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Differences in Depressive Symptom Profile by Age Group in Koreans With Major Depressive Disorder: Results From Nationwide General Population Surveys

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Objective This study investigated to what extent a range of depressive symptoms was differentially present depending on age group in Korean population.

Methods Data was pooled from five nationally representative surveys in which 29,418 respondents aged at least 18 years were interviewed face-to-face using the Korean version of the Composite International Diagnostic Interview. A total of 691 (2.1%) respondents were found to have had at least 1 episode of major depressive disorder (MDD) within the last 12 months. Logistic regression analysis was conducted to identify the association between age groups (18–39 years, 40–59 years, and 60 years or older) and 26 depressive symptoms among the respondents with MDD.

Results Associations were observed between somatic symptoms—including insomnia, awakening 2 h earlier—and cognitive symptoms such as feelings of guilt, thoughts of death, and suicidal ideation with the older age group. Whereas, atypical depressive symptoms such as increased appetite, weight gain, and hypersomnia were associated with the younger age group. When adjusted for sociodemographic factors, symptoms such as depressed mood, awakening 2 h earlier, and feeling guilty in the older age group, and hypersomnia, psychomotor retardation, and worse in the morning in the younger age group still remained statistically significant. Furthermore, fatigue and decreased libido were newly associated with the younger age group.

Conclusion The findings of this study revealed distinct patterns of symptomatology in MDD based on age groups. These differences should be considered owing to their potential relevance to treatment response and prognosis in the clinical setting.

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Keywords Major depressive disorder; Depressive symptoms; Age groups; Korea; Epidemiology.

INTRODUCTION

Major depressive disorder (MDD) is a prevalent and disabling mental disorder that affects approximately 3.8% of the population, including 5% of adults.[1] It is a growing public health concern owing to its lethal and recurrent nature. Furthermore, MDD is expected to be the leading contributor to the global disease burden by 2030.[2] Therefore, it is important to accurately identify the status of MDD in the general population, such as the prevalence and organization of symptoms, in order to distribute health resources and develop appropriate screening and treatment.

The prevalence of MDD varies by age,[3] but it is not necessarily true that it increases with age. Some studies have found that depression is more common in younger age groups, particularly in adolescents and young adults.[4] However, MDD can

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occur at any age, and older adults are not immune to it. In practice, MDD is more likely to be underdiagnosed and undertreated in older adults,[5] possibly due in part to stigma, physical health problems, and other factors that can complicate diagnosis and treatment.[6] In other words, MDD symptoms might resemble characteristics inherent to the aging process, making it difficult to recognize MDD in older adults.[6] Thus, gaining insight into differences in the age-specific symptom profile of MDD may contribute to the improvement of diagnosis and treatment.

It is known that the presentation of depressive symptoms differs according to age.[7] Psychomotor agitation, hypochondria, and somatic symptoms were more common in older adults, whereas guilt, which can be perceived as a cognitive symptom, was more common in young adults. However, most of the previous studies were conducted only on several depressive symptoms using the Hamilton Depression Rating Scale,[8] which does not include all Diagnostic and Statistical Manual of Mental Disorders (DSM) depressive symptoms. Regarding age, people were usually divided into two groups, and middle-aged people were inconsistently grouped. Furthermore, studies on the difference in depressive symptom profile in Asian populations are scarce.

As sociocultural factors also influence the manifestation of symptoms of depression and mental habits,[9] it is essential to study the epidemiology of MDD across countries with different sociocultural backgrounds and establish countermeasures, including optimized mental health policies. Thus, this study aimed to investigate the 1-year prevalence of MDD and the presence of a range of depressive symptoms across different age groups within the Korean population using data from a nationally representative sample from Korean Epidemiologic Catchment Area (KECA) studies.

METHODS

Participants

The KECA study is a nationally representative survey of mental health in the general population aged 18 years and above. It has been conducted every 5 years since 2001. Data were obtained from several KECA studies conducted over 20 years, in 2001, 2006, 2011, 2016, and 2021. In all surveys, a complex sampling design was applied, wherein each included sample was independent of the other. In these surveys, a total of 29,418 participants (6,275 in 2001, 6,510 in 2006, 6,022 in 2011, 5,100 in 2016, 5,511 in 2021) were interviewed face to face using the same version of the structured diagnostic tool, i.e., the Korean version of the Composite International Diagnostic Interview (K-CIDI), based on the criteria of the DSM, Fourth Edition (DSM-IV).[10] The K-CIDI was developed and validated for the Korean population and adheres to the CIDI translation guidelines provided by the World Health Organization.[10]

Assessment of sociodemographic factors

The participants' sociodemographic characteristics were obtained: age (18−39/40−59/≥60 years), employment status (full-time job/part-time job/unemployed), gender, marital status (married/never married/widowed, separated, or divorced), and years of education (<10/10−12/≥13 years).

Assessment of MDD

MDD over the past 12 months was evaluated according to the K-CIDI mood section based on the DSM-IV. First, the respondents were asked whether they had experienced either depressed mood or loss of interest during the past 12 months. Then, those who affirmatively responded to any of these items were asked additional questions to determine whether they met the MDD criteria. The respondents were required to answer questions on whether they had experienced the 26 depressive symptoms as defined in the DSM-IV and International Classification of Diseases Tenth Revision (ICD-10), including mood, appetite, psychomotor changes, fatigue, sleep disturbance, guilt/worthlessness, concentration difficulty, and suicidality.

Statistical analysis

A total of 29,418 respondents completed the psychiatric diagnostic interview, which included questions on their sociodemographic characteristics. Of them, 691 (2.1%) were found to have had at least 1 episode of MDD in the last 12 months and were included in the final analysis.

We used survey-specific weights for each sample respondent to estimate the national population in terms of age and gender by each catchment area, as defined by the Korean National Statistical Office for each year. We conducted chi-squared tests to compare gender, years of education, employment status, and marital status by age group. For each 26 depressive symptoms, we conducted chi-squared tests to compare individual symptom profile by age group followed by logistic regression analysis to calculate odds ratio (OR) and 95% confidence interval (CI). We defined each depressive symptom as the main outcome variable and the 40−59 years group and 60 years or older group as the principal group, with the 18−39 years group as the reference group. We conducted additional analyses with adjustments for gender, age, years of education, employment status, and marital status to eliminate the impact of other sociodemographic variables as potential confounding factors. Furthermore, we calculated the variance inflation factor (VIF) to evaluate the colinearity between independent

variables. We evaluated the goodness-of-fit using the Hosmer–Lemeshow test. Statistical analysis was conducted using the Statistical Package for the Social Sciences Statistics for Windows version 25.0 (IBM Corp., Armonk, NY, USA). All statistical values were two-tailed, and a p-value <0.05 was considered statistically significant.

Ethics statement

All participants were fully informed about the objectives and methods of the study and provided written informed consent. This study was also approved by the IRB of the Kyungpook National University Hospital (approval number: 2023-01-022).

RESULTS

Sociodemographic characteristics of subjects with MDD

Table 1 presents the sociodemographic characteristics of subjects with MDD. The 1-year prevalence rates of MDD were 2.0%, 2.1%, and 2.3% for the 18–39 years, 40–59 years, and 60 years or older groups, with no significant difference by age group. There was also no significant difference between the age groups in terms of gender. However, years of education, employment status, and marital status showed significant differences (all p<0.001).

Symptomatological differences between age groups with MDD

To determine differences in the symptomatology of MDD by age group, chi-squared tests were conducted for the individual symptoms of MDD. Table 2 presents the results. Significant differences were observed between the 18–39 years, 40–59 years, and 60 years or older groups in terms of weight gain (20.1% vs. 10.8% vs. 11.1%, p=0.006), hypersomnia (37.9% vs. 20.7% vs. 14.0%, p<0.001), psychomotor retardation (65.8% vs. 55.4% vs. 51.5%, p=0.012), and worsening in the morning (50.9% vs. 41.2% vs. 37.4%, p=0.022). Insomnia (78.1% vs. 86.1% vs. 91.9%, p=0.002), awakening 2 h earlier (48.7% vs. 62.0% vs. 77.8%, p<0.001), psychomotor agitation (43.1% vs. 53.6% vs. 52.0%, p=0.045), feeling guilty (37.2% vs. 55.0% vs. 60.0%, p<0.001), and thoughts of death (59.5% vs. 67.6% vs. 73.7%, p=0.022) were also reported to be significantly different between the groups.

Depressed mood (40–59 years: OR=2.89, 95% CI [1.64–5.10]; ≥60 years: OR=5.19, 95% CI [1.85–14.55]), insomnia (40–59 years: OR=1.76, 95% CI [1.11–2.79]; ≥60 years: OR=3.16, 95% CI [1.46–6.84]), awakening 2 h earlier (40–59 years: OR=1.71, 95% CI [1.21–2.43]; ≥60 years: OR=3.70, 95% CI [2.17–6.28]), feeling guilty (40–59 years: OR=2.09, 95% CI [1.47–2.96]; ≥60 years: OR=2.54, 95% CI [1.59–4.07]), psychomotor agitation (40–59 years: OR=1.53, 95% CI [1.08–2.16]), thoughts of death (≥60 years: OR=1.90, 95% CI [1.14–3.16]), and thoughts of suicide (≥60 years: OR=1.63, 95% CI [1.02–2.58]) were associated with the older age group.

Table 1. Sociodemographic characteristics of patients who have had major depressive episode in the last 12 months (N=691)

Variables	18–39 years	40–59 years	60 years or older	p
1-year prevalence	248 (2.0)	278 (2.1)	165 (2.3)	0.494
Gender				
Men	67 (31.6)	69 (33.9)	29 (22.2)	0.102
Women	181 (68.4)	209 (66.1)	136 (77.8)	
Education (yr)				
0–9	14 (4.8)	128 (38.2)	125 (65.0)	<0.001
10–12	100 (37.5)	89 (35.9)	29 (21.0)	
≥13	134 (57.6)	61 (25.9)	11 (14.0)	
Employment				
Full-time	66 (26.8)	86 (33.2)	20 (10.0)	<0.001
Part-time	17 (7.8)	21 (7.2)	7 (5.0)	
Unemployed	165 (65.4)	171 (59.6)	138 (85.0)	
Married (missing=1)				
Married	106 (35.7)	182 (66.0)	84 (55.6)	<0.001
Never married	129 (60.2)	17 (6.0)	1 (1.0)	
Widowed/divorced/separated	13 (4.1)	78 (28.0)	80 (43.4)	

Values are presented as number (%). Number: unweighted. Percent: weighted by age and gender to the population census for each year

Table 2. Symptomatic differences between age groups who have had a major depressive episode in the past 12 months*

Depressive symptoms	Prevalence (%)			p
	18–39 years	40–59 years	60 years or older	
Depressed mood	81.8	92.8	96.0	<0.001
Loss of interest	90.7	84.0	88.0	0.068
Fatigue	94.1	92.8	94.9	0.726
Decreased appetite	80.3	80.0	79.8	0.993
Weight loss	45.7	41.8	37.4	0.328
Increased appetite	18.2	11.6	11.1	0.058
Weight gain	20.1	10.8	11.1	0.006
Insomnia	78.1	86.1	91.9	0.002
Awakening 2 h earlier	48.7	62.0	77.8	<0.001
Hypersomnia	37.9	20.7	14.0	<0.001
Psychomotor retarded	65.8	55.4	51.5	0.012
Psychomotor agitated	43.1	53.6	52.0	0.045
Feeling worthless	62.5	61.0	68.7	0.397
Feeling guilty	37.2	55.0	60.0	<0.001
Low self-esteem	75.1	71.6	75.0	0.630
Low self-confidence	63.0	64.5	62.0	0.884
Concentration difficulty	84.4	83.3	82.8	0.913
Slow thought	59.9	65.3	67.0	0.299
Indecisiveness	72.5	70.5	67.7	0.655
Thoughts of death	59.5	67.6	73.7	0.022
Thoughts of suicide	43.5	52.0	55.6	0.053
Suicide plan	17.8	23.9	25.3	0.148
Suicide attempt	14.9	13.5	14.1	0.911
Worse in the morning	50.9	41.2	37.4	0.022
Decreased libido	60.2	62.8	55.6	0.455
Loss of pleasure	72.1	73.7	70.7	0.834

*percent: weighted by age and gender to the population census for each year

Whereas, loss of interest (40–59 years: OR=0.54, 95% CI [0.32–0.92]), increased appetite (40–59 years: OR=0.59, 95% CI [0.36–0.97]), weight gain (40–59 years: OR=0.49, 95% CI [0.30–0.81]), hypersomnia (40–59 years: OR=0.43, 95% CI [0.29–0.63]; ≥60 years: OR=0.26, 95% CI [0.14–0.48]), psychomotor retardation (40–59 years: OR=0.65, 95% CI [0.45–0.92]; ≥60 years: OR=0.55, 95% CI [0.35–0.88]), and worse in the morning (40–59 years: OR=0.68, 95% CI [0.48–0.96]; ≥60 years: OR=0.58, 95% CI [0.36–0.92]) were associated with the younger age group.

When adjusted for sociodemographic factors, depressed mood (40–59 years: adjusted OR [AOR]=2.44, 95% CI [1.20–4.95]; ≥60 years: AOR=3.58, 95% CI [1.09–11.78]), awakening 2 h earlier (40–59 years: AOR=1.63, 95% CI [1.03–2.58]; ≥60 years: AOR=3.23, 95% CI [1.68–6.20]), feeling guilty (40–59 years: AOR=2.09, 95% CI [1.31–3.33]; ≥60 years: AOR=2.39, 95% CI [1.30–4.39]), hypersomnia (≥60 years: AOR=0.40, 95% CI [0.19–0.86]), psychomotor retardation (≥60 years: AOR=0.52, 95% CI [0.28–0.95]), and worse in the morning (40–59 years: AOR=0.60, 95% CI [0.38–0.95]) remained statistically significant. Furthermore, fatigue (40–59 years: AOR=0.30, 95% CI [0.11–0.84]) and decreased libido (40–59 years: AOR=0.45, 95% CI [0.26–0.77]; ≥60 years: AOR=0.38, 95% CI [0.19–0.74]) were newly associated with the younger age group.

No colinearity was observed between the independent variables in any of the analyses (VIF≤2) (Table 3).

DISCUSSION

Using data from a nationally representative sample, we examined the 1-year prevalence of MDD and depressive symptom profile by age group. The main findings of this study were

Table 3. Adjusted odds ratios of individual depressive symptoms for older age groups compared with the younger age group

Depressive symptoms	Odds ratio (95% CI)			Adjusted odds ratio (95% CI)†		
	18–39 years	40–59 years	60 years or older	18–39 years	40–59 years	60 years or older
Depressed mood	1.00	2.89 (1.64–5.10)***	5.19 (1.85–14.55)**	1.00	2.44 (1.20–4.95)*	3.58 (1.09–11.78)*
Loss of interest	1.00	0.54 (0.32–0.92)*	0.78 (0.37–1.63)	1.00	0.52 (0.25–1.07)	0.73 (0.28–1.89)
Fatigue	1.00	0.81 (0.40–1.63)	1.16 (0.41–3.25)	1.00	0.30 (0.11–0.84)*	0.38 (0.10–1.53)
Decreased appetite	1.00	0.99 (0.64–1.52)	0.98 (0.55–1.74)	1.00	0.84 (0.47–1.51)	0.88 (0.41–1.89)
Weight loss	1.00	0.85 (0.60–1.21)	0.71 (0.44–1.14)	1.00	0.84 (0.53–1.32)	0.69 (0.38–1.27)
Increased appetite	1.00	0.59 (0.36–0.97)*	0.57 (0.28–1.14)	1.00	0.84 (0.44–1.60)	0.84 (0.35–2.05)
Weight gain	1.00	0.49 (0.30–0.81)**	0.52 (0.27–1.04)	1.00	0.56 (0.29–1.06)	0.55 (0.23–1.32)
Insomnia	1.00	1.76 (1.11–2.79)*	3.16 (1.46–6.84)*	1.00	1.09 (0.60–1.98)	1.62 (0.64–4.11)
Awakening 2 h earlier	1.00	1.71 (1.21–2.43)**	3.70 (2.17–6.28)***	1.00	1.63 (1.03–2.58)*	3.23 (1.68–6.20)***
Hypersomnia	1.00	0.43 (0.29–0.63)***	0.26 (0.14–0.48)***	1.00	0.65 (0.39–1.09)	0.40 (0.19–0.86)*
Psychomotor retarded	1.00	0.65 (0.45–0.92)*	0.55 (0.35–0.88)*	1.00	0.64 (0.41–1.02)	0.52 (0.28–0.95)*
Psychomotor agitated	1.00	1.53 (1.08–2.16)*	1.43 (0.90–2.27)	1.00	1.19 (0.75–1.88)	0.91 (0.50–1.66)
Feeling worthless	1.00	0.94 (0.66–1.34)	1.33 (0.82–2.18)	1.00	1.03 (0.65–1.64)	1.30 (0.70–2.44)
Feeling guilty	1.00	2.09 (1.47–2.96)***	2.54 (1.59–4.07)***	1.00	2.09 (1.31–3.33)**	2.39 (1.30–4.39)**
Low self-esteem	1.00	0.83 (0.56–1.23)	1.00 (0.59–1.71)	1.00	1.11 (0.67–1.84)	1.25 (0.64–2.44)
Low self-confidence	1.00	1.07 (0.75–1.53)	0.96 (0.60–1.54)	1.00	1.62 (1.01–2.60)*	1.35 (0.73–2.49)
Concentration difficulty	1.00	0.92 (0.58–1.47)	0.90 (0.48–1.66)	1.00	1.51 (0.82–2.77)	1.55 (0.71–3.41)
Slow thought	1.00	1.27 (0.89–1.81)	1.37 (0.84–2.23)	1.00	1.12 (0.70–1.80)	1.13 (0.60–2.11)
Indecisiveness	1.00	0.91 (0.62–1.33)	0.80 (0.48–1.31)	1.00	0.79 (0.47–1.33)	0.73 (0.38–1.41)
Thought of death	1.00	1.41 (0.99–2.03)	1.90 (1.14–3.16)*	1.00	1.20 (0.75–1.94)	1.51 (0.79–2.90)
Thought of suicide	1.00	1.41 (0.99–1.99)	1.63 (1.02–2.58)*	1.00	1.18 (0.75–1.87)	1.38 (0.76–2.52)
Suicide plan	1.00	1.45 (0.94–2.22)	1.56 (0.90–2.70)	1.00	1.33 (0.77–2.30)	1.48 (0.73–3.01)
Suicide attempt	1.00	0.90 (0.55–1.47)	0.97 (0.51–1.86)	1.00	0.56 (0.30–1.08)	0.51 (0.22–1.20)
Worse in the morning	1.00	0.68 (0.48–0.96)*	0.58 (0.36–0.92)*	1.00	0.60 (0.38–0.95)*	0.57 (0.31–1.04)
Decreased libido	1.00	1.12 (0.79–1.60)	0.83 (0.52–1.32)	1.00	0.45 (0.26–0.77)**	0.38 (0.19–0.74)**
Loss of pleasure	1.00	1.10 (0.74–1.61)	0.93 (0.56–1.53)	1.00	0.82 (0.49–1.39)	0.70 (0.36–1.37)

*p<0.05; **p<0.01; ***p<0.001; †adjusted for gender, years of education, employment, and marital status. CI, confidence interval

as follows: 1) the 1-year prevalence of MDD was stable across all age groups. 2) However, 13 symptoms (50%) differed depending on the age group. That is, the older age group was more likely to be associated with melancholic symptoms, including depressed mood, insomnia, awakening 2 h earlier, psychomotor agitation, and cognitive symptoms, including suicide-related symptoms, along with feeling guilty. Whereas, the younger age group was more likely to be associated with atypical symptoms such as increased appetite, weight gain, hypersomnia, and fatigue.

Our results are inconsistent with previous findings that the prevalence of MDD varies by age.[3] Previous studies have suggested that the prevalence of MDD tends to increase with age, peaking in adulthood.[4] However, it is essential to recognize that prevalence may vary depending on factors such as region, culture, and data collection methodology. Nevertheless, regardless of age, the prevalence observed in our study was lower than the global prevalence.[11,12] Sociocultural influences on the concept of depression may contribute to the low prevalence of depression in some cultures.[13] The suggestion that non-Western people have lower rates of depression is interpreted to reflect denial of the illness or a tendency to express depression somatically.[14] Due to these patterns, the interpretation of this alternative presentation may influence epidemiological estimates.[15]

This study found differences in depressive symptom profile by age, similar to previous studies.[7,16] The older age group exhibited associations with melancholic symptoms, particularly somatic symptoms, which were the core symptoms of melancholic symptoms, such as psychomotor agitation, insomnia,

and awakening 2 h earlier. Furthermore, for insomnia and awakening 2 h earlier, the value of OR increased with age. These somatic symptoms could be attributed to aging or the presence of chronic somatic diseases in older adults. The manifestation of somatic symptoms at older adults might elucidate why late-life depression has been relatively more often underdiagnosed, as older adults experiencing these symptoms may exhibit attribution bias, thinking that their problems are simply consequences of growing older and they may not feel the need to seek help.[6,17] However, it needs to consider that physiological changes in older adults, such as an advanced sleep phase, could contribute to these symptoms. For example, awakening 2 h earlier could be a manifestation of an advanced sleep phase, potentially leading to a misperception of insomnia. Therefore, further research into these findings may be necessary.

Moreover, cultural factors can play an important role in the experience, presentation, diagnosis, and treatment of depressive symptoms.[18] Although depression has been observed across cultures, cross-cultural presentations of depressive symptoms may vary.[19] Particularly, somatic symptoms of depression may be more heavily emphasized among non-Western populations, resulting in higher rates of somatization compared with Western populations.[20] It might be worthwhile to ask persons who report physical complaints about their mood, as older adults might not be used to expressing mood problems and might focus on physical health.[6] Furthermore, in relation to the stigma attached to depression among the Korean elderly, future research needs to develop a depression scale that fits the emotional and cultural characteristics of the Korean elderly, rather than simply applying an international scales.

Associations with the older age group were also observed in cognitive symptoms, such as feeling guilty, thoughts of death, and thoughts of suicide. In particular, contrary to previous findings,[16] suicide-related symptoms (i.e., thoughts of death and thoughts of suicide) exhibited an association with the 60 years or older group. According to the interpersonal theory of suicide, suicide-related symptoms are the result of feelings of thwarted belongingness and perceived burdensomeness. Older adults experience several situations of social stress and adverse social experiences, such as retirement, widowing, or lack of new intimate relationships.[21] In addition to the low sense of belongingness, poor social support, and social integration, the death of close relatives is a highly stressful event and constitutes a risk factor for suicidality. Also, for older adults, physical illnesses (e.g., heart disease, stroke, and chronic obstructive pulmonary disease) could represent an acute stressful life event and have been associated with a higher risk of subsequent depression, which could be associated with suicide; some physical conditions may cause chronic pain, a well-known risk factor for suicide.[22] Finally, functional impairment could play a further consistent role.

This study found the younger age group to be associated with atypical depressive symptoms, similar to previous studies.[23] Atypical depression is characterized by higher levels of inflammatory and metabolic dysregulation, reduced serotonin synthesis, and hypoactivity of the hypothalamus—pituitary—adrenal axis.[24] Increased appetite and weight gain associated with the younger age group may be attributed to the slowing down of life because of loss of interest and emotional eating, as well as elevated levels of cortisol and inflammation in this context.[25] In particular, hypersomnia, psychomotor retardation, and worse in the morning remained statistically significant after adjusting for gender, marital status, years of education, and employment status. Furthermore, fatigue and decreased libido were newly associated with the younger age group. It has been reported that MDD with hypersomnia is common in younger age groups and that there are many complaints of symptoms related to fatigue (loss of energy),[26] which is relatively consistent with the differences in depressive symptoms according to age in this study. Regarding decreased libido, one study found that it was commonly observed in older adults with depression,[27] whereas other studies found that younger adults with depression were more likely to have decreased libido than older adults with depression.[16,28] In our study, we observed an association between decreased libido and the younger age group. Consistent with the previous results, not only a decrease in sexual desire and sexual function with aging itself but also the lack of a living partner might explain our finding that older patients had lesser sexual dysfunction due to depression than younger ones.[7] Nonetheless, it remains unclear how sexual interest is differently affected by the pathophysiologic process of depression by age group. Nonetheless, it is recommended to consider sexual dysfunction, particularly in the treatment of younger individuals with MDD. Additionally, individuals with atypical depression often experience a more chronic, unrelenting course of depression than those with typical depression and could be associated with increased comorbidity of other psychiatric disorders and greater functional impairment.[29] Therefore, in terms of long-term outcome estimation, these characteristics should be taken into account in younger individuals with depression who are highly associated with atypical depressive symptoms.

When interpreting the results of this study, its limitations need to be considered. First, this was a cross-sectional study in which existence of its individual depressive symptoms and diagnosis of MDD were relied on the respondents' retrospective reports. To minimize recall bias, we assessed and analyzed individual depressive symptoms and MDD diagnosis within the past year. Second, although our study demonstrated an association between age groups and depressive symptoms, the

causal association between the two remains unknown. Accordingly, it is necessary to conduct longitudinal studies to confirm accurate temporal relationships. Third, we could not thoroughly analyze somatic symptoms associated with depression as the K-CIDI diagnosis of MDD was based on the DSM-IV and ICD-10 definitions, which do not encompass common somatic symptoms such as gastrointestinal trouble, headache, and frequent palpitation. Finally, the categorization of age groups into three cohorts—specifically, older adults as 40−59 years and 60 years or older—necessitates caution in interpreting the results. Future research that treats age as a continuous variable is needed to provide more nuanced insights. Furthermore, we need to study the severity of symptoms, chronicity, number of episodes, and onset of the disease. Nevertheless, this study has the following strengths: for the first time, the depressive symptom profile by age group was investigated in the general adult population of Korea. Furthermore, a validated structured interview tool, K-CIDI, was employed to assess MDD.

In conclusion, the depressive symptom profile of MDD in the general Korean population varies by age group. In particular, the older age group was more associated with somatic symptoms and cognitive symptoms, including suicide-related symptoms. These differences should be considered owing to their potential relevance to treatment response and prognosis in the clinical setting. Moreover, this study may provide significant information for public policymakers to establish national mental health policies to reduce the social burden of MDD, especially in developing appropriate screening and treatment by age group.

Availability of Data and Material

The datasets generated or analyzed during the study are available from the corresponding author on reasonable request.

Conflicts of Interest

Jimin Lee, a contributing editor of the *Psychiatry Investigation*, was not involved in the editorial evaluation or decision to publish this article. All remaining authors have declared no conflicts of interest.

Author Contributions

Conceptualization: Jimin Lee, Sung Man Chang. Data curation: Byung-Soo Kim, Seong-Jin Cho. Formal analysis: Jimin Lee, Byung-Soo Kim, Sung Man Chang. Funding acquisition: Jimin Lee. Investigation: Jimin Lee, Jun-Young Lee, Su Jeong Seong. Methodology: Byung-Soo Kim, Seong-Jin Cho, Jee Eun Park, Sung Man Chang. Writing—original draft: Jimin Lee, Sung Man Chang. Writing—review & editing: all authors.

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