Determinants of Mental Health Care Utilization in a Suicide High-risk Group With Suicidal Ideation

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Objectives: The suicide rate in Korea is increasing every year, and is the highest among the Organization for Economic Cooperation and Development countries. Psychiatric patients in particular have a higher risk of suicide than other patients. This study was performed to evaluate determinants of mental health care utilization among individuals at high risk for suicide.

Methods: Korea Health Panel data from 2009 to 2011 were used. Subjects were individuals at high risk of suicide who had suicidal ideation, a past history of psychiatric illness, or had utilized outpatient services for a psychiatric disorder associated with suicidal ideation within the past year. The chi-square test and hierarchical logistic regression were used to identify significant determinants of mental health care utilization.

Results: The total number of subjects with complete data on the variables in our model was 989. Individuals suffering from three or more chronic diseases used mental health care more frequently. Mental health care utilization was higher in subjects who had middle or high levels of educational attainment, were receiving Medical Aid, or had a large family size.

Conclusions: It is important to control risk factors in high-risk groups as part of suicide prevention strategies. The clinical approach, which includes community-based intervention, entails the management of reduction of suicidal risk. Our study identified demographic characteristics that have a significant impact on mental health care utilization and should be considered in the development of suicide prevention strategies. Further studies should examine the effect of mental health care utilization on reducing suicidal ideation.

Key words: Mental health care, Suicidal ideation, Mental disorders, Republic of Korea

INTRODUCTION

Suicide is a significant public health and social problem. Suicide rates in developed countries have decreased in recent years, but the suicide rate in Korea increased by 29.1 per 100 000 in 2012 and has been the highest among the Organization for Economic Cooperation and Development (OECD) countries over the past decade [1]. Various studies of the risk factors for suicide have been conducted. Suicide rates are higher in males [2] but suicidal ideation or attempts are higher in females [3]. Suicide rates are higher in individuals with low educational attainment [3] and in the unemployed [4], and suicide rates also differ among occupations [5]. Studies have also assessed the impact on suicide rates in Korea of sex [6], the economy and unemployment [7,8], and social class, using the death statistics database of the Korean National Statistical Office [9]. In Korean adolescents, sleep duration has been associated with suicidal ideation or attempt, but this association is weaker in those with depression [10].

In Western countries, a past history of psychiatric disorder is the most important risk factor for suicide [11-14], with psychiatric patients at about 8.5 times higher risk of suicide than the general population [12]. One study found that 60% to 80% of people with psychiatric disorders had suicidal ideation, and 20% to 50% had attempted suicide at least once [13]. More than 90% of suicides occur in people with psychiatric illness, but more than 80% of psychiatric illnesses are untreated [14]. In Korea, 25% of people who died by suicide had previously received medical care for psychiatric disorders [15], and subjectively depressed mood and the presence of a family history of psychiatric illness are related to suicidal ideation in the general population [16]. Moreover, suicidal behaviors such as ideation, planning, and attempts are associated with obsessive compulsive disorder or mood disorders in the general population [17].

Management of suicide risk in patients with suicidal ideation can be effective and may reduce suicidal outcomes [18]. Patients who received antidepressants or psychotherapy (interpersonal therapy) showed a decrease in suicidal ideation on the Hamilton Rating Scale for Depression (vs. placebo, $\beta=0.47$ and $\beta=0.41$, respectively) [19]. In Korea, interventions such as a counseling program have been studied to examine their impact on suicidal ideation or depression [20-22]. However, while mental health care is increasingly delivered as a combination of clinical service and community based care [23], studies on the determinants of outpatient care as an aspect of clinical intervention are rare. This study examined the determinants of mental health care utilization among a group of individuals at high risk of suicide.

METHODS

Data and Subjects

The Korea Health Panel Survey, which started in 2008, is conducted by the Korea Institute for Health and Social Affairs and the National Health Insurance Service and collects annual data on health services used by families and individuals. The data includes general characteristics, socioeconomic characteristics, and information on health status and medical utilization, such as the incidence of chronic diseases, usage of medication, emergency presentations, hospitalization, outpatient services utilization, and private health insurance information. Data collection methods were parallel household recording surveys and interviews. The recollection of hospitalization, emergency presentations, attendance at outpatient services, or medication use was performed with the diary method [24]. Questions about suicidal ideation were added since 2009.

The present study used Korea Health Panel data from 2009 to 2011. Subjects who had suicidal ideation, a past history of psychiatric illness, or outpatient service utilization for a psychiatric disorder over the past year were included in the high-risk suicide group. Psychiatric disorders included alcoholism, drug dependence, schizophrenia and schizotypal disorder, mood disorder, somatoform disorder, mental developmental disorder, dementia, and other mental and behavioral disorders (Table 1). One thousand four hundred forty nine subjects had suicidal ideation in 2009, and 977 subjects had suicidal ideation in 2010. Subjects who did not have a history of psychiatric illness, depressed mood, or outpatient service utilization for a psychiatric disorder over the past year were excluded from

Table 1. Classification and codes of psychiatric disorders in the Korea Health Panel Survey, 2008 - 2011

Type of disorder	Disease code[1]		PD	DSI
	2008 - 2009	2010 - 2011		
Dementia	1501	15 011	O	X
Alcoholism	1502	15 021	O	O
Drug dependence	1503	15 030-15 031	O	O
Schizophrenia and schizotypal disorder	1504	15 041-15 044	O	O
Mood disorder	1505	15 051-15 052	O	O
Somatoform disorder	1506	15 060-15 066	O	O
Mental developmental disorder[2]	1507	15 071-15 074	O	X
Other mental and behavioral disorder	1508	15 081-15 083	O	X
Unspecified affective symptom	3027	30 271	X	O

PD, psychiatric disorder (for selecting subjects); DSI, disorder associated with suicidal ideation (for counting mental health care utilization).
[1]Classification in the Korea Health Panel Survey.
[2]Including mental retardation, intellectual disability, developmental disability, and autism.
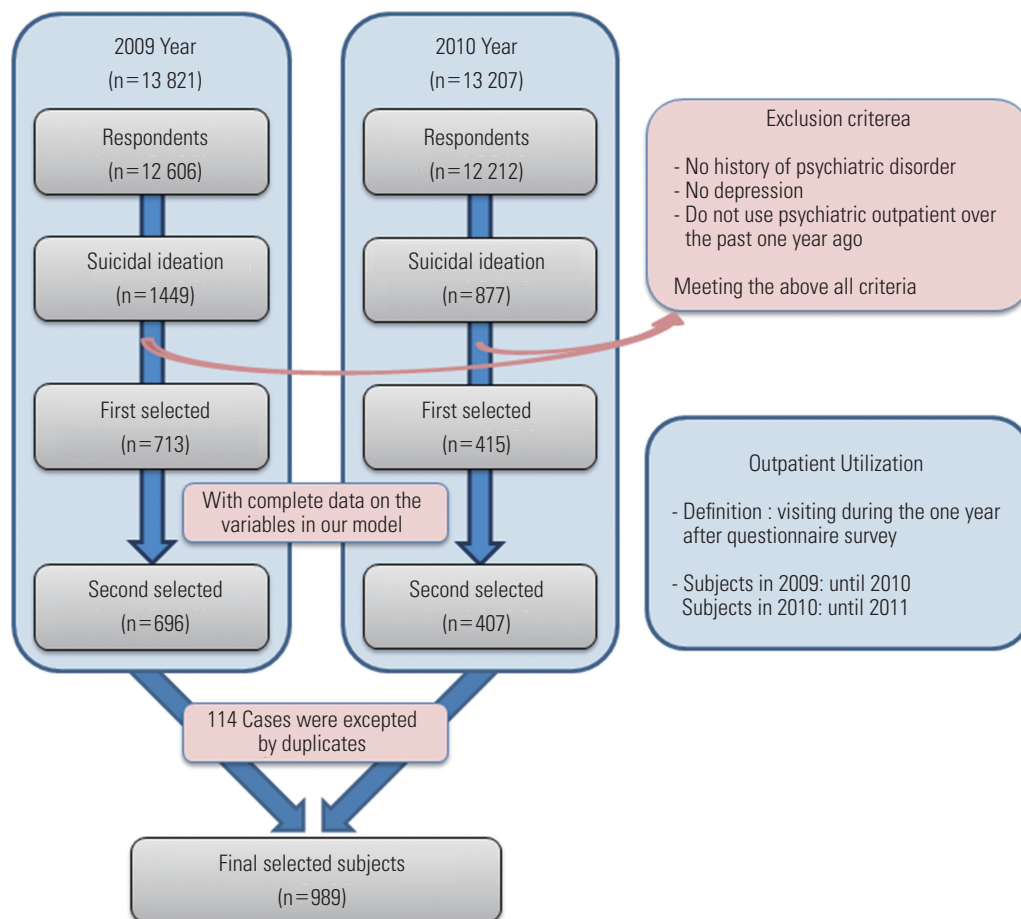
Figure 1. Flow chart of selecting process.

analysis. Thus, 696 subjects in 2009 and 407 subjects in 2010 with complete data on the variables in our model were selected. The total number of subjects was 989 adults after excluding 114 duplicate cases (Figure 1).

Mental Health Care Utilization

The dependent variable was outpatient mental health care utilization for a disorder associated with suicidal ideation, including alcoholism, drug dependence, schizophrenia and schizotypal disorder, mood disorder, somatoform disorder, and unspecified affective symptom (Table 1) [12]. A 'yes' response indicated the use of outpatient services for a disorder associated with suicidal ideation within one year prior to the survey.

Collected Characteristics

Independent variables were individual and household characteristics in the year of response to the questionnaire on suicidal ideation. Individual characteristics included sex, age, ed-

ucational attainment, marital status, presence of economic activity, social security, current cigarette smoking, binge drinking, regular eating, duration of sleep, disability, chronic disease, past history of cancer, stress score, and quality of life. Household characteristics included family size, equivalised family income, households with disabled members, households having a member with a chronic disease, poverty status, and impoverishment due to medical costs. The average number of outpatient service utilizations per month was included as an independent variable. Quality of life was divided into quartiles on the calculated index by applying weights to the five European Quality of life-5 Dimension survey items [25]. Disabilities were graded from grade 1 to 6, or if they were not graded, a person who was diagnosed with a disability was still included. Equivalised family income was divided into quartiles and calculated as the total family income divided by the square root of the number of family members.

With respect to poverty status, 'poor' was defined as having

an income below the minimum cost of living (Equation 1). Impoverishment was defined as household impoverishment due to medical costs (Equation 2). The minimum cost of living for households according to the number of family members was based on a notification from the Ministry of Health and Welfare in Korea (update: February 19, 2014).

'Poor' = (total family income-average cost of living) < the minimum cost of living   (Equation 1)

Impoverishment = (total family income-average cost of living)-(total family medical costs) < the minimum cost of living   (Equation 2)

Statistical Analysis

To determine the relationship between demographic characteristics and outpatient utilization, chi-square tests were performed. Hierarchical logistic regression was used to identify potential determinants associated with mental health care utilization by individual and household characteristics. Statistical analyses were conducted with SPSS version 20.0 (IBM Corp., Armonk, NY, USA), and p-values less than 0.05 indicated statistical significance.

RESULTS

We found that 13.3% of people with suicidal ideation used outpatient services for a psychiatric disorder associated with suicidal ideation within the previous year. Mental health care utilization in younger people was lower than in the elderly ($p = 0.011$). The high educational attainment group used mental health care services more frequently ($p = 0.016$). People with economic activity and health insurance used mental health care services less frequently ($p < 0.001$). There was no significant difference in service utilization according to sex or marital status (Table 2).

Regarding health behavior and status, binge drinkers used mental health care services more frequently ($p = 0.038$), but there was no difference in service utilization according to current cigarette smoking or regular eating (Table 3). A shorter duration of sleep was associated with more service utilization ($p = 0.024$). Individuals with disabilities or chronic diseases used mental health care services more frequently (both $p < 0.001$). A negative association was observed between quality of life and mental health care utilization ($p < 0.001$). There was no significant effect of a past history of cancer or of the stress score.

Regarding the household characteristics, the mental health

Table 2. Crude frequency and percentage of people using outpatient services for psychiatric disorders associated with suicidal ideation within the past year, by general characteristics

Characteristics	Total (n = 989)	Outpatient utilization		*p*-value[1]
		Yes	No	
Sex				0.08
Male	313 (31.6)	33 (25.0)	280 (32.7)	
Female	676 (68.4)	99 (75.0)	577 (67.3)	
Age (y)				0.01
19-39	239 (24.2)	19 (14.4)	220 (25.7)	
40-49	184 (18.6)	20 (15.2)	164 (19.1)	
50-59	167 (16.9)	23 (17.4)	144 (16.8)	
60-69	203 (20.5)	36 (27.3)	167 (19.5)	
≥70	196 (19.8)	34 (25.8)	162 (18.9)	
Educational attainment				0.02
None	139 (14.1)	21 (15.9)	118 (13.8)	
Elementary	224 (22.6)	30 (22.7)	194 (22.6)	
Middle	136 (13.8)	26 (19.7)	110 (12.8)	
High	303 (30.6)	43 (32.6)	260 (30.3)	
University	187 (18.9)	12 (9.1)	175 (20.4)	
Marital status				0.36
Married	627 (63.4)	79 (59.8)	548 (63.9)	
Not married/separated	362 (36.6)	53 (40.2)	309 (36.1)	
Economic activity				<0.001
Yes	469 (47.4)	41 (31.1)	428 (49.9)	
No	520 (52.6)	91 (68.9)	429 (50.1)	
Social security				<0.001
Health insurance	850 (85.9)	95 (72.0)	755 (88.1)	
Medical aid	139 (14.1)	37 (28.0)	102 (11.9)	
Total		132 (13.3)	857 (86.7)	

Values are presented as number (%).
[1]p-values were calculated by chi-square test.

care utilization rate was 7.0% in households with a family size of four or more ($p < 0.001$), and there was a negative association of health care utilization with equivalised family income ($p = 0.038$) (Table 4). Mental health care utilization was higher in households with members with disabilities or chronic diseases ($p = 0.003$ and $p = 0.004$, respectively). Poor households and households impoverished due to medical costs used mental health care services more frequently ($p = 0.039$ and $p < 0.001$, respectively).

According to the results of hierarchical logistic regression, the high and middle educational attainment group used mental health care services more frequently than those with no educational attainment (odds ratio [OR], 2.48; 95% confidence interval [CI], 1.15 to 5.37 and OR, 2.82; 95% CI, 1.30 to 6.14, re-

Table 3. Crude frequency and percentage of people using out-patient services for psychiatric disorders associated with suicidal ideation within the past year, by health behavior and status

| Characteristics | Total (n = 989) | Outpatient utilization | | p-value[1] |
		Yes	No	
Current cigarette smoking				0.50
Yes	210 (21.2)	31 (23.5)	179 (20.9)	
No	779 (78.8)	101 (76.5)	678 (79.1)	
Binge drinking				0.04
Yes	285 (28.8)	28 (21.2)	257 (30.0)	
No	704 (71.2)	104 (78.8)	600 (70.0)	
Regular eating				0.13
Yes	547 (55.3)	81 (61.4)	466 (54.4)	
No	442 (44.7)	51 (38.6)	391 (45.6)	
Duration of sleep (h)				0.02
≤5	323 (32.7)	53 (40.2)	270 (31.5)	
6	248 (25.1)	23 (17.4)	225 (26.3)	
7	196 (19.8)	20 (15.2)	176 (20.5)	
≥8	222 (22.4)	36 (27.3)	186 (21.7)	
A person with disability				<0.001
Yes	128 (12.9)	31 (23.5)	97 (11.3)	
No	861 (87.1)	101 (76.5)	760 (88.7)	
No. of chronic diseases				<0.001
<3	572 (57.8)	35 (26.5)	537 (62.7)	
≥3	417 (42.2)	97 (73.5)	320 (37.3)	
Past history of cancer				0.87
Yes	57 (5.8)	8 (6.1)	49 (5.7)	
No	932 (94.2)	124 (93.9)	808 (94.3)	
Stress score[2]				0.15
1-<2	88 (8.9)	9 (6.8)	79 (9.2)	
2-<3	369 (37.3)	41 (31.1)	328 (38.3)	
3-<4	398 (40.2)	58 (43.9)	340 (39.7)	
4-5	134 (13.5)	24 (18.2)	110 (12.8)	
Quality of life				<0.001
1st quartile	207 (20.9)	38 (28.8)	169 (19.7)	
2nd quartile	166 (16.8)	38 (28.8)	128 (14.9)	
3rd quartile	276 (27.9)	25 (18.9)	251 (29.3)	
4th quartile	340 (34.4)	31 (23.5)	309 (36.1)	
Total		132 (13.3)	857 (86.7)	

Values are presented as number (%).
[1]p-values were calculated by chi-square test.
[2]High score indicates less stress.

spectively). Individuals with three or more chronic diseases and those with health insurance used mental health care services more frequently (OR, 4.05; 95% CI, 2.37 to 6.94 and OR, 1.75; 95% CI, 1.01 to 3.02, respectively). Families of four or more members used mental health care services less frequently than

Table 4. Crude frequency and percentage of people using outpatient services for psychiatric disorders associated with suicidal ideation within the past year, by household characteristics and outpatient utilization

| Characteristics (household) | Total (n = 989) | Outpatient utilization | | p-value[1] |
		Yes	No	
Size of family (persons)				<0.001
1	122 (12.3)	25 (18.9)	97 (11.3)	
2-3	467 (47.2)	79 (59.8)	388 (45.3)	
≥4	400 (40.4)	28 (21.2)	372 (43.4)	
Equivalised family income[2]				0.04
1st quartile	232 (23.5)	43 (32.6)	189 (22.1)	
2nd quartile	247 (25.0)	34 (25.8)	213 (24.9)	
3rd quartile	261 (26.4)	27 (20.5)	234 (27.3)	
4th quartile	249 (25.2)	28 (21.2)	221 (25.8)	
Households with disabled members				0.003
Yes	248 (25.1)	47 (35.6)	201 (23.5)	
No	741 (74.9)	85 (64.4)	656 (76.5)	
Households having a member with a chronic disease				0.004
Yes	913 (92.3)	130 (98.5)	783 (91.4)	
No	76 (7.7)	2 (1.5)	74 (8.6)	
Poverty status[3]				0.04
Poor	391 (39.5)	63 (47.7)	328 (38.3)	
Not poor	598 (60.5)	69 (52.3)	529 (61.7)	
Impoverishment[4]				<0.001
Yes	474 (47.9)	82 (62.1)	392 (45.7)	
No	515 (52.1)	50 (37.9)	465 (54.3)	
Total		132 (13.3)	857 (86.7)	

Values are presented as number (%).
[1]p-values were calculated by chi-square test.
[2]Calculated by total family income / $\sqrt{}$ the number of family members.
[3]Poverty line was defined as the minimum cost of living.
[4]Impoverishment due to medical costs.

families comprised of one person (OR, 0.43; 95% CI, 0.21 to 0.91). Poor households used mental health care services less frequently (OR, 0.49; 95% CI, 0.25 to 0.98) as did impoverished households (OR, 1.31; 95% CI, 1.31 to 5.52) (Table 5).

DISCUSSION

Suicidal ideation is the beginning of the act of suicide and leads to actual attempts and successful suicides [26]. Because there are many causes for the act of suicide, there is a dire need for a multi-dimensional approach to prevent suicide, and

Table 5. Outpatient utilizations for psychiatric disorders associated with suicidal ideation within the past year, by hierarchical logistic regression analysis

Independent variable	Step 1	Step 2	Step 3	Step 4	Step 5
Sex (ref. male)					
Female	1.64 (1.05, 2.56)	1.55 (0.98, 2.45)	1.67 (1.02, 2.73)	1.41 (0.84, 2.38)	1.50 (0.89, 2.54)
Age (y: ref. 19-39)					
40-49	1.45 (0.73, 2.87)	1.50 (0.76, 2.99)	1.46 (0.73, 2.92)	1.08 (0.51, 2.26)	1.08 (0.51, 2.28)
50-59	2.02 (1.00, 4.06)	1.97 (0.97, 3.99)	1.96 (0.95, 4.03)	0.69 (0.30, 1.58)	0.67 (0.29, 1.53)
60-69	3.12 (1.55, 6.26)	2.79 (1.38, 5.64)	2.84 (1.38, 5.86)	0.71 (0.30, 1.67)	0.70 (0.30, 1.65)
≥70	3.58 (1.65, 7.76)	2.83 (1.29, 6.22)	2.91 (1.28, 6.58)	0.76 (0.30, 1.94)	0.71 (0.28, 1.83)
Educational attainment (ref. none)					
Elementary	1.04 (0.56, 1.95)	1.20 (0.63, 2.28)	1.18 (0.62, 2.27)	1.14 (0.59, 2.23)	1.13 (0.57, 2.20)
Middle	2.17 (1.07, 4.42)	2.48 (1.20, 5.14)	2.63 (1.26, 5.49)	2.69 (1.25, 5.75)	2.48 (1.15, 5.37)
High	2.21 (1.07, 4.57)	2.43 (1.16, 5.10)	2.54 (1.21, 5.36)	2.96 (1.37, 6.41)	2.82 (1.30, 6.14)
University	1.04 (0.42, 2.57)	1.39 (0.55, 3.51)	1.49 (0.58, 3.80)	1.40 (0.52, 3.83)	1.29 (0.47, 3.54)
Economic activity (ref. 'yes')					
No		1.64 (1.07, 2.52)	1.58 (1.03, 2.44)	1.45 (0.92, 2.29)	1.49 (0.94, 2.35)
Social security (ref. health insurance)					
Medical aid		2.44 (1.54, 3.87)	2.37 (1.49, 3.78)	1.67 (0.97, 2.88)	1.75 (1.01, 3.02)
Binge drinking (ref. 'no')					
Yes			0.98 (0.58, 1.66)	1.02 (0.58, 1.77)	1.04 (0.60, 1.81)
Duration of sleep (h; ref. ≤5)					
6			0.60 (0.35, 1.04)	0.69 (0.39, 1.21)	0.67 (0.38, 1.18)
7			0.76 (0.43, 1.36)	0.94 (0.51, 1.72)	0.91 (0.50, 1.68)
≥8			1.25 (0.77, 2.05)	1.47 (0.87, 2.49)	1.43 (0.84, 2.42)
A person with disability (ref. 'yes')					
No				0.89 (0.41, 1.92)	0.83 (0.38, 1.79)
No. of chronic diseases (ref. <3)					
≥3				4.05 (2.37, 6.93)	4.05 (2.37, 6.94)
Quality of life (quartile; ref. 4th)					
1st quartile				1.28 (0.69, 2.39)	1.17 (0.62, 2.19)
2nd quartile				1.96 (1.08, 3.56)	1.80 (0.99, 3.29)
3th quartile				1.25 (0.69, 2.27)	1.18 (0.65, 2.15)
Size of family (persons; ref. 1)					
2-3				0.91 (0.51, 1.64)	1.00 (0.55, 1.81)
≥4				0.38 (0.18, 0.79)	0.43 (0.21, 0.91)
Equivalised family income[1] (ref. 1st)					
2nd quartile				0.99 (0.56, 1.76)	0.88 (0.48, 1.60)
3rd quartile				0.99 (0.51, 1.90)	1.03 (0.49, 2.17)
4th quartile				1.67 (0.81, 3.46)	2.03 (0.87, 4.75)
Households with disabled members (ref. 'no')					
Yes				1.22 (0.64, 2.31)	1.20 (0.63, 2.27)
Households having a member with chronic diseases (ref. 'no')					
Yes					2.92 (0.66, 12.89)
Poverty status[2] (ref. not poor)					
Poor					0.49 (0.25, 0.98)
Impoverishment[3] (ref. 'no')					
Yes					2.69 (1.31, 5.52)
-2 log likelihood	928.447	902.998	884.473		817.130
Nagelkerke R square	0.031	0.070	0.097		0.194

Values are presented as odds ratio (95% confidence interval).
ref, reference.
[1]Calculated by total family income /√ the number of family members.
[2]Poverty line was defined as the minimum cost of living.
[3]Impoverishment due to medical costs

interventional programs should be designed to address the three stages of prevention, treatment, and maintenance [27]. The risk of suicide among patients suffering from psychiatric illnesses is much higher than that in the general population [12,16,17], and the majority of suicide victims receive some form of medical service before their deaths. Therefore, it is very important to screen and manage high-risk groups at the primary health care level to prevent suicide [14]. This study was designed to shed light on the possible factors that affect mental health care utilization among high-risk groups with suicidal ideation.

Generally, increased medical utilization is positively correlated with increased age and/or income and negatively correlated with poor health. In particular, people older than 65 years of age seek medical attention more frequently than younger population groups due to chronic illnesses, and females seek medical attention more frequently than males [28]. The present study also showed that women and older age groups made more total outpatient visits. However, although the study population was composed of patients with both suicidal ideation and psychiatric illnesses related to suicide, the number of outpatient visits due to diseases related to suicide did not significantly differ with sex or age. As was the case in a previous study, in which sex lost its impact because of a greater impact of income level on medical utilization [29], it is likely that in our study, economic activity and educational attainment had a greater impact on medical utilization than sex. In addition, when the household characteristics were included in the model, age had no significant impact. This may be explained by the decline in economic activity and income level among patients in older age groups due to circumstances like retirement, which might have led to decreased outpatient visits. Moreover, elderly Asian people with depression tend to present with somatic symptoms, and are reluctant to use mental health care for psychological problems [30], and thus may seek general practitioner care instead of psychiatric support.

Similar to previous studies [31], our findings suggest that subjects receiving Medical Aid had more medical service utilization than those with health insurance. Social security and economic status are some of the factors that increase medical accessibility. Thus, changes in economic status due to circumstances like unemployment or retirement, or in socioeconomic status due to factors like income level, may jeopardize medical accessibility. Taking these points into consideration, while outpatient visits are made more frequently by females and older

age groups, socioeconomic factors such as social security can be said to affect medical utilization to a greater extent. Another important point to note is that in Korea, individuals with psychiatric disorders do not usually have health insurance, due to the strict policies of private insurance companies that mean that insurance products for mental disorders are rare, except in the case of dementia. This may contribute to reduced utilization of psychiatric treatment. Improved insurance policies to address this issue are required.

Although disabled persons have a higher prevalence of chronic diseases, they are less likely to use preventive services [32]. Furthermore, although their medical care utilization is high, their unmet health care needs are also high [33]. The present study also showed that mental health care utilization among people with a disability was higher than among people without disability, but that when household characteristics were included in the model, the mental health care utilization was low, although this was not statistically significant. Populations with chronic diseases had greater medical utilization. This was concurrent with a study that showed that an older population with a greater number of chronic illnesses had greater medical utilization [34]. Considering these findings, it is likely that chronic diseases have a greater impact on outpatient visits than disability. Families experiencing impoverishment made more outpatient visits, which may be partly because families with a disabled family member have greater medical expenditure [35]. Interestingly, families with more than four members made fewer outpatient visits due to psychiatric illness; however, considering a previous study that showed that more suicidal attempts are made in a large family [36], a better approach must be devised for suicide prevention in large families.

A notable finding of this study was that household characteristics have a high impact on medical care utilization, and that many patients that need psychiatric help have disproportionately low psychiatric outpatient utilization compared with their total utilization of outpatient services. The factors shown to affect medical care utilization in previous studies were also significant in this study. Most victims of suicide have psychiatric illnesses that was undiagnosed or untreated prior to death [37]. Considering that medical intervention can reduce suicidal ideation [19], mental health care utilization needs to be increased in suicide high-risk groups.

There are several limitations to this study. First, it is impossible to state whether suicidal ideation in our population was an

impulsive, momentary whim or a pervasive, continuous behavior, because the study defined the high-risk group as those with suicidal ideation and either a psychiatric history or depressed mood, utilizing questionnaires that did not allow for the assessment of the severity of such thoughts. However, unlike previous studies that reviewed the history of medical care utilization in suicide victims, this study intended to review a high-risk group with suicidal ideation among the general population, and as suicidal ideation and depressed mood are two very important risk factors for suicide and the main targets for preventing suicide [38], the significance of their assessment must not be undervalued. Secondly, this was a cross-sectional study that reviewed medical care utilization within one year, making it impossible to assess the causality between psychiatric medical utilization and independent variables. In particular, this study measured poverty in terms of total medical expenditure in a one-year period, making it difficult to assess whether poverty changed medical care utilization, or increased medical care utilization led to poverty. Future studies should investigate how the economic burden on individual families changes with time, and how this affects the family. Third, factors that affect medical care utilization such as medical environment, regional cultural differences, social support, and infrastructure were not included in the study. Mental health care utilization is also affected by community resources such as medical personnel, medical facilities, physical proximity of medical centers, type of residence [39], regional cultural differences that affect suicide [30], and policies and infrastructure for the prevention of suicide. The Korea Health Panel data utilized in this study did not include these factors, and the population was divided according to cities, making it difficult to assess the characteristics of a specific region. However, given that families with four or more members had low mental health care utilization, it can be speculated that social support plays a role in mental health care utilization. If future Korea Health Panel data provides regional information on smaller districts, it will enhance our knowledge of their effects on society, especially if this information is integrated with regional cultural characteristics regarding suicide provided by the national statistical office.

CONFLICT OF INTEREST

The authors have no conflicts of interest associated with the material presented in this paper.

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