Chapter-I

Introduction
1.00: INTRODUCTION

1.01: Suicide is a major public health problem: approximately 0.9% of all deaths are the result of suicide. About 1000 persons are estimated to commit suicide each day worldwide.

More than one lakh (1,18,112) lives in India, were lost to suicide in the year 2006. In the last two decades, the suicide rate has increased from 7.9 to 10.3 per 100,000. The southern states of Kerala, Karnataka, Andhra Pradesh and Tamil Nadu have a suicide rate of more than 15 percent while in the Northern States of Punjab, Uttar Pradesh, Bihar and Jammu & Kashmir, the suicide rate is less than 3 percent.

The majority of suicides (37.8%) in India are by those below the age of 30 years. The fact that 71% of suicides in India (National Crime Records Bureau, 2005) are by persons below the age of 44 years imposes a huge social, emotional and economic burden on our society. Suicide rates were nearly equal for young women and men, a contrast with the pattern of suicide sex ratios in eight developed countries (Mayer and Ziaian, 2002). It is estimated that one in 60 persons in our country are affected by suicide. It includes both, those who have attempted suicide and those who have been affected by the suicide of a close family or friend. Thus, suicidal behaviour requires immediate addresal.

Suicide implies taking one’s own life. Incidence of suicide may occur at any time from the start of adolescence to the age of even 100 years or more (Chaube, 1991). The ‘suicidal person’ may be one who successfully commits suicide, unsuccessfully attempts suicide, threatens suicide, demonstrates suicidal ideation or behaves in generally self-destructive patterns. The expression ‘suicidal act’ is used by the World health Organisation to denote the self-infliction of injury with varying degree of lethal intent and awareness of motive. For attempted suicide, the action must have a self-destructive intention however vague and ambiguous (Stengel, 1963). The suicidal gesture is similar except that the action is performed in a manner that other persons might interpret as suicidal in purpose. In suicidal threats the intention is expressed but no relevant action is performed. The term ‘suicidal ideation’ is often used in the technical literature, and refers to thoughts of killing oneself, in varying degrees of intensity and elaboration. The term also refers to a feeling of being tired of life, a belief that life is not worth living, and a desire not to wake from sleep (Paykel, 1974; Kessler et al, 1999).
In suicidal ideation, the person thinks or talks or writes about suicide without expressing any definite intent or performing any relevant action. Suicidal intention is a common denominator of all forms of suicidal behaviour.

Human suicidal behaviour has always been a source of dread and wonder to mankind. When a person has suicidal ideas, he is thinking of preponing his death and undergoing that process voluntarily. All suicidal people are not death seekers. Some attempt to communicate pain to reduce isolation, to avoid consequences of social status change, seek revenge, and convey a whole lot of other meanings, which are essentially individualistic.

Before the 1950s, little distinction was made between people who killed themselves and those who survived after an apparent suicidal act. Stengel (1952) identified epidemiological differences between the 2 groups and proposed the terms ‘suicide’ and ‘attempted suicide’, to distinguish between the two forms of behaviour. He supposed that a degree of suicidal intent was essential in both groups, i.e., those who survived were failed suicides.

Kessel and Grossman (1965) proposed that suicidal intent should no longer be regarded as essential because it was recognized that most ‘attempted suicides’ had performed their acts in the belief that they were comparatively safe; aware that they would survive their own dosage, and be able to disclose what they had done in good time to ensure their rescue. Kreitman (1977), introduced the term ‘para-suicide’ to refer to a ‘non-fatal’ act – “with a non fatal outcome, in which an 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.”

Although parasuicide has been used quite widely, ‘self-poisoning’ and ‘self-injury’ are retained. Morgan (1979) suggested the term ‘Deliberate Self Harm’ to refer to all such behaviour without the intent to die. Deliberate Self Harm (DSH) avoids all reference to suicide, and merely describes the common end-points of aberrant behaviour.
The core features of DSH are:

> The behaviour is self-initiated
> Harm is intended
> The act results, or may result in injury and possibly death to the individual.

The term attempted suicide is more generally used in literature, and is used as an umbrella term which covers people who inflict acute harm on themselves, poison or injure themselves, or try to do so, with non fatal outcome and that these behaviours occur in conditions of emotional turmoil. These attempts are undertaken with the view to, and expectation of, acute self-harm or unconsciousness, as a means of realizing change through the actual or intended consequences (Kerkhof, 2000).

Kerkhof (2000) notes: Some attempts are aimed at dying, many are aimed at mobilizing help, and others are ambiguously aimed to a certain extent at both. Some attempts are well prepared, others are carried out impulsively. Attempts may result in very different physical consequences, depending on intention, preparation, knowledge of lethality of the chosen method and purely coincidental factors. For these reasons, many authors prefer the term Deliberate Self Harm (DSH). Generally however, in the literature, the terms attempted suicide and DSH are used interchangeably and describe similar behaviours.

In the present study, the term Attempted Suicide will be used.

1.02: HYPOTHESES ABOUT SUICIDALITY

I. Neurobiology:

A proliferation of studies detailing more direct examination of the neuro-chemical functioning of the suicidal patients distinguishes the suicidal from the non suicidal (Bachus et al., 1997; Gross-Isseroff et al., 1998; Mann et al., 2001). It has been proposed that genetic variants may be correlated with the impulsivity, psychomotor change, and aggressive behaviour that increase suicide risk (Mann et al, 2001). Although several neuro-chemical factors have been implicated,
the main focus has been on alterations in serotonergic transmission in the central nervous system (CNS).

a. Genetic Considerations: The importance of biological factors in suicidal behaviour was suggested by studies of completed suicide demonstrating a much higher concordance rate for monozygotic twins than dizygotic twins. Significantly more living monozygotic twins than dizygotic co-twin of twins who complete suicide attempt suicide themselves (Roy et al., 1995). Studies examining biological relatives of adoptee who committed suicide found a significantly higher incidence of suicide than in the biological relatives of control subjects (Schulsinger et al., 1979). These results support the argument for the possible existence of a genetic predisposition toward suicidal behaviour.

More recently genetic studies of suicide attempters have focused on genotypic variations in the gene for tryptophan hydroxylase, the rate-limiting enzyme in the synthesis of serotonin (Abbar et al., 2001). In a Finnish population in particular, the intron 7 variant in the tryptophan hydroxylase gene showed significant association to medically serious suicide attempts (Nielsen et al., 1998) as well as to alcoholism.

b. Post-mortem studies of suicide victims: The initial post-mortem studies of the brains of suicide victims began as a quest to determine underlying biochemical derangements in depressed patients because at that time, it was assumed that all suicide victims were depressed. It was found that serotonin and its major metabolite, 5 HIAA, are decreased in the brain stem and in other sub-cortical nuclei (Shaw et al., 1967; Beskow et al., 1976; Korpi et al., 1986).

Stemming from research involving platelets, it was found that imipramine binding might well serve as a measure of pre-synaptic serotonergic functioning. Arango et al. (1995) demonstrated a lowered cortical serotonin transporter binding – a pre-synaptic measure-in the ventrolateral prefrontal cortex in the brains of suicide victims. Decreased serotonin activity in the prefrontal cortex may be especially important in decreasing the ability to inhibit suicidal urges (Mann, 1998).

Post-mortem studies of suicide victims have also focused on other neurotransmitter systems. One study cited an increase in muscarinic cholinergic receptor bindings
Other studies found increases in β-adrenergic receptor binding not only in the prefrontal cortex but also in the temporal cortex (Mann et al., 1986; Zanco and Bigeon, 1983). In the one study in which both 5-HT2 and β-adrenergic binding were compared, no victims were found to have low levels of both receptors. Ordway (1997) reported increased levels of tyrosine hydroxylase and α-adrenoreceptor binding in locus coeruleus of suicide victims, leading him to hypothesize that chronic activation of the locus coeruleus led to depletion of norepinephrine with compensatory changes in suicide. Therefore, the consideration of abnormalities in multiple neurotransmitter systems greatly aid in our ability to identify those patients at greatest risk for suicide (Bachus et al., 1997).

Several post-mortem studies have suggested that patients who commit suicide may have dysregulations of the hypothalamic–pituitary–adrenal (HPA) axis. Two studies found greater adrenal weights in suicide victims than in control subjects. Other studies have demonstrated fewer binding sites in the post-mortem study representing a down-regulation in response to the increase in corticotropin releasing factor (Nemeroff et al., 1984).

c. Cerebrospinal Fluid Studies of suicide attempters: It is found that the cerebrospinal fluid (CSF) content of serotonin metabolite—5-HIAA highly positively correlates with the cerebral tissue content of the same, as seen from autopsy. Various studies have targeted the measurement of CSF-5-HIAA content in suicide attempters as well as depressed patients. One of the initial studies demonstrated that 21% of patients who had been hospitalised after a suicide attempt and had been found to have low levels of CSF-5-HIAA, actually committed suicide within one-year after the original evaluation (Åsberg et al., 1976). Other studies also corroborated this finding that depressed patients with subnormal CSF-5-HIAA level were more likely to attempt suicide (Agren 1980; Banki 1981; Träskman et al., 1981).

Decreased CSF-5-HIAA has been found to distinguish suicidal patients from those who do not attempt suicide in cases of Schizophrenia (Banki et al., 1983; Roy et al., 1985), Personality Disorders as well as Alcoholism (Banki et al., 1984; Brown et al., 1979).
However, this finding was not replicated in suicide attempters among Bipolar cohort, where serotonergic dysregulation is also taken to be central (Berrettini et al., 1986).

Another biological observation is that major depression and suicide are associated with fewer serotonin transporter sites. Bondy et al (2000) found a higher incidence of insertion/deletion at 5'-flanking promoter region of 5-HTT gene in suicide victims compared to normal subjects. Little et al. (1997) found no differences in 5-HTT binding in the midbrain, hippocampus and frontal cortex of depressed suicide victims and similarly no differences in 5-HTT messenger RNA levels in the dorsal and median raphe nuclei of depressed suicide victims.

d. Hypothalamic Pituitary Adrenal (HPA) axis mechanism: The Dexamethasone Suppression Test (DST), a measure of hyperactivity of the HPA axis has been revisited as a predictor of suicidal behaviour. Coryell and Schlesser (2001) followed up a group of 78 patients for 15 years. 8 suicides were documented in the cohort, of which 7 were non-suppressors on the initial admission. They found that the estimated risk of suicide in the abnormal DST group was 26.8% compared to 2.9% in the suppressor group. Elevated 24-hour urinary cortisol production was found in patients who recently attempted suicide, compared with patients who did not have a history of suicidal behaviour (Van Heeringen et al, 2000).

II. Psychological Background of Suicidal Behaviour:

Freud (1917) proposed in *Mourning and Melancholia*, that most individuals cope with the loss of a loved person through the experience of mourning. He believed that there were other individuals for whom the loss experience is unbearable and generates enormous anger. The individual feels ambivalence but preserves the mental image of the loved one by internalisation and it becomes part of the ego. Feelings of anger towards the lost objective are not possible to express. So they are transformed into self-censure, and the wish to harm oneself. When these feelings reach a critical pitch, they lead to the urge to destroy the self.

a. Stress Diathesis Model of Suicidal Behaviour: Although suicidal behaviour is episodic, occurring most often when a person is in an episode of depression and not when they are in remission, not all people who suffer from recurrent depression become suicidal, and
some suicidal behaviour occurs in individuals who are not clinically depressed. Thus a psychiatric disorder is generally a necessary but insufficient condition for suicide. Mann et al. (1999) proposed a stress-diathesis model in which the risk for suicidal acts is not determined merely by a psychiatric illness (the stressor) but also by a diathesis. They wanted to develop a model to determine who remains vulnerable, despite seeming to have recovered, and how this underlying vulnerability relates to the acute suicidal state. The diathesis may be reflected in the tendencies to experience more suicidal ideation and to be more impulsive and thus being more likely to act on suicidal feelings. Their model showed that subjective depression, hopelessness and suicidal ideation were greater in suicide attempters than in non-attempters despite comparable rates of objective severity for depression or psychosis. The diathesis for suicidal behaviour includes a combination of factors such as sex, religion, familial and genetic components, childhood experiences, psychological support system, availability of highly lethal suicide methods and various other factors (Mann, 2002).

b. **Differential Activation Theory**: Teasdale et al. (1988) proposed a Differential Activation Theory (DAT), which suggests that during episodes of depression, associations are formed between sad mood and a constellation of negative processing bias. With each occurring episode of depression, the network of depressive cognitions is strengthened, elaborated and becomes increasingly accessible. Recently Joiner et al. (2003) and Lau et al. (2004) suggested that this theory could be extended to the explanation of recurrence of suicidal behaviour. Painful and fear-inducing qualities of suicidal behaviour can diminish with repetition, while opposing processes may intensify. Williams et al. (2005a; 2005b; 2006) refined this theory further in their reports. DAT suggests that the risk of future suicidality is dependent on the extent to which suicidal thoughts and plans have become a part of the processing pattern that is reactivated when low mood reoccurs.
1.03: COGNITIVE BEHAVIOURAL THEORY OF SUICIDE:

Early cognitive accounts of suicidal behaviour were developed from cognitive theories of depression (Beck & Greenberg, 1971; Beck et al., 1975). Suicidal patients were assumed to share the frequent occurrence of depressed patients' negative thinking, compounded by logical errors, and a tendency for long-term belief structures to be activated by current depression. Beck with his colleagues (1975, 1990) showed in their research that there is a strong relationship between life stress and suicidal behaviour. When depressed patients believe that there is no solution to their problems, they consider suicide as a way out of an intolerable and hopeless situation. Hopelessness as it occurs in depressed patients may be viewed as characteristics related to both trait and state. During depression, hopelessness escalates and then subsides over the course of the
illness. Cognitive research on suicide and risk prediction has developed a model with hopelessness as the key psychological variable for suicidal behaviour. In many cases, hopelessness has proven to be a better predictor of suicidal intent than depression, and is believed to mediate the relationship between depression and suicidal behaviour. Further research emphasized the widespread impairment of interpersonal problem-solving in suicidal patients. Among the variables studied in suicidal patients, depression, hopelessness and problem solving have become a recurrent theme.

Suicidal ideation arises as a symptom of depression, especially if there are reasons for a person to feel hopeless with regard to the future. Still, majority of individuals who experience suicidal ideation do not attempt suicide (Kessler et al., 1999). It is important to explain how or why suicidal ideation arises and why it is maintained and exacerbated to the point of a possible suicide attempt. Ringel (1976) introduced the concept of the Pre-suicidal Syndrome which has three principal components: constriction, inhibited aggression turned toward the self and suicidal fantasies. The Pre-suicidal Syndrome relates to specific psychic state of mind that can lead to suicidal acts. It is proposed that the Pre-suicidal Syndrome provides a basis for better judgement of the danger of suicide and makes more focused suicide prevention possible. Williams (2001) suggested that suicidal ideation and behaviour arises from feelings of entrapment, that there is no escape, and that this presents a particular pattern of information processing concerning one’s self and the world. Suicidal ideation can last only a short while if only one can think of other alternative ways to solve problems. Impairment in problem solving reduces this capacity. Suicidal feeling may alleviate if the person feels that he or she has something to look forward to in future, some important reasons for living. Hopelessness with regard to the future takes away these possibilities. The combination of a poor problem solving capacity and hopelessness has become the main object of research in psychological processes of suicidal behaviour.

1.04: RISK FACTORS:

There may be differences among people who attempt suicide and those who complete it. Differential risk factors include gender, age, and substance abuse, past suicide attempts, means, family history, hopelessness, co-morbid medical conditions, and some other psychological factors.
a. **Gender:** Women are more likely to be attempters than men (3:1), although men commit suicide more frequently (4.1:1) (Hoyert *et al.*, 2001). The lifetime risk of suicide in major depression is 7% in men and 1% in women (Blair-West *et al.*, 1999). Increased incidence of substance abuse and aggression increase the risk of suicide. Males use more violent methods like hanging, jumping, and firearms while females more often use poison or overdose of prescribed medication or drown (Comprehensive Textbook of Psychiatry, 2003).

b. **Age:** Elderly are at a high risk of suicide. This may be due to more chance of missing the diagnosis of major depression in elderly. Other risk factors for the elderly include bereavement, loss of functionality and independence, co-morbid medical condition or chronic pain, financial stressors and diminished support system. The attempt to completion ratio for the elderly was 4:1, whereas the same ratio in case of young 15-24 years was 100-200:1 (Hoyert *et al.*, 2001).

c. **Substance Abuse:** Substance abuse can heighten suicide risk independently of the presence of other psychiatric illness and may contribute to both attempts and completions. Harris and Barraclough (1997) in a meta-analysis of 32 studies involving 45000 subjects found that there was a six-fold increase in the suicide risk for the alcohol abusers. Heroin addicts have a 14-fold increased risk compared to non-abusers in 9 studies involving 7500 subjects. There was also an association between suicidal behaviour and cigarette smoking. Substance abuse has long been associated with mood disorders and suicide risk. Of all Axis-I disorders, patients with Bipolar Disorders have the highest likelihood of co-morbid substance abuse (Regier *et al.*, 1990). Cocaine use/dependence has been associated with suicide attempt and completion. Garlow (2002) in a study of completed suicide, from 1994 to 1998 in Georgia, found that cocaine was found in 9.9% and alcohol in 28.9% of these suicide victims, almost all of them males between 15 and 20 years old.

d. **Past Attempts:** A history of previous suicide attempts is the strongest predictor of suicidal behaviour and suicide completion (Brodsky *et al.*, 1997). Fawcett *et al* (1990) in a longitudinal follow up of mood disorder patients noted that suicide was no more common in the short term (1 year) in those with prior attempts compared to those with no
attempts, but that prior attempts approached a significant association with long-term (1-10 years) suicide.

e. **Means:** There is a strong relationship between access to lethal means of suicide and completed suicide. Women have higher rates of suicide attempts because of less lethal means like over-dosage and wrist cutting. Men have higher rates of completed suicide because of more violent means like guns or hanging. There is evidence that restricting the availability of guns, or increasing the waiting period to purchase one may have some impact on suicide rates (Loftin et al., 1991; Wintemute et al., 1999; Ludwig & Cook, 2000).

f. **Family History:** Roy (1983) compared a group of patients with a family history of suicide to a control group without a family history of suicide. Almost 11% of the study group had two or more relatives who died of suicide, 48.6% of the study group had made suicide attempts compared to 21.8% in the control group. During the 7.5 years follow up 7 of the study group committed suicide. Notably there was a preponderance of Affective disorder in the positive family history group (56.4%) as compared to the control group (26.6%). In this study the association with Affective disorder was most apparent, although there are genetic components associated with other risk factors for suicidal behaviour, including aggression, impulsivity and substance abuse (Dawkins et al., 2004).

g. **Hopelessness:** There is a high association between hopelessness and long-term suicide risk. Not specific to depression, hopelessness can accompany demoralization with a number of other syndromes: schizophrenia, anxiety disorders, and chronic conditions, including medical conditions. In a prospective study of 1958 outpatients, Beck et al. (1990) found that hopelessness was highly correlated with eventual suicide. Brown et al. (2000), in their study of 6891 psychiatric outpatients over a 20-year period, found hopelessness to be a significant risk factor for suicide. Fawcett et al. (1990) also found hopelessness, loss of interest, and loss of the capacity for pleasure as factors that discriminated a suicide group from a control group. Assessment of hopelessness is one of the key aspects in the management of the suicidal patient.
h. **Life events**: compared to the general population, a person with suicidal behaviour experience four precipitating event often occurs against the background of long term problems concerning marriage, children, work and health. Three common stressors are: (1) conflict, separation and rejection (2) economic problems and (3) medical illness (Rich *et al.*, 1991). In the San Diego Suicide Study, interpersonal conflicts, separations, and rejections were the predominant stressors for adolescents and individuals in early adulthood. For those between 40 and 60 years, economic problems were deemed the principal stressor and for patients older than 60, medical illness played the most significant predisposing factor in patients older than 80 years of age. In a study comparing stressful life events in suicide attempters and non attempters, Guha *et al* (2006) found that non attempters experienced less number of stressful life events in the last 1 year before the attempt, as compared to the attempters. They also experienced less presumptive stress than the attempters.

i. **Co-morbid Medical Conditions**: A number of medical conditions have been associated with increased risk of suicide. As reviewed by Hendin (1999), cancer, acquired immunodeficiency syndrome, peptic ulcer, Huntington’s chorea, head injury and spinal cord injury are associated with high suicide rates. Terminal illness however is the backdrop for suicide in only 2 to 4 percent.

j. **Other psychological factors**: Hendin (1991) identified desperation as another important factor in suicide. Desperation implies not only a sense of hopelessness about change, but a sense that life is impossible without such change. Guilt was also found to be another effective component of desperation. In a study of Vietnam veterans with Post Traumatic Stress Disorder, guilt was found to be prominent in those veterans exhibiting suicidal behaviour. This guilt stemmed from self-hatred and a need for punishment, attributable in part to perceived guilt from actions committed during combat and in part to survivor guilt.

Aggression and violence are also important in understanding of suicidal behaviour. Classical psychoanalytic theory postulated the importance of aggression toward the self in suicidal behaviour. Apter *et al*. (1991) studied suicide risk in patients with a history of violent behaviour and in those without a history of violence. Their findings demonstrated
that the two groups had similar correlates of suicide risk with regard to several psychological factors: anger, fear, anxiety, impulse decontrol, suspiciousness and rebelliousness.

Divorce, low educational status, social and familial factors such as childhood abuse or other adverse childhood experiences, parents' separation or divorce, parental psychopathology, social isolation, fewer reasons for living, subjective suicidal ideation are also risk factors for attempted suicide (Skegg, 2005).

1.05: ASSESSMENT OF THE SUICIDAL PATIENT:

Common presentations of suicidal behaviour include acute, chronic, contingent and/or potentially manipulative suicidal patient. Careful assessment, use of collateral information, and acceptance of predictive limitations are generally helpful in the assessment process.

As reviewed by Nicholas and Golden (2001), factors to be considered in the assessment of the acutely suicidal patient include the current mental status, with special attention to direct enquiry about suicidal ideation, intent and plans, sadness, hopelessness, social withdrawal, isolation, anxiety, agitation, impulsivity, insomnia, psychosis are additional considering symptoms. These factors coupled with prior high lethality attempts, uncommunicative presentation, recent major loss, active substance abuse or untreated mood, psychotic or personality disorder might be indicated in attempted suicide.

The evaluation of suicidal ideation or behaviour is done in a manner similar to the investigation of any symptom cluster that might have adverse medial consequences. First, it is essential to maintain an index of suspicion stemming from the demographic characteristics, second, to individualise the assessment of the patient by considering his family history, assessing current medical and psychiatric status, determining psychosocial assets and liabilities, and taking into consideration his prior response to treatment.

When taking a personal history of a patient to assess suicidal ideation, it is essential to evaluate the patient's level of intention of acting on such ideation and to determine whether the patient has a plan of suicide action, paying particular attention to the steps already taken to implement
such a plan and assessing its potential lethality. The availability of means must be assessed ranging from stockpile medication to firearms, as well as whether the patient has taken any specific actions in preparation for death, such as writing a will, settling accounts or giving away prized objects. It is also important to enquire about the presence of other symptoms that have been associated with a higher suicide risk, including delusional symptoms (particularly command hallucinations), anhedonia, hopelessness and severe anxiety.

It is essential to obtain a history of prior suicide attempts as well as a history of violence and impulsivity. In addition, the presence of substance abuse should be assessed, as it also increases the risk of suicidal behaviour. A history of suicide or violence in the patient’s family should also alert one to the presence of a liability to more dangerous suicidal behaviour. The clinician must enquire about the circumstances of previous violence, as well as whether he/she thinks this behaviour is abnormal or unusual, and should attempt to determine whether the violence is tied to a specific mood state.

A complete evaluation for suicidal potential also includes the assessment of an individual’s strengths. Despite the presence of suicidal behaviour, it may well be that the individual has a proven ability to control his or her behaviour and also controls the financial bearings of the family. A motivation to seek help in general and psychotherapeutic and psychiatric intervention in particular must be determined. As part of this assessment, the clinician should become familiar with the patient’s prior responses to treatment, including responses to pharmacotherapeutic and psychotherapeutic intervention.

1.06: PREVENTION OF ATTEMPTED SUICIDES:

Primary prevention of suicide is the ideal method of protection. It requires broad modifications in social, economic and biological conditions to prevent certain members of a population from becoming suicidal. Primary prevention is directed at social interventions early in suicidal pathways. This approach forces interventions at the level of the environment and the means of self-destruction, rather than focusing on the individual at risk (Maris, 2002).
Primary preventive measures or protective measures could include restricting access to lethal methods (firearms, pesticides, toxic gas, barbiturates etc.), promoting physical health, proper exercise, diet, sleep etc. (Maris, 2002; Mann et al., 2005).

As secondary prevention options, the measures are early detection of suicidal individuals, accurate diagnosis and effective treatment of psychiatric disorders (especially Major Depressive Disorder).

Principles of acute intervention, as delineated by Blumenthal (1990), begin with adequate supervision of the suicidal patient. A contract may also be signed with the patient to give up access of potentially harmful accessories or keep it under another’s lock and key.

1. Biological Therapy:

The aim of biological therapy in the treatment of suicidal patients has been to treat the diagnosed psychiatric condition. As a result, few studies describe the response to specific pharmacotherapeutic interventions.

The role of dopamine in suicidal behaviour seemed to be given weight by more than 2 studies that indicated that postsynaptic dopaminergic blocking agents appeared to decrease suicidal behaviour in patients with personality disorders (Cowdry and Gardner, 1988; Soloff et al., 1986). Much focus has been placed on interventions affecting the serotonergic system. With the advent of medications that selectively affect the serotonergic system, it is expected that medications are associated with more significant amelioration of suicidal behaviour than either tricyclic antidepressants (TCAs) or antidepressants that promote noradrenergic transmission. Though some of the early studies suggest an earlier improvement in suicidality in the group treated with serotonergic agents (Montgomery et al., 1981; Mullin et al., 1988). Some studies question the use of antidepressants in the treatment of suicidal behaviour, stating that self-destructive behaviour is increased due to the possibility of paradoxical reactions – the agents appeared to intensify the symptoms that they were ostensibly introduced to treat (Teicher et al., 1990; Mann and Kapur, 1991). Interestingly, other studies suggest that serotonergic agents may selectively decrease suicidality and impulsiveness not only in patients with major depressive disorder but also in patients with borderline personality disorder. In a study by Verkes et al. (1998), a
significant reduction in suicidal behaviour was seen in a heterogeneous group of patients who
had a recurrent suicidal behaviour but did not have a major depression at the time of the study.

The clinical effectiveness of antidepressants as measured by response (defined as 50% reductions
in the Hamilton Depression Rating Score (HDRS) or marked improvement or better on the
Global Impression) in the acute treatment of depression and suicide as summarised below:

Meta-Analysis of Randomized Control Trials (RCT) shows these to be effective in moderate and
greater severity of major depression with or without physical illness. The number needed to treat
(NNT= the number of patients needed to receive the drug in order to produce an additional
patient benefiting than would have been obtained with placebo) is between three or four
(Anderson et al, 2000). The average response rates to antidepressants from Randomised
Controlled Trials studies are 50-65% (Anderson et al, 2000) but do not necessarily result in the
same remission rates (Ferrier, 1999).

Although similar effectiveness of the different classes of drugs are reported, there are three key
differences that are likely to influence how well they are suited to an individual patient:

1. Differing dosage schedules (TCAs need to be increased to the full therapeutic
dose, whilst Specific Serotonin Reuptake Inhibitors (SSRIs) can be started at the
therapeutic dose).

2. They have different side effects and can affect concordance.

3. They have different toxicities, with TCAs being more dangerous in overdoses.

It may thus be said that literature to date, is too preliminary to specify a group of drugs for the
treatment of suicidal behaviour. Rather, SSRIs and other new-generation antidepressants may be
viewed as a more prudent choice over the tricyclic antidepressants because of their low lethality
index.

Considering the above findings, in the present study Specific Serotonin Reuptake Inhibitors have
been used as the drug of choice for all the patients.
2. **Psychotherapy:**

The interventional studies have focused on various factors like: biological, social, family, stress, coping styles, cognitive factors, problem solving skills, personality factors and psychiatric morbidity.

In his classic treatise on suicide, Durkheim (1897, 1951) noted that the risk of suicide varied inversely to the degree of connectedness with family and society as a whole. The risk of suicide seems to correlate inversely with the maintenance of ongoing personal and professional relationships. Thus one of the daunting tasks in the psychotherapy of the suicidal patient is the realization that the psychotherapist may be perceived as the last ballast of hope that human connectedness may be yet something worth striving for. The establishment of the therapeutic alliance is the single most important task in the treatment of the suicidal patient.

The establishment of the therapeutic alliance is common to all of the psychotherapeutic traditions. Also common is the role of the empathic method (Jacobs, 1989) in the treatment of the suicidal patients.

The earliest intervention study was conducted by Greer and Bagley (1971). They used psychiatric contact as an indication of treatment and they found that 2 each in the experimental and control groups committed suicide. Gibbons (1978) used social work intervention with self-poisoning patients. Hawton and Fagg (1987) applied domiciliary and outpatient treatments for deliberate self-poisoning.

**a. Psychodynamic Psychotherapies:** Psychodynamic psychotherapies have stemmed from an understanding of the dynamics of the individual’s suicidal motivation, as well as of the act of suicide itself (Dulit and Michels, 1992; Hendin, 1991). In addition, the psychodynamic literature offers useful insight regarding counter-transference pitfalls in the treatment of suicidal patients. Though turning of murder on the self inferred by Freud remains a cornerstone, current practice of psychoanalytic psychotherapy in treating suicidal behaviour focuses on the identification of a precipitating event, the escalation of intolerable painful affect that the patient cannot moderate, the self perception of helplessness, the evolution of hopelessness as a secondary affect, increasing fantasies of
suicide as a means of escape and ego regression (self destruction), leading progressively to suicide (Maltsberger, 2006).

b. A Cognitive Behavioural Conceptualisation of Suicide:

Model of psychopathology of suicidal behaviour, according to Cognitive Behaviour Therapy or CBT suggests that suicidal behaviour has been found to have specific associated cognitive characteristics that warrant its inclusion as a separate cognitive profile. The cognitive processing in suicidal individuals has two features: a) Suicidal individuals have a high degree of hopelessness, the greater the hopelessness; the more likely they are to commit suicide (Beck et al., 1985); b) Suicidal individuals have poor problem-solving skills, often apparent in their interpersonal relationships at work or in school. Although poor problem-solving skills interact with hopelessness to increase suicidal risk, it is a factor, in itself, in suicidal patients.

The major ingredient in suicide is hopelessness (Beck, 1985). When the depressed individual believes that he or she has no more options left, death may seem to be a welcome relief. The therapist must appreciate several variations on the hopelessness theme to best understand and treat the patient’s suicidal thinking and behaviour. Suicidal behaviour can be divided into 4 broad types: (1) hopeless suicides (2) histrionic suicides (3) psychotic suicides (4) rational suicides.

In the first type, the patient maintains the belief that there is no hope of improving and therefore no longer any reason for continuing life. The individual sees himself as having no choice but either to commit suicide or live in unending misery. As suicide is at the bottom of the list of options, it becomes an issue only as the individual perceives to have exhausted all his options and nears the bottom of the list. Suicide then becomes a viable alternative. Therapy here helps the individual find other alternatives to suicide. The second type of suicider has a high need for excitement. This surge for excitement may lead to injury or loss of life. Histrionic suicide attempts are flamboyant and may be repetitive. They may be classified as manipulative or motivated by a need for attention. At times though, such attempts may be fatal too. Therapy here focuses on moderating the individual’s expression of excitement in less self-harming ways. The psychotic suicider attempts suicide as a direct result of command hallucinations. Therapy in such
cases addresses 2 primary issues: (a) The power to respond (b) the nature of the voices. The rational suicider chooses to die based on some rational considerations. The type of situation generally offered as the model, for rational suicide is that of the terminally ill or in intractable pain (Siegel, 1986). With therapy the rational suicider is made to see other alternatives.

With the conceptual framework, cognitive therapy works in a very direct manner with patients, proposing hypotheses, developing strategies for testing the hypotheses, developing a range of specific skills as needed, and teaching the patient a model for more effective coping and adaptation to the world. The focus of the therapy is collaborative, although it does not always remain on 50-50 collaboration. Because of the seriousness of the patient’s condition, and the severity of the consequences, the therapist cannot rely simply on offering a re-statement of the patient’s problems but must use an active restructuring of thoughts, behaviour and affect.

The initial goal in working with the suicidal patient is to establish rapport quickly. The therapist must be perceived as an individual who may be trusted, supportive, resourceful and available and who is allied closely with the patient. The therapist’s openness, lack of self-consciousness in questioning directly the nature of the hopelessness and thoughts of suicide, utilizing the data from the psychological measures, history and level of depression, serves to put the patient at ease (Freeman and White, 1989).

Having established the rapport, the therapist works actively and directly with hopelessness. Focus is on working with the patient than on the patient. This in turn helps to increase the internal motivation of the patient to take a more active part in the treatment process.

Cognitive Behaviour Therapy focuses on correcting faulty information processing and modifying dysfunctional beliefs and assumptions that maintain maladaptive behaviours and emotions. Cognitive Behaviour Therapy employs both behavioural and verbal techniques to examine the patient’s beliefs, challenge the dysfunctional ones, and to provide skills and experience that promote more adaptive cognitive processing.
**Intervention Techniques:**

1. **Cognitive Techniques:**

Cognitive therapy techniques are used to develop adaptive responses to dysfunctional thinking. The format for intervention is *Socratic Questioning* (Beck *et al.*, 1979). By questioning, the patient is offered an idea, hypothesis or prompt to his thinking, feeling and experience.

The various cognitive techniques used with the suicidal client in this study are:

- Understanding the idiosyncratic meaning, Questioning the evidence: Reattribution, Examining options and alternatives, Decatastrophising, Cost Benefit Analysis, Turning adversity to advantage, Guided discovery, Scaling, Cognitive rehearsal, Thought stopping, and Focusing.

2. **Behavioural Techniques:**

The goal in using behavioural techniques is two-fold. The first goal is to utilize direct behavioural strategies and techniques to alter suicidal behaviour as quickly as possible. The second goal involves the utilization of behavioural techniques as short-term interventions that helps in providing information regarding suicidality in the service of longer-term cognitive change.

The major behavioural techniques used in the present study are:

- Activity scheduling, Graded task assignments, Behavioural rehearsal, Homework assignments, Behavioural experiments, Assertiveness training, physical exercise and controlled breathing.

CBT initially focuses on symptom relief, including distortions in logic and problem behaviours. Ultimately, it aims at modifying assumptions and correcting the patient's systematic bias in thinking. In order to cause these changes, the patient's beliefs are treated as hypotheses to be tested. Then they are logically examined and tested through behavioural experiments, jointly determined by therapist and patient. Structural change occurs with the modification of these assumptions to fit more closely with the reality of the situation and with the practice of behaviours congruent with new, more adaptive assumptions.
Therapeutic change occurs through several channels—cognitive, behavioural, and affective. Cognitive change promotes behavioural change by allowing the patient to adopt a perspective that allows risk taking. In turn, the practice of new behaviours serves to validate the new perspective. Emotions can be moderated by considering evidence and facts and by expanding one’s perspective to allow for alternative interpretations of events. CBT emphasizes the primacy of cognition initiating and maintaining therapeutic change.

In treating the suicidal patient, it is important to promote a good relationship with him/her from the beginning and to establish bridges from one therapy session to the next so as to discourage the patient from making a suicide attempt between sessions (Beck and Weishaar, 1989). The therapist explores the patient’s hopelessness in using a variety of cognitive techniques to try to get the patient to view his/her problems more objectively. The therapist teaches the patient to cope particularly with the type of ‘dichotomous’ thinking characteristic of many suicidal patients. By attacking the hopelessness and the self-defeating beliefs, the therapist is able to get the patient to recognize that there are important solutions to life’s problems and that he/she does not need to turn to suicide in order to escape from them.

‘Cognitive deficit’ is another problem atypical of the cognitive profile of suicidal patients (Beck and Weishaar, 1989). In contrast to other patients, they seem to have a peculiarly lacking ability in solving highly charged problems in relationships with other people or to get their job or career. When they are thwarted in one of these endeavours, they seem to be unable to generate alternative solutions to the problem. If their accustomed way of dealing with a situation suddenly does not work, they are unable to think of other ways to deal with the situations. Thus therapy for attempted suicide patients has to be focused on ‘problem solving’ techniques such as defining the problem, generating alternative ways of reducing the problem, and implementation of the solution.

Salkovskis et al. (1990) used cognitive problem-solving in treating patients who repeatedly attempted suicide. The group problem-solving improved significantly more than controls on ratings of depression, hopelessness, suicidal ideation and target problems at the end of treatment and at follow up of up to 1 year and there was evidence of an effect on the rates of repetition over the 6 months after treatment. Rotherum-Borus et al. (1994) used brief CBT programs for adolescent suicide attempters and their families. They used Successful Negotiation Acting
Positively (SNAP) treatment which consists of a series of structured activities that create a positive family atmosphere, teach problem-solving skills, shift the family’s understanding of their problems to troublesome situations rather than difficult individuals and build confidence in the treatment thereby reducing conditions associated with future attempts.

In a controlled study, McLeod et al (1998) used Brief Manual Assisted Cognitive Therapy (MACT) in a high-risk para-suicidal group. Patients were randomly assigned to either the specific intervention (MACT) or Treatment As Usual (TAU) and assessed again after six months follow up. The patient groups were compared with a match-group of community-controls on adapted fluency measure of future thinking. Results revealed that patients receiving MACT improved significantly in positive future thinking over the follow-up period whereas the TAU group showed no such improvement.

3. Combined Therapy:

Various studies show that combined therapy is more effective in treating depression and suicidal behaviour as compared to a single form of therapy (Blackburn et al., 1981; Rush, 1988).

Goldapple (2004) showed that cognitive behaviour therapy and paroxetine produce opposite changes in activity in the hippocampus and in the frontal cortex. In the hippocampus, cognitive behaviour therapy increases activity while paroxetine decreases it; in the frontal cortex cognitive behaviour therapy decreases activity while paroxetine increases it. However, cognitive behaviour therapy and paroxetine each affect unique regions that additionally have distinct connections to the areas commonly affected by both treatments.

The hypothesis that antidepressants work by a “bottom-up” effect on the brain while cognitive therapies have a “top-down” effect has received support because it focuses on using thinking functions to modulate abnormal mood states, modify attention and memory functions, change affective bias, and correct maladaptive information processing. Drug therapy is seen as a bottom-up approach because it first changes the chemistry in the brainstem, limbic, and subcortical sites system. It then produces secondary cortical changes with chronic treatment, altering more basic emotional and circadian behaviours and eventually causing “upstream” changes in depressive thinking.
In a study replicating these results, Raj et al. (2001) tried to find the efficacy of CBT in the management of Deliberate Self harm. The experimental group (N=20) were given 10 sessions of CBT. The control group (N=20) were given routine medical treatment. Post assessment was done for both groups at the end of three months. The analysis of pre-post assessment revealed that only the experimental group showed significant improvement on all the variables except on impulsivity. It was concluded that CBT was effective in the management of DSH patients.

In another study in the Indian context, Raj et al (1999) applied cognitive behavioural intervention strategies in four cases of attempted suicide. Each client was seen for 30 to 40 sessions. Both qualitative and quantitative analysis of data showed changes in cognitive distortions, hopelessness, anxiety, depression and suicidal ideation in the positive direction. A two-year follow-up showed maintenance improvement.

1.07: THE PRESENT STUDY:

The present discussion suggests that existing literature in the study of attempted suicide has focused primarily on risk factors like hopelessness, substance abuse, age, gender, multiple attempts, co-morbid medical conditions and life events. Detailed information about the individual's suicidal ideation, hopelessness and depression is of vital importance for the understanding and management of attempted suicide. Further assessment of the protective factors or factors that may prevent the patient from ending his life, and an elaborate understanding of the attempter's personality assists in the therapeutic measures to address the suicidal behaviour adequately. In addition, they help in guiding the therapeutic process individualistically, for each patient, and also help in quantifying the change brought about by the therapy in addressing suicidal behaviour. Considering the above, the variables that have been selected for the present study are:

**Suicidal ideation:** Suicidal ideation is defined as thoughts serving the agent of one's own death. It may vary in seriousness depending on the specificity of suicide plans and the degree of suicidal intent (American Psychiatric Association, 2003). Suicidal ideation can be manifested from transient thoughts with respect to the worthlessness of life and death wish, to permanent; concrete plans for killing oneself and obsessive preoccupation with self-destruction. Suicidal ideation may be an aspect of depressed mood and also from the other point of view, a coping
strategy with such a mood. It is also correlated closely with hopelessness. Suicidal ideation can be of a habitual or chronic as well as of an acute nature (Goldney et al., 1989; Diekstra & Garnefski, 1995).

Suicidal Ideation being a primary indicator of suicidal behaviour, the present study thus attempts to assess the change in suicidal ideation in the two study groups (the Treatment As Usual group receiving only antidepressants, and the CBT group receiving cognitive behaviour therapy and antidepressants) under therapy. In the present study, Suicidal Ideation is depicted by the term ASIQ representing Adult Suicidal Ideation Questionnaire, by which the variable has been assessed.

**Depression**: Depressives are regarded in clinical practice as a high-risk group with respect to suicide: epidemiological studies show a strong association between depression and suicide, leading to the hypothesis that suicide is the mortality of depressive illness (Silverman, 1968). The combination of cognitive therapy and antidepressants has been shown to effectively manage severe or chronic depression (Rupke et al., 2006), and thus reduce suicidality.

The present work, in an attempt to study the suicidal behaviour in attempted suicide, thus attempts to assess the change in depression brought about by the two study groups under therapy. In the present study, Depression is depicted by the term BDI representing the Beck Depression Inventory by which the variable has been assessed.

**Hopelessness**: Hopelessness is a danger sign, perhaps more sensitive than depression, of the seriousness of suicidal intent. It is an important clue to immediate and long-term suicide potential (Beck et al., 1990). Research on reducing a patient's hopelessness, assists in alleviating the suicidal crises more effectively by administering psychotherapeutic approaches in which negatively distorted expectations for the future are corrected effectively to reduce suicidal behaviour.

The cognitive element of negative expectations- as a stronger indicator of suicidal intent than depression itself has been identified as a component of the syndrome of depression. This not only suggests a solution to the puzzling question of why there is a relationship between depression and suicide, but also indicates that approaches specifically designated to alleviate hopelessness may be successful in preventing suicide (Minkoff et al., 1973).
Unlike certain other predictors of suicide, such as age, sex, or race, as hopelessness is a characteristic that can be modified, the present study attempts to assess the change in hopelessness brought about by the two groups under study. In the present study, Hopelessness is depicted by the term BHS representing the Beck Hopelessness Scale by which the variable has been assessed.

**Cognitive style:** Cognitive style refers to an individual’s habitual or typical way of perceiving, remembering, thinking and problem solving (Allport, 1937). Blackburn et al. (1986) found a relation between a negative cognitive style and vulnerability to depression. The patients have a cognitive trait of inflexible thinking and are unable to develop new or alternative solutions to their immediate problems. They tend to view their future, themselves and their life negatively but tend to view suicide positively. They have high levels of self-derogatory thinking and an increased or unrealistic expectation of their performance, but have decreased expectancy of success. Various studies also documented restricted cognitive style of attempted suicides (Levenson and Neuringer, 1971; Kaplan and Pokorny, 1976; Orbach et al., 1987; MacLeod et al., 1993; Kernberg, 1994; Orbach et al., 1998). Guha et al. (2006) studied the impact of cognitive style in attempted suicides in the Indian setting and found that individuals attempting suicide have a restricted cognitive style as compared to non-attempters.

Most studies have not addressed attributional style or cognitive style in suicide. Cognitive style affects the individual’s processing of information and helps him perceive a situation as positive or negative. This in turn may build up suicidal thought and behaviour. Cognitive style of an individual also affects his approach to therapy and in turn therapy may bring about a change in enriching the individual’s cognitive style. The efficacy of therapy in its change and modulation has not yet been explored. The present study thus attempts to explore the cognitive styles of the suicidal individual and also tries to see the efficacy of CBT in bringing about a change in the cognitive style of attempted suicide patients. In the present study the term Cognitive Style is depicted as CS(W), representing Cognitive Style for World, CS(S), representing Cognitive Style for Self, and CS(F), representing Cognitive Style for Future, by which the variables have been assessed.

**Ego Functions:** Ego functions constructs refer to mental contents, processes or outcomes. Lack of maturation, various neurotransmitters such as dopamine and catecholamine and structural
change can vitally affect the nature of ego functioning (Bellak, 1979). Bellak et al. (1973) described 12 ego functions each of which was defined in terms of major components. These 12 ego functions are as follows: (1) Reality Testing (RT), (2) Judgement (JD), (3) Sense of Reality (SR), (4) Drive Control (DC), (5) Object Relations (OR), (6) Thought Processes (TP), (7) Adaptive Regression In the Service of the Ego (AR), (8) Defensive Functioning (DF), (9) Stimulus Barrier (SB), (10) Autonomous Functioning (AF), (11) Synthetic Integrative Functioning (SF) and (12) Mastery Competence (MC).

The adaptive level of ego functioning is generally more stable in well-functioning individuals than in those who show marked psychopathology. Pfeffer et al. (1995) studied the relation between ego functions and suicidal attempts (SA). They concluded that ego functions are related to behaviour of consequences, and are useful in the identification of children at risk for suicidal behaviour. Das et al. (2004) studied ego functions in attempted suicide in the Indian setting. Findings suggest that attempters have inadequacy in everyday functioning and they lack flexibility as well as self-confidence as compared to non-attempters.

Studies investigating the functioning of the ego in attempted suicide or deliberate self-harm have also been very few in number. The use of ego functions in the evaluation of the ongoing treatment process has been well documented, but relating ego functions to attempted suicide, especially in the Indian setting have been rare and far between.

It is also important to note that most of the studies addressing attempted suicide, be it epidemiological or interventional, have been conducted in different parts of the world, but we fail to have an adequate representative number in India.

Research findings in the context of development of effective intervention strategies in attempted suicide in the Indian settings have been scanty, though there is some evidence from the international research arena that CBT is effective in treating patients attempting suicide.

Considering the scenario, the present study thus addresses the risk factors of hopelessness, depression and suicidal ideation and explores their role and impact in the conceptualisation of attempted suicide. To see the importance of the personality factors in the formation of suicidal thought and behaviour, the study also addresses cognitive style and ego functioning and reflects the change brought about by therapy in all these variables. Finally the study attempts to see the
efficacy of cognitive behaviour therapy in dealing with attempted suicide in the Indian setting. In the present study, the 12 ego functions are depicted as EF RT, EF JD, EF SR, EF DC, EF OR, EF TP, EF AR, EF AF, EF SF and EF MC as representations of the Ego Function Assessments that have been used to assess the variables.

1.08: OBJECTIVES:

A. The primary objective of the study is:

- To determine the efficacy of Cognitive Behaviour Therapy in reducing suicidal behaviour.

B. Subsequent to the primary objective, the specific objectives of the study are:

1. To determine the efficacy of Cognitive Behaviour Therapy in improving the 12 ego functions as mentioned by Bellak (1989).
2. To determine the efficacy of Cognitive Behaviour Therapy in improving Cognitive style towards World.
3. To determine the efficacy of Cognitive Behaviour Therapy in improving Cognitive style towards Self.
5. To determine the efficacy of Cognitive Behaviour Therapy in reducing Hopelessness.
6. To determine the efficacy of Cognitive Behaviour Therapy in reducing Suicidal Ideation.
7. To determine the efficacy of Cognitive Behaviour Therapy in reducing depression.