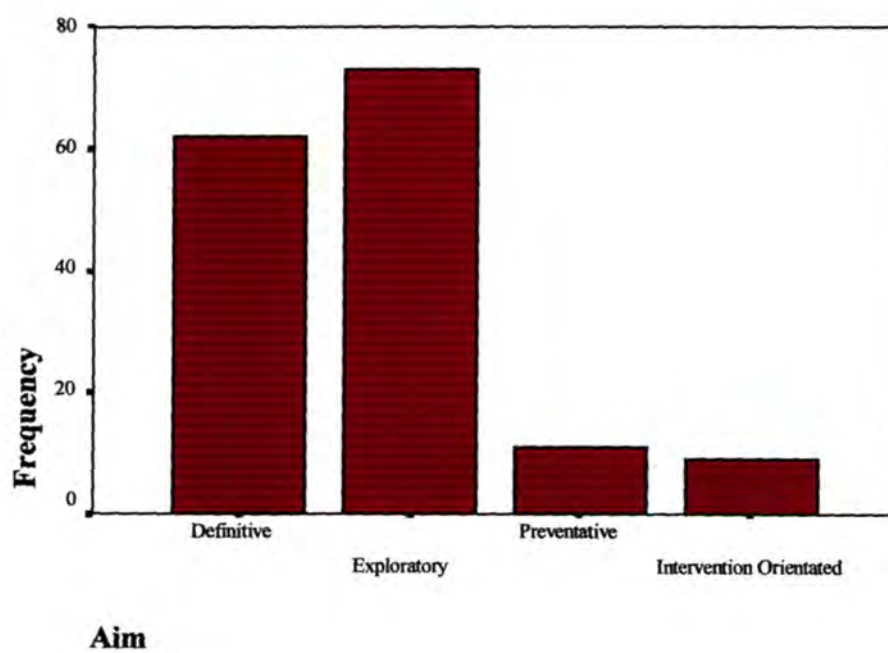


Table 8 represents the frequencies and percentages of the various aims of the studies depicted in the retrieved publications. Most of the research done in the South African context has mainly been descriptive and exploratory. There is a clear linear decrease across the 4 categories ranging from a high of 44% for exploratory and 37.3 for descriptive to only 6.6% for prevention and 5.4 for intervention orientated literature. Fig 15 depicts the dominance of definitive and exploratory research and the minority of research on prevention and intervention. Neuman (1997) characterizes *descriptive* research as research that “provides an accurate profile of a group, describes a process, mechanism or relationship and gives a verbal or numerical picture” (p.20). This content analysis, for example, would be categorized as descriptive. Neuman’s account of descriptive research corresponds with the category of definitive research used in this thesis. The dominance of definitive research in the retrieved publications may be a function of the lack of theoretical foundations in suicide research. Research efforts should focus on questions and topics related to the prevention and intervention of suicidal behaviours.

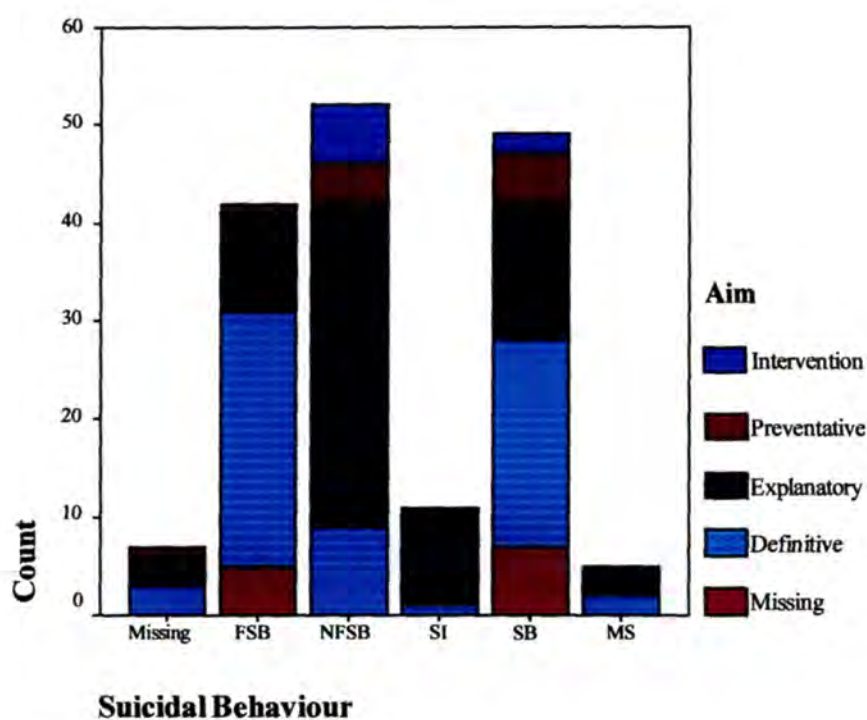
**Fig 16: Research Aims by Type of Suicidal Behaviour**

Fig 16 depicts the aim of the research publications according to type of suicidal behaviour discussed in the publication. That intervention publications are not represented for FSB is simply due to the fact that once a FSB has occurred intervention is not possible. However, interventions could be constructed which are aimed at the secondary victims of a FSB. The most common design for studies on NFSB was exploratory. Considering the high frequency of exploratory publications for NFSB it would appear that this area may be well, if not over-researched, and that research efforts should go toward expanding the prevention and intervention orientated areas. However, the frequency of prevention and intervention publications for NFSB appears to be promising. There is no representation of prevention or intervention for suicidal ideation

specifically, thus representing an important area that requires action-orientated input. As little definitive work has also been done in this area, it may require some definitive studies to lay the groundwork for prevention and intervention strategies. Murder-suicide is less common in South Africa than other forms of suicidal behaviours so it therefore makes sense that this is the least investigated area. However, within this area there have been no studies done that are aimed at prevention or intervention. Whilst there is a need for descriptive and exploratory publications in suicidology, these should not necessarily occupy as much as 81,3% of the research.

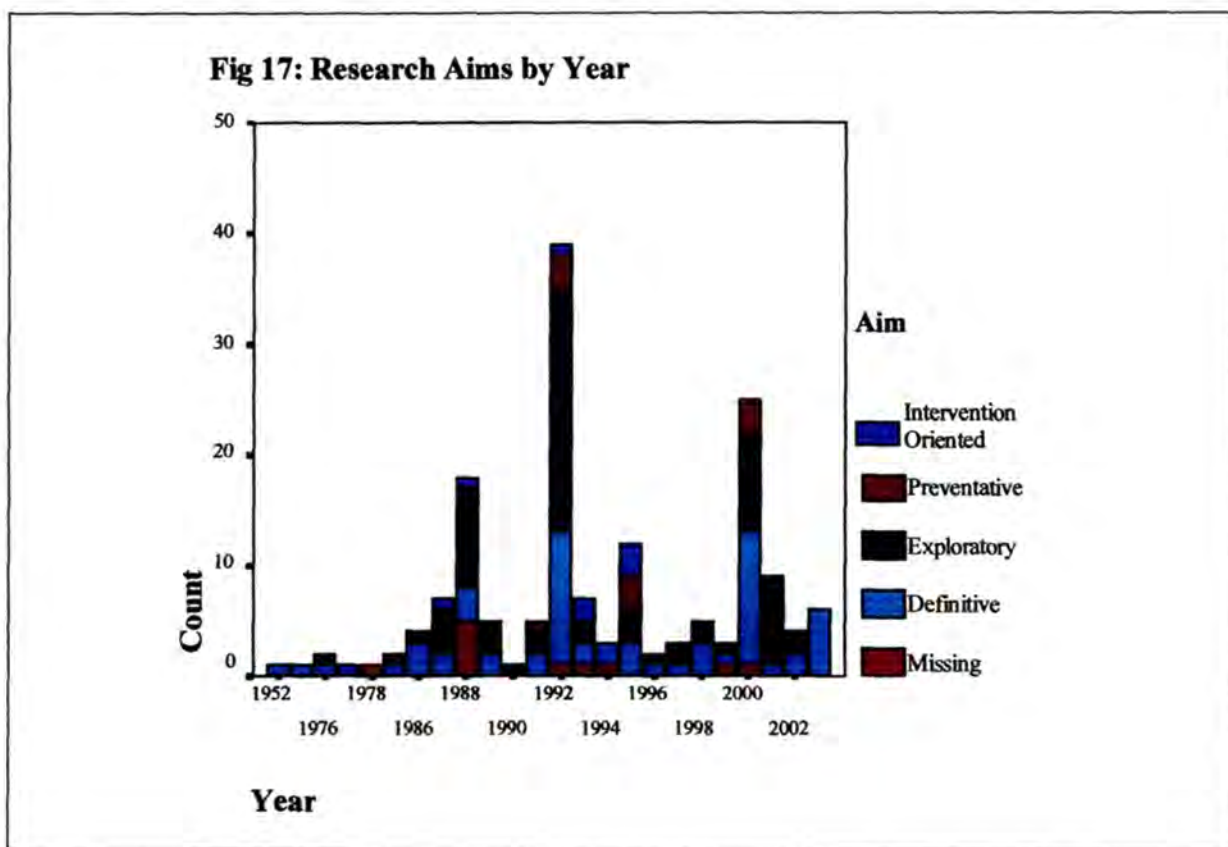


Fig 17 depicts the use of research aims by year. It is interesting to note that whilst a small number of intervention-oriented publications were evident from 1987-1995, since then no such

literature has been produced. This is contrary to the recommendations for research within the health sciences and anticipated trends within the current research paradigm.

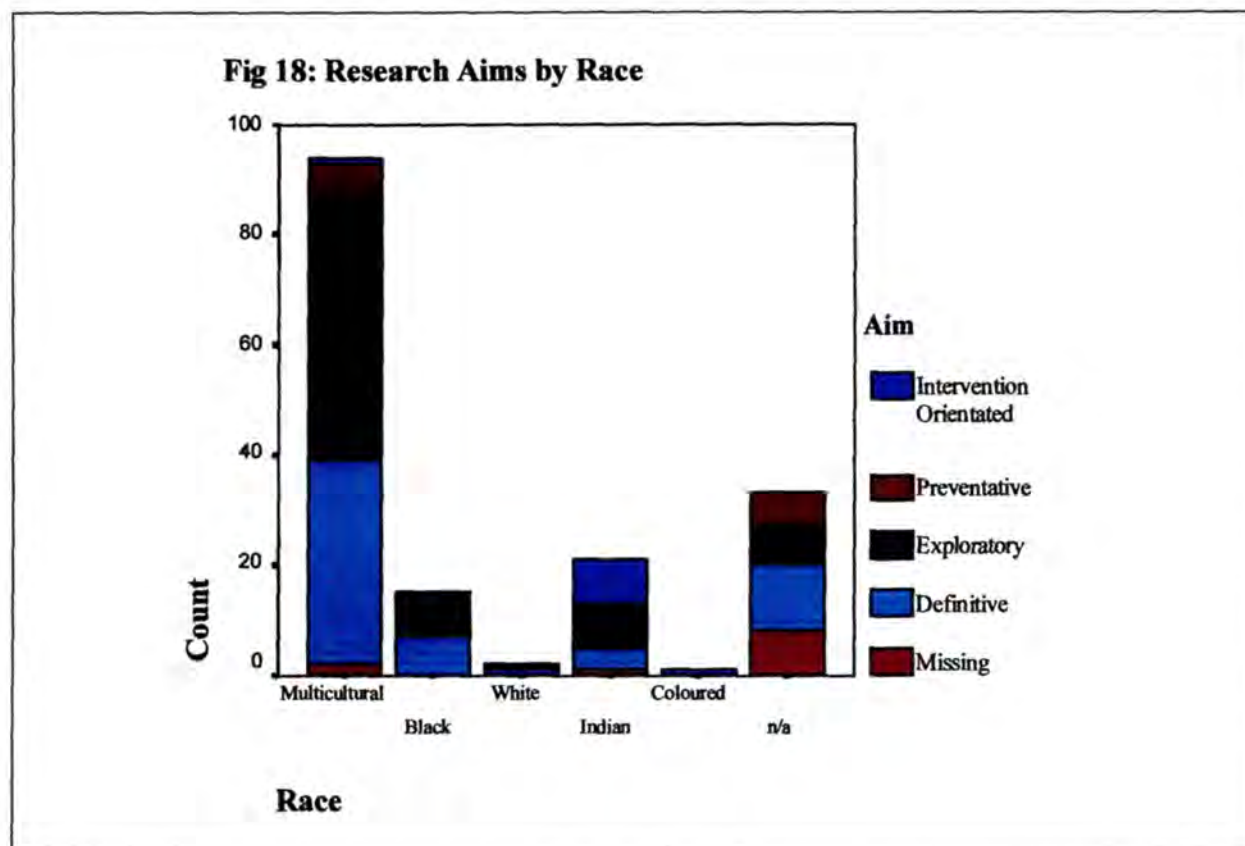


Fig 18 presents the use of research aims by race. Intervention related publications have only been geared toward Indian people and none for the other races. Publications on Coloured people are only definitive and have not even reached the exploratory level, yet alone incorporated prevention or intervention research aims. Research on suicide in Black and in White people is distributed between definitive and exploratory aims. No prevention research has been conducted with regards to any specific racial group.

## **Chapter 6: Limitations of the Study**

One of the greatest advantages of this study was the availability and accessibility of the data for analysis, which existed already transcribed. The method allowed for the analysis of published trends of suicidal behaviour over time. It had the further advantage of being passive and non-reactive in nature, limiting potential problems that may have been created by a researcher's effects on the study or having been disruptive to research participants. Content analysis easily allows for repeatability, meaning that other researchers may re-check findings and challenge questions of reliability and validity. The project may potentially provide a source of longitudinal data (Babbie & Mouton, 2002). Lastly, the project was relatively inexpensive with the major costs being time, photocopying and printing.

However, research in suicide has certain inherent problems due to methodological inadequacies such as inconsistent use of definitions regarding the subtypes of suicidal behaviour, levels of suicide intent, differences in the conceptions of different age categories and a lack of comparison or control groups and standardized outcome measures (Burns, 1995; Linehan, 2000; Rudd, 2000).

A cut off date for receiving articles to be included in the table was scheduled for the 28<sup>th</sup> of February 2004 due to the time constraints of the project. The remainder of traced publications that were not included in the analysis were included in a supplementary bibliographic list of articles on suicidal behaviour in South Africa.

Due to the need to summarize comprehensive sources of data, certain items may have been more likely to be included than others. This could be a result of the researcher's unconscious interests or selective attention to certain details. Another disadvantage of the study is that it is limited to an analysis of publications only, and there are pitfalls inherent in the use of retrieved records as raw data (Babbie & Mouton, 2002). For example, the publications being studied may have not represented a true reflection of the original population of records created or may not have been an adequate representation of the original records produced. The analysis may have thereby run the risk of de-contextualizing the content of the articles and therefore distorted the original record (Kellehear, 1993). Furthermore, by highlighting the salient information in order to tabulate it, specific information about the context and circumstances of the findings may be lost or misrepresented.

The statistical results based on the database information were analysed using the SPSS 11.5 (SPSS Inc., 2002) computer programme. Like any computer analysis, SPSS relies on the accurate coding and input of information. Any errors made in the coding or input of information, may weaken the reliability of the results. Although the database was carefully coded and checked for errors, the data capture may have been subject to human error. However, the mean proportion of agreement between the coders was 88.4% for all seven content categories.

The omission of age as a variable for statistical analysis may have limited the scope of the study. A reason for this was because of the overlap among the definitions of age across publications. For example, one publication (Pillay, 1995) used an adolescent sample between the ages of 13 and 17 whilst another publication (Mayekiso, 1995) used an adolescent sample between the ages of 15 and 19. Thus, the age categories were incompatible for statistical analysis in a work of this

limited scope. As many national and international suicide statistics and studies are categorized by age, South African suicide researchers may benefit from corresponding their samples more closely with specific age or developmental categories.

Lastly, the exclusivity of the categories may have been compromised by the varying definitions employed by the authors of articles, their differing research aims and the comprehensive nature of the information produced. For example, Bateman (2001) studies suicidal ideation in a sample of participants between the ages of 17 and 24 whilst Routledge (2001), also studying suicidal ideation, uses a sample of participants between the ages of 17 and 20, thus resulting in an overlap of age categories.

The above methodological problems may have impacted on the reliability and validity of the study. The results should therefore be interpreted with caution. Furthermore, the manner in which the results are presented has produced a rather superficial and broad description of the field of suicidology and therefore may lack nuance and depth.

Although this study has the aforementioned limitations and may over generalize due to the large amount of data on which the results are based, it is hoped that the current study may serve the purpose of providing a broad overview of the state of suicidology research in South Africa. This will hopefully provide a platform from which more specific, refined analyses of the literature could be conducted.

## **Chapter 7: Conclusions and Recommendations**

This study attempted to describe the scope, trends and nature of suicide research in South Africa. This was done via a comprehensive search and tabulation of the literature that has been published regarding suicide in South Africa. A total of 166 articles were identified and statistically analysed according to year, type of suicidal behaviour, method of data analysis, race, sex and research aim. The findings were discussed in detail in the previous results section.

This section is a summary of the main conclusions generated from these results and attempts to highlight the major significant findings and implications of the study. It includes recommendations that have been generated from the results of the study that may direct future research toward neglected areas.

### **7.1 Types of Suicidal Behaviours Represented in Retrieved Publications**

Research on the various types of suicidal behaviours appears to be heavily concentrated on non-fatal suicidal behaviours whilst suicidal ideation and murder-suicide are very poorly represented in the publications. The field of suicidology may therefore require further research into suicidal ideation, especially as this is most often the precursor to actual suicidal behaviours (fatal and non-fatal). This may contribute significantly to preventative strategies and case management. Further research into the area of murder-suicides is indicated.

## 7.2 Method of Data Analysis in Retrieved Publications

Quantitative statistical analysis was the most frequently used methodology type in suicidology research, whilst qualitative analysis was rarely used. The combined use of quantitative and qualitative analysis is hardly evident in the literature. The use of qualitative analysis and the combined use of quantitative and qualitative analysis does not show an increase over time as might be expected. Due to the predominance of quantitative research in the suicide literature, increasing the use of qualitative methods or the combined use of quantitative and qualitative methods is indicated. This may extend the scope of research beyond quantitative outcomes as qualitative research aims to generate new concepts rather than merely test existing ones (Neuman, 1997) or data gathering. As previously mentioned, further research into suicidal ideation is indicated and this is an area that would lend itself well to qualitative analysis.

## 7.3 The Representation of Race in Retrieved Publications

Multi cultural samples characterise most of the retrieved publications. For research that focuses on a specific racial group, Indian people are most represented followed by Black and Coloured people as the least represented. Based on the discrepancies between the percentage reflection of race in the publications and the percentage racial population statistics it can be seen that Black people are significantly under-represented and Indian people are highly over-represented in the publications. Future suicide research that investigates race should therefore focus on the Black population group. Whilst Coloured people are adequately represented according to population statistics, suicide research may benefit from increased specific sex-linked knowledge and understanding of suicidality within this racial group. This may prevent the inappropriate over-

generalisation of findings to unique populations. The relationship of suicidal ideation specific to each race deserves increased attention.

An alarming finding with regard to Coloured people is that they have only begun to be represented in the literature as a specific group since 2003. Black and Indian people have almost consistently been researched since 1952 in the retrieved publications. White people are only represented as a distinct racial group in 1992. As a whole, reporting with reference to ethnicity is minimal in comparison to reporting on the population as a whole. Reporting with reference to ethnicity may improve the precision and detail of our understanding of suicidal behaviours with regard to diverse groups across a variety of settings. An investigation into historical data on the various racial groups may provide a valuable archive of multi-cultural information with which to compare current research on fatal and non-fatal suicidal behaviours, suicidal ideation and murder-suicides.

Black and Indian males and White females appear to be poorly represented in the literature. For Coloured people, few studies focus specifically on distinct groups according to sex, again indicating the lack of representation of Coloured people as a cultural group in suicide research. If sex is investigated with regard to specific racial groups, the field would benefit from increased studies on Black and Indian males and White females and both gender specifics for Coloured people.

#### 7.4 The Representation of Sex in Retrieved Publications

The ratio of male to female research is 1.8: 4.8. No publications in South Africa have used exclusively male samples. Although fatal suicide is predominant in males (Butchart, 2000; Flisher & Parry, 1994), limited research has been done on suicidality in relation to masculinity. No research has been conducted on males with suicidal ideation despite the statistical fact that males who are experiencing suicidal ideation are more likely to use fatal means to carry out their suicidality. Increased research efforts could focus on suicidality and especially suicidal ideation in relation to masculinity and use male only samples.

#### 7.5 Research Aims Represented in Retrieved Publications

Most of the research done so far in the South African context has mainly been descriptive and exploratory. Research on prevention and intervention is minimal, which may represent the lack of theoretical foundations in suicide research. Prevention and intervention publications for non-fatal suicidal behaviours are more evident than for other types of suicidal behaviours. There is no representation of prevention or intervention for suicidal ideation specifically, suggesting an important area that requires action-orientated input. No studies on murder-suicide have been aimed at prevention or intervention. No prevention research has been conducted with regard to any specific racial group. There is thus a need for research to focus on prevention and intervention of suicidal behaviours, especially suicidal ideation, and move toward expanding the theoretical foundations in suicide research. Whilst intervention research is redundant for fatal suicidal behaviours, intervention research could focus on the secondary victims of fatal suicidal

behaviours. The field of suicidology could also benefit from increased prevention and intervention research related to murder-suicides.

The most common design for studies on non-fatal suicidal behaviours was exploratory. Considering the high frequency of exploratory publications for non-fatal suicidal behaviours it would appear that this area may be well, if not over-researched. Research efforts should go toward expanding the prevention and intervention orientated areas. However, the frequency of prevention and intervention publications for non-fatal suicidal behaviours appears to be increasing. There is no representation of prevention or intervention for suicidal ideation specifically, thus suggesting an important area that requires action-orientated input. As little definitive work has also been done in this area, it may require some definitive studies to lay the groundwork for prevention and intervention strategies. Murder-suicide is less common in South Africa than other forms of suicidal behaviours so it therefore makes sense that this is the least investigated area. However, within this area there have been no studies done that are aimed at prevention or intervention. Whilst there is a need for descriptive and exploratory publications in suicidology, these should not necessarily occupy as much as 81,3% of the research.

Through the process of reviewing and tabulating the South African suicide literature, it became evident that various valuable areas of research investigation have been neglected within the retrieved publications. The following section lists areas of suicide research, which may need to be further investigated:

- i) Analyses into the effectiveness of suicide treatment strategies (Burns, 1995).

- ii) The relationship between sexual abuse and the development of suicidality (Garcia et al., 2002; Gutierrez, Thakkar & Kuczen, 2000; Santa Mina & Gallop, 1998).
- iii) The 'perceptual' world of the suicidal individual (Nel, 1981).
- iv) The association between sexual orientation and suicidality (D'Augelli et al., 2001, McDaniel et al., 2001).
- v) The incorporation of measures of 'reasons for living' into investigations of suicidality.
- vi) Postvention for survivors of suicide eg family members and mental health professionals.
- vii) The impact of the media on suicidality.
- viii) Cluster and contagion suicides.
- ix) Geriatric suicide (Turvey, 2002).
- x) HIV status and suicidality (du Preez & Towell, 1992; Wassenaar, 1995)

The results of the study thus represent a broad descriptive overview of the state of suicidology research in South Africa. It is hoped that the findings might provide an indicator of the areas that require further research in suicidology as well as a focus for more specific research investigations. It is further hoped, despite its limitations, that this work and the above conclusions provide a basis for a national suicide research agenda that could be useful to researchers and funding agencies.

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# APPENDICES

| <u>Year</u> | <u>Author</u>   | <u>Region</u>  | <u>Race</u>    | <u>Sex</u>         | <u>Age</u> | <u>Subjects</u>                                 | <u>Suicidal Behaviour</u>           | <u>Research Aim</u>  | <u>Research Method</u> | <u>Procedure / Instruments</u>  |
|-------------|---|----------------|----------------|--------------------|------------|---|-------------------------------------|--|------------------------|---|
| 2001        | Bateman, C  | South Africa   | Black          | Female (F)         | +/- 17-24  | Black & female                                  | Suicidal Ideation (SI)              | *Review of reasons for increasing prevalence of eating disorders & suicidal depression   | n/a                    | *Academic article   |
| 2001        | Allan, A.<br>Allan, M.M.<br>Roberts, M.C.<br>Pienaar, W.P.<br>Stein, D.J. | Cape Province  | Multi-cultural | Male & Female (MF) | n/a        | Problem drinkers                                | Suicidal Behaviours (SB)            | *To investigate the relationship between alcohol, crime & suicide re. demographic & alcohol related variables  | Quantitative           | *Cross-sectional record study of criminal offences & suicide attempts in 269 admissions to an alcohol rehabilitation unit<br>*Description of types of offences & suicide attempts |
| 2001        | Pillay, A.L.<br>van der Veen, M.B.W.<br>Wassenaar, D.R.                   | South Africa   | Multi-cultural | Female (F)         | Adult      | Hospitalized for NFSB                           | Non-fatal Suicidal Behaviour        | *To investigate the precipitants of non-fatal suicidal behaviour using a gender based comparison   | Quantitative           | *Retrospective analysis of case records (self reports of precipitating factors & biographical details) *Statistical analyses  |
| 2001        | Descoins, S.  | Kwa-Zulu Natal | Multi-cultural | Male & Female (MF) | n/a        | Data collected for 2 unpublished honours theses | Fatal Suicidal Behaviour (FSB)      | *To investigate the seasonal, monthly & weekly variation of fatal suicidal behaviour as well as the relationship between suicidal behaviour & climate          | Quantitative           | *2ndary analysis  |
| 2001        | Pillay, A.L.<br>Wassenaar, D.R.<br>Kramers, A.L.                          | Kwa-Zulu Natal | Black          | Male & Female (MF) | n/a        | Patients presenting at clinics for NFSB         | Non-fatal Suicidal Behaviour (NFSB) | *To investigate non-fatal suicidal behaviour in persons of African descent   | Quantitative           | n/a   |
| 2001        | Osborne, S.   | South Africa   | Multi-cultural | Male & Female (MF) | n/a        | Newspaper reports                               | Murder-suicide (MS)                 | *To determine base rates & profile of murder suicide perpetrators<br>*To determine common trends in the phenomenon of murder-suicide as reported in newspapers | Quantitative           | *Newspaper surveillance technique   |
| 2001        | Routledge, L.   | South Africa   | Multi-cultural | Male & Female (MF) | 17-20      | University students                             | Suicidal Ideation (SI)              | *To investigate whether a relationship exists between alcohol misuse and positive & negative life ideation across 3 cultures                                   | Quantitative           | *Questionnaires:<br>Adolescent Alcohol Involvement Scale &<br>Positive and Negative Suicide Ideation Scale  |
| 2001        | Pyke, D.A.  | Kwa-Zulu Natal | Multi-cultural | Male & Female (MF) | 21+        | Random (shopping mall)                          | Suicidal Ideation (SI)              | *To determine culture-specific 'reasons for living'<br>*To identify key target areas for suicide prevention in SA  | Quantitative           | *Demographic data survey<br>*Brief Reasons for Living Inventory   |
| 2001        | Peirson, A.L.   | Gauteng        | Multi-cultural | Male & Female (MF) | 17-21      |   | Non-fatal Suicidal Behaviour (NFSB) | *To investigate the relationship between personality & suicidal ideation and the prevalence of suicide attempts & ideation                                     | Quantitative           | *Assessment instruments   |

| <b>Results</b>   | <b>Discussion</b>  |
|--|--|
| <ul style="list-style-type: none"> <li>* Largely evident among daughters of emerging black elite professionals</li> <li>* Dramatic increase in attempted suicide in this population (1988-1998): 17%-75% (overall general increase of 58% over the same period)</li> <li>*Precipitating factors: largely 'partner relational' (39%) &amp; 'parent child problems' (32%)</li> <li>* Suicide attempts associated with female gender, White racial group, not having a spouse, younger current age &amp; early onset of problem drinking</li> </ul>   | <ul style="list-style-type: none"> <li>*Loss of family cohesion</li> <li>*"crises of identity in our urbanised black youth"</li> <li>*Lack of black female role models of ambition &amp; power</li> <li>*Young black women are cast into prominent positions with little mentoring / support</li> <li>*Association between intoxication &amp; suicide attempts</li> <li>*Recommended need for population studies &amp; intervention programmes aimed at teenage alcohol users</li> </ul> |
| <ul style="list-style-type: none"> <li>*Significantly more married women than men cited spousal extramarital affairs, alcohol abuse and marital violence as precipitants of their self-destructive behaviours</li> </ul>   | <ul style="list-style-type: none"> <li>*Findings emphasise the role of spousal behaviour and resultant stress in precipitating non-fatal suicidal behaviour (NFSB) in women</li> <li>*Preventive efforts must focus on the psychological, social and economic empowerment of women</li> </ul>  |
| <ul style="list-style-type: none"> <li>*Significant monthly variation in the distribution of FSB with the expected spring-summer peak &amp; winter trough</li> <li>*Pattern more pronounced for adults than for the youth or elderly</li> <li>*No significant variation in weekly distribution</li> <li>*No peak on Mondays</li> <li>*Peak on Sundays with a steady decrease toward the end of the week</li> <li>*Increase in humidity, ambient temperature &amp; min temp was associated with an increase in suicide rates especially for violent suicide</li> <li>*Negative relationship found between hours of sunshine &amp; suicide (only significant for non-violent suicide)</li> </ul> | <ul style="list-style-type: none"> <li>*Further research required to develop a theoretical framework for understanding the temporal distribution of suicide</li> </ul>   |
| <ul style="list-style-type: none"> <li>*Over half of the sample engaged in SB over the weekend</li> <li>*Significantly more adolescents than adults ingested medicinal substances &amp; significantly more adults than adolescents used violent methods</li> <li>*Interpersonal conflict was cited as a short term precipitant</li> <li>*Financial &amp; employment stressors were predominantly cited as recent stressors to non-fatal suicidal behaviour (NFSB) amongst adults</li> </ul>  | <ul style="list-style-type: none"> <li>*Findings demonstrate similar demographic &amp; psychosocial correlates of non-fatal suicidal behaviour (NFSB) amongst Africans as other cultural groups in SA</li> <li>*Discusses role of apartheid &amp; acculturation</li> </ul>   |
| <ul style="list-style-type: none"> <li>*Majority of murder-suicides (MS) were spousal/consortial; 62,7% fell into the familicidal category</li> <li>*Motive: mostly amorous jealousy (21.7%)</li> <li>*Gender: Mostly male (88%)</li> <li>*Mostly under 50yrs old</li> <li>*Method: Mostly firearms (72.2%)</li> <li>*Race: Mostly black (59%)</li> <li>*Occupation: Mostly policemen (24.1%)</li> <li>*Suicide perpetrators are more likely to use firearms as opposed to other methods</li> </ul>  | <ul style="list-style-type: none"> <li>*Profiles in SA similar to other countries</li> <li>*Indicates similarities between perpetrators of homicide &amp; murder-suicide (MS)</li> <li>*Suggests the need for national surveillance system for identifying &amp; preventing murder suicide (MS)</li> </ul>   |
| <ul style="list-style-type: none"> <li>*White adolescents misuse alcohol to the greatest extent, followed by Indian then Black adolescents</li> <li>*Significant relationship between positive life ideation and alcohol misuse, however the relationship between negative life ideation and alcohol misuse is not as clearly seen</li> </ul>  | <ul style="list-style-type: none"> <li>*Suggests future research to include measures of the extent to which coping resources play a role in promoting or discouraging adolescent high risk behaviours</li> </ul>   |
| <ul style="list-style-type: none"> <li>*Indicates significant differences based on gender, number of children, marital status and race for sub-categories of reported 'reasons for living'</li> </ul>  | <ul style="list-style-type: none"> <li>*Indicates significant differences based on gender, number of children, marital status and race for sub-categories of reported 'reasons for living'</li> </ul>  |
| <ul style="list-style-type: none"> <li>Suicidal ideation shown to be related to high Neuroticism, low Extraversion, &amp; low Conscientiousness</li> </ul>   | <ul style="list-style-type: none"> <li>*Suicidal ideation (SI) related to high Neuroticism, low Extraversion, &amp; low Conscientiousness</li> </ul>   |

## APPENDIX B

### EXTRACT OF CODED DATA (Publications of 2001)

|      |   |    |    |      |   |     |
|------|---|----|----|------|---|-----|
| 2001 | Bateman, C  | B  | F  | SI   | E | n/a |
| 2001 | Allan, A.<br>Allan, M.M.<br>Roberts, M.C.<br>Pienaar, W.P.<br>Stein, D.J. | MC | MF | SB   | E | Qt  |
| 2001 | Pillay, A.L.<br>van der Veen, M.B.W.<br>Wassenaar, D.R.                   | MC | F  | NFSB | E | Qt  |
| 2001 | Descoins, S.  | MC | MF | FSB  | E | Qt  |
| 2001 | Pillay, A.L.<br>Wassenaar, D.R.<br>Kramers, A.L.                          | B  | MF | NFSB | E | Qt  |
| 2001 | Osborne, S.   | MC | MF | MS   | D | Qt  |
| 2001 | Routledge, L.   | MC | MF | SI   | E | Qt  |
| 2001 | Pyke, D.A.  | MC | MF | SI   | E | Qt  |
| 2001 | Peirson, A.L.   | MC | MF | NFSB | E | Qt  |

## APPENDIX C

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