Chronic diseases and others factors that affect suicidal ideation in elderly people

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Abstract

Background: In the elderly, chronic disease and suicide are emerging as serious issues. The purpose of this study was to examine the factors affecting suicidal ideation in elderly people.

Methods and materials: This study used raw data from the 2017 Korea Community Health Survey. Of the 228,452 participants in the survey, 64,641 (95.29%) were selected for the study. Those with missing values, no response and outlier values in the initial sample of 67,835 elderly people aged 65 years and above were excluded. The dependent variable was suicidal ideation and the independent variables were related to socio-demographic profiles and chronic disease history. Statistical analyses were performed using logistic regression analysis for factors affecting suicidal ideation.

Results: The odds ratio (OR) for suicidal ideation in elderly people was higher in people with a college education than in those with elementary school education or who were illiterate. The OR was higher in people with monthly family incomes of 500,000-1,000,000 won and ≤ 500,000 won, compared to those with monthly incomes of ≥ 6,000,000 won. Compared to married elderly people who lived with a spouse, the ORs of divorced and separated people were significantly higher. The ORs of elderly people with diabetes, dyslipidemia, arthritis or cataracts were significantly higher than those of elderly people without chronic diseases. The OR of elderly people with depression was significantly higher than that of elderly people without a history of depression. The primary reason for suicidal ideation was 'disease or disorder', and the second was 'loneliness'.

Conclusions: The findings suggest that socio-demographic factors and chronic disease history may be considered risk factors for suicidal ideation. [*Ethiop.J. Health Dev.* 2020;34(Special issue-3):91-96]

Key words: Suicide, suicidal ideation, aging, elderly, chronic disease

Introduction

Old age is often accompanied by physical and mental problems, and a nation that is responsible for the health of the people needs to guarantee the right of the people to health (1). Elderly people in Korea do not seem to be particularly happy. Elderly poverty, loneliness, and suicide rates are higher than in other OECD countries (2). Although suicide among elderly people has been recognized as a serious social phenomenon (3), it needs to be improved because it includes various complex factors such as physical, psychological, social and economic factors (4-6).

In 2019, the proportion of elderly people in Korea was 14.8% of the total population, and the country had already become an 'aging society' (7). In 2026, the proportion people who will be elderly is expected to exceed 20% (8). According to the National Statistical Office (NSO), the suicide mortality rate was 24.3 per 100,000 population in 2017. The suicidal ideation rate of the elderly was reported to be 4.5%-7.5%, and the suicide attempt rate was 2.3%-17.5% (8).

Changes in health due to aging are often exhibited as declines in physical and psychological abilities. Physical changes may result in a decrease in overall strength due to decreased circulation and immune function (9). Psychological changes lead to increased depression as a result of self-esteem and loneliness (10). The physical and psychological problems of the elderly are associated with socioeconomic status, resulting in a decrease in the quality of life (11,12).

In Korea, some variables related to the physical, psychological, and socioeconomic status of the elderly are known to be factors of suicidal ideation or suicide attempts (13-17). Suicidal ideation and suicide attempts are important predictors of suicide, which is a key factors of suicide prevention in health policy making.

Chronic disease are representative indicators that classify or judge health status (18). Typical types of chronic diseases are hypertension, diabetes, myocardial infarction, arthritis, cataracts, and pneumonia. The number of chronic diseases is known to increase with age (19). Depression is a typical psychological problem caused by chronic disease (20). In addition, anxiety (21), post-traumatic stress disorder (22), and other diseases have been reported. It is important to improve not only the person's physical ability but also address psychological problems after the onset of chronic disease.

In Korea, previous studies on suicidal ideation in the elderly have been conducted through secondary data (13-15) and surveys in the context of health program development (16). In addition, studies on suicide in people with disabilities have been conducted (17). In previous studies of other nations, an epidemiological survey analyzed the suicide rate in a local area in Italy (23). Community-based cross-sectional studies in Japan (24) and China (25) reported on suicidal ideation in the elderly. In Taiwan, a study reported on the prevalence of suicidal ideation in elderly inpatients with surgical or medical conditions (26). However, few large sample studies have examined the effect of chronic disease on suicide.

Therefore, the purpose of this study was to investigate the factors affecting suicidal ideation, and identify the risk factors, including chronic diseases, and the reasons for suicidal ideation.

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Materials and methods

Subjects: In this study, secondary data were used for the analysis. The secondary data used were raw data from the 2017 Korea Community Health Survey and the study had a cross-sectional design (27). The Korea Community Health Survey was initiated in 2008 to establish and evaluate community-based health planning in health centers nationwide every year. The survey is conducted by a trained researcher visiting sample households and conducting one-to-one interviews. Of the 228,452 subjects in the raw data, 64,641 (95.29%) were selected from 67,835 elderly people aged 65 years or older, excluding those with missing values, no response and outlier values.

Definitions of dependent and independent variables: The dependent variable in this study was suicidal ideation. The independent variables were demographic characteristics such as age, gender, education level, monthly family income, marital status, and chronic diseases such as hypertension, diabetes, dyslipidemia, arthritis, and cataracts. The question on depression history was, "Have you ever felt sad or desperate for two consecutive weeks over the past year?" The answer was 'yes' or 'no'.

Suicidal ideation: The question about suicidal ideation was, "Have you ever thought about wanting to die in the last year?" The question on the reason of suicidal ideation was, "What is the main reason I thought I wanted to die?" The subjects chose responses from a list of eight relevant items: financial problems, romantic problems, disease or disorder, work problems, loneliness, family discord, career problems, and other.

Statistical analysis: The statistical significance level of this study was set at 0.05. All collected data were analyzed using SPSS 22 version. Demographic characteristics, the presence of chronic disease, depression history, suicidal ideation and the reasons for suicidal ideation were confirmed by frequency analysis. Logistic regression analysis was used to analyze the factors affecting suicidal ideation in the elderly. The regression model applied adjusted random-effects logistic regression analysis. In other words, a multivariate analysis was performed.

Results

Of the 64,641 elderly people, 54.1% were 65-74 years old, and 37,714 (58.3%) were female. About half of the study participants completed elementary school. A monthly family income of 500,000-1,000,000 won accounted for the highest proportion of participants (30.8%). Most participants (63.4%) were living with a spouse (Table 1).

Table 1: **Demographic characteristics**

			Elderly people (n=64,641)	
			N	%
Demographic characteristics	Age	65-74 yrs	34,991	54.1
		75-84 yrs	25,227	39.0
		≥ 85 yrs	4,423	6.8
	Gender	Female	37,714	58.3
		Male	26,927	41.7
	Education level	College or higher	4,814	7.4
		High school	9,389	14.5
		Middle school	10,157	15.7
		Elementary school	27,177	42.0
		Illiteracy	13,104	20.3
	Family income (10,000 won)	≥ 600	1,887	2.9
		500-600	1,105	1.7
		400-500	2,076	3.2
		300-400	4,072	6.3
		200-300	7,916	12.2
		100-200	14,912	23.1
		50-100	19,881	30.8
		<50	12,792	19.8
	Marital status	Cohabited with partner	40,995	63.4
		Divorced	1,228	1.9
		Spouse deceased	21,427	33.1
		Separated	719	1.1
		Single	272	0.4

The presence of chronic disease consisted of hypertension in 54.8% of the participants, diabetes in 21.5%, dyslipidemia in 26.5%, arthritis in 35% and cataracts in 36%. A history of depression history was present in 6.4% of the participants and suicidal ideation was found in 10.7% (Table 2).

Table 2: **Chronic diseases, depression and suicidal ideation**

			Elderly people (n=64,641)	
			N	%
Chronic disease	Hypertension	None	29,239	45.2
		Have	35,402	54.8
	Diabetes	None	50,771	78.5
		Have	13,870	21.5
	Dyslipidemia	None	48,079	74.4
		Have	16,562	25.6
	Arthritis	None	42,044	65.0
		Have	22,597	35.0
	Cataracts	None	41,347	64.0
		Have	23,294	36.0
Depression history		No	60,529	93.6
		Yes	4,112	6.4
Suicidal ideation experience		No	57,716	89.3
		Yes	6,925	10.7

Compared to elderly people aged 65-74, elderly people aged 75-84 (OR = 1.244, 95% CI: 1.150-1.302, p < 0.001) and elderly people aged 85 or older (OR = 1.667, 95% CI: 1.505-1.847, p < 0.001) had significantly higher odds ratios (ORs) for suicidal ideation. There was no significant difference in OR between females and males (OR = 1.001, 95% CI: 0.933-1.074, p = .973). Elementary school education (OR = 1.356, 95% CI: 1.186-1.550, p < 0.001) and illiteracy (OR = 1.807, 95% CI: 1.567-2.084, p < 0.001) had significantly higher ORs for suicidal ideation than those who had completed a college or higher level of education. The number of elderly people with monthly family incomes of 500,000-1,000,000 won (OR = 1.399, 95% CI: 1.156-1.692, p < 0.001) and less than 500,000 won (OR = 1.824, 95% CI 1.505-2.211, p < 0.001) was significantly higher than those with monthly incomes of more than 6,000,000 won. Divorced (OR = 1.772, 95% CI: 1.497-2.084, p < 0.001) and separated (OR = 1.454, 95% CI: 1.148-1.842, p = 0.002) elderly people had significantly higher ORs for suicidal ideation compared to those who cohabitated with a partner. Elderly people with diabetes (OR = 1.117, 95% CI: 1.046-1.192, p = 0.001), dyslipidemia (OR = 1.114, 95% CI: 1.044-1.188, p = 0.001), arthritis (OR = 1.334, 95% CI: 1.259-1.413, p = 0.001), or cataracts (OR = 1.291, 95% CI: 1.220-1.365, p < 0.001) had significantly higher ORs for suicidal ideation compared to elderly people without chronic disease. The OR for suicidal ideation was significantly higher in elderly people with a history of depression than in those without a depression history (OR = 11.556, 95% CI: 10.770-12.399, p < 0.001) (Table 3).

Table 3: **Factors affecting suicidal ideation**

			Elderly people (n=64,641) Odds ratio (95% CI)	p
Demographic characteristics	Age	65-74 yrs (ref)	1	
		75-84 yrs	1.244 (1.150-1.302)	<0.001***
		≥ 85 yrs	1.667 (1.505-1.847)	<0.001***
	Gender	Female (ref)	1	
		Male	1.001 (0.933-1.074)	0.973
	Education level	College or higher (ref)	1	
		High school	1.021 (0.879-1.185)	0.790
		Middle school	1.141 (0.987-1.320)	0.076
		Elementary school	1.356 (1.186-1.550)	<0.001***
		Illiteracy	1.807 (1.567-2.084)	<0.001***
	Family income (10,000 won)	≥ 600 (ref)	1	
		500-600	0.926 (0.681-1.260)	0.625
		400-500	1.009 (0.783-1.301)	0.943
		300-400	0.890 (0.710-1.117)	0.315
		200-300	0.963 (0.785-1.182)	0.720
		100-200	1.034 (0.851-1.257)	0.737
		50-100	1.399 (1.156-1.692)	<0.001***
		< 50	1.824 (1.505-2.211)	<0.001***
	Marital status	Cohabited with partner (ref)	1	
		Divorced	1.772 (1.497-2.098)	<0.001***
		Spouse deceased	1.038 (0.971-1.109)	0.274
		Separated	1.454 (1.148-1.842)	0.002**
		Single	1.391 (0.944-2.052)	0.095
Chronic disease	Hypertension	None (ref)	1	
		Have	1.020 (0.964-1.080)	0.491
	Diabetes	None (ref)	1	
		Have	1.117 (1.046-1.192)	0.001**
	Dyslipidemia	None (ref)	1	
		Have	1.114 (1.044-1.188)	0.001**
	Arthritis	None (ref)	1	
		Have	1.334 (1.259-1.413)	<0.001***
	Cataracts	None (ref)	1	
		Have	1.291 (1.220-1.365)	<0.001***
Depression history		No (ref)	1	
		Yes	11.556 (10.770-12.399)	<0.001***

ref = reference
p<0.05*, p<0.01**, p<0.001***

The most frequent reason for suicidal ideation in the elderly was 'disease or disorder', which was reported by 53.2% of the participants. The second most frequent was 'loneliness' (17.2%), and the third was 'financial problems' (11.9%) (Table 4).

Table 4: **Reasons for suicidal ideation**

		Elderly people (n=6,906)	
		N	%
Reasons for suicidal ideation[a]	Financial problems	823	11.9
	Romantic problems (disappointment in love, divorce, etc.)	16	0.2
	Disease or disorder	3,672	53.2
	Work problems (unemployment, etc.)	59	0.9
	Loneliness	1,186	17.2
	Family discord	792	11.5
	Career problems	4	0.1
	Other	354	5.1

[a] 19 missing values

Discussion

In Korea, suicide among elderly people is a serious social issue, and solutions and efforts are needed to combat it. Chronic diseases are common health indicators, and the incidence of many chronic diseases is increased in the elderly. Previous studies did not examine the effects of chronic diseases on suicidal ideation in the elderly (13-26). To address this, we analyzed the factors affecting suicidal ideation among 64,641 elderly people.

Compared to elderly people without chronic diseases, the probability of suicidal ideation was 1.11 times, 1.1 times, 1.33 times, and 1.29 times higher in elderly people with diabetes, dyslipidemia, arthritis, and cataracts, respectively. In Japan (24), suicidal ideation and numbers of chronic diseases were not associated, but there were differences in the types of chronic diseases in this study. This was due to the difference in sample sizes between the previous study (24) and our study. In a study conducted in China (25), a chronic disease history was reported to have a significant impact on suicidal ideation.

Elderly people with arthritis had the highest risk ratio for suicidal ideation. Choi et al. (17) report that elderly people with arthritis showed about twice the suicidal ideation of elderly people without arthritis. In this study, there was no difference in suicidal ideation according to the presence of hypertension, and hypertension did not show any difference in the study by Choi et al. (17). Because arthritis is a disease with a higher level of pain than other diseases, the results might represent the close correlations between pain and depression (28) and pain and suicide (4).

Suicidal ideation in elderly people was 1.24 times higher in the 75-84 age group and 1.67 times higher in the over 85 age group compared to elderly people aged 65-74. Han et al. (13) showed that suicidal ideation among those over 80 years old was 2.1 times higher than that of 65 to 69-year-olds, which is a similar finding to the results of this study. Compared with a college or higher level of education, elementary school and illiteracy showed ORs for suicidal ideation of 1.36 and 1.8, respectively. In a study by Sohn (15), the OR for elementary school education was slightly higher than that of college and higher, ranging from 2.3 to 3.66. The relationship between education level and suicidal ideation is similar to that reported by Xu et al. (25). The results are different from a study by Awata et al. (24), which is due to differences in the setting of the variables in the two studies.

The ORs for suicidal ideation were 1.39 and 1.82 for monthly incomes less than 500,000 won and 500,000-1,000,000 won, respectively, compared to a monthly income of more than 6,000,000 won. In Sohn's study (15), the OR of the lower 25% income group was 1.12-1.75 compared to the upper 25% income level, which is similar to the results of this study. Compared to cohabitating with a partner, the ORs for suicidal ideation in divorced and separated participants were significantly higher, at 1.77 and 1.45, respectively. In a study by Han et al. (13), the suicidal ideation of elderly people tended to decrease as the number of spouses and the number of families living together increased. In other Asian country studies, there was no significant association between suicidal ideation and marital status or living status (24-26).

Elderly people with a history of depression had an 11.6 times higher OR for suicidal ideation than elderly people without a depression history. Studies by Awata et al. (24) and Xu et al. (25), reported ORs 11.8 to 33.8 times and 17 times higher, respectively, than elderly people without depression. Sohn (15) reported ORs 5.68 to 7.83 times higher. In this study, the OR was relatively higher and lower compared to other studies (15,24,25).

The primary reason for suicidal ideation was 'disease or disorder' (53.2%), followed by 'loneliness' (17.2%) and 'financial problems' (11.9%). In a study by Park et al. (16), suicidal ideation and reasons for suicidal ideation in the elderly were surveyed. The primary reason was 'physical and mental disorder, disability' (37.5%-39.8%) and the second was 'financial problems' (28.1%-35.1%). The results of this study are similar to those results.

Taken together, we found that economic and social variables, such as age, education level, monthly income, and marital status affected suicidal ideation in the elderly. Compared to other chronic diseases, arthritis had a significant impact on suicidal ideation. A history of depression was highly related to suicidal ideation, which is consistent with previous studies. Finally, more than half of the elderly participants cited 'disease or disorder' as the primary reason for suicidal ideation, indicating that more attention is needed to improve the health of the elderly (1).

Conclusions

Examining the factors that affect suicidal ideation in community-dwelling elderly people, the study revealed that the risk of suicidal ideation is associated with demographic and psychological variables and the presence of chronic diseases. The reasons for suicidal ideation were 'disease or disorder' in the first rank, and 'loneliness' in the second rank. These findings suggest the necessity of expanding projects for the prevention of suicide among elderly people, including counseling to manage chronic diseases, and the development of educational, welfare and health care services that target the elderly.

Acknowledgments

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