Original Article

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# Substance Dependence and Risk Factors for Suicide Attempt: A Retrospective Study

Psychiatry/Mental Health Section

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## ABSTRACT

**Introduction:** Suicide is closely linked to substance abuse and it is one of the main component of premature death.

**Aim:** To assess the factors that affect the possibility of suicidal behaviour among persons who abuse substance.

**Materials and Methods:** The present retrospective study was conducted in August to December 2021, analysis of data was done from January to February 2022 at the Outpatient Department of Psychiatry at ACS Medical College and Hospital, Chennai, Tamil Nadu, India. Total 101 substance abuse patients who attempted suicide and 101 substance abusers who have not attempted suicide were included. Data were collected regarding socio-demographic variables, legal problems (drunken driving/stealing/perpetrator in domestic violence or physical abuse or sexual abuse or homicide), hereditary and addiction data. The patient was diagnosed with substance dependence syndrome, anxiety disorders, Depression disorder and substance-induced psychosis based on the International Classification of Diseases (ICD) 10 criteria. The socio-economic status was assessed using modified Kuppuswamy scale. Data analysis done using the Statistical Package for the Social Science (SPSS) version 20.0.

**Results:** The mean age of the participants who had attempted suicide was 39 years, and those in the other was 43 years. In both the groups all subjects were males. The common abused substance was alcohol. There was a positive association between various demographic variables and attempted suicide, such as socio-economic status, education and place of residence. Early age of onset of substance abuse, abusing more than two substances, co-morbidity of psychiatry illness such as anxiety disorder, depression, and family history of psychiatry illness were the risk factors. In the 'attempted suicide' group, 74.2% of the participants abused drugs since more than 10 years, while it was 59.4% in the other group. There was also a positive association between the duration of abuse and attempted suicide.

**Conclusion:** An early age of onset of drug initiation, abusing more than two substances, family history of psychiatry disorders, and co-morbid psychiatric illness increase the risk of suicide. Suicides are preventable, the need to early identification of the risk factors, assess manage and follow-up is the utmost importance of mental health professionals.

**Keywords:** Attempted suicide, Co-morbid psychiatric illness, Substance abuse

## INTRODUCTION

World Health Organisation (WHO) reported in 2021, that more than 7,00,000 people die due to suicide every year [1]. Approximately 5% of adults attempt suicide atleast once in their lifetime [2]. According to the National Crime Records Bureau (NCRB), India lost more people to suicide than Coronavirus Disease-2019 (COVID-19). The country reported more than 1.53 lacs suicides last year (2020)-highest in the last 10 years [3].

For every suicide committed there are many more people who attempt suicide [4]. A prior suicide attempt is the single most important risk factor for complete suicide in the general population [5]. Suicide attempts are five to twenty times more common than complete suicide [6]. Suicide is the fourth leading cause of death among 15-19 year olds. Every suicide is a tragedy that affects families, communities and entire countries and has long lasting effects on the people left behind. Suicide is a serious public health problem [7].

Suicide is closely linked to substance abuse and it is the leading cause of premature death [8]. Substance use is a risk factor for both fatal and non fatal overdoses, suicide attempts and death by suicide [9]. Compared to the general population, individuals with alcohol dependence and people who use drugs have a 10-14 times greater risk of death by suicide and approximately 22% of deaths by suicide have involved alcohol intoxication [10,11]. Substance abuse and suicide have a very complicated relationship, where substance abuse greatly increases risk of suicide and suicidal thoughts and tendencies greatly increase the risk of addiction. Almost all substance use disorders are associated with an increase in suicide risk [12].

Suicides are preventable. There are number of measures that can be taken at population, subpopulation and individual levels to prevent suicide and suicide attempts. The aim of the study was to confirm the factors that affect the possibility of suicidal behaviour and to treat acute, modifiable risk factors and to continuously ensure patients safety [13].

## MATERIALS AND METHODS

The retrospective study was conducted in August to December 2021, analysis of data was done from January to February 2022 at the Outpatient Department (OPD) of Psychiatry at ACS Medical College and Hospital, Chennai, Tamil Nadu, India. The multispecialty teaching hospital provides care to patients with a wide variety of disorders. The study included 101 substance abusers who have attempted suicide and 101 substance abusers who have not attempted suicide and attended the Psychiatry OPD. Ethical approval was obtained from the Institutional Ethics Committee (IEC) (NO.218/2021/IEC/ACSMCH Dt.06.08.2021).

**Inclusion criteria:** Persons with co-morbid psychiatry mood disorder and psychosis were included in the study.

**Exclusion criteria:** Persons who were in delirium, co-morbid cognitive disorder, history of head injury and those who were not willing to take part in the study were excluded from the study.

### Data Collection

Socio-demographic variables, legal problems, (drunken driving/stealing/perpetrator in domestic violence or physical abuse or sexual abuse or homicide), hereditary, and addiction data were obtained

using a semi-structured proforma, specifically designed to capture the relevant factors that may impact on the risk factors pertaining to suicide among substance abusers. The socio-economic status was assessed by using modified Kuppuswamy scale [14]. The patients were diagnosed with substance dependence syndrome, anxiety disorders, depression disorder and substance induced psychosis based on ICD-10 criteria [15].

## STATISTICAL ANALYSIS

Data analysis done using the Statistical Package for the Social Science (SPSS) version 20.0, Chi-square test for categorical outcomes. A two tailed probability value of <0.05, accepted as the level of statistical significance.

## RESULTS

The age range of whole study sample was 18-65 years and the mean was 41 years. The mean age in the 'attempted suicide group' was 39±13.43 years, while that in 'not attempted suicide group' was 43±2.12 years [Table/Fig-1].

| Variable | Attempted suicide (Out of 101) (%) | Not attempt suicide (Out of 101) (%) | p-value (Based on Pearson's Chi-square Values) | Total frequency (Out of 202) (%) |
|---|---|---|---|---|
| **Age (years)** | | | | |
| 18-40 | 60 (59.4) | 52 (51.5) | 0.39 (1.88) | 112 (55.4) |
| 41-60 | 38 (37.6) | 43 (42.6) | | 81 (40.1) |
| >60 | 3 (3.0) | 6 (5.9) | | 9 (4.5) |
| **Mean±SD (years)** | 39±13.43 | 43±2.12 | | |
| **Religion, n (%)** | | | | |
| Christianity | 14 (13.9) | 12 (11.9) | 0.20 (3.25) | 26 (12.9) |
| Hinduism | 84 (83.1) | 80 (79.2) | | 164 (81.2) |
| Islam | 3 (3.0) | 9 (8.9) | | 12 (5.9) |
| **Educational status** | | | | |
| **Below 10th grade** | | | | |
| Illiterate | 6 (5.9) | 11 (10.9) | 0.015* (15.79) | 17 (8.4) |
| Primary school certificate | 6 (5.9) | 14 (13.9) | | 20 (9.9) |
| Middle school certificate | 9 (8.9) | 8 (7.9) | | 17 (8.4) |
| High school certificate | 22 (21.8) | 30 (29.7) | | 52 (25.7) |
| **Above 10th grade** | | | | |
| Intermediate/Post high school diploma | 22 (21.8) | 22 (21.8) | | 44 (21.8) |
| Graduate/ Postgraduate | 27 (26.7) | 15 (14.8) | | 42 (20.8) |
| Professional degree | 9 (8.9) | 1 (1.0) | | 10 (5.0) |
| **Marital status, n (%)** | | | | |
| Divorced | 13 (12.9) | 2 (2.0) | <0.001* (63.82) | 15 (7.4) |
| Married | 32 (31.7) | 87 (86.1) | | 119 (58.9) |
| Separated | 36 (35.6) | 6 (5.9) | | 42 (20.8) |
| Single | 18 (17.8) | 4 (4.0) | | 22 (10.9) |
| Widower | 2 (2.0) | 2 (2.0) | | 4 (2.0) |
| **Occupation, n (%)** | | | | |
| Unemployed | 5 (4.9) | 0 | <0.001* (24.35) | 5 (2.5) |
| Unskilled worker | 5 (4.9) | 12 (11.9) | | 17 (8.4) |
| Semi-skilled worker | 4 (4.0) | 10 (9.9) | | 14 (6.9) |
| Skilled worker | 34 (33.7) | 48 (47.5) | | 82 (40.6) |
| Clerical/Shop owner | 25 (24.8) | 17 (16.8) | | 42 (20.8) |
| Semi professional | 13 (12.9) | 12 (11.9) | | 25 (12.4) |
| Professional/White collar | 15 (14.8) | 2 (2.0) | | 17 (8.4) |
| **Socio-economic status, n (%)** | | | | |
| Upper | 21 (20.8) | 7 (6.9) | 0.018* (11.88) | 28 (13.9) |
| Upper middle | 41 (40.6) | 35 (34.7) | | 76 (37.6) |
| Lower middle | 28 (27.7) | 40 (39.6) | | 68 (33.7) |
| Upper lower | 10 (9.9) | 18 (17.8) | | 28 (13.9) |
| Lower | 1 (1.0) | 1 (1.0) | | 2 (0.9) |
| **Place of residence, n (%)** | | | | |
| Rural | 6 (5.9) | 29 (28.7) | <0.001* (48.19) | 35 (34.6) |
| Semiurban | 24 (23.8) | 49 (48.5) | | 73 (72.3) |
| Urban | 71 (70.3) | 23 (22.8) | | 94 (93.1) |

**[Table/Fig-1]:** Socio-demographic factors associated with attempting suicide among subjects with substance abuse.

In the 'attempted suicide group' majority (57.4%) of the participants were educated above 10th grade; while in the other 62.4% were educated below 10th grade. In the 'attempted suicide group' majority (68%) sample was single/divorced/separated, while in the other 87% were married. Majority (61.3%) of the 'attempted suicide group' belonged to upper and upper middle socio-economic class, while it was lower middle class (39.6%) in the other. Majority (70.3%) were urban population in 'attempted suicide group', while it was semiurban (48.5%) in the other group. In the 'attempted suicide group', 95 participants abused the drug before 25 years of age, while in the 'not attempted suicide group', 45 initiated drug abuse before attaining 25 years of age.

There was a significant association between the duration of abuse and attempted suicide. Total 75 participants in the 'attempted suicide group' abused drug for more than 10 years, while it was 60 in the other group. Total 90 participants who attempted suicide were polysubstance abusers, while 70 in the other group were polysubstance abusers [Table/Fig-2]. The mean number of suicide attempts was 2.41±1.67 [Table/Fig-3].

Out of 158, 95 in the 'attempted suicide group' abused drug more than once a day. Depression, and psychosis was more common in the 'attempted suicide' group, while anxiety was more common in the 'not attempted suicide' group. History of legal problems were present in 63/82 of the 'attempted suicide group' and 19/82 in the other group [Table/Fig-4].

Total 113 participants had history of undergoing deaddiction treatment, of which only 29 belonged to the 'atttempted suicide' group [Table/Fig-4]. Of the 59 who had family history of suicide, 56 belonged to the 'attempted suicide' group.

## DISCUSSION

This study helps us to understand the impact of drug abuse on persons committing suicide. It is important to confirm the factors that influence the possibility of suicidal behaviour among substance abusers. As evident from previous studies [16,17]. There was a significant association among various demographics and attempted suicide. Suicide attempt was found to be more likely in persons who are intermediate/graduate/postgraduate or professional persons. Attempted suicide was more among the upper middle and upper socio-economic classes and among the urban population compared to rural or semi urban. Social isolation (separated, divorced or widowers) is another risk factor. It can be assumed that the entry into the community with a partner is a sign of stability in social functioning and thus reduced suicide risk [18].

The results from the study conform with earlier studies that risk factors of previous suicide attempt, co-morbid psychiatry illness such as psychosis, depression, anxiety disorders are more prone for attempting suicide. More number of suicide attempts have been identified with persons with psychosis and depression [19,20].

The tendency towards criminal behaviour that is often associated with substance abusers with abusing family members (verbally, physically, sexual abuse, emotional abuse and financial abuse) is

| Variable | Grouping of variable (Number) | Subjects who attempted suicide (Out of 101) | Subjects who did not attempt suicide (Out of 101) | Odds ratio (95% CI of odds ratio) | Chi-square value | p-value |
|---|---|---|---|---|---|---|
| Age of initiation of substance abuse | ≤25 years (140) | 95 | 45 | 19.7 (7.9-49.1) | 57.89 | <0.001* |
| | >25 years (62) | 6 | 56 | 1.00 | | |
| Duration of abuse | >10 years (135) | 75 | 60 | 2.0 (1.1-3.6) | 5.00 | 0.025* |
| | ≤10 years (67) | 26 | 41 | 1.00 | | |
| History of alcoholism | Yes (190) | 97 | 93 | 2.1 (0.6-7.2) | 0.80 | 0.37 |
| | No (12) | 4 | 8 | 1.00 | | |
| History of tobacco smoking | Yes (118) | 63 | 55 | 1.4 (0.8- 2.4) | 1.30 | 0.26 |
| | No (84) | 38 | 46 | 1.00 | | |
| History of tobacco chewing | Yes (88) | 48 | 40 | 1.4 (0.8- 2.4) | 1.28 | 0.26 |
| | No (114) | 53 | 61 | 1.00 | | |
| History of cannabis | Yes (30) | 23 | 7 | 4.0 (1.6-9.7) | 9.97 | 0.0015* |
| | No (172) | 78 | 94 | 1.00 | | |
| History of opioid use | Yes (4) | 3 | 1 | 3.1 (0.3-29.9) | 0.26 | 0.61 |
| | No (198) | 98 | 100 | 1.00 | | |
| History of inhalant abuse | Yes (10) | 8 | 2 | 4.3 (0.9-20.6) | 2.63 | 0.10 |
| | No (192) | 93 | 99 | 1.00 | | |
| History of use of more than one substance | Yes (167) | 90 | 77 | 2.6 (1.2-5.5) | 5.81 | 0.016* |
| | No (35) | 11 | 24 | 1.00 | | |
| Amount of substance consumed[$] | Maximum (165) | 99 | 66 | 26.3 (6.1-112.9) | 33.88 | <0.001* |
| | Minimum (37) | 2 | 35 | 1.00 | | |
| Use of the drug more than once a day | Yes (158) | 95 | 63 | 9.6 (3.8-23.9) | 29.61 | <0.001* |
| | No (44) | 6 | 38 | 1.00 | | |

**[Table/Fig-2]:** Association between patterns and profile of substance abuse and attempting suicide.
[$]Minimum- <180 mL alcohol, <3 cig/day, <1 pack tobacco chew
Maximum- >180 mL alcohol, >3 cig/day, >1 pack tobacco chew

| Name of the variable | Lower Limit (LL) | Upper Limit (UL) | Mean | Standard deviation | Standard error | Range (UL-LL) |
|---|---|---|---|---|---|---|
| Number of suicide attempts | 1 | 10 | 2.41 | 1.67 | 0.17 | 9 |

**[Table/Fig-3]:** Details of suicide attempts among the subjects who attempted suicide.

| Variable | Grouping of variable (Number) | Subjects who attempted suicide (Out of 101) | Subjects who did not attempt suicide (Out of 101) | Odds ratio (95% CI of odds ratio) | Chi-square value | p-value |
|---|---|---|---|---|---|---|
| Anxiety | No (173) | 93 | 80 | 3.1 (1.3-7.3) | 6.77 | 0.0093* |
| | Yes (29) | 8 | 21 | 1.00 | | |
| Depression | Yes (65) | 42 | 23 | 2.4 (1.3-4.5) | 8.14 | 0.0043* |
| | No (137) | 59 | 78 | 1.00 | | |
| Psychosis | Yes (73) | 54 | 19 | 5.0 (2.6-9.4) | 26.15 | <0.001* |
| | No (129) | 47 | 82 | 1.00 | | |
| History of legal problems (Drunken driving/stealing/perpeterator in domestic violence or physical abuse or sexual abuse or homicide) | Yes (82) | 63 | 19 | 7.2 (3.8-13.6) | 39.54 | <0.001* |
| | No (120) | 38 | 82 | 1.00 | | |
| History of treatment for deaddiction | No (89) | 72 | 17 | 12.3 (6.2-24.1) | 60.46 | <0.001* |
| | Yes (113) | 29 | 84 | 1.00 | | |
| History of abusive family member | Yes (149) | 79 | 70 | 1.6 (0.8-3.0) | 2.06 | 0.15 |
| | No (53) | 22 | 31 | 1.00 | | |
| History of sexual abuse (victim or perpetrator) | Yes (21) | 18 | 3 | 7.1 (2.0-24.9) | 10.42 | <0.001* |
| | No (181) | 83 | 98 | 1.00 | | |
| History of co-morbid illness (including far relations) | Yes (127) | 65 | 62 | 1.1 (0.6-2.0) | 0.19 | 0.66 |
| | No (75) | 36 | 39 | 1.00 | | |
| Family history of substance abuse (including far relations) | Yes (177) | 92 | 85 | 1.9 (0.8-4.6) | 2.23 | 0.14 |
| | No (25) | 9 | 16 | 1.00 | | |
| Family history of suicide (including far relations) | Yes (59) | 56 | 3 | 40.7 (12.1-136.9) | 64.74 | <0.001* |
| | No (143) | 45 | 98 | 1.00 | | |
| Family history of psychiatric illness (including far relations) | Yes (53) | 40 | 13 | 4.4 (2.2-9.0) | 18.56 | <0.001* |
| | No (149) | 61 | 88 | 1.00 | | |

**[Table/Fig-4]:** Association between attempting suicide and psychiatric, family, physical and social problems.

a significant risk factor for attempting suicide and the results are similar to earlier studies [21,22]. History of sexual abuse, co-morbid medical illness are other risk factors that have been identified in the study also being confirmed with earlier studies [23,24].

Family history is a significant predictor of attempted suicide in substance abusers [25]. Family history of complete suicide or attempt suicide, psychiatry illness have been identified as another risk factor for suicide attempt. Besides the classical genetic heritage, which is primarily related to psychotic disorder, behaviour patterns can also be significant [26]. No association was found with family history of substance abuse, as recognised in other studies [27,28].

Earlier the age of onset of drug abuse, more the dependence and suicide attempts [29]. Hence, duration of drug abuse is another important risk factor. Polysubstance abuse, as risk factor was identified in the study, alcohol and tobacco smoking being more common [30]. Most of the previous studies did not consider whether multiple substance abuse contribute greater risk of attempt suicide than single substance. Use of drug more than once a day also increases the risk of attempting suicide [31,32]. Persons who have taken deaddiction treatment in the past are less likely to attempt suicide findings are similar to previous studies [33,34].

### Limitation(s)

The tertiary care centre was in an urban area, so the sample of rural population was low. The study sample constituted only males, so the analysis of the risk factors of drug abuse across other gender have not been studied.

## CONCLUSION(S)

Substance use disorders are associated with significant risk of suicidal mortality. The finding suggest that a heightened suicide risk screening and prevention efforts for individuals with substance use disorders are needed. History of suicide attempt is important in any substance abuse individual, thereby, assessing the psychiatry co-morbidity and treating for the same is pertinent. It is important to reduce the stigma of suicidal behaviour and increase awareness of psychological distress of individuals who experienced suicidal behaviour in their family. Health systems need to consider suicide prevention screening for persons abusing substance in other settings too, such as primary care or emergency settings.

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