Suicide and suicide risk factors: A literature review

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Abstract

Suicide can be defined as intentional self-inflicted death. [1] It is a serious cause of mortality worldwide. Suicide is considered as a psychiatric emergency and the awareness of the seriousness of suicide in our society should not be overlooked. It is a significant cause of death worldwide.[1] It accounts for about 30,000 deaths annually in the USA and more than 5,000 deaths annually in South Africa,[2] and the prevalence of suicide in our society is on the increase. Etiological factors for suicide include social, psychological and physical factors. But suicide is multi-factorial in nature.[1] This review focuses mainly on the associated risk factors for suicide: demographic factors, psychiatric disorders, terminal or chronic medical conditions, and recurrent unresolved psychological stressors.[3]

Search strategy

The search strategy included research carried out internationally and in South Africa.. Computerised database searches were utilised. These covered a wide range of health, educational, occupational and other areas of research. Recent major reviews on suicide and associated risk factors were located electronically and the references in such reviews scrutinised for the relevant articles.

The sources of information included relevant textbooks of psychiatry, journals of psychiatry (both local and international), internet search engines like Medscape and Google, and abstracts from relevant articles.

Definition of terms

- Suicide: self-inflicted death with evidence that the person intended to die.[1,2]
- Suicide attempt: a self-injurious behaviour with a non-fatal outcome.[1,2]
- Suicide ideation: thoughts about killing himself or herself. Suicide ideation may vary in seriousness depending on the specificity of suicide plans and the degree of suicide intent.[1,2]
- Lethality of suicide behaviour: objective danger to life associated with a suicide method.[1,2]
- Deliberate self harm: injurious act without the intent to die.[1,2]

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Introduction

Suicide does not have one universally accepted definition. It can however be defined, simply, as intentional self-inflicted death.[1,2,3] Scheidman defines it as "the conscious act of self-induced annihilation, best understood as multidimensional malaise in a needful individual who defines an issue for which the suicide act is perceived as the best solution."[1] Suicide is not a random or pointless act; on the contrary it is a way out of a problem.[2]

Suicide is a significant cause of death worldwide. It is rated as one of the first eight leading causes of death annually in South Africa.[4, 5.] About 5000 suicides were recorded in South Africa annually.[6] Suicide is considered a psychiatric emergency, and its prevalence is increasing.

Epidemiology

Incidence and prevalence

Attempted suicide is 8 to 10 times higher than the number of successful suicides.[1,5.] In 1997 the suicide rate in the USA was 11.4/100,000, although this has subsequently declined slightly, and is about 10.7/100,000 in 2000.[1,4,5,7] About 30,000 deaths annually are attributed to suicide in the USA.

From 1993 to 2004 the rate of suicide among people over the age of 14 was 10–13/100,000 in England and 13/100 000 in the UK and Ireland.[8] Similar data is lacking in South Africa and other African states. A national collection of suicide data has not yet been compiled; the present data is obtained from ad hoc studies. In South Africa, a study carried out by Flisher revealed a suicide rate of 17/100 000 in the year 1990, which is slightly higher than the world average of 16/100 000. The mean annual suicide mortality rate in the age range 15–25 was found to be higher than in other age ranges.[9,10]

Aetiology

An understanding of the theoretical perspectives on suicide is helpful.

Social theories

In an attempt to explain statistical patterns of suicide Emile Durkheim, a French sociologist, divided the social theories into three categories: the egoistic, the altruistic and the anomic.[1,3]

Egoistic

This refers to those people who are not strongly integrated into any social group. The lack of family integration explains why the unmarried are more vulnerable to suicide than the married. It also explains why couples with children are the best-protected group of all other groups that were studied. Durkheim also believes that rural communities have more social integration than urban areas, hence the low suicide rate. Another example is that of Protestants versus Catholics. He believes that Protestantism is a less cohesive religion than Catholicism, and consequently the Protestants have higher suicide rates among their members.

Altruistic

Durkheim believes that individuals who are philanthropic are prone to suicide because of their excessive integration into a group. Suicide is viewed as an outgrowth of that integration.

Anomic

This refers to social instability, with a breakdown in social standards and values. It is believed that this group's integration into society is disturbed. Individuals in this group are thus deprived of customary norms of behaviour. This explains why those who experience negative changes in their economic fortunes are more vulnerable to suicide.

Psychological theories

The first important psychological insight into suicide was reported by Freud. According to him suicide represents aggression turned inward against an "introjected" object. This retroflexed murder is either turned inward or used as an excuse for punishment, or self-directed death instincts, which he refers to as Thanatos. Freud identified three components of hostility suicide: a wish to kill, a wish to be killed, and a wish to die.[1,3] Freud also described suicide as an aggression turned inward against an introjected ambivalently cathected loved object and he doubted that there could be a suicide without any earlier repressed desire to kill someone else.

Menninger's theory is built on Freud's concept. He perceived suicide as inverted homicide because of a patient's anger towards another person. This retroflexed murder is either turned inward or used as an excuse for punishment or a self-directed death.[1,3]

Other psychological theories

Contemporary sociologists believe that much can be learned about the psychodynamic issues of suicidal patients from their fantasies about what will happen and what the consequences will be if they commit suicide. Their fantasies are revenge, escape, rescue, rebirth, and reunion with the dead, new life, sacrifice, control, power, restitution and atonement.[1] People who have suffered the loss of a loved object or have a narcissistic injury experience overwhelming effects like rage and guilt. They are the ones most likely to act out suicidal fantasies. Suicide patients use preoccupation with suicide as a way of fighting off intolerable depression. A sense of hopelessness is an indicator of long-term suicidal risk.[1] The suicide attempt can cause long-standing depression to disappear, especially if it fulfils the patient's need for punishment.[(1)] Depressed persons may also attempt suicide just as they appear to be recovering from their depression.[1]

Biological factors

The following are biological factors predisposing to suicide.

Genetics

Twin studies, done as a landmark study in 1991, show monozygotic concordance of 11.3 and dizygotic concordance of 1.8.[1,2] Suicide risk is eight times greater for first-degree relatives of psychiatry patients than controls, and four times greater among first-degree relatives of psychiatry patients who had committed suicide.[6] In families with a heavy genetic loading for mood disorders the suicide rate was higher.[3,6,11–13] The genetic factor for suicide may be independent or in addition to the genetic transmission of mental disorders.[6,10,14]

Neurochemistry

Studies done on the relationship between tryptophan hydroxylase and a lifetime history of multiple suicide attempts have revealed that there may be a genetic factor of impulsivity. Apolymorphism in humans with two alleles has been found. This may be related to an abnormality in the control of the serotonin system.[1,3] A decrease in serotonin levels leads to a decrease in 5-hydroxyindolacetic acid (5HIAA) in the cerebrospinal fluid (CSF). This was found in depressed patients who attempted suicide.[1,3] Studies have shown that there is an association between serotonin decrease in the central serotonin system and poor impulse control. Those who view suicide as an impulsive behaviour use this as an explanation.[1,3,14]

Peripheral markers

The peripheral markers may identify patients who are emotionally overwhelmed and vulnerable.[1] They have increased hypothalamic–pituitary–adrenal axis activity, increased 24-hour urine excretions of cortisol, a blunted plasma thyrotrophic stimulating hormone (TSH) response to thyrotrophic-releasing hormone (TRH), skin conductance abnormalities, altered urinary catecholamine ratios, a decrease in platelet serotonin uptake and low levels of platelet monoamine oxidase (MOA).[1,3]

Suicide risk factors

There are several factors associated with an increased risk for suicide. Among them is gender, age, religion, marital status, and employment or nature of profession.

Demographic factors

Gender

More males commit suicide than females, whereas more females tend to attempt suicide than males.[1,15]

Age

The risk for suicide increases with age: the risk in men peaks at age 45 and in women at age 55.[1]Suicide rates among young people, especially in the 15–24 age bracket, are on the increase.[1,2,7–10,16–19] Suicide among males aged 25–34 years has increased by almost 30% over the past decade.[9] In the USA suicide is the leading cause of death in the age group 15–24 years old, followed by motor vehicle accidents and homicide.[9,10] In South Africa suicide accounts for 1,3% of deaths of people in the age group15–24.[9]

Marital status

Marriage acts as a protective factor against suicide. Reported rates of suicide among the various categories revealed that among married people the suicide rate is 11/100 000.[1,4] Marriage appears to be reinforced by having children and the marriage has to be stable. Rates of suicide were highest among divorced men (69/100 000) and those who are widowed (40/100 000).[20–22]

Race

In the past, suicide rates were higher among whites than blacks in the

Table I: Proportional mortality (PM) and mean annual mortality (MR) rates per 100 000 for suicide among each population group, gender and age group in South Africa, 1984–1986.

Race	Whites				Coloureds				Asians				Blacks	
Sex	Men		Woman		Men		Women		Men		Women		Men	Women
Age group (years)	(n = 2184)		(n = 577)		(n = 349)		(n = 97)		(n = 349)		(n = 59)		(n = 1692)	(n = 299)
	PM	MR	PM	MR	PM	MR	PM	MR	PM	MR	PM	MR	PM	PM
1524	11.8	25.75	9.5	6.5	2.4	9.8	2.6	3.72	8.4	19.74	12.8	11.36	2.5	1.5
2534	16.1	42.04	12.4	12.14	2.6	18.03	1.4	4.13	7.4	24.52	3.1	3.94	2.3	1.1
3544	11.8	43.57	6.6	11.7	1.5	16.26	0.6	3.48	3.4	20.76	2.8	6.78	1.6	0.5
454	5.5	46.95	3	13.97	0.7	12.81	0.3	3.42	1.5	21.66	0.4	2.63	0.9	0.3
5564	2.3	50.3	1	11.45	0.3	9.6	0.1	1.5	0.8	26.18	0.4	7.65	0.5	0.2
> 65	0.7	41.27	0.2	6.21	0.1	5.7	0	0.56	0.3	26.79	0	0.13	0.2	0
All ages	3.5	39.93	1.1	10.1	1	13.03	0.4	3.38	2.2	21.11	1.1	6.65	1.1	0.3

USA.[1] The trend seems to be changing, however, as we now see more suicides among blacks. Results of a study carried out by Flisher et al in five provinces of South Africa are presented in Table I. It shows that during the period 1984–1986 more whites committed suicide than blacks[9].

Source: Department of Psychiatry, University of Cape Town. 1994

Religion

Historically, Roman Catholics have had fewer suicides compared to Protestants and Jews.[1] One's degree of orthodoxy and social integration may be a more accurate measure of risk in this category.[1] This seems to be in agreement with Durkheim's theory.

Occupation

Social status predisposes to a greater risk of suicide. Gainful employment generally protects against suicide. Suicide is higher among the unemployed.[2] The suicide rate increases during economic recessions and times of high unemployment, and decreases during times of high employment.[21,22]

Physicians are traditionally at a greater risk of committing suicide than non-physicians and the general population.[1] Physicians who commit suicide are said to have a history of mental illness, in addition to their professional, personal and family difficulties.[1,2]

Specialties with high suicide risk are musicians, dentists, nurses, social workers, artists, mathematicians, scientists and police officers.[1] Other sources cite that psychiatrists, ophthalmologists and anaesthetists also have high risk of suicide.[21,22]

Psychiatric diagnosis and psychiatric symptoms

About 90% of people who commit suicide have a diagnosable mental disorder.[4,7,13,17] Depression is most commonly associated with suicide.[18,19] An estimated 400 per 100 000 depressed male patients and 180 per 100 000 depressed female patients commit suicide.[20,21,23,24]

Hopelessness is associated with an increased suicide risk. Suicide often occurs in conjunction with depression as a "state-dependent" characteristic. Other individuals experience hopelessness in a primary and more enduring bases.[25–27] Anxious patients may be inclined to act on suicidal impulse. Studies of suicide in patients with affective disorders have shown that those who died by suicide were more likely to have had severe psychic anxiety or panic attacks[28,29] Around a quarter of the people who committed suicide had been in contact with mental health services in the year before death. Figures for England and Wales are over 1000 such cases annually.[30]

The suicide risk often increases when the depressed person is showing signs of recovery.[1,2,6]

Past and current suicidality

Past suicidal behaviours are a significant factor for suicide. About 50% of those who died of suicide had made at least one previous attempt. The presence of current suicidal ideation plans and attempt are associated with a high risk of suicide. The risk is higher if there are multiple attempts, if planned, with a low possibility of rescue, use of a lethal method, high intent of dying or causing serious medical complications.[1,2,38]

Individual history

This includes medical conditions like malignancies, heart disease, HIV/AIDS, chronic obstructive lung disease, etc.[38] Other factors include psychosocial stressors, family history of suicide and mental illness.[38]

Personality strength and weakness

This relates to lack of coping skills, lack of problem-solving skills, pessimism, hopelessness, perfectionism, rigid/polarised thinking.[38]

Suicide risk assessment

Clinicians should endeavour to perform a comprehensive suicide risk assessment on any patient who expresses suicidal tendencies such as ideation, thought, intent or attempt and, more especially, when they portray some of the risk factors discussed above.[38]

The goals of the assessment are to identify individual suicide risk and the protective factors in order to estimate severity of suicide risk, and help the individual gain insight into his or her motivation for suicide, to identify modifiable factors, and to target interventions to reduce the suicide risk.[38]

There are four main steps in the assessment of suicide risk:

Step I: *Assessment of suicidality*

This involves

- Establishing a therapeutic rapport with the patient, showing empathy and using gentle enquiry about suicidal behaviour.
- Acquiring collateral information from relatives, friends, or significant others, because some patients might give inaccurate information about the incidence to downplay the act.
- Assessing current suicidal ideation, intent and plan. This includes the method, availability of means, patient's belief about lethality of the method, chance of rescue, steps taken to enact plan, and preparedness for death.[2–5,31,32]
- Assessing the motivation for suicide; such as anger, escape from suffering, wish to reunite with loved ones, hopelessness, loss of a relationship, etc.

- Assessment of past suicide behaviour, frequency of previous attempts, lethality, nature and severity, intent to die, context/triggers for the attempt, method used, consequences.[38]

Step II: *Evaluation of suicide risk factors*
This relates to the assessment of the presence of the risk factors in 4.1 to 4.5.

Step III: *Identifying what is going on*
Look for the answer to the following questions: why, why now, and what is going on. This will help the clinician to understand the complexities of factors underlying or precipitating the suicidal behaviour and also facilitate the identification of targets for intervention. Most responses are categorised as psychiatric diagnosis/symptoms, distressing psychosocial situations and character difficulties.[35,36,38]

Step IV: *Identifying targets for intervention*
This involves identifying and targeting interventions to reduce modifiable suicide risk factors, e.g.

- Psychiatric diagnosis and symptoms, to treat disorder and alleviate symptoms.
- Distressing psychosocial situations, by addressing modifiable triggers or stressors.
- Character difficulties, by addressing maladaptive traits and coping skill development.[38]

There are two standardised tools developed to assist in the above assessment:

1. Suicide risk assessment guide (SRAG). This can be used to estimate the severity of the risk factors, i.e. for any of the factors selected, a score of the following:
   1 = low significance
   2 = moderate significance
   3 = high significance[38]

2. The tool for assessment of suicide risk (TASR). This consists of four parts:
   a. Individual risk profile (e.g. age, sex, family history, psychiatric illness)
   b. Symptom risk profile (e.g. depressive, psychotic symptoms, hopelessness)
   c. Interview risk profile (e.g. substance abuse, suicide ideation, intent, plan)
   d. Level of suicide risk (e.g. high, moderate, low)[38]

Myths about suicide

Myth	Comment
1. Those who talk about suicide are not serious risks	1. Most suicide victims communicate their plans or distress before death
2. Suicide is an impulsive act with little warning and few clues	2. As noted above, some form of communication is common
3. Suicidal persons are rarely indecisive or ambivalent	3. People who attempt suicide are decisive and have contemplated suicide before committing it
4. Suicidal tendencies or behaviour are inherited	4. Suicide does not appear to be an inherited predisposition or trait; it is familial
5. The risk of suicide is short-lived and improvement appears immediately	5. Improvement may be deceptive (e.g. recovery from depression), thus only when modifiable suicide risks are resolved

Source: Ref. 37.

Conclusion

Suicide remains a serious cause of mortality worldwide.
Not all suicides are preventable but a methodical approach to suicide risk assessment can enable healthcare providers to manage the patients who are at risk of committing suicide.

Comprehensive risk assessment helps healthcare providers reduce their liabilities. Although errors of judgment are inevitable, errors of omission are preventable if healthcare providers take time to perform a thorough risk assessment.

Recommendations

Healthcare providers, i.e. primary healthcare doctors, emergency personnel, psychologists, psychiatric nurses, human science professional social workers, clinical psychologists and teachers, should be adequately, and continuously, trained in the following areas:

- Suicide risk assessment and recognition.
- Treatment of medical emergencies owing to attempted suicide and the follow up after acute management, for referral to relevant specialities for further management
- Use of new prevention technologies, by identifying those prone to high-risk suicide behaviour, such as individuals with alcoholism, people living in isolation.

Further research should be carried out to better understand the risks and protective factors, their effects, and their interaction, on suicide and suicide behaviours.

Community awareness of suicide risk factors should be promoted by using information technology to educate the public.

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