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The characteristics of elderly suicidal attempters in the emergency department in Korea: a retrospective study

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Background: Although Korea ranks first in the suicide rate of elderly individuals, there is limited research on those who attempt suicide, with preventive measures largely based on population-based studies. We compared the demographic and clinical characteristics of elderly individuals who attempted suicide with those of younger adults who visited the emergency department after suicide attempts and identified the factors associated with lethality in the former group.
Methods: Individuals who visited the emergency department after a suicide attempt from April 1, 2017, to January 31, 2020, were included. Participants were classified into two groups according to age (elderly, ≥65 years; adult, 18–64 years). Among the 779 adult patients, 123 were elderly. We conducted a chi-square test to compare the demographic and clinical features between these groups and a logistic regression analysis to identify the risk factors for lethality in the elderly group.
Results: Most elderly participants were men, with no prior psychiatric history or suicide attempts, and had a higher prevalence of underlying medical conditions and attributed their attempts to physical illnesses. Being sober and planning suicide occurred more frequently in this group. In the elderly group, factors that increased the mortality rate were biological male sex ($p<0.05$), being accompanied by family members ($p<0.05$), and poisoning as a suicide method ($p<0.01$).
Conclusion: Suicide attempts in elderly individuals have different characteristics from those in younger adults and are associated with physical illness. Suicides in the former group are unpredictable, deliberate, and fatal. Therefore, tailored prevention and intervention strategies addressing the characteristics of those who are elderly and attempt suicide are required.

Keywords: Aged; Disease; Psychiatric emergency services; Suicide

Introduction

Despite remarkable advances in modern medicine and technology that have led to a decrease in mortality rate and an increase in life expectancy every year, the number of deaths by suicide has not diminished. Korea ranked first in suicide rate among the Organization for Economic Co-operation and Development (OECD) member countries in 2003 and has been in first or second place thereafter. The average suicide rate in OECD member countries in 2019 was 11.0 per 100,000 population, and Korea ranked first with 24.6 suicides per 100,000 population, which was more than twice the OECD average suicide rate [1]. Suicide is a tragic issue with significant social and economic costs. In 2019, the Centers for Disease Control and Prevention of the United States estimated the so-

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cial cost of suicide and suicide attempts in 2020 at approximately $165 billion [2]. Regarding Korea, the Health Insurance Policy Research Institute under the National Health Insurance Service published a socioeconomic cost analysis report of the ten major causes of death in 2015. According to this report, the socioeconomic costs related to suicide were estimated at 6.448 trillion won [3].

Korea has a high suicide rate in all age groups; however, the suicide rate among the elderly population is particularly high. Korea set a record for the highest suicide rate of elderly individuals among OECD member countries from 2013 to 2020. As of 2019, the suicide rate per 100,000 people by age group in Korea was 33.7, 46.2, and 67.4 for people in their 60s, 70s, and ≥ 80 years old, which is 2.2, 2.8, and 3.1 times higher than the OECD averages (15.2, 16.4, and 21.5), respectively [1]. According to the statistics on the causes of death announced by the Statistics Korea in 2020, 3,392 people aged 65 years or older died from suicide attempts in Korea [4]. Although the global population is aging, the Korean population is aging at a faster rate than that of other countries. Most countries, including Korea, follow the United Nations (UN) definition of elderly as those over 65 years of age. The UN defines an aging society as a population aged 65 years or older that accounts for 7% or more of the total population, an aged society as 14% or more, and a super-aged society as 20% or more. Korea became an aging society in 2000, and this trend has accelerated remarkably. It is predicted that 20.6% of Koreans will be 65 years or older by 2025, making Korea a super-aged society at an unprecedented speed [5]. This demographic shift has significant implications for various social and economic sectors, and preparations are crucial for future development and well-being.

Research has shown that suicide attempts are more serious and more likely to result in mortality in those who are elderly than in those who are younger [6]. In addition, it has been reported that physical illness or disability in elderly individuals is strongly associated with suicide attempts and that limited social connections are associated with suicidal ideation, non-suicidal self-harm, and suicide [7]. There are several risk factors for suicide in the elderly population, including serious psychiatric disorders, depression, and a history of suicide attempts [8]. In a Korean study, suicidal ideation was significantly higher among elderly men living alone than not living alone. This study also revealed that higher levels of depression, lower self-esteem, and poor economic status were associated with suicide [9]. As part of a regionally tailored suicide prevention project, local governments are implementing preventive measures targeting elderly individuals and those living alone and are continuing attempts to lower the suicide rate in the elderly population [10]. However, systematic studies and indicators of the characteristics and risk factors of suicide attempts among elderly individuals are insufficient. Most existing studies are epidemiological and investigated sociodemographic characteristics and revealed associations with suicidal thoughts through questionnaires. Therefore, studies involving sufficient numbers of people who attempted suicide are rare. This study investigated the demographic and clinical characteristics of elderly individuals visiting the emergency department who had attempted suicide. Consequently, we confirmed existing research results, identified risk factors related to suicide in the elderly population, and used them to classify risk groups for prevention.

Methods

Ethical statements: This study was approved by the Institutional Review Board (IRB) of Yeungnam University Hospital (IRB No: 2023-01-016), and the requirement for informed consent was waived due to the retrospective nature of the study.

1. Patients

A total of 2,011 patients visited the Department of Emergency at Yeungnam University Hospital between April 1, 2017, and January 31, 2020, after attempting suicide. Among them, cases in which a suicide attempt was confirmed through the information provided by the patient or when the patient denied having attempted suicide, but a guardian or rescuer provided objective information confirming such an attempt were included in the study. The exclusion criteria were as follows: children under 18 years of age and cases in which only suicidal thoughts were reported but no suicide attempt was made. A total of 779 individuals who attempted suicide, including 656 non-elderly (18–64 years) and 123 elderly (≥ 65 years) individuals, were studied.

2. Study procedure and assessment

This study used the interview records of case managers of the "Emergency Department-Based Suicide Attempts Post-Management Project," a national suicide prevention project, and the medical records of the Departments of Psychiatry and Emergency Medicine at Yeungnam University Hospital was designated as a regional emergency medical center in 2019 and receives approximately 25,000 patients annually. The institution has participated in this project since 2017. Through case management, this project promotes the emotional stability of those who attempt suicide and visit the emergency department, and it prevents the recurrence of suicide attempts by linking them with necessary treatment and counseling services.

If a patient who visits the emergency department of a research

institution is recorded as having made a suicide attempt in the National Emergency Department Information System, the emergency medicine and psychiatric departments, and the case managers are automatically contacted. Emergency medicine doctors provide physical treatment, and the psychiatric department records psychosocial and clinical factors, including the presence of mental illness, psychiatric symptoms, suicidal ideation, and suicide plans, through interviews and then provides psychotherapy. Case managers receive education and records management training through the Korea Respect for Life Hope Foundation (formerly the Central Suicide Prevention Center) and evaluate the items in the suicide attempt follow-up management manual. The demographic data of patients who attempted suicide, history of suicide attempts, coexisting diseases, medical conditions, and clinical data necessary for this study were included in the case manager's questionnaire prepared in advance.

3. Statistical analysis

Data obtained from the medical and clinical records were processed using IBM SPSS ver. 21.0 (IBM Corp., Armonk, NY, USA). Statistical significance was found when the *p*-value was less than 0.05. Adult patients aged 19 years or older were divided into elderly (≥ 65 years) and non-elderly adult (hereafter adult; < 65 years) groups, and the characteristics and specific relationships of the collected demographic and clinical data of suicide attempts were compared. When the dependent variable was categorical, the chi-square test or Fisher exact test was used. A *post-hoc* analysis was conducted using Bonferroni correction. When the dependent variable followed a normal distribution, the Student *t*-test was used. In addition, logistic regression analysis was performed within the elderly suicide attempt group to analyze the independent factors influencing the reasoning of these patients.

Results

1. Comparison of demographic characteristics between elderly and adult groups

The elderly group had significantly higher and lower proportions of male and female ($p < 0.001$), respectively, than the adult group. The elderly group had a lower percentage of highly educated individuals with at least a college degree and a higher percentage of individuals who were illiterate ($p < 0.001$) and held a job ($p = 0.019$) than the adult group. The proportion of unmarried participants was lower and that of married participants was higher in the elderly group than in the adult group ($p < 0.001$). In addition, no significant differences were found between the two groups in terms of cohabitation ($p = 0.997$), religion ($p = 0.124$), health insurance ($p = 0.359$), or monthly household income ($p = 0.880$). When conducting a *post-hoc* analysis using the Bonferroni correction, the results were found to be comparable (Table 1, Supplementary Table 1).

2. Comparison of clinical characteristics between elderly and adult groups

The elderly group had lower suicide attempt rates among those with a history of suicide attempts ($p = 0.007$) and a significantly lower number of previous suicide attempts than the adult group ($p < 0.001$). The proportion of individuals who had never received psychiatric treatment was higher and the percentage of individuals currently receiving psychiatric medication was lower in the elderly group than in the adult group ($p = 0.018$). The number of past psychiatric admissions was lower in the elderly group than in the adult group ($p < 0.001$). There was a significant difference in suicide awareness; however, this was attributable to the proportion of individuals whose status could not be assessed ($p = 0.006$). The elderly group had more recent acute and chronic diseases than the adult group ($p < 0.001$). There were no significant differences in physical ($p = 0.295$) and psychiatric ($p = 0.372$) treatments after past suicide attempts or family histories of psychiatry ($p = 0.789$) and suicide attempts ($p = 0.542$) (Table 1, Supplementary Table 2).

3. Comparison of suicide-related characteristics between elderly and adult groups

Among the suicide attempt methods, the elderly group had a higher prevalence of poisoning than the adult group ($p < 0.001$). In the elderly group, the proportion of those choosing houses and hospitals as places to attempt suicide was higher than in the adult group ($p < 0.001$). The ratios of hospital visits with family and friends were higher and lower, respectively, in the elderly group ($p = 0.021$). The elderly group had fewer suicide attempts in a drunken state ($p = 0.002$), and more planned suicide attempts ($p < 0.001$) than the adult group. In the elderly group, the rate of not asking for help before attempting suicide was higher and that of asking for help was lower ($p < 0.001$). Among the events that triggered suicide attempts, the proportion of diseases was higher, whereas that of intersocial, psychiatric, and socioeconomic problems was lower ($p < 0.001$). The sincerity of suicide attempts ($p < 0.001$) and transfer or discharge rates ($p < 0.001$) were higher in the elderly group than in the adult group. In the elderly group, there were fewer individuals with clear consciousness, and more were in a comatose state than in the adult group ($p = 0.003$). Elderly individuals had a lower incidence of no or slight injury but a higher rate of needing admission or mortality ($p < 0.001$). There was a difference in referrals to psychiatric treatment; however, this

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Table 1. Demographic and clinical characteristics of the elderly and adult groups

Variable	Adult group (n = 656)	Elderly group (n = 123)	χ^2 or Fisher exact test	*p*-value
Sex			13.148	< 0.001
Male	263 (40.1)	71 (57.7)		
Female	393 (59.9)	52 (42.3)		
Education			82.339	< 0.001
Illiteracy	0 (0)	10 (45.5)		
Below high school	80 (46.8)	7 (31.8)		
College or above	91 (53.2)	5 (22.7)		
Employed			5.480	0.019
Yes	167 (48.0)	50 (62.5)		
No	181 (52.0)	30 (37.5)		
Marital status			62.323	< 0.001
Single	233 (43.4)	0 (0)		
Married	257 (47.9)	78 (89.7)		
Divorced/separated/widowed	47 (8.8)	9 (10.3)		
Past suicide attempt history			7.398	0.007
Yes	190 (33.9)	23 (20.7)		
No	371 (66.1)	88 (79.3)		
Past psychiatric treatment			11.946	0.018
Likely to have had psychiatric problems (never seen a doctor)	201 (37.5)	57 (50.0)		
Likely to have not had psychiatric problems (never seen a doctor)	47 (8.8)	14 (12.3)		
Discontinued treatment	58 (10.8)	13 (11.4)		
Currently in treatment (with medication)	227 (42.4)	29 (25.4)		
Currently in treatment (no medication)	3 (0.6)	1 (0.9)		
Awareness of suicide			10.334	0.006
Admit	84 (16.0)	10 (10.5)		
Deny	430 (82.1)	78 (82.1)		
Uncheckable	10 (1.9)	7 (7.4)		
Past medical history			177.934	< 0.001
No underlying disease	404 (72.0)	15 (12.6)		
Recent acute disease	9 (1.6)	7 (5.9)		
Chronic disease (not interfering with daily life)	125 (22.3)	58 (48.7)		
Chronic disease (interfering with daily life)	23 (4.1)	39 (32.8)		
Past psychiatric admission count[a]	2.01	0.15	13.120	< 0.001

Values are presented as number (%) or mean value only.
[a]t-test.

difference was due to mental deterioration or death ($p < 0.001$). No significant differences were found between the two groups regarding suicide notes ($p = 0.371$) or suicide with other people ($p > 0.99$) (Table 2, Supplementary Table 3).

4. Factors affecting lethality of elderly individuals who attempted suicide

In the univariate logistic regression analysis performed on the variables used in the correlation analysis, biological male sex (odds ratio [OR], 5.804; 95% confidence interval [CI], 1.248–26.984), a family member accompanying the person to the emergency department (OR, 0.064; 95% CI, 0.005–0.760), and suicide attempt by poisoning (OR, 0.191; 95% CI, 0.058–0.633) were identified as significant risk factors for mortality (Table 3).

Discussion

This study found differences in demographic, clinical, and suicide attempt-related characteristics between elderly and adult individuals who attempted suicide. The findings support the results of previous epidemiological studies showing differences in suicidal ideation and suicide attempts between individuals who are elderly and those who are younger [11,12].

The proportion of male participants was significantly higher in the elderly group than in the adult group. Women make more suicide attempts; however, the suicide mortality rate is higher among men [13]. Considering previous reports that the rates of suicidal ideation and attempts increase with age in men who are elderly [14], assessments of suicide risk and immediate interventions for

Table 2. Suicide-related characteristics of elderly and adult groups

Variable	Adult group (n = 656)	Elderly group (n = 123)	χ^2 or Fisher exact test	*p*-value
Suicide method			11.467	< 0.001
Poisoning	463 (70.6)	105 (85.4)		
Non-poisoning	193 (29.4)	18 (14.6)		
Suicide place			30.618	< 0.001
House	515 (85.8)	112 (95.7)		
School	52 (8.7)	0 (0)		
Commercial facility	6 (1.0)	0 (0)		
Accommodation	6 (1.0)	0 (0)		
Car	14 (2.3)	1 (0.9)		
Hospital	1 (0.2)	4 (3.4)		
Outdoor	5 (0.8)	0 (0)		
Drunk during suicide attempt			9.820	0.002
Drunken	281 (48.0)	35 (31.8)		
Sober	304 (52.0)	75 (68.2)		
Current suicide thoughts			8.520	0.014
Yes	286 (64.6)	40 (51.3)		
No	140 (31.6)	30 (38.5)		
Uncheckable	17 (3.8)	8 (10.3)		
Suicidal plan			11.501	< 0.001
Planned	75 (13.4)	28 (26.4)		
Impulsive	484 (86.6)	78 (73.6)		
Seeking help			18.979	< 0.001
Do not need help	353 (58.8)	92 (79.3)		
Giving a clue	101 (16.8)	12 (10.3)		
Help (before attempt)	42 (7.0)	1 (0.9)		
Help (after attempt)	104 (17.3)	11 (9.5)		
Reason for suicide attempt			98.829	< 0.001
Intersocial	142 (25.1)	12 (10.8)		
Family	116 (20.5)	19 (17.1)		
Psychiatric	124 (21.9)	10 (9.0)		
Socioeconomic	108 (19.1)	10 (9.0)		
Disease	72 (12.7)	58 (52.3)		
Death or severe illness around people	4 (0.7)	2 (1.8)		
Sincerity			29.604	< 0.001
Sincerely chose a way to die	326 (53.9)	95 (79.2)		
Wanted to die, but chose a way that might not die	152 (25.1)	18 (15.0)		
Helping	125 (20.7)	6 (5.0)		
Others	2 (0.3)	1 (0.8)		
Refer for psychiatric treatment			21.021	< 0.001
Referred	321 (49.2)	53 (43.1)		
Not necessary	210 (32.2)	44 (35.8)		
Patient refused	104 (15.9)	13 (10.6)		
Mental deterioration	13 (2.0)	7 (5.7)		
Expired	5 (0.8)	6 (4.9)		
Status after visiting emergency department			27.609	< 0.001
Inpatient	192 (29.4)	28 (22.8)		
Transfer	86 (13.1)	27 (22.0)		
Discharge	355 (54.3)	53 (43.1)		
Others	21 (3.2)	15 (12.2)		
Level of consciousness			14.284	0.003
Alert	419 (64.2)	58 (47.5)		
Drowsy	115 (17.6)	28 (23.0)		
Stupor/semicoma	90 (13.8)	24 (19.7)		
Coma	29 (4.4)	12 (9.8)		
Medical lethality			43.997	< 0.001
No or slight injury	273 (42.2)	28 (23.1)		
Injury needing moderate attention	224 (34.6)	34 (28.1)		
Injury needing admission	132 (20.4)	44 (36.4)		
Expired	18 (2.8)	15 (12.4)		

Values are presented as number (%).

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Table 3. Factors affecting lethality of suicide attempts in participants who are elderly

Variable	Odds ratio (95% CI)	*p*-value
Sex, male	5.804 (1.248–26.984)	<0.05
Covisitor, family	0.064 (0.005–0.760)	<0.05
Suicide method, poisoning	0.191 (0.058–0.633)	<0.01

CI, confidence interval

this population are particularly necessary. There were fewer college graduates and more illiteracy in the elderly group than in the adult group. According to the 2020 elderly survey report [11], approximately 10.6% of elderly individuals aged 65 years or older had no education; 31.7%, 23.3%, and 28.4% had graduated from elementary, middle, and high schools, respectively; and only 5.9% had a community college or higher education. This could be considered a characteristic of the elderly group that is unrelated to suicide attempts. However, existing studies have shown that suicidal ideation, hopelessness, and depression are higher in elderly people with low education, and that low education [15] in the elderly population is related to low self-efficacy [16] and subjective quality of life [17]. Therefore, lack of education and low educational attainment, which are more prominent in the elderly group, may have contributed to the increase in suicide attempts. The rate of suicide attempts of elderly individuals living alone was high (57.72%), but there was no difference compared with that of the adult group [11]. There was no significant difference between the two groups in terms of type of medical insurance or monthly household income; however, the proportion of participants receiving medical aid was similarly high in both groups. As of 2021, 592,807 of the 1,516,525 beneficiaries of medical aid, or approximately 39%, were seniors aged 65 years or older [18]. In this study, among the elderly participants who visited the emergency department because of a suicide attempt, 74.8% were medical aid beneficiaries, which is higher than that of the general elderly population. This is consistent with previous findings that socioeconomic status in the elderly population is associated with depression and suicidal ideation [19,20].

When examining psychiatric history, the elderly group had a higher proportion of individuals with no history of and a lower proportion of individuals currently receiving psychopharmacological treatment and past psychiatric hospitalizations. This appears to contrast with established studies that identify psychiatric history as an important risk factor for reattempting suicide and a major factor in increasing suicide risk and completion rates [21]. However, this could be due to negative perceptions and neglect of mental health care in the past, as well as low accessibility to such services. It should also be considered that these societal impacts may be even more pronounced among older individuals. In the elderly group, a higher proportion of individuals had no history of suicide attempts, and the number of past suicide attempts was lower than in the adult group. In the elderly population, the presence of a suicide attempt is associated with an even higher suicide risk [22,23]. When connecting these findings to previous studies indicating lower levels of depression, anxiety, and suicide-related scales in individuals who attempted suicide and are elderly than in those who are non-elderly, suicide among elderly individuals may exhibit characteristics that make it more easily overlooked and difficult to predict [24]. Therefore, heightened attention should be paid to elderly individuals who appear to have a lower suicide risk, considering their psychiatric history, scales, and even suicide history.

In our study, elderly individuals were more likely than adults to have underlying chronic diseases. Although physical diseases commonly increase with age, it is important to pay attention to the high prevalence of depression and suicidal ideation in hospitalized patients who are elderly [25]. In older adults, both physical and mental illnesses can independently increase the risk of suicide, and multiple diseases can further increase such risk [25-27]. This is consistent with the higher rate of physical illness as a reason for suicide in the elderly group than in the adult group. Physical discomfort or underlying diseases in older adults are mediated by feelings of depression and hopelessness, which increase the severity of suicide attempts [26,27]. Additionally, considering that elderly individuals with depression often complain of physical discomfort rather than emotional discomfort [28], their suicide risk needs to be assessed in not only psychiatry but also in other departments. According to a psychological autopsy study, nearly 50% of those aged 60 years or older who died by suicide visited a medical institution in the month of death, 26% in the week before death, and 7% on the day before death, but more than half of the counseling was for physical discomfort [29].

The proportion of those who chose poisoning as the suicide method was higher in the elderly group than in the adult group. According to global statistics, hanging is the most common method of suicide, and it is the same in Korea [10,30]. However, the probability of survival in the emergency department owing to the high fatality rate is significantly lower than that of poisoning. Compared with adults who are younger, the severity and prognosis of patients who are elderly are worse for poisoning; therefore, more attention and care are needed [12].

The finding that suicide attempts in the elderly group are more deliberate is consistent with previous reports [29]. This is because, in the case of suicides in the elderly population, attempts are often made because of existing suicidal thoughts that have lasted for a long time rather than those that have been triggered by a specific

event [31,32].

The rate of asking for help immediately before the suicide was significantly lower in the elderly group. Paradoxically, suicidal ideation in the elderly population tends to be chronic because it is often long-standing. In one study, 49% of suicide attempts in individuals over the age of 60 years revealed suicidal intentions within the year prior to death, and 18% of cases overtly expressed suicidal ideation [30]. Therefore, there is a period during which intervention is possible for elderly individuals, and it is necessary to devise timely and appropriate intervention methods.

Suicide attempts by the elderly group were more genuine and medically lethal. This supports previous findings that suicide by older individuals has a high fatality rate [23,33] and is consistent with previous reports that older adults have higher suicidal intentions than younger adults [34].

In the elderly group, the factors that increased fatality were (1) biological male sex, (2) being accompanied by family members, and (3) poisoning as a suicide method. Although female participants had a higher rate of suicidal thoughts and attempts than their male counterparts, male mortality rates were higher in previous studies [35]; the same results were confirmed in the elderly group in our study. In 37 OECD countries, persons aged 70 years and older are more likely to die by suicide than any other age group, and the tendency toward fatal suicidal behavior prevails in men aged 75 years, with rates six times higher than those in women [36]. Many younger adults visited the emergency department by themselves or with friends. However, among the elderly participants, there were many cases in which they could not reach the emergency department on their own because of their physical fragility after a serious suicide attempt. Many patients were transferred and, under these circumstances, being accompanied by a family member may be related to the mortality rate. According to 2017 data from the Korea Emergency Medical Information System, poisoning was the most common suicide attempt method, and the rate of choosing poisoning for suicide attempts increased with age [37]. Another study that evaluated suicide attempts by poisoning showed that psychiatric drugs (43.4%) were the most common substances used across all age groups, whereas pesticides (50.3%) were the most common substances used for self-poisoning among elderly individuals [38]. Self-poisoning is also associated with poorer clinical outcomes in elderly patients than in younger adult patients. Fatal substances are often selected by older individuals. Additionally, more serious medical situations may be caused by toxic substances due to preexisting diseases and aging, which are believed to increase the mortality rate of the elderly population. In one study, demographic and clinical factors, such as older age, biological male sex, interpersonal stress, and impression of schizophrenia, were associated with mortality among those who attempted suicide and were younger than 65 years. However, in the same study, no factors affecting the mortality of suicide attempts in elderly individuals were found, but there may have been limitations, as only 37 suicide attempts by older individuals were included [6].

The limitations of this study were as follows. First, considering the results of a previous study in which less than 30% of those attempting suicide visited the hospital, the current study was conducted on those who visited the emergency department of a university hospital; therefore, there may be limitations in generalizing the results. Second, this study included critically ill participants who attempted suicide and visited the emergency department, which limited the use of validated scales owing to time and environmental constraints. However, this study was not indirectly performed via a questionnaire survey but rather by directly assessing high-risk patients who attempted suicide, including a sufficient number of elderly participants who were compared with younger adults. In addition, this study attempted to identify the predictors of suicide mortality in the elderly group and found significant results. These findings highlight the importance of conducting large well-designed studies to replicate and validate our results.

In conclusion, our study revealed distinct characteristics of elderly individuals who attempted suicide compared with those of younger adults who attempted suicide. Physical illness plays a significant role in suicide attempts and related life events among older adults. Suicide attempts among the elderly were more premeditated and serious, employing lethal methods such as pesticide poisoning. Moreover, these patients were less likely to receive appropriate psychiatric treatment, were hesitant to seek help, and faced higher lethality due to underlying medical conditions. These findings underscore the need for a tailored preventive strategy aimed at addressing the specific needs of the elderly population.

Supplementary materials

Supplementary Tables 1–3 can be found via https://doi.org/10.12701/jyms.2023.01004.

Article information

Conflicts of interest

No potential conflict of interest relevant to this article was reported.

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