Prevalence of suicidality and its correlates in geriatric depression: A multicentric study under the aegis of the Indian Association for Geriatric Mental Health

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ABSTRACT

Aim of the Study: This study aimed to evaluate the prevalence and risk factors for suicidal ideations (SIs) and suicidal attempts (SAs) among elderly patients with depression, seeking treatment in psychiatric setups. Methodology: The study sample comprised 488 elderly patients (age ≥60 years) with depression recruited across eight centers. These patients were evaluated on the Columbia Suicide Severity Rating Scale, Geriatric Depression Scale-30, Generalized Anxiety Disorder-7 (GAD-7), Patient Health Questionnaire-15 Scale, UCLA Loneliness Scale, Revised Social Connectedness Scale, and Montreal Cognitive Assessment Scale. Results: “Wish to die” was present in one-fifth (21.7%) and about one-fourth (26.6%) of the study samples at the time of assessment and in the lifetime, respectively. Overall, one-fourth (25.8%; n = 126) of the participants had SIs at the time of assessment and two-fifths (41.5%; n = 203) had SIs in the lifetime. Overall, about one-tenth (9.2%) of the participants made an SA just before assessment and one-sixth (16.6%) had at least one SA in the lifetime. Compared to those with no SIs in the lifetime, those with current and lifetime SIs had lower age of onset and longer duration of illness, less often had a comorbid physical illness, more often had recurrent depressive disorder, had significantly higher anxiety as assessed on GAD-7 scale, and had significantly higher prevalence of loneliness and significantly higher prevalence of cognitive deficits. When those with any current and lifetime SAs and those with no lifetime SAs were compared, those with SAs had longer duration of current treatment and more often had comorbid physical illness and significantly higher cognitive deficits. Conclusions: The present study suggests that about one-fourth (25.8%) of the elderly with depression have SIs at the time of assessment and about two-fifths (41.5%) have lifetime SIs. About one-sixth of the elderly patients with depression make at least one SA in the lifetime and about one-tenth attempt suicide in recent past. In terms of risk factors for SIs and SAs, the present study suggests that the presence of comorbid anxiety, loneliness, and cognitive deficits possibly predispose the elderly to suicidal behaviors.

Key words: Depression, elderly, suicidal attempt, suicidal ideations

INTRODUCTION

Existing data from different parts of the world suggest that completed suicidal rates are highest for the elderly and the rates increase with age among people older than 60 years of age.¹⁻⁴ Lifetime suicidal attempts (SAs) have been found to be higher in young olds (65–74 years) compared to middle olds (75–84 years).⁵,⁶ Studies which have evaluated the risk factors for SAs and suicidal
ideations (SIs) in the elderly suggest association with certain sociodemographic characteristics (such as female gender and unemployment)\(^\text{[40]}\) and serious physical illnesses such as malignancies, chronic pain, stroke, rheumatoid arthritis, and Parkinson’s disease.\(^\text{[8,9]}\) In terms of mental health issues, suicidal behavior is most commonly associated with depressive disorders. Other mental health issues which have been shown to be associated with suicidal behavior include anxiety, low social connectivity/greater social isolation, and loneliness.\(^\text{[16–12]}\) Various psychosocial factors such as bereavement, interpersonal problems, living alone, urban living, financial stressors, and low social support have been found to be associated with SIs, nonfatal suicidal behavior, and suicide in the elderly.\(^\text{[13–16]}\) Among all of these factors, late-life depression is a major factor, which has been consistently associated with SIs, SAs, and completed suicide.\(^\text{[17–19]}\)

Various factors which have been shown to be associated with SIs and SAs among elderly patients with depression include higher levels of anxiety, hopelessness, loss of status; intolerable psychological pain; perceived incompetence to adjust to adverse situations; and poor performance on tests of executive functions, attention, memory, and cognitive flexibility.\(^\text{[23–24]}\) Suicidal behavior among elderly patients with depression has also been linked with greater white matter brain lesions, suggesting that cognitive impairment mediated by white matter brain lesions possibly mediates SA in depressed elderly people.\(^\text{[25]}\) Another important risk factor for suicidal behavior among elderly with depression includes the presence of comorbid physical illnesses.\(^\text{[26,27]}\) Cognitive rigidity in thinking, narrowing of focus, and concreteness lead to amalgamations of trauma of poor health and feeling of being rejected/left out and can lead to SAs in the elderly.\(^\text{[28]}\) All these findings suggest that factors involved in SIs and SAs in the elderly are different from young- and middle-aged population.

There are limited data from India on suicidal behavior among the elderly, and the incidence rates vary widely. A national representative survey which surveyed 2684 deaths due to suicide in individuals aged 15 years or older suggested that completed suicide rate in those aged 60–69 years was 23.7 (confidence interval [CI]: 18.6–27.6) and those aged ≥70 years is 30.2 (CI: 24.2–35.4) per one lakh population as compared to 25.5 (CI: 22.3–26.5) per one lakh population in individuals aged 15–29 years and 27.4 (CI: 24.0–29.7) per one lakh population in individuals aged 30–44 years.\(^\text{[24]}\) In contrast, a study from South India (Tamil Nadu, Kaniyambadi block) suggested annual suicidal rate of 189/lakh persons aged above 55 years, with a male-to-female ratio of 1:0.66.\(^\text{[30]}\) The risk factors identified for suicide in the elderly include higher rate of family history of psychiatric illness, presence of a psychiatric illness (particularly depression), concurrent physical illness, and history of medical contact 3 months before attempt.\(^\text{[30]}\)

There is a lack of data in terms of prevalence of SIs and SAs among elderly patients with depression. Similarly, little is understood about risk factors for SIs and SAs among elderly patients with depression. It is well known that risk factors for suicidal behaviors are influenced by the psychosocial factors and those reported from one country may not be generalizable to other countries. Accordingly, there is a need to have country-specific data. In this background, the present study aimed to evaluate the prevalence of suicidal behaviors in the form of SIs and SAs among elderly patients with depression, seeking treatment in psychiatric setups. Additional aim was to evaluate the risk factors for SIs and SAs among elderly patients with depression.

**METHODOLOGY**

This was a multicentric study, conducted at eight centers across the country, under the aegis of the Indian Association for Geriatric Mental Health. The study was approved by the local institutional ethics committees of the institutes in which this study was conducted. All the participants were explained about the study and were recruited after obtaining written informed consent.

Detailed methodology of this study has been discussed in previous papers. We would briefly discuss the methodology here; interested readers can refer to the previously published papers of the study.\(^\text{[31–33]}\)

The study followed a cross-sectional design in which participants were assessed only once. To be included in the study, patients were required to be aged ≥60 years, fulfilling the criteria of major depressive disorder as per the Diagnostic and Statistical Manual of Mental Disorders-IV Edition criteria,\(^\text{[34]}\) confirmed by MINI Plus.\(^\text{[35]}\) Patients with comorbid intellectual disability, dementia and organic brain syndrome were excluded.

All the patients were assessed on the Hindi version of the Geriatric Depression Scale (GDS-30),\(^\text{[36]}\) Generalized Anxiety Disorder-7 (GAD-7),\(^\text{[37]}\) Patient Health Questionnaire-15 (PHQ-15),\(^\text{[38]}\) UCLA Loneliness Scale (LS),\(^\text{[39]}\) Revised Social Connectedness Scale,\(^\text{[40]}\) and Montreal Cognitive Assessment (MoCA).\(^\text{[41]}\) MoCA correction was applied (one point extra to those with ≤12 years of education) and cutoff of 26 was used to categorize those with and without cognitive deficits.\(^\text{[42]}\) Physical comorbidity was assessed by taking detailed history, physical examination, and reviewing the treatment records.

Suicidality was assessed by the Columbia Suicide Severity Rating Scale (C-SSRS).\(^\text{[42]}\) The C-SSRS is designed to assess the full range (severity and intensity) of SI and behavior at the time of assessment and in the lifetime. The severity and intensity of ideations is rated on a 5-point ordinal scale. Suicidal behavior is rated on a nominal scale. The C-SSRS has been found to be a reliable and valid method for identification of suicidal risk.\(^\text{[43,44]}\)

The data were analyzed using SPSS version 14 (Chicago, IL, USA). Descriptive analysis involved computation of mean and standard deviation (SD) with a range for continuous variables and frequency and percentages for ordinal or nominal variables. Chi-square test, t-test, and Mann–Whitney test were used for comparison of various variables.
RESULTS

The study included 488 patients diagnosed with depression. Slightly more than half of the study participants were male (53.7%; n = 262), were on paid employment (53.3%; n = 260), and from urban locality (53.1%; n = 259). The mean age of the study samples was 66.55 (SD: 5.83) years, and the mean years of formal education was 7.63 (SD: 5.85) years. About one-fourth of the samples (25.4%; n = 124) were currently single (unmarried, widowed, separated, and divorced). More than two-third of the participants were living in nunnuclear family setup (69.9%, n = 341).

Three-fifths of the samples were diagnosed with first-episode depression (60.9%; n = 297), and the rest were diagnosed with recurrent depressive disorder (39.1%; n = 191). More than three-fourth of the samples had at least one comorbid physical illness (78.7%; n = 384). Comorbid substance use disorders were found in about one-third (37.9%) of the participants, and a very small proportion of the participants had comorbid psychiatric disorders (3.1%). The mean age of onset of depression was 60.18 (SD: 10.5) years, and the mean total duration of illness was 65.68 (SD: 91.8) months.

The mean GDS score, mean GAD-7 score, and mean PHQ-15 score of the samples were 16.96 (SD: 4.03), 9.46 (SD: 4.20), and 11.56 (SD: 4.13), respectively. The mean UCLA Loneliness score was 27.93 (SD: 13.96), and the mean social connectedness score was 69.87 (SD: 10.2). The mean MoCA score was 22.45 (SD: 3.60; range, 16–30).

Suicidal behavior as assessed by the Columbia Suicide Severity Rating Scale

Suicidality in C-SSRS is measured in the form of SIs and SAs, both at current time, i.e., at the time of evaluation and in the lifetime (current and past suicidal behavior). As shown in Table 1, at the time of assessment, “wish to die” was present in one-fifth (21.7%) and about one-fourth (26.6%) of the study samples at the time of assessment and in the lifetime, respectively. At the time of assessment, nonspecific active suicidal thoughts, active SIs with any method (not plan) without intent to act, and active suicidal thought with some intent to act without specific plan at current were present in 10.2%, 5.7%, and 3.9% of patients, respectively. At the time of assessment, active SIs with specific plan and intent were present in 5.9% of patients. Overall, one-fourth (25.8%; n = 126) of the participants had SIs at the time of assessment. As expected, lifetime rates were slightly higher than those reported at the time of assessment for all kind of SIs [Table 1].

When the combined prevalence of wish to die and SIs was evaluated, the prevalence of SIs by this broader definition in the present study was 29.6% (n = 133) at the time of assessment and 60.04% (n = 293) in the lifetime.

In terms of frequency of SIs, half (n = 63) of the patients who had current SI (n = 126) reported the same at a frequency of 2–5 times per week at the time of assessment. Further, in terms of duration of SIs at the time of assessment, in three-fourth (73%) of the participants, these lasted for <1 h and slightly more than one-third (38.09%) reported to have control over the same. In terms of deterents, to act on the SIs, three-fourth (73.8%) of the participants reported that something definitely stopped me from doing any suicidal act.

In terms of intensity (rated as the level of intensity of the most severe ideations during the time he/she was feeling most suicidal on a Likert scale of 1–5) of SIs, the mean score for those with SIs at the time of assessment was 2.84 (SD: 1.04). When the lifetime SIs were evaluated, more than half of the participants who had SIs reported the same to occur at a frequency of less than once a week and duration of SIs was <1 h for about three-fifth (58.5%) of those with lifetime SIs. About half (47.29%) of those with lifetime SIs reported to have easy control and another one-third reported having slight difficulty in control over the SIs. The mean intensity of lifetime SI for those with lifetime SIs was 3.45 (SD: 0.704).

In terms of actual self-harm, C-SSRS[42] records different severity of attempted behaviors. Overall, only 9 (1.8%) of the participants made actual SA (defined as per C-SSRS as a potentially self-injurious act committed with at least some wish to die), another 2.3% had interrupted attempts (defined as per C-SSRS as when the person is interrupted by an outside circumstance from starting the potentially self-injurious act, if not for that, actual attempt would have occurred) and 7.6% of the participants had aborted attempts (defined as per C-SSRS as when person begins to take steps toward making a suicide attempt, but stops himself/herself before he/she actually have engaged in any self-destructive behavior) in the recent past, at the time of the assessment. In terms of lifetime attempts, about one-seventh (14.8%) of the participants had aborted attempts, 4.3% had interrupted attempts, and 4.1% had actual attempts. Few of the patients showed overlap of different severity of SAs, both in the recent past and in the lifetime. Overall, about one-tenth (9.2%) of the participants had any kind of SA behavior just before assessment and one-sixth (16.6%) had at least one SA in the lifetime [Table 1].

Evaluation of risk factors for suicidal behavior

Based on the present or absence of current and lifetime suicidal behavior, the study sample was divided into those with no SI in the lifetime (n = 285), those with current SI only (n = 126), and those with lifetime SI (i.e., current or past (n = 203). Similar categorization was done for SA. To understand the risk factors, those with current SIs were compared with those with lack of SI in the lifetime. The second comparison involved those with lifetime SIs and those with no SI in the lifetime.

Comparison of patients with current suicidal ideations and those with no suicidal ideation in the lifetime

Compared to those with no SIs in the lifetime, those with current SIs had lower age of onset for depressive illness, had longer duration of illness, had longer duration of current treatment, less often had a comorbid physical illness, more often had RDD, had significantly higher score on
GAD-7 scale, had higher scores for UCLA-LS and higher prevalence of loneliness, and had more attention deficits and overall cognitive deficits as assessed on MoCA scale with significantly higher number of participants scoring below 26 [Table 1].

Comparison of patients with lifetime suicidal ideations and those with no suicidal ideation in the lifetime
When those with lifetime ($n = 203$) and those without lifetime SIs ($n = 285$) were compared, those with lifetime SIs had significantly lower age of onset of illness ($t$-test...
Table 2: Comparison of sociodemographic and clinical profile between patients with current suicidal ideations (n = 126) and those with lifetime suicidal ideation (n = 203) with those who never had any suicidal ideations in current as well as lifetime (n = 285)

| Variables                      | Mean (SD)/frequency/n (%) | $\chi^2$/ttest ($P$) | Group II versus Group I | Group III versus Group I  |
|--------------------------------|---------------------------|----------------------|-------------------------|---------------------------|
| Age (years)                    |                           | 1.106 (0.269)        | 66.23 (5.44)            | 1.047 (0.296)             |
| Sex (%)                        |                           |                      |                         |                           |
| Male                           | 156 (54.7)                | 0.086 (0.769)        | 106 (52.2)              | 0.303 (0.582)             |
| Female                         | 129 (45.3)                | 97 (47.8)            |                          |                           |
| Education (years)              | 7.86 (6.23)               | 1.785 (0.075)        | 7.30 (5.28)             | 1.052 (0.293)             |
| Marital status (%)             |                           |                      |                         |                           |
| Currently single               | 65 (22.8)                 | 1.076 (0.300)        | 59 (29.1)               | 2.449 (0.118)             |
| Married                        | 220 (77.2)                | 144 (70.9)           |                          |                           |
| Occupation (%)                 |                           |                      |                         |                           |
| Currently on paid employment   | 148 (51.9)                | 0.281 (0.596)        | 112 (55.2)              | 0.501 (0.479)             |
| Not on paid employment         | 137 (48.1)                | 91 (44.8)            |                          |                           |
| Type of family (%)             |                           |                      |                         |                           |
| Nuclear                        | 83 (29.1)                 | 0.077 (0.781)        | 64 (31.5)               | 0.326 (0.568)             |
| Nonnuclear                     | 202 (70.9)                | 139 (68.5)           |                          |                           |
| Locality (%)                   |                           |                      |                         |                           |
| Urban                          | 161 (56.5)                | 2.767 (0.096)        | 98 (48.3)               | 3.213 (0.073)             |
| Rural                          | 124 (43.5)                | 105 (51.7)           |                          |                           |
| Clinical profile               |                           |                      |                         |                           |
| Age of onset (years)           | 62.19 (9.89)              | 4.137 (<0.001)***    | 57.36 (10.70)           | 5.137 (<0.001)***         |
| Total duration of illness      | 49.02 (75.23)             | U = 13,532.00 (0.019)* | 89.06 (106.87)         | U = 23,576.0 (<0.001)***  |
| Duration of current treatment  | 10.38 (17.57)             | 11.18 (23.73)        | U = 27,147.0 (0.244)    |                           |
| Overall duration of treatment  | 28.31 (54.67)             | 50.35 (71.47)        | U = 25,072 (0.012)*     |                           |
| Family history of mental illness (%) | 116 (40.7) | 0.912 (0.340)       | 90 (44.3)              | 0.642 (0.423)             |
| Comorbid physical illness (%)  | 229 (80.4)                | 12.166 (<0.001)***   | 155 (76.4)             | 1.129 (0.288)             |
| Comorbid psychiatric illness (%) | 8 (2.8)     | 0.385 (0.535)       | 7 (3.4)                | 0.164 (0.686)             |
| Diagnosis (%)                  |                           |                      |                         |                           |
| First-episode depression       | 192 (67.4)                | 3.977 (0.046)*       | 105 (51.7)             | 12.181 (<0.001)***        |
| Recurrent depressive disorder  | 93 (32.6)                 | 98 (48.3)            |                          |                           |
| Depression measures            |                           |                      |                         |                           |
| Total GAD score                | 8.81 (4.03)               | 2.840 (0.005)**      | 10.37 (4.27)           | 4.115 (<0.001)***         |
| Total GDS score                | 16.95 (3.85)              | 1.453 (0.147)        | 16.97 (4.28)           | 0.066 (0.947)             |
| Total PHQ score                | 11.85 (4.48)              | 0.084 (0.933)        | 11.16 (3.56)           | 1.816 (0.070)             |
| Total loneliness score         | 25.15 (13.61)             | 3.492 (0.001)***     | 31.83 (13.53)          | 5.36 (<0.001)**           |
| Loneliness (any positive response on item 4, 10, 16): Present (%) | 210 (73.7) | 14.764 (<0.001)***  | 182 (89.7)             | 19.137 (<0.001)***        |
| Total social connectedness score | 69.68 (10.36) | 0.871 (0.384)       | 70.15 (10.00)          | 0.508 (0.612)             |
| Cognitive profile: MoCA        |                           |                      |                         |                           |
| Executive functions            | 3.31 (1.09)               | 3.16 (0.95)          | 1.288 (0.198)          | 3.22 (1.05)               |
| Attention                      | 3.73 (1.38)               | 3.30 (1.27)          | 2.936 (0.004)**        | 3.56 (1.27)               |
| Naming                         | 2.76 (0.48)               | 2.73 (0.55)          | 0.559 (0.576)          | 2.71 (0.53)               |
| Language                       | 1.98 (0.74)               | 1.92 (0.70)          | 0.734 (0.463)          | 2.01 (0.71)               |
| Abstraction                    | 1.70 (0.69)               | 1.61 (0.75)          | 1.175 (0.241)          | 1.65 (0.70)               |
| Recall                         | 3.80 (1.19)               | 3.66 (0.94)          | 1.170 (0.243)          | 3.86 (1.03)               |
| Orientation                    | 5.27 (0.87)               | 5.21 (0.82)          | 2.513 (0.496)          | 5.23 (0.86)               |
| Total MoCA score               | 23.30 (3.760)             | 2.123 (0.034)*       | 23.13 (3.38)           | 0.520 (0.604)             |
| Total MoCA cutoff (<26): Present (%) | 181 (63.5) | 17.630 (<0.001)***  | 142 (70.0)             | 2.198 (0.138)             |

*P < 0.05, **P < 0.01, ***P < 0.001, U: Mann-Whitney test value. SD: Standard deviation, GAD: Generalized Anxiety Disorder, GDS: Geriatric Depression Scale, PHQ: Patient Health Questionnaire, MoCA: Montreal Cognitive assessment, SIs: Suicidal ideations

value: 5.137; $P < 0.001$), had longer duration of illness (Mann–Whitney value: 23.576; $P < 0.001$) and overall longer duration of treatment (Mann–Whitney value: 25.072; $P = 0.012$), more often were diagnosed with RDD (48.3% vs. 32.6%; Chi-square value: 12.181; $P < 0.001$), had significantly higher anxiety scores as per GAD-7 ($t$-test value: 4.115; $P < 0.001$), and had higher loneliness score as per UCLA-LS ($t$-test value: 5.36; $P < 0.001$) scale and higher prevalence of loneliness at the time of assessment.

*Comparison of patients with current suicidal attempts (n = 45) and those with no lifetime suicidal attempts (n = 407) When those with current SAs and those with no lifetime
Table 3: Comparison between patients with any current suicidal attempt (n = 45) and those with any lifetime suicidal attempt (n = 81) with those who never had any suicidal attempt (n = 407)

| Variables | Group I (n = 407) | Group II (n = 45) | Group III (n = 81) | Chi-square/test (P) |
|-----------|------------------|------------------|-------------------|---------------------|
| Age of onset (years) | 61.10 (10.44) | 57.96 (11.33) | 55.56 (9.60) | 4.42 (<0.001)*** |
| Total duration of illness (months) | 56.21 (88.08) | 75.55 (108.00) | 113.27 (95.84) | U = 11,440.0 (<0.001)*** |
| Duration of current treatment (months) | 11.70 (21.89) | 6.13 (9.75) | 5.74 (7.65) | U = 13,091.0 (0.003)*** |
| Overall duration of treatment (months) | 29.89 (57.38) | 25.88 (53.79) | 25.52 (25.33) | U = 11,230.5 (<0.001)*** |
| Family history of mental illness: Present (%) | 162 (39.8) | 9 (20.0) | 44 (54.3) | 5.837 (0.016)* |
| Comorbid physical illness: Present (%) | 309 (75.9) | 42 (93.3) | 78 (96.3) | 17.087 (<0.001)*** |
| Comorbid substance abuse: Present (%) | 156 (38.3) | 10 (22.2) | 29 (35.8) | 0.183 (0.669) |
| Comorbid psychiatric illness: Present (%) | 14 (3.4) | 1 (2.2) | 29 (35.8) | 1 (1.2) |
| Diagnosis (%) | | | | |
| First-episode depression | 270 (66.3) | 24 (53.3) | 27 (33.3) | 30.895 (<0.001)*** |
| Recurrent depressive disorder | 137 (33.7) | 21 (46.7) | 54 (66.7) | |
| Depression measures | | | | |
| Total GAD score | 9.30 (4.24) | 8.80 (3.91) | 10.25 (3.91) | −1.875 (0.061) |
| Total GDS score | 16.94 (4.13) | 17.86 (4.24) | 17.03 (3.46) | −0.185 (0.853) |
| Total PHQ score | 11.71 (4.34) | 10.68 (3.56) | 10.83 (2.83) | 1.742 (0.082) |
| Total loneliness score | 26.58 (13.96) | 30.82 (13.79) | 34.71 (11.87) | −4.899 (<0.001)*** |
| Loneliness (any positive response on item 4, 10, 16): Present (%) | 321 (78.9) | 35 (77.8) | 71 (87.7) | 3.299 (0.069) |
| Total social connectedness score | 69.54 (10.20) | 68.28 (11.77) | 71.58 (10.10) | −1.645 (0.101) |
| Cognitive profile | | | | |
| Executive functions | 3.28 (1.08) | 2.64 (0.85) | 3.785 (<0.001)*** | 3.24 (1.04) | 0.252 (0.801) |
| Attention | 3.66 (1.38) | 3.20 (1.14) | 2.164 (0.031)* | 3.65 (1.07) | 0.056 (0.956) |
| Naming | 2.76 (0.50) | 2.44 (0.54) | 3.96 (<0.001)*** | 2.67 (0.49) | 1.348 (0.175) |
| Language | 1.96 (0.75) | 1.84 (0.42) | 1.085 (0.278) | 2.16 (0.58) | −2.181 (0.03)* |
| Abstraction | 1.67 (0.72) | 1.53 (0.69) | 1.284 (0.200) | 1.71 (0.57) | −0.446 (0.656) |
| Recall | 3.75 (1.14) | 4.04 (1.14) | −1.611 (0.108) | 4.20 (0.94) | −3.356 (0.001)*** |
| Orientation | 5.26 (0.88) | 4.97 (0.89) | 2.069 (0.039)* | 5.23 (0.81) | 0.290 (0.772) |
| Total MoCA score | 23.12 (3.61) | 21.53 (2.39) | 23.79 (3.32) | −1.524 (0.128) |
| Total MoCA cutoff (<26): Present (%) | 276 (67.8) | 44 (97.8) | 47 (38.0) | 2.892 (0.089) |

*P < 0.05, **P < 0.01, ***P < 0.001, U: Mann-Whitney test value, SD: Standard deviation, GAD: Generalized Anxiety Disorder, GDS: Geriatric Depression Scale, PHQ: Patient Health Questionnaire, MoCA: Montreal Cognitive Assessment
SAs were compared, those with current SA had longer duration of current treatment; less often had family history of mental illness; more often had comorbid physical illness; and had poorer performance on the executive functions, attention, naming, orientation, and total MoCA score with significantly more number of persons scoring below the cutoff score of 26 [Table 3].

**Comparison of patients with lifetime suicidal attempts (N = 81) and those with no lifetime suicidal attempts (n = 407)**

When those with lifetime SAs and those with no lifetime SAs were compared, those with lifetime SA had younger age of onset of illness, longer duration of illness, longer duration of current treatment, and longer overall treatment duration; more often had family history of mental illness; more often had a comorbid physical illness; more often had tobacco dependence; more often had recurrent depressive episodes/disorder and greater loneliness; and had poorer performance on language and recall tests of MoCA score [Table 3].

**DISCUSSION**

Depression is one of the most common psychiatric morbidities among the elderly and suicide is one of the preventable causes of mortality. It is well known that completed suicide is preceded by SIs and failed attempts. Accordingly, identifying the risk factors for those with SIs and SAs can help in identifying the high-risk population and possibly preventing suicide. Accordingly, the present study aimed to evaluate the prevalence of SIs and SAs in a relatively large sample of depressed elderly people and to explore the associated risk factors for SIs and SAs in this population. Suicidal behaviors were evaluated using the C-SSRS, which is a validated instrument, available in about 103 languages. The present study suggests that about one-fourth (25.8%) of the elderly with depression have SIs at the time of assessment, i.e., current and about two-thirds (41.5%) have lifetime SIs. Available clinic-based data from other countries have reported the prevalence of SIs to range from 43% to 51%, with no significant differences. Studies which have evaluated the symptom profile of geriatric depression have reported suicidal thoughts in about 70% of the study samples, with suicidal thoughts being one of the important parameters/items in cluster analysis of symptom profile of geriatric depression. When we compare the findings of the present study, the prevalence of SIs appears to be low. However, one needs to understand that these studies have reported the prevalence of SIs based on one item of various scales, which can tap wish to die, SIs, and SAs as a single outcome. When we combine the prevalence of wish to die and SIs, the prevalence of SIs by this broader definition in the present study was 29.6% at the time of assessment and 60.04% in the lifetime. When these figures are compared with the existing data, the prevalence rate appears to be lower, but still significantly high. This high prevalence of SIs among the elderly suggests that the clinicians evaluating elderly patients with depression should always enquire about SIs, and if found to be present, these must be considered seriously while deciding about the manangement.

In the present study, studied demographic factors did not appear to be significantly associated with SIs and SAs. Available data have also come up with mixed results with some studies reporting higher prevalence of SIs in elderly women, in those with lower level of education, and more in widowed/single individuals. Some of the studies have failed to find such associations. The present study supports the latter group of studies.

In terms of risk factors for SIs, the present study suggests that longer duration of illness and longer duration of current treatment are associated with the presence of current and lifetime SIs and SAs. In addition, the findings of the present study also suggest that younger age of depression and presence of RDD are associated with the presence of SIs, both at the time of assessment and in the lifetime. Taken together, it can be said that longer duration of symptomatic phase of illness is associated with suicidal behavior. Accordingly, there is a need to treat the depression adequately.

The comorbidity of depression and anxiety disorders has been found to be associated with several suicide-related risk factors in the elderly. In the present study too, those with current and lifetime SIs and SAs had significantly higher GAD-7 score. These associations suggest that anxiety as a clinical manifestation of depression among the elderly should alert the clinicians for possible suicidality and the patients with high level of anxiety should be given due clinical attention.

The findings of the present study too suggest loneliness to be significantly associated with both current and lifetime SIs and with lifetime SAs. Available data suggest that loneliness is an important risk factor for SIs in the elderly. A recent meta-analysis which included 31 studies revealed that perceived feelings of loneliness (odds ratio (OR): 2.24) and poorly perceived social support (OR: 1.59) were the important determinants of late-life SIs and later suicide.

With regard to cognitive performance, the present study suggests that cognitive deficits were higher among those with SIs and SAs. Previous studies have also found that elderly patients with SIs and SAs had poor performance on tests of executive functions, attention, memory, and cognitive flexibility with more stronger association with SAs.

Chronic physical health problems have been found to be an independent risk factor for SIs and SAs among the elderly. Suicidal behavior has been found to be associated with numerous specific conditions including malignancy, neurological disorders, chronic pain conditions, liver diseases, male genital disorders, and arthritis. The present study does not support the association of SIs and SAs with comorbid physical illnesses. However, important fact to remember is most of these associations have been reported in community-based studies, where all patients are not found to have depression. In contrast, the present study was limited to elderly patients with depression.

Comorbid substance use disorders mainly, alcohol misuse/dependence has been found to be strongly associated with elderly suicide and to independently predict suicidal
Further, alcohol use has been reported to be significantly associated with the presence of comorbid anxiety, loneliness, and cognitive deficits possibly predispose the elderly to suicidal behaviors.

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**Conflicts of interest**

There are no conflicts of interest.

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