

## **A Study Of Self Immolation – Are The Factors Associated With It, Unique Or Universal**

D. Sivalingam<sup>1</sup>, Vimal Doshi Veerappan<sup>2</sup>, MS Jagadeesan<sup>3</sup>, S Rajarathnam<sup>4</sup>

<sup>1</sup>. Assistant Professor of Psychiatry, Madras Medical College, Chennai, Tamil Nadu, India.

<sup>2</sup>. Assistant Professor of Psychiatry, Madras Medical College, Chennai, Tamil Nadu, India.

<sup>3</sup>. Associate Professor of Psychiatry, Madras Medical College, Chennai, Tamil Nadu, India.

<sup>4</sup>. Retired Professor of Psychiatry, Government Kilpauk Medical College, Chennai, Tamil Nadu, India.

Corresponding Author: Vimal Doshi Veerappan

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### **I. Introduction**

Suicide is a serious public health problem. The world health organisation : recognising the growing problem of suicide worldwide urged members to address the phenomenon. During the past decade there have also been dramatic and disturbing increases in reports of suicide among youths. Suicide remains a serious public health problem at the other end of age spectrum. Suicidal risk and protective factors and their interaction form the empirical basis for suicide prevention. Risk factors are associated with the greater suicidal intent and more lethal suicidal behaviour. Understanding risk factors can help dispel myths that suicide is a random act or result from stress alone. Previous suicidal attempt, hopelessness, psychological pain and mental disorders, easy access to lethal methods constitute important elements in the precipitation of suicide.

The search for suicide risk factors independent of diagnosis has been espoused by a number of researchers and clinicians representing several different points of views. Weismann et al (1973) for example suggested that suicidal individuals exhibited greater hostility than did depressed patients, some authors Minkoff et al (1973), Beck et al (1985) found that hopelessness was a stronger predictor than degree of depression. Fawcett et al (1989) argued that different risk profiles may emerge for different diagnoses.

The burden of suicide is on the rise and the data obtained particularly from developing countries doesn't reflect a true picture of the load. For example India has an average annual suicide rate (per 100000) in 1990 of 9.7 (male 11.4, female 8.0) but studies say that reality appears to be nine times this value.

Self immolation and pesticide poisoning are common means of suicide attempts. Self immolation is more common in India when compared to other countries and also fire has a special significance to Indians from ancient times, but studies on self immolation is very sparse, so this study attempts to understand some of the risk factors involved with it.

### **II. Review Of Literature**

Stengel and Cook (1958) published their classic monograph 'attempted suicide'. Their definition every act of self injury consciously aiming at self destruction was regarded as suicidal attempt'

Edwin Shneidman defined suicide as the conscious act of self induced annihilation, best understood as a multi dimensional malaise in needful individual who defines an issue for which the act is perceived as the best solution. Kay Redfield Jamison said the suffering of the suicidal is private and inexpressible, leaving family members, friends and colleagues to deal with an almost unfathomable kind of loss as well as guilt. Suicide carries in its aftermath a level of confusion and devastation that is for most part beyond description.

The word suicide is derived from the Latin word for self murder. There is a range between thinking about suicide and acting it out.

Suicide - most contemporary definition rely on two elements, a precise outcome (death) and a prerequisite (the intention or wish to die).

#### **WHO 's operational definition (1998)**

For the act of killing oneself to class as suicide, it must be deliberately initiated and performed by the concerned person in the full knowledge, or expectation of its fatal outcome. Stengel in 1964 proposed that suicide and suicide attempt are two distinct entities. Stengel's concept led Kreitman and his colleagues (1969) to devise the term Parasuicide to designate precisely those suicidal acts that did not carry an unquestionable wish or intention to die (a cry for help) but still preserving the connection to completed suicide however Parasuicide

soon came to be utilised in a variety of meanings (billebrahe et.al 1994) so that it fell from favour with most suicidologists. During the twenty-five year long process the WHO multicentre study on Parasuicide changed terminology from Parasuicide to attempted suicide (billebrahe et.al 1994).

Silvermann and colleagues (2007 a,b) argued about the intent of act and defined suicide attempt as self inflicted potentially injurious behaviour with a non fatal outcome for which there is evidence either explicit or implicit of intent to die (silverman et al 2007 b).

In 1979 Morgan proposed the term deliberate self harm (DSH) once again stressing the volitional element. Given the fundamental importance of outcome from a public health perspective this terminology has been adopted in 1992 ICD-10 in the category 'intentional self harm' which includes purposefully self inflicted poisoning or injury and suicide attempted.

## **SUICIDAL PROCESS**

Zubin (1974) suggested that suicide does not just occur but is the end product of a process. That concept was further developed by several authors (bestow 1979, forebrow 1 980). Mann and colleagues proposed stress-diathesis model (Mann et. al 1999) and Wassermann a stress vulnerability model (Wassermann 2001). These models have in common are a sequence that goes from suicidal ideas (thoughts) to plans and then to attempts and eventually to death, through a specific action or omission, but in practice it cannot be demonstrated. Research has demonstrated that there are more people entertaining ideas about suicide and even more than those completing suicide. Philips et.al 2002 has presented a distinct suicidal process in almost every aspect including predisposing and precipitating factors and timing of this process. The development of suicide process can also be gender dependent, more female than male processes fade away from death wishes and suicidal ideation. The development of suicidal process is also dependent on the access to health care services and skilfulness in recognising suicidal communication and risk behaviours (Wassermann 2001).

## **BURDEN**

Suicide is a global public health problem (Cutcliffe, 2003; Goldney, 2002).in developing countries epidemiological research has been hampered by issues of data quality. Data were not available in some countries. From where they are available there are often problems associated with numerator (e.g. Under reporting due to inefficient civil registration system, variations in legal practices and differences in the extent to which family and friends may try to conceal the cause of death due to social stigma, religious sanctions and legal issues associated with suicide (Cheng & Lee, 2000) and suicide researchers stated that figures to date have under estimated the extent of problem in developing countries(Joseph 2003). Various authors have postulated that any observed differences between patterns of suicide in developing countries and those in developed countries may be related to range of factors. These include population increases (Zang 1998), cultural, religious and legal attitudes towards suicide (Kelleher.et.al 1998, Sartorius 1995), health service factors and socioeconomic factors. Average total suicide rate for medium human development index countries shows considerable variability which ranged from 0.2 per 100,000 in Iran to 41.7 per 100,000 in Russian federation. In most medium human development index countries, the average male suicide rate in 1990s exceeded the female suicidal rate. The average suicide rate in India was 9.7 per 100,000 but a recent population study in a defined geographical region found that with more accurate data collection the true rate was nine times the official reported rate (Joseph.et.al 2003). In developed countries the male suicide rate far outweighs the female rate, but in developing countries the difference is smaller and sometimes goes in opposite direction (Mayer Ziaian, 2002; WHO 1999). Various reasons have been postulated which includes perceived social and economic burden of being female (associated with factors like dowry expectation and reduced earning capacity) (Kumar 2003, National Crime Records bureau 2000) and significant relationship issues (such as restriction of partner choice associated with arranged marriages) (Lee & Kleinman 2000, Vijayakumar &Thilothammal 1993).

## **RISK FACTORS**

### **SOCIO DEMOGRAPHIC RISK FACTORS**

**AGE AND GENDER:** The profile in developing countries with regard to age is consistently similar with studies of suicide rates in India (Mayor 2002, Rao 1991) Pakistan Brazil, Nigeria. However, there is more variability with regard to gender. In India it is near equal for young men and women (Mayer & Ziaman 2002). The most striking was in china were the suicide rate for women is 25% higher than that for men (Philips et al 2003).

**MARIATAL STATUS-** one of the most commonly quoted observation is that being single (never married, separated, divorced or widowed) acts as a risk factor for suicide. The evidence for these is from developed countries (Westergard Neilson 2000) but it is very sparse in developing countries. A review of available data India concluded that marital status alone was not predictive of suicide suggesting that instead family and social integration were more significant (Rao 1991).

**SOCIO ECONOMIC STATUS:** low socio economic status identified as a major reason for suicide in both developed and developing nations particularly unemployment as a major risk factor. Poverty, job loss and major financial setbacks have been cited as proximal causes for suicide. For example a recent spate of suicides in Warangal district of Andhra Pradesh in south India was directly attributed to losses incurred when cotton crops failed (Stone, 2002).

**URBANICITY/RURALITY:** Several cross sectional studies suggest that rurality may more consistently emerge as a risk factor in developed countries than it does in developed countries. In china the rates of suicide were three times higher in rural areas than those in urban areas (Li 2000) likewise in India the suicide rate is lower in urban areas (National Crimes Record Bureau 2000).

**RELIGIOUS/CULTURAL BELIEFS:** The association between religious/ cultural beliefs and suicidality has been debated since Durkhiem published his ecological studies in Europe at the end of nineteenth century demonstrating that protestant provinces had higher suicide rates than catholic province (Durkheim 1952). Studies have found that suicide rates tend to be lower in countries with religious or cultural belief systems that traditionally view suicide negatively and higher in countries with belief systems that sanction it (Kelleher, Chamber, Williamson & Keeley 1998, Neelman 1990, 1998). A study in India found that compared with controls those who died by suicide were less likely to have a strong belief in god and to attend their place of worship and were more likely to have changed their religious affiliations (Vijayakumar 2002).

#### **CLINICAL RISK FACTORS:**

**MENTAL ILLNESS:** Consistently studies have observed that suicide rates were higher in psychiatric patients (Harris & Barraclough 1997, 1998) particularly in developed countries but in developing countries but in developing countries like India the relationship has been less robustly demonstrated (Vijayakumar & Rajkumar 1999).

**SUBSTANCE USE:** is often regarded as a distal risk factor but can also be considered to heighten suicide risk proximally or in the short term (e.g. drugs or alcohol are involved in suicide act itself) (Hirschfield & Davidson 1988). In India an ecological study showed a high correlation between levels of alcohol consumption and suicide rates with areas like Pondicherry ranking among the highest as both these findings was supported by a case control study that found alcoholism was significantly associated with suicide at an individual level (Vijayakumar & Rajkumar 1999).

**PREVIOUS SUICIDE ATTEMPTS:** various descriptive studies have noted that previous suicide attempts increase the likelihood of future suicide. An Indian study found that 18% had done so (Bhatia, Agarwal 2000) though it was flawed in the sense that they do not have a population reference point.

#### **ENVIRONMENTAL/ SITUATIONAL BASED RISK FACTORS**

**RECENT STRESSFUL LIFE EVENTS:** Many review papers have noted that importance of recent stressful life events in suicidal behaviour (Marries 1997). Stressful life events cited have included interpersonal loss, conflict or rejection, loss of employment economic problems incarceration or legal problems, eviction and being diagnosed with terminal illness. Body of literature on recent stressful life events from both developed and developing countries suggest life events may be a precipitating factor in many suicides. Family and marital problems were identified as precursors to suicide (Vijayakumar 1999 & Cheng et al 2000), and others were social change and particularly modernization in many Asian countries has led to cultural tensions. Socioeconomic stressors and breakdown of traditional family systems which in turn have influenced some to resort to suicidal behaviours (Chan, Jung & yip 2001, Deleo 2003, Gehlot & Nathawat 1983).

**ACCESS TO MEANS:** Is frequently cited as risk factor for completed suicide. Hambert and Silva for example recently reviewed studies examining the association between gun control legislation and suicide rates (Hambert and Silva 1998). In majority of studies there was a decrease in suicide rates following the introduction of gun control laws. Specifically emphasis on access to firearms is replaced by a focus on access to pesticides (e.g. Legislation or codes of conduct to limit the range of available pesticides (Eddleston et al 2002). In general, these studies have found that such regulation reduces suicide risk thereby providing evidence for access to means as a risk factor.

To sum up in some developing countries at least being female, living in rural area and holding religious beliefs that sanction suicide may be of relevance to suicide risk than these are in developed countries. Conversely being single or having a history of mental illness may be of less relevance. Risk factors that appear to be universal include youth or old age, low socioeconomic standing, substance use and previous suicide attempts. Recent stressful life events play a role in both developing and developed countries although their nature may differ (social change may have more influence in the former) likewise access to means heightens the risk in both, but the specific means may vary.

The implication is that prevention measures should be tailored according to risk factor profile of particular country.

## **THE CONTEXT OF PESTICIDE SUICIDAL ATTEMPTS**

Several studies in Asia found that pesticide suicides are mostly impulsive acts undertaken during stressful life events (often family quarrels) and they are committed mostly by persons who do not have mental illness. A study of 326 people who were hospitalised for a suicide attempt of which 83 percent ingested pesticides had found that 35 percent reported that the first time they had considered suicide was ten minutes or less before their attempt (Li et al 2002). Another study in China (Conner et al 2005) in which low planned suicides (suicides with little or no premeditation) were overwhelmingly committed by ingestion (86.4%) and a high proportion (38%) expressed stressful life event forty eight hours before their suicide. In another study in China (Pearson et al 2002) found high levels of impulsivity and low levels of mental illness. In a study in Sri Lanka (Vander Hock & Konradsen 2005) 32 percent were under the influence of alcohol misuse was mentioned as the reason for the suicide attempt in one third of all cases usually the alcohol misuse of father or husband of the victim, unhappy love affair unwanted pregnancies, forced marriages jealous husbands physical, sexual or psychological abuse by a husband or a combination of these events were reported to be main reasons for suicide attempts. Other less frequent explanations included loss of a close family member disease and disability, problems at school, financial hardships and trivial arguments among sister and brothers. The authors concluded that self-poisoning is often a means of communicating ones feelings or coping with stressful situations with unclear levels of an intention to die.

A survey done at a coastal village in India found that family quarrels were given as the reason for suicide in 71.4 % of males and 50% of females mostly quarrels with the spouse (Chowdhary et al 2005). Prasad and colleagues (2006) found that suicide victims in south India were mostly under forty-four and women more often committed suicide following acute precipitating events, mostly a single episode of quarrel at home or falling in love but not being able to marry the person.

The above findings contrast with research in western countries where the proportion of persons who die by suicide who have a mental illness is often reported to be near 90% and most common diagnosis in a depressive disorder.

## **SELF IMMOLATION**

Suicide by self-immolation is one of the most violent methods of committing suicide. It is highly lethal and most of the attempts are fatal. The ratio of attempters to completers is 1:25, a reversal of that in other types of suicide (Rao et. al 1989). In India 9.7 percent of suicides are by self-immolation. This is the only method where women 69 percent outnumber men 31 percent. In the state of Gujarat 18.26 percent of suicides are by self-immolation, other states with a high percentage of suicide by self-immolation are Maharashtra (14.71 %), Madhya Pradesh (13.22%) Jharkhand (13.6%) and Bihar (11.39%).

The fact that more females than males have been well documented (Adityanjee 1986; Bhatia & Khan 1987). Self-immolation is the preferred method of suicide for Indian origin even after migrating to United Kingdom (Sonia et al 1990). The possible reasons for high incidence of suicide by self-immolation among Indian women can be traced back to customs of the Hindu religion. Fire is worshipped and sanctifies birth marriage and death; further Hindus are cremated after death. The practice of sati and jauhar prevalent in the medieval period are also important factors. There was stray occurrence even after its abolition. The sensational Roop Kanwar case in September 1987 alarmed public and pressed the government to promulgate sati prevention act 1987. Sati remains an unusual example of a cultural form of suicide which is tolerated and, in some cases, even encouraged (Bhugra 2005). The contemporary explanatory factors for self-immolation could be easy availability and accessibility of the means of suicide. Self-immolation as a form of protest is also a phenomenon observed particularly in India. In August 1990 the implementation of Mandal Commission to reserve 27 percent of jobs in government for lower classes as an affirmative action to uplift the backward classes. This created uproar and unrest especially in student community (Vijayakumar 2004).

## **III. Aims And Objectives**

1. To study the socio demographic details of self-immolators and pesticide poisoning subjects.
2. To study the occurrence of stressful life events prior to attempt in both the groups
3. To understand the prevalence of psychiatric morbidity among self-immolators and pesticide subjects.
4. To understand the intensity of intent prior to attempt in both groups
5. To estimate the impulsivity as a personality style between the groups.

## **HYPOTHESIS**

1. There is no significant difference in socio demographic factors of both groups
2. There is no significant difference in psychiatric morbidity of both groups.
3. The suicidal intent between the groups is almost the same.
4. There is no significant difference in the presence of stressful life events between the groups.

5. Impulsivity as a personality style is almost similar in both groups.

#### **IV. Methodology**

The study was carried out in the Government Kilpauk Medical College Hospital, Chennai.

##### **SAMPLE : TWO GROUPS**

**GROUP ONE** - Thirty consecutive inpatients admitted in burns ward sustaining burns by immolating themselves as a means of suicide attempt.

**GROUP TWO** – Thirty consecutive inpatients admitted in IMCU with suicidal pesticide poisoning.

Study was undertaken between July 2009 to October 2009.

##### **INCLUSION CRITERIA**

1. AGE GROUP BETWEEN 15 TO 60 YEARS OF AGE.
2. BURNS LESS THAN 70 PERCENT.
3. ABLE TO GIVE CONSENT
4. WITIN FIRST FIFTEEN DAYS OF ATTEMPT.

##### **EXCLUSION CRITERIA**

1. ACCIDENTAL POISONING
2. ACCIDENTAL PESTICIDE POISONING.

##### **STUDY DESIGN**

This study is a cross sectional descriptive study.

##### **MATERIALS USED**

1. Semi structured proforma for assessing Socio Demographic details. presumptive stressful life events scale (GURMEET SINGH et al)
2. Beck's Suicide intent scale
3. Barratt impulsivity scale
4. Brief psychiatric rating scale.

##### **SEMI STRUCTURED PROFORMA (APPENDIX 1)**

To get the demographic data. It includes age marital status age of marriage, occupation, socio economic status, religion, family type, history of previous attempts, witnessing or heard about such attempts, history of substance previous psychiatry history.

##### **PRESUMPTIVE STRESSFUL LIFE EVENT SCALE**

###### **(APPENDIX 2)**

Constructed by Gurmeet Singh and colleagues using open ended questions along with HOLMES and RAHE's social readjustment scale schedule. It is a standardised one for Indian population. The life events were differentiated into three broad categories as Desirable, Undesirable and Ambiguous as the events perception of the individuals totally making up fifty-one different life events. The scale is simple to administer to literate and illiterate subjects.

##### **SUICIDAL INTENT SCALE (APPENDIX 3)**

Suicidal intent entails both wish to die and the expectation that death will result from self-harm (Mosciciki subjective addresses attempter's expectations and perceptions related to attempt (ITEM 9-15).

Although other measures of suicidal intent exist for more than thirty years researchers have used predominantly SIS.

##### **BARRATT IMPULSIVITY SCALE (APPENDIX 4)**

**DEFINITION OF IMPULSIVITY-** Defined as a predisposition toward rapid, unplanned reactions to internal or external stimuli without regard to negative consequences of these reactions to the impulsive individuals or to others.

**MEASURING IMPULSIVITY**-self report measures such as BARRATT IMPULSIVENESS SCALE have the advantage of allowing the researcher to gather information on variety of acts and on whether these acts constitute long term patterns of behaviour. The draw backs of self-report measures include the need to rely on the veracity of the individual completing the questionnaire.

Barrett's impulsiveness scale version 2 is a thirty item self-reported questionnaire designed to assess general impulsiveness taking into account the multifactor nature of construct.

The structure of instrument allows for assessment of

1. ATTENTIONAL IMPULSIVENESS (attention and cognitive instability).
2. MOTOR IMPULSIVENESS (motor and perseverance).
3. NONPLANNING IMPULSIVENESS (self-control and cognitive complexity).

A total score is obtained by summing the factors. The items were scored on a four point scale.

NEVER! RARELY	1
OCCASIONALLY	2
OFTEN	3
ALWAYS	4

**BRIEF PSYCHIATRIC RATING SCALE (APPENDIX 5)**

Developed by OVERALL and GORHAM to evaluate the psychiatric status of a patient. Used for assessing psychopathology encompassing mainly psychosis, depression, mania, anxiety. It can be administered rapidly and can be used to monitor change in patient.

Each measure was evaluated using a seven point scale

NOTPRESENT	1
VERY MILD	2
MILD	3
MODERATE	4
MOD., to SEVERE	5
SEVERE	6
EXTREMELY SEVERE	7

**INTERPRETATION**

Minimum score	16
Maximum score	112

The data collected were tabulated and discussed with reference to aims and objective of the study. Statistical analysis was done using the chi-square test and unpaired T test.

Approval was obtained from the ethics committee.

**V. Result**

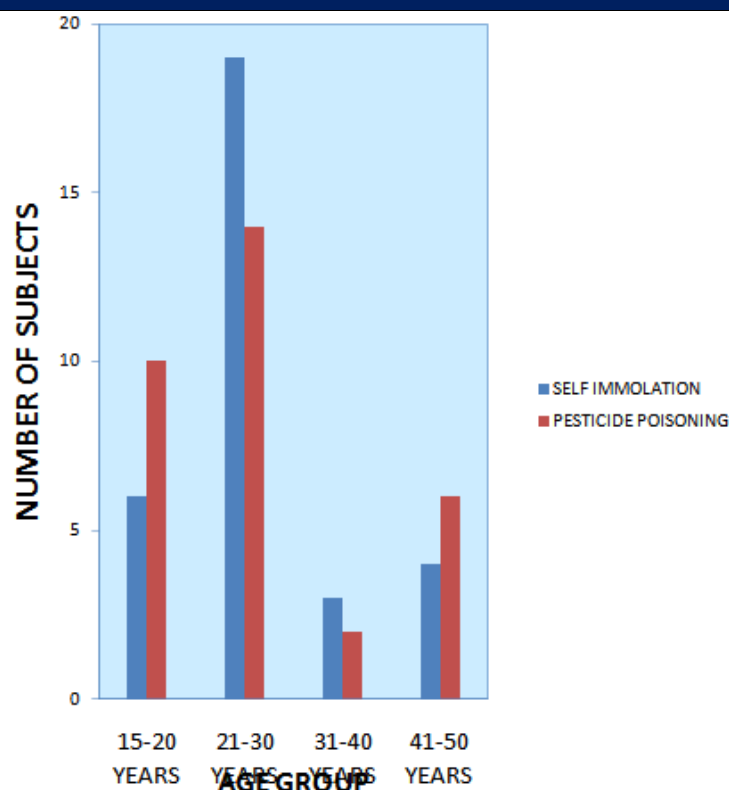
**AGE REPRESENTATION OF BOTH GROUP**

AGE GROUP	Age		GROUP		TOTAL
			1	2	
1	15-20	Count	6	10	18
		% within GROUP	20.0%	33.3%	26.7%
2	21-30	Count	19	14	33
		% within GROUP	63.3%	46.7%	55.0%
3	31-40	Count	3	2	5
		% within GROUP	10.0%	6.7%	8.3%
4	41-50	Count	2	4	6
		% within GROUP	6.7%	13.3%	10.0%
TOTAL		Count	30	30	60
		% within GROUP	100.0%	100.0%	100.0%

	Value	P Value	Significance
Chi-Square	2.624	.453	Not significant

Among the sample bulk of them were between ages 15-30, which are about 82% of them. In self immolators 63% were within 21 to 30 years and another 20% were between 15 to 20 years. More than 60% of self-immolators fall between 21 to 30 years. The percentage of suicide attempts between 31 to 50 years adding both groups were only 18%

**AGE WISE REPRESENTATION OF BOTH GROUPS**



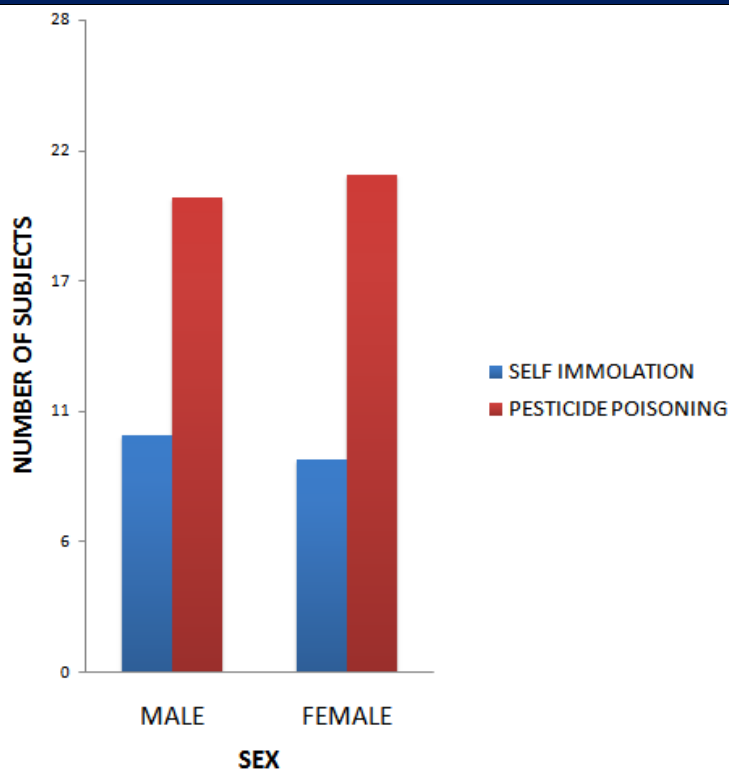
**GENDER REPRESENTATION**

SEX GROUP	SEX		GROUP		TOTAL
			1	2	
1	MALE	Count	10	9	19
		% within GROUP	30.3%	30.0%	31.7%
2	FEMALE	Count	20	21	41
		% within GROUP	66.7%	70.0%	68.3%
TOTAL		Count	30	30	60
		% within GROUP	100.0%	100.0%	100.0%

	Value	P Value	Significance
Chi-Square	.781	.077	Not significant

Male and Female representation in both the groups was almost the same percentage with females occupying almost 70% and males about 30%. In self-immolation group females were 66.75% and males were 33.3% in the pesticide group females were 70% and males 30%.

**GENDER REPRESENTATION**



**LITERACY LEVEL OF BOTH GROUPS**

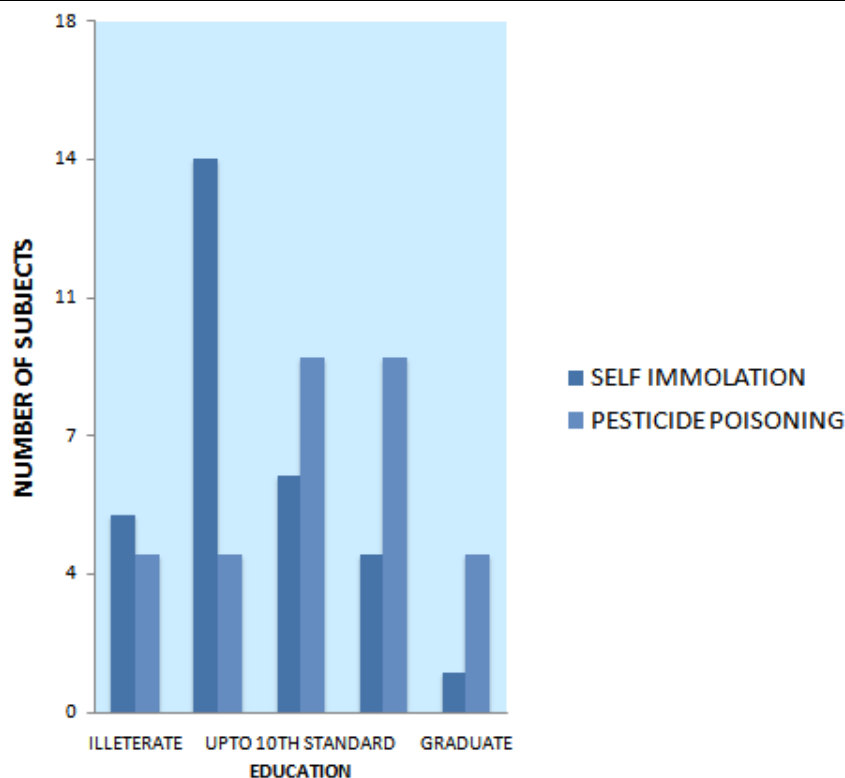
Education Group	Education		GROUP		TOTAL
			1	2	
0	Illiterate	Count	5	4	9
		% within GROUP	16.7%	13.3%	15.0%
1	Upto 8 <sup>th</sup> Std.	Count	14	4	18
		% within GROUP	46.7%	13.3%	30.0%
2	High School	Count	6	9	15
		% within GROUP	20.0%	30.0%	55.0%
3	Higher Secondary	Count	4	9	13
		% within GROUP	13.3%	30.0%	21.7%
4	Graduate	Count	1	4	5
		% within GROUP	3.3%	13.3%	8.3%
TOTAL		Count	30	30	60
		% within GROUP	100.0%	100.0%	100.0%

	Value	P Value	Significance
Chi-Square	9.990	.041	Significant

About 16% and 13% of self-immolators and pesticide consumers respectively are illiterate. More than 46% of self-immolators have not crossed 8<sup>th</sup> STD but only 13.3% were educated below 8<sup>th</sup> STD in pesticide group. Above 43% have crossed higher secondary education. In self-immolation group only 36.6% have crossed high school and only 13.3% have touched higher secondary.



**LITERACY LEVEL OF BOTH GROUP**



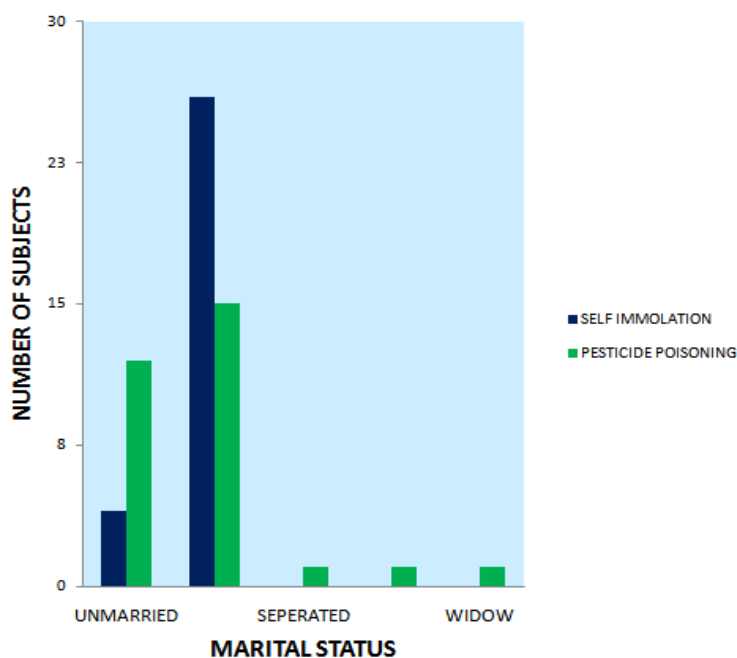
**MARITAL STATUS**

MARITAL STATUS GROUP	MARITAL STATUS		GROUP		TOTAL
			1	2	
1	UNMARRIED	Count	4	12	16
		% within GROUP	13.3%	40.0%	41%
1	MARRIED	Count	26	15	41
		% within GROUP	86.75%	50.0%	68.3%
2	SEPARATED	Count	0	1	1
		% within GROUP	0%	3.3%	1.7%
3	DIVORCED	Count	0	1	1
		% within GROUP	0%	3.3%	1.7%
4	WIDOW	Count	0	1	1
		% within GROUP	0%	3.3%	1.7%
TOTAL		Count	30	30	60
		% within GROUP	100.0%	100.0%	100.0%

	Value	P Value	Significance
Chi-Square	9.951	0.0451	Significant

Of the thirty cases of self-immolators around 86% were married and around 13% were unmarried. In the pesticide consumption group only 50% was found to be married and the remaining 50% were single. This finding clearly suggests that being married is a significant risk factor for self-immolation.

**MARITAL STATUS**

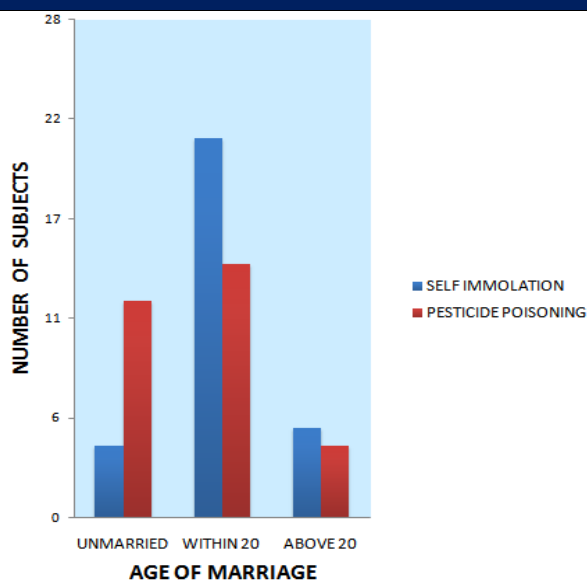


**AGE OF MARRIAGE**

AGE OF MARRIGE GROUPS	AGE OF MARRIAGE		GROUP		TOTAL
			1	2	
1	UNMARRIED	Count	4	12	16
		% within GROUP	13.3%	40.0%	26.7%
2	WITHIN 20	Count	21	14	35
		% within GROUP	70.0%	46.7%	58.3%
3	ABOVE 20	Count	5	4	9
		% within GROUP	16.7%	13.3%	15.0%
TOTAL		Count	30	30	60
		% within GROUP	100.0%	100.0%	100.0%

Within both the group 58% and 15% of them got married before and after twenty years of their age respectively. Amount 26 who were married to self-immolation group 21 of them got married before 20.

**AGE OF MARRIAGE**



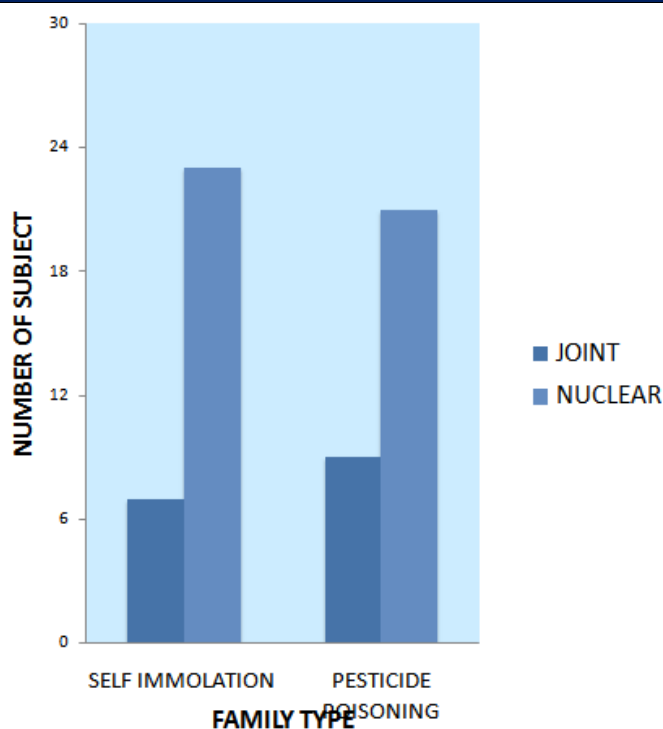
**FAMILY TYPE**

FAMILY TYPE GROUPS	FAMILY TYPE		GROUP		TOTAL
			1	2	
1	JOINT	Count	7	9	16
		% within Group	23.3%	30.0%	26.7%
2	FEMALE	Count	23	21	44
		% within GROUP	76.7%	70.0%	73.3%
TOTAL		Count	30	30	60
		% within GROUP	100.0%	100.0%	100.0%

	Value	P Value	Significance
Chi-Square	341	559	Not significant

Around 74% of persons on average of both groups habituated in nuclear type of family only 26% lived in a joint family. Of the joint family group 23.3% and 30% are from self-immolation and pesticide groups respectively.

**FAMILY TYPE**



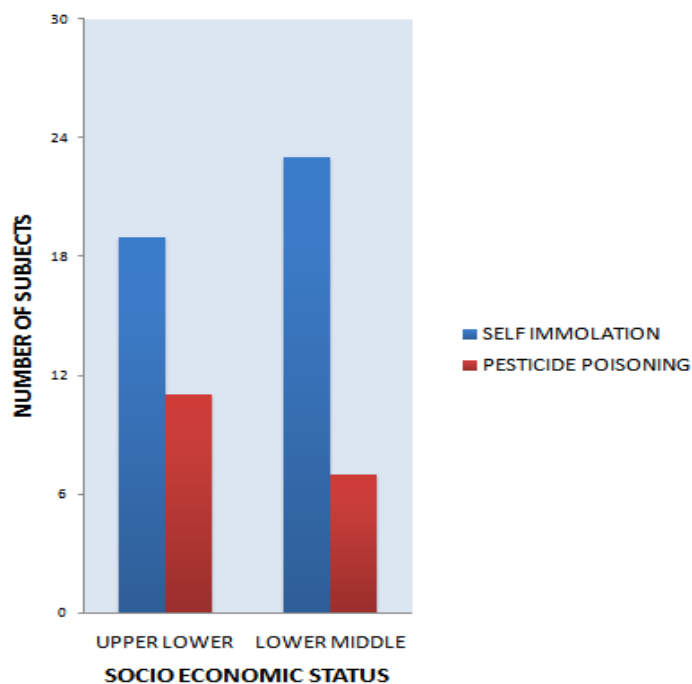
**SOCIO ECONOMIC STATUS**

SOCIO ECONOMIC STATUS GROUP	SOCIO ECONOMIC CLASS		GROUP		TOTAL
			1	2	
1	Upper Lower	Count	19	23	42
		% within Group	63.3%	76.7%	70.0%
2	Lower Middle	Count	11	7	18
		% within GROUP	36.7%	23.3%	30.0%
TOTAL		Count	30	30	60
		% within GROUP	100.0%	100.0%	100.0%

	Value	P Value	Significance
Chi-Square	1.270	.260	Not significant

70% of the attempters were of upper lower and the remaining were of lower middle socio economic status. Among the lower socio economic category 63.3% of them were self-immolators and 76.7% were pesticide consumers.

**SOCIO ECONOMIC STATUS**

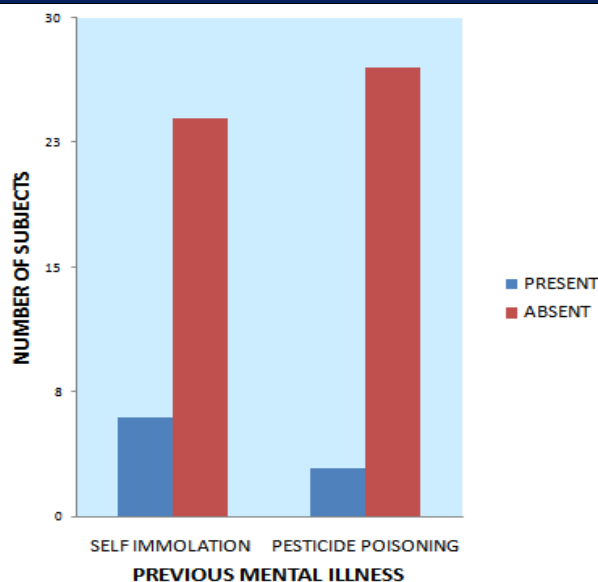


**HISTORY OF MENTAL ILLNESS**

PREVIOUS MENTAL ILLNESS GROUP	PREVIOUS MENTAL ILLNESS		GROUP		TOTAL
			1	2	
1	PRESENT	Count	6	3	9
		% within Group	20.0%	10.0%	15.0%
2	ABSENT	Count	24	27	51
		% within GROUP	80.0%	90.0%	85.0%
TOTAL		Count	30	30	60
		% within GROUP	100.0%	100.0%	100.0%

Eighty and ninety percent of both the groups respectively did not give any history suggestive of mental illness in the past or present.

**HISTORY OF MENTAL ILLNESS**



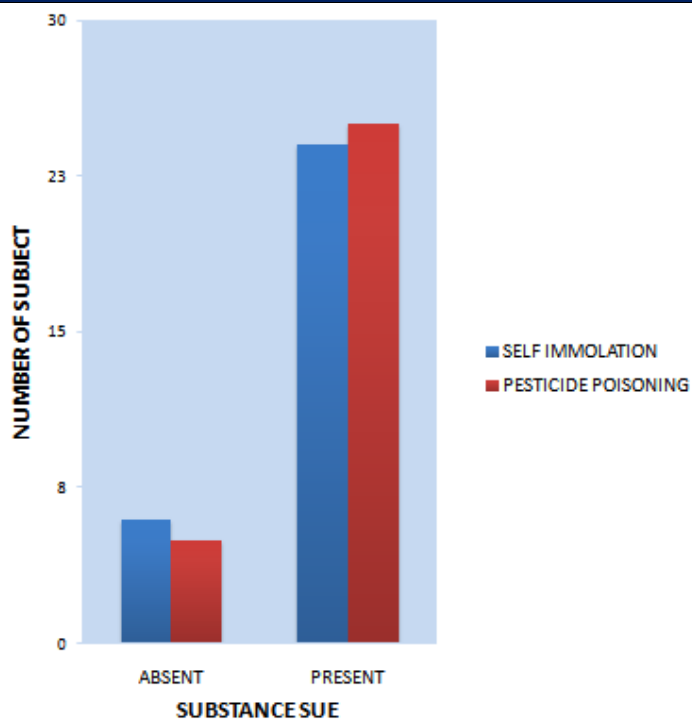
**SUBSTANCE USE WITHIN THE GROUP FAMILY**

SUBSTANCE USE GROUPS	SUBSTANCE USE		GROUP		TOTAL
			1	2	
1	ABSENT	Count	6	5	11
		% within Group	20.0%	16.7%	18.3%
2	PRESENT	Count	24	25	49
		% within GROUP	80.0%	83.3%	81.7%
TOTAL		Count	30	30	60
		% within GROUP	100.0%	100.0%	100.0%

	Value	P Value	Significance
Chi-Square	111	.739	Not significant

There was history of substance use in approximately 81% of attempters and absent in the rest. The ratio was almost similar in both self immolators and pesticide groups, only around 18% had no history of substance use.

**SUBSTANCE USE WITHIN THE GROUP FAMILY**



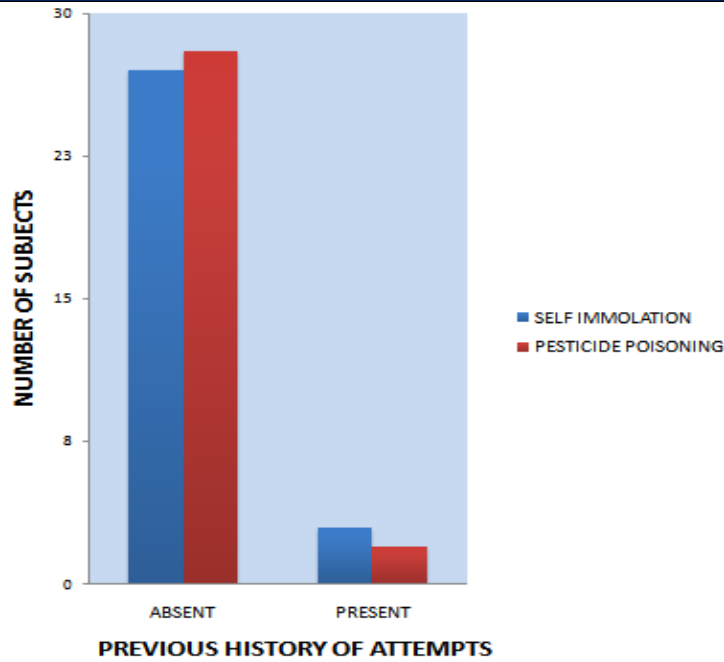
**PREVIOUS HISTORY OF SUICIDAL ATTEMPTS**

GROUPS	ATTEMPTS		GROUP		TOTAL
			1	2	
1	ABSENT	Count	27	28	55
		% within Group	90.0%	93.3%	91.7%
2	PRESENT	Count	3	2	5
		% within GROUP	10.0%	6.7%	8.3%
TOTAL		Count	30	30	60
		% within GROUP	100.0%	100.0%	100.0%

	Value	P Value	Significance
Chi-Square	218	.640	Not significant

There was history of previous attempts of suicide only in 8.3% of attempters of which 10% belong to self immolation and 6.7% to pesticide consumption, whereas no such history was noted in the remaining 91.7%

**PREVIOUS HISTORY OF SUICIDAL ATTEMPTS**



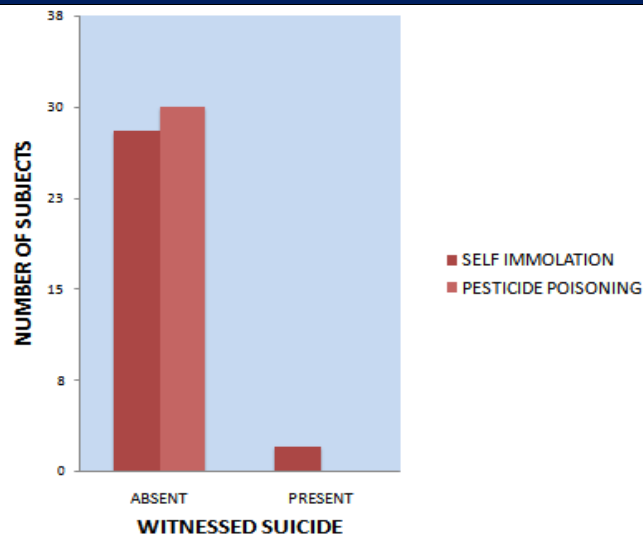
**WITNESSED / HEARD ABOUT SUICIDE ATTEMPTS**

AGE OF MARRIGE GROUPS	Education		GROUP		TOTAL
			1	2	
1	ABSENT	Count	28	30	58
		% within GROUP	93.3%	100.0%	96.7%
1	PRESENT	Count	2	0	2
		% within GROUP	5.6%	0%	3.3%
TOTAL		Count	30	30	60
		% within GROUP	100.0%	100.0%	100.0%

	Value	P Value	Significance
Chi-Square	2.069	.150	Not significant

Only two of the total sixty had given history of having witnessed suicide attempt, in the remaining it was absent.

**WITNESSED / HEARD ABOUT SUICIDE ATTEMPTS**



**SUICIDE INTENT**

SUICIDE INTENT GROUP	SUICIDE INTENT		GROUP		TOTAL
			1	2	
1	MILD	Count	6	20	26
		% within GROUP	20.0%	66.7%	43.3%
2	MODERATE	Count	17	7	24
		% within GROUP	56.7%	23.3%	40.0%
3	SEVERE	Count	7	3	10
		% within GROUP	23.3%	10.0%	16.7%
TOTAL		Count	30	30	60
		% within GROUP	100.0%	100.0%	100.0%

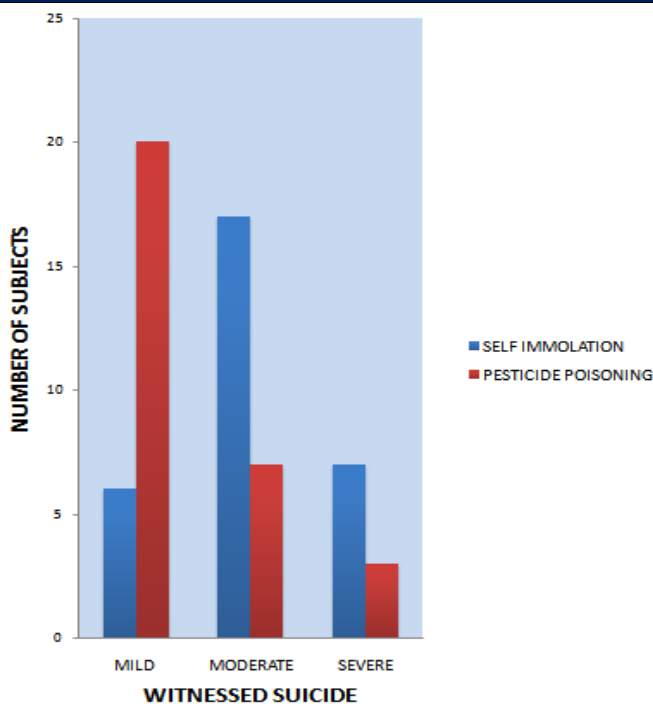
	Value	P Value	Significance
Chi-Square	13.305	.001	Significant

Among the attempters 43.3% had mild intent and within this group only 20% were self immolators and the rest pesticide consumers.

40% of attempters had moderate intent of which 56.7% belong to self immolation.

16.7% of the subjects had severe intent which is about ten of them. Of this ten seven attempted self immolation.

**SUICIDE INTENT**



**ASSESSMENT OF IMPULSIVENESS**

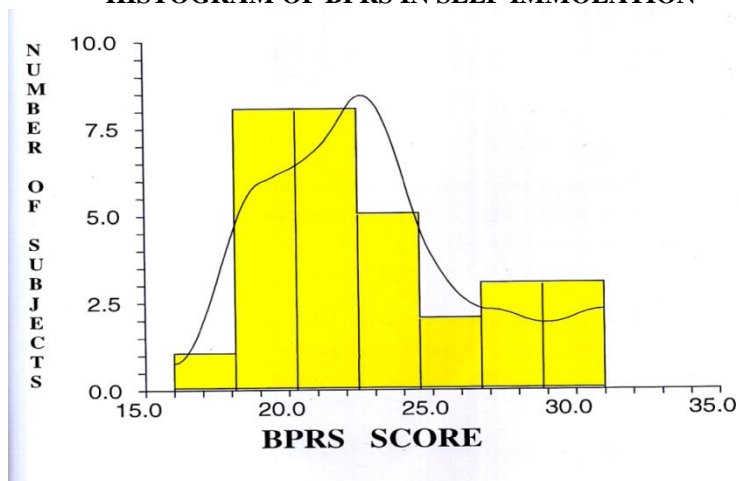
IMPULSIVITY GROUP	IMPULSIVITY SCORE		GROUP		TOTAL
			1	2	
0	40-50	Count	2	2	4
		% within GROUP	6.7%	6.7%	14%
1	51-60	Count	7	7	14
		% within GROUP	23.3%	23.3%	30.0%
2	61-70	Count	9	9	18
		% within GROUP	23.3%	23.3%	30.0%
3	71-80	Count	7	7	14
		% within GROUP	23.3%	23.3%	30.0%
4	81-90	Count	5	5	10
		% within GROUP	16.7%	16.7%	16.7%
TOTAL		Count	30	30	60
		% within GROUP	100.0%	100.0%	100.0%

Impulsiveness scores were exactly same for both groups in different levels of impulsiveness. 67% of them had scores of 40 to 50, 23.2 percent had 51 to 60, 30% had 61 to 70, 23.3% had 71 to 80 and 16.7% had scores of 81 to 90.

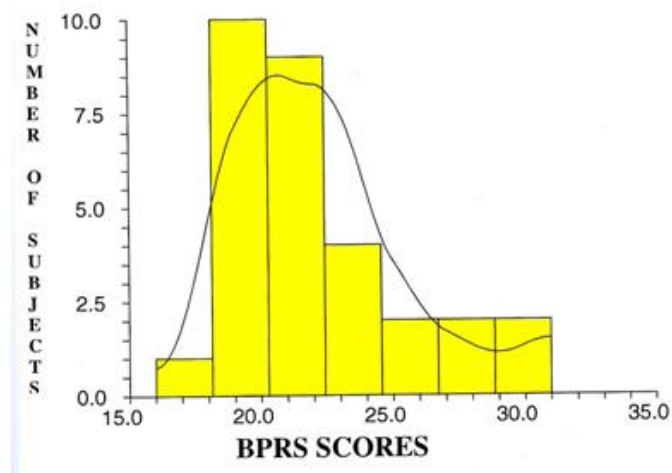
**PRESENCE OF PSYCHOPATHOLOGY**

Variable	Count	Mean	Standard Deviation	T. Value
GROUP 1	30	22.96667	3.925894	0.7251
GROUP 2	30	22.26667	3.542192	

**HISTOGRAM OF BPRS IN SELF IMMOLATION**



**HISTOGRAM OF BPRS IN PESTICIDE POISONING**



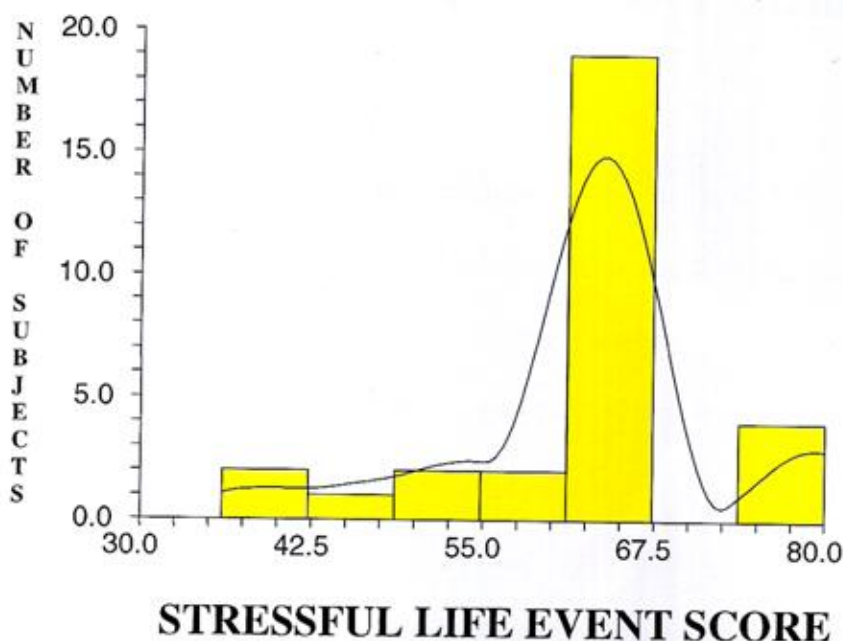
The graph shows the scores of brief psychiatric rating scale scored by the individual subjects. In self immolation about eight subjects scored between seventeen to twenty and another eight scored between twenty and twenty four, only three subject's score were between twenty five and thirty. In pesticide consumption group about ten scored around twenty and about thirteen scored between twenty and twenty five and three subjects scored between twenty five and thirty.



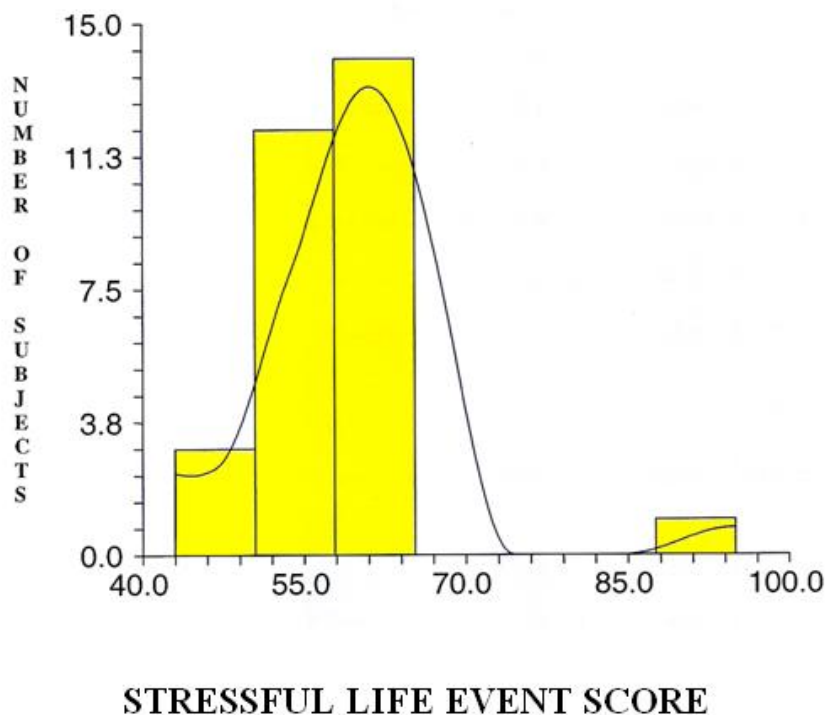
**STRESSFUL LIFE EVENTS**

Variable	Count	Mean	Standard Deviation	T. Value
GROUP 1	30	62.5	9.943808	1.1483
GROUP 2	30	59.63334	9.386283	

**HISTOGRAM OF STRESSFUL LIFE EVENT SCORE IN SELF IMMOLATION**



**HISTOGRAM OF STRESSFUL LIFE EVENT IN PESTICIDE POISONING**



The mean score of stressful life event for group 1 is 62.5 and group 2 is 59.63. There is not much of a difference between the two groups with t-value being insignificant. The finding clearly indicates that both the groups had some form of life stressor prior to attempt.

## **VI. Discussion**

With regard to the socio demographic risk factors there is some variability between developed and developing countries as far as the age is concerned. In developed countries the typical suicide completers are often elderly males, but the scenario in developing countries is that both elderly and increasingly younger people are at risk, similarly our study also support the view that younger people are at risk.

Considering the sex females were dominating which were similar to studies from China.

Studies have stated that being single acts as a risk factor for suicide which was in contrast to our study where majority of them were married and most of them were between fifteen to thirty years, getting married very early.

A major bulk were living in a nuclear type family and fall in lower socio economic status which has been noted in previous studies.

Putting together the findings such as more number of women, younger age group being more vulnerable, lower literacy level among attempters, early age of marriage, low socio economic status, is it the time to think about marital counselling for all couples.

Mental illness as a risk factor has been proven beyond doubt mainly in developed countries but studies from developing countries provide only support but it is opined that this could be due to under diagnosis of mental illness. Our study does not support the proven fact.

Substance use has been shown to be associated with heightened risk of suicide. In this study substance was involved directly or acted as a stressor since one of the family members was using it and contributing to the socio economic status of the family.

Almost all the subjects had stressful life event mainly in the form of marital problems, family conflicts, alcohol dependence in spouse, jealous husbands, and love failures.

Suicidal intent appears to be moderate to severe in more than half of self immolators whereas it was mild to moderate in pesticide poisoning subjects. Impulsiveness was almost similar in both groups and majority of them high levels of guilt feelings towards the act.

## **VII. Summary**

There is no significant difference between the groups with regard to demographic factors namely age, sex, socio economic status, marital status, family type.

Females outnumber males in both the groups.

A significant number of them got married early.

Substance has been associated risk factor among attempters.

Almost all of them had a significant life stressor acting as a precipitating factor.

Suicidal intent was high in self immolators when compared to pesticide poisoning.

Impulsivity was almost similar in both methods of attempts.

Psychopathology was not a significant factor but depression was predominant in those very few who had mental illness.

## **VIII. Conclusion**

Suicide is a cause of premature death. More of young people attempting suicide are on the rise; we can easily assess the burden it can have on the family and indirectly on the government.

Most of the young women who attempt self immolation have their own expectation of married life and are not well prepared for are challenge as a consequence are unable to cope particularly when the added with stress of low socio economic status, marital problems, substance dependence in partners, jealous husbands, getting married at an earlier age makes the situation even more worse as they are not mentally mature enough to handle life difficulties. So at the end the picture of self immolation doesn't seem to differ very much from pesticide poisoning.

## **FUTURE DIRECTION**

Is there a need for marital counselling? The question needs further study.

With the amount of excessive external scarring the psychological trauma is expected to rise even further. The quality of life in a post burns subjects can be explored.

Personality of self immolators can be studied in detail.

## **LIMITATION**

This study was done in a government set up so the study group did not represent the general population so certain variables like socio economic status was not fully represented.

Recall bias could have influenced the patients and relatives recollection of the suicidal intent during the attempt.

The influence of morbidity of burns may have affected the response to various scales used in the study.

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**APPENDIX 1**

**PROFORMA**

Name:

Age:

Sex: Male (1) / Female (2)

Marital status: (1) single / (2) married / (3) separated / (4) divorced / (5) widow / (6) widower

Address: Rural (1) / Urban (2)

Education: Nil (0) / up to 8th std (1) / High School / (10th std) (2)

Higher Secondary (3) / Graduate (4) / Post Graduate (5).

Occupation:

Income:

Socio economic status: according to modified kuppusamy scale

Religion:

Any Previous attempt(s) : Yes (1) / No (2)

H/o Substance use : Yes (1) / No (2)

H/o Substance use in family : Yes (1) / No (2)

Previous he/o Psychiatric treatment : Yes (1) / No (2)

H/o having witnessed or heard of suicide : Yes (1) / No (2)

**APPENDIX 2**

**PRESUMPTIVE STRESSFUL LIFE EVENTS SCALE (Gurmeet Singh et al. 1984)**

Life Events	Mean stress score
1. Death of spouse	95
2. Extra-marital relation	80
3. Marital separation/divorce	77
4. Suspension or dismissal from job	76
5. Detention in jail of self or close family member	72
6. Lack of child	67
7. Death of close family member	66
8. Marital conflict	64
9. Property or crops damaged	61
10. Death of friend	60
11. Robbery or theft	59
12. Excessive alcohol or drug use by family member	58
13. Conflict with in laws( other than over dowry)	57
14. Broken engagements or love affairs	57
15. Major personal illness or injury	56
16. Son or daughter leaving home	55

17. problems	Financial loss or 54
18. member	Illness of family 52
19. colleagues, superiors	Trouble at work with 52
20. astrologer or palmist etc	Prophecy of 52
21.	Pregnancy of wife 52
22.	Conflict over dowry 51
23.	Sexual problems 51
24. member unemployed	Self or family 51
25.	Lack of son 51
26.	Large loan 51
27. or dependent sister	Marriage of daughter 49
28. law	Minor violation of 48
29.	Family conflict 47
30.	Break-up with friend 47
31. construction of house	Major purchase or 46
32.	Death of pet 44
33. examination	Failure in 43
34. examination or interview	Appearing for an 43
35. engaged	Getting married or 43
36. neighbour	Trouble with 40
37. commitments	Unfulfilled 40
38.	Change in residence 39
39. of business	Change or expansion 37
40. achievement	Outstanding personal 37
41. schooling	Begin or end 36
42.	Retirement 35
43. conditions/transfer	Change in working 33
44. habits	Change in sleeping 33
45.	Birth of daughter 30
46. member	Gain of new family 30

47.	Reduction in number
of family function	29
48.	Change in social
activities	28
49.	Change in eating
habits	27
50.	Wife begins or stops
work	25
51.	Going on pleasure
trip or pilgrimage	20

### APPENDIX 3

#### Beck Suicide Intent Scale

#### Objective Circumstances Related to Suicide Attempt

##### 1. Isolation

1. Somebody present
2. Somebody nearby, or in visual or vocal contact
3. No one nearby or in visual or vocal contact

##### 2. Timing

1. Intervention is probable
2. Intervention is not likely
3. Intervention is highly unlikely

##### 3. Precautions against discovery/intervention

1. No precautions
2. Passive precautions (as avoiding other but doing nothing to prevent their intervention; alone in room with unlocked door)
3. Active precautions (as locked door)

##### 4. Acting to get help during/after attempt

1. Notified potential helper regarding attempt
2. Contacted but did not specifically notify potential helper regarding attempt.
3. Did not contact or notify potential helper

##### 5. Final acts in anticipation of death (will, gifts, insurance)

1. None
2. Thought about or made some arrangements
3. Made definite plans or completed arrangements

##### 6. Active preparation for attempt

1. None
2. Minimal to moderate
3. Extensive

**7. Suicide Note**

1. Absence of note
2. Note written, but torn up; note thought about
3. Presence of note

**8. Overt communication of intent before the attempt**

1. None
2. Equivocal communication
3. Unequivocal communication

**Self Report**

9. Alleged purpose of attempt
  1. To manipulate environment, get attention, get revenge
  2. Components of above and below
  3. To escape, surcease, solve problems

**10. Expectations of fatality**

1. Thought that death was unlikely
2. Thought that death was possible but not probabl
3. Thought that death was probable or certain

**11. Conception of method's lethality**

1. Did less to self than s/he thought would be lethal
2. Wasn't sure if what s/he did would be lethal
3. Equaled or exceeded what s/he thought would be lethal

**12. Seriousness of attempt**

1. Did no seriously attempt to end life
2. Uncertain about seriousness to end life
3. Seriously attempted to end life

**13. Attitude toward living/dying**

1. Did not want to die
2. Components of above and below
3. Wanted to die

**14. Conception of medical rescuability**

1. Thought that death would be unlikely if he received medical attention
2. Was uncertain whether death could be averted by medical attention
3. Was certain of death even if he received medical attention

**15. Degree of premeditation**

1. None; impulsive
2. Suicide contemplated for three hours of less prior to attempt
3. Suicide contemplated for more than 3 hourS

**APPENDIX 4**

**BARRATT IMPULSIVENESS SCALE 11**

*	*	*	*
Rarely/Never	Occasionally	Often	Almost Always/Always

1.	I plan tasks carefully	*	*	*	*
2.	I do things without thinking	*	*	*	*
3.	I make-up my mind quickly	*	*	*	*
4.	I am happy-go-lucky.	*	*	*	*

5.	I don't "pay attention"	*	*	*	*
6.	I have "racing" thoughts	*	*	*	*
7.	I plan trips well ahead of time	*	*	*	*
8.	I am self controlled	*	*	*	*
9.	I concentrate easily	*	*	*	*
10.	I save regularly	*	*	*	*
11.	I "squirm" at plays or lectures.	*	*	*	*
12.	I am a careful thinker	*	*	*	*
13.	I plan for job security	*	*	*	*
14.	I say things without thinking	*	*	*	*

15. problems.	I like to think about complex	*	*	*	*
16.	I change jobs	*	*	*	*
17.	I act "on impulse"	*	*	*	*
18. thought problems.	I get easily bored when solving	*	*	*	*
19.	I act on the spur of the moment	*	*	*	*
20.	I am a steady thinker	*	*	*	*
21.	I change residences	*	*	*	*
22.	I buy things on impulse	*	*	*	*
23. a time	I can only think about one thing at	*	*	*	*



24.	I change hobbies	*	*	*	*
25.	I spend or charge more than I earn	*	*	*	*
26. when thinking	I often have extraneous thoughts	*	*	*	*
27. than the future	I am more interested in the present	*	*	*	*
28. lectures	I am restless at the theatre or	*	*	*	*
29.	I like puzzles	*	*	*	*
30.	I am future oriented	*	*	*	*

**APPENDIX 5**

**BRIEF PSYCHIATRIC RATING SCALE**

**SOMATIC CONCERN**

<b>Not present:</b>	1
<b>Mild:</b> occasional complaint or expression of concern	2
	3
<b>Moderate:</b> frequent expressions of concern or exaggerations of existing ills	4
	5
<b>Severe:</b> preoccupied with physical complaints or some somatic complaints	6
	7

**ANXIETY**

<b>Not present:</b>	1
<b>MILD :</b> mentions or acknowledges being worried or fearful on direct Questioning only	2
	3
<b>MODERATE:</b> volunteers he! she is anxious or fearful and may ask For reassurance	4
	5
<b>SEVERE:</b> feels in a panic, insists on anxious talk, and may speak of Impending death	6
	7

**EMOTIONAL WITHDRAWAL**

<b>Not present:</b>	1
<b>MILD:</b> tends not to get involved with other people but will respond If approached	2
	3
<b>MODERATE:</b> seems to avoid emotional contact with others for much or Most of the time; this may be expressed as a passive withdrawal.	4

	5
<b>SEVERE:</b> actively avoids participation, unresponsiveness, and may Leave an area when spoken to or just not respond at all when approached	6
	7
<b>CONCEPTUAL DISORGANISATION</b>	
<b>NOT PRESENT</b>	1
<b>MILD :</b> peculiar use of words, rambling speech and speech a bit hard to Understand or make sense of	2
	3
<b>MODERATE:</b> association loose, apparent topic shift without readily Apparent reason and sentences may be incomplete or peculiarly constructed Blocking interrupts talk.	4
	5
<b>SEVERE:</b> often completely incoherent, uses made up words, grammar Incomprehensible or severe blocking	6
	7
<b>GUILT FEELINGS</b>	
<b>NOTPRESENT</b>	1
<b>MILD:</b> worries about having failed someone or something, and wishes to have Done things differently	2
	3
<b>MODERATE:</b> preoccupied about having done wrong or injured others by Doing or failing to do something	4
	5
<b>SEVERE :</b> delusional guilt and an obviously unreasonable self reproach	6
	7
<b>TENSION</b>	
<b>NOT PRESENT</b>	1
<b>MILD:</b> seems anxious, tense posture, and nervous mannerisms	2
	3
<b>MODERATE:</b> Clearly very tense, fearful expression, trembling and restless	4
	5
<b>SEVERE:</b> continually agitated, pacing and hand wringing	6
	7
<b>MANNERISMS AND POSTURING</b>	
<b>NOT PRESENT</b>	1
<b>MILD:</b> eccentric or odd mannerisms or activity that ordinary individuals Would have difficulty explaining for example grimacing or picking	2
	3
<b>MODERATE :</b> does things or has mannerisms in a way that most people Would regard as crazy. Behaviour serving no apparent constructive purpose	4
	5
<b>SEVERE:</b> posturing, smearing, intense rocking and foetal positioning And strange rituals that dominate the patients attention and behaviour	6
	7
<b>GRANDIOSITY</b>	
<b>NOT PRESENT</b>	1
<b>MILD :</b> says he/she is feeling great and has no problems	2
	3
<b>MODERATE :</b> patient is enthusiastically ready to take over the world Or the management of others	4
	5
<b>SEVERE:</b> delusional. Patient says' he/she is appointed by god or is uniquely Qualified to run the world	6
	7

<b>DEPRESSIVE MOOD</b>	
<b>NOT PRESENT</b>	1
<b>MILD:</b> seems unhappy and blue	2
	3
<b>MODERATE:</b> Persistent dejected manner and crying	4
	5
<b>SEVERE :</b> severely depressed, despairing, preoccupied with death or suicide	6
	7
<b>HOSTILITY</b>	
<b>NOT PRESENT</b>	1
<b>MILD:</b> snappish or grumpy manner or talk, mild irritability, or sour expression	2
	3
<b>MODERATE:</b> angry, sarcastic or argumentative. May slam about or be noisy, But no actual physical aggression towards people or objects	4
	5
<b>SEVERE:</b> threatens or assaults people or throws objects. May be severe if Clearly furious and just barely controlling anger	6
	7
<b>SUSPICIOUSNESS</b>	
<b>NOT PRESENT</b>	1
<b>MILD:</b> seems on guard, unresponsive to personal questions, and describes Incidents where others have harmed or wanted to harm him/her that sound Plausible	2
	3
<b>MODERATE:</b> does not trust others and says others are talking about him/ Her and intend harm. Says or implies that he/she expects other patients or Staff to cause harm	4
	5
<b>SEVERE:</b> delusional paranoia. Speaks of mafia plots, or the federal Bureau of investigation hospital staff or others poisoning his food	6
	7
<b>HALLUCINATORY BEHAVIOUR</b>	
<b>NOT PRESENT</b>	1
<b>MILD:</b> patient sees, smells or feels something but knows it isn't real Knowledge of the patient! experience suggests that the patient has occasional Hallucinatory behaviour	2
	3
<b>MODERATE :</b> talks about or to voices or other hallucinated experiences Frequent gestures suggestive of active ongoing hallucinations for a sustained Period	4
	5
<b>SEVERE:</b> pervasive involvement in hallucinated experience during at least Some of the rating period. Little or no evidence that the patient rejects them As different to normal	6
	7
<b>MOTOR RETARDATION</b>	
<b>NOT PRESENT</b>	1
<b>MILD:</b> noticeably slowed in movement or speech compared with the average Individual	2
	3
<b>MODERATE:</b> Clearly retarded. Seldom moves or speaks unless prodded Or urged	4
	5
<b>SEVERE:</b> frozen and catatonic	6
	7
<b>UNCOOPERATIVENESS</b>	

<b>NOT PRESENT</b>	<b>1</b>
<b>MILD</b> : gripes or tries to avoid complying with routine but goes ahead Without argument	2 3
<b>MODERATE</b> : resists routine, verbally resists and seems defiant but eventually Complies	4 5
<b>SEVERE</b> : refuses to cooperate, negativistic and physically resistant	6 7
 <b>UNUSUAL THOUGHT CONTENT</b>	
<b>NOT PRESENT</b>	<b>1</b>
<b>MILD</b> : expresses odd, unusual or strange ideas	2 3
<b>MODERATE</b> : Expresses beliefs or ideas that would be regarded as crazy by Average person	4 5
<b>SEVERE</b> : bizarre thoughts, ideas or beliefs that have no relationship to the Real world of the physically possible. Patient refuses to consider their Irrationality.	6 7
 <b>BLUNTED AFFECT</b>	
<b>NOT PRESENT:</b>	<b>1</b>
<b>MILD</b> : Patient has some loss of normal emotional responsiveness	2 3
<b>MODERATE</b> : Lacks almost all emotional expression. doesn't laugh, smile Or react emotionally when approached. Has a somewhat frozen unchanging Expression.	4 5
<b>SEVERE</b> : Seems almost mechanical in speech and activity. Shows no feeling.	6 7

**APPENDIX 6**

**CONSENT FORM**

I, the undersigned have been explained the following in the language I understand.

1. participating in the study with my own wish I am
  
2. purpose of this study is to find further information regarding causes and risk factors of suicide by poisoning by corrosives and OPC s. The
  
3. finding of this study can be used jn a thesis or research paper. The
  
4. dual information will be kept confidential. Indivi
  - Name and signature of patient
  - Name and signature of the doctor
  - Name and sign of witness