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Original Article

A study on differences in depression and influencing factors among women by age group

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Received: 14 June 2026; **Revised:** 04 September 2026; **Accepted:** 06 September 2026

ABSTRACT

Depression is related to health risks such as chronic disease morbidity and suicide. The prevalence of depressive disorder is more than doubled among women in Korea, raising the need to closely examine the factors affecting depression in women. This study is a descriptive research study in which a secondary analysis of data from the National Health and Nutrition Examination Survey is conducted. Of the 4,352 female subjects, 3,148 adults over the age of 20 were targeted, and they were classified into young people, middle-aged people, and aged people. Demographic factors, health-related factors, and disease-related factors were included. All data were analyzed using the SPSS/WIN 20.0 program for complex sample analysis. Among the young aged, marital status, job status, smoking, subjective health status, aerobic physical activity, weekend sleep time, subjective body type recognition, BMI, and thyroid cancer diagnosis were identified as influencing factors of depression. Among the middle-aged, researchers identified marital status, smoking, subjective health status, subjective body type perception, osteoarthritis, rheumatoid arthritis diagnosis, number of days to walk, sleep time per week, and BMI as influencing factors of depression. Among the aged people, education level, subjective health status, eating habits, subjective body type recognition, and hypertension diagnosis were identified as influencing factors of depression. These results confirmed that the influencing factors of depression in women differ by age group.

Keywords: Depression, Women, Young aged, Middle-aged, Aged

Introduction

Depression is the most common mental illness, and the World Health Organization (WHO) has identified depression as one of the three most burdensome diseases in the world, along with ischemic heart disease and car accidents [1]. Depression is classified into major depressive disorder, dysthymic disorder, and other depressive disorders, and typical symptoms include decreased interest or pleasure in daily activities, sudden changes in weight, insomnia or excessive sleep, and inappropriate guilt [2]. Depression has been consistently pointed out in a number of previous studies as a major cause and predictor of suicidal ideation and is one of the most common and serious diseases worldwide with various symptoms. According to the International Social Survey Program (ISSP) survey on the experience rate of depression, Korea recorded 13.2%, which is higher than the average of 10.7% of all surveyed countries including Switzerland 4.0%, the Netherlands 6.9%, Denmark 7.8%, and Germany 12.4% [3]. In a survey on mental health among Koreans [4], the lifetime prevalence of depressive disorder was 7.7% and 5.7% for men and 9.8% for women, 1.7 times higher in women. The 1-year prevalence of depressive disorder was 1.7%, male 1.1%, and female 2.4%, 2.2 times higher in females [4]. The reason for the high incidence of depression in women is not only biological differences according to gender but also social, economic, and emotional factors that

Access this article online	
Website: www.japer.in	**E-ISSN:** 2249-3379

How to cite this article: Won H. A study on differences in depression and influencing factors among women by age group. J Adv Pharm Educ Res. 2026;16(3):161-9. https://doi.org/10.51847/GfDvkYKMnn

only women experience in work specifically [5]. So it is necessary to examine the causes of women's depression more closely.

Young people are the first starting point of adulthood, and it is a time to become independent from parents, form new social relationships with others, and lay the foundation for life in preparation for middle and old age. During this period, they are required to take on the role of a major social member and take responsibility for their own life through the termination of studies, employment, and marriage [6]. However, as the suicide rate among young people continues to increase as a result of social and economic threats along with rapid social growth in recent years [7], it is urgent to prepare countermeasures for youth depression management. Middle age is the period when physical and biological aging begins. Women experience psychological changes as their roles in the family change, especially due to their spouses' retirement and their children's growth and independence [8]. Depression in middle-aged women can weaken the will to live, weaken the level of health, and cause emotional anxiety [9]. Repeated thoughts about death can lead to extreme choices if left unattended in this situation. Older people experience a physical, social, and emotional loss due to deterioration of health, economic loss, loss of self-esteem, alienation, loneliness, fear of death, etc [10]. Psychological factors such as anxiety and depression in the elderly can cause serious health problems as they exacerbate chronic diseases as well as mental health aspects [11].

So far, domestic studies on depression have analyzed the relevance of 2-3 variables for a specific group or analyzed male and female research subjects without distinguishing them. Studies on women's depression have focused on individual factors to explain the influencing factors of depression, so the understanding of women's depression has only been done at a limited level. In addition, although a customized approach to depression is required for each age group, there is a limit to understanding and explaining the influence factors of depression from a comparative point of view by age group. Considering that the influencing factors of depression cannot be explained in any one aspect, it is necessary to analyze the influencing factors of depression by age in Korean women in a more multifaceted approach. Therefore, this study intended to identify the factors affecting depression in Korean women by age group from a comprehensive perspective, using the data from the 7th, and 3rd years of the National Health and Nutrition Examination Survey. The purpose of this study is to: First, the degree of depression, general characteristics, health-related behaviors, and disease-related factors in women by age group and their differences by age group are analyzed. Second, the influencing factors affecting the depression of women by age are analyzed.

Conceptual framework

Individual depression influencing factors are very diverse, and there are demographic and sociological factors such as sex [12], marital status [13], education level [14, 15], occupation and employment situation [16], and housing factors [13, 17]. There are health-related characteristics such as physical activity [18], health status [8], subjective body type recognition [19], and sleep time [14]. Smokers were 20% more likely to develop depression than nonsmokers, and heavy drinkers were 34% more likely than the person who doesn't drink [20]. In addition, BMI [21] and chronic diseases [16] have been reported to be related to depression. However, the target of this study is a specific group such as adolescents [22], college students [23], adults [15, 21], middle-aged8, [14, 24], elderly [10, 11, 25], marriage immigrant women [26], post-menopausal middle-aged female [27], etc. An analysis of gender differences in depression using data from 29 developed countries [12] found that women were more likely to suffer from depression than men in all countries. As a cause of the high prevalence of depression among women working alone, the physiological characteristics of active hormonal activity, social factors related to stress, and the balance and responsibility required in the multiple roles of office workers, mothers, and wives were complexly related [28]. In addition, given that women's depression is more persistent than men's [23], systematic attention to women's depression is urgently needed.

Materials and Methods

Research design and respondents of the study

This study is a descriptive research study of secondary analysis of data from the 7th, 3rd year (2018) National Health and Nutrition Examination Survey of the Korea Centers for Disease Control and Prevention to identify factors affecting depression in women by age. The KNHANES is a nationwide survey that surveys the health level and health risk factors of people every year. The data used in this study were collected from January to December 2018. As for the sampling method, a two-step stratified colony sampling method was used with the surveying district and household as the primary and secondary sampling units [29]. The extraction frame was stratified based on city/province, dong/eup-myeon, and housing type, and the residential area ratio and householder's educational background ratio were used as implicit stratification criteria [29]. 4,416 households within the primary sampling units (129 areas) were selected [29]. 3,148 adults aged 20 years or older out of 4,352 female subjects were included. Based on age (year of study – the year of birth), those over 20 and under 40 were classified into the young-aged group, those over 40 and under 65 were divided into the middle-aged group, and over 65 years old were classified as the aged group. This was classified according to domestic conditions and legal standards [30].

Measurements

The general characteristics of the subjects are age (≥ 20 and < 40, ≥ 40 and < 65, ≥ 65), an education level (≤ middle school, ≥ high school), marital status (yes, no), household composition (one, with spouse and 1 household, ≥ 2 households), occupation (yes, no), and dietary level (good, bad).

The participants' health-related attributes comprised the following binary and categorical parameters: recent medical examinations within the prior 24 months (yes/no), cancer screenings over the same duration (yes/no), cigarette use (yes/no), alcohol consumption (yes/no), self-rated health condition (good versus poor or neutral), engagement in aerobic exercise (yes/no), weekly walking frequency (0, 1–2, or ≥ 3 days), weekday sleep duration (< 6, 6–8, or ≥ 8 hours), weekend sleep duration (< 6, 6–8, or ≥ 8 hours), and perceived body weight status (underweight, normal, or overweight). Individuals who smoked on a daily or intermittent basis were coded as 'yes,' whereas former smokers who had successfully quit and lifetime non-smokers were coded as 'no.' Regarding alcohol intake, participants consuming over one drink monthly over the past year were designated as 'yes,' while lifetime abstainers and those drinking less than one beverage per month were categorized as 'no.' Vigorous-intensity physical activity was defined as exertion causing a rapid heartbeat, whereas moderate-intensity activity referred to exertion inducing slight breathlessness or a mildly elevated heart rate. Meeting the aerobic guidelines, defined as accumulating at least 2 hours and 30 minutes of moderate activity, 1 hour and 15 minutes of vigorous activity, or an equivalent combination (where 1 minute of vigorous exercise equals 2 minutes of moderate exercise) per week, was classified as 'yes,' with all other outcomes recorded as 'no.'

Disease-related factors included body mass index (BMI; kg/m^2, underweight = < 18.5, normal = 18.5-25.0, overweight = ≥ 25), hypertension diagnosis, dyslipidemia diagnosis, osteoarthritis diagnosis, rheumatoid arthritis diagnosis, osteoporosis diagnosis, diabetes diagnosis, breast cancer diagnosis, cervical cancer diagnosis, and thyroid cancer diagnosis. Depression of subjects was measured using PHQ-9 (Patient Health Questionnaire-9), which was developed by Spitzer *et al*. [31] to evaluate mental health in primary health care centers. It consists of a 9-item, 4-point Likert scale (from 0 for 'not at all' to 3 for 'almost every day'), and the higher the sum of the 9-item scores, the higher the depressive symptoms.

Statistical analysis

The IBM SPSS/WIN 20.0 application was used to do complicated sample analysis, which included stratification, clustering, and weighting, with a significance level of. 05. The average depression level of women by age group was calculated, and a one-way ANOVA was used to compare groups. The quantity and weighted percentages of general features, health-related behaviors, and disease-related factors were determined based on the age of the women and compared between groups. Linear regression analysis was used to examine the factors that influence depression in women based on their age.

Ethical consideration

In the National Health and Nutrition Examination Survey, prior consent was obtained from all survey subjects prior to data collection. The tools and investigation process used in the investigation were conducted after being reviewed and approved by the Research Ethics Review Committee (IRB: 2018-01-03-P-A) of the Korea Centers for Disease Control and Prevention. The Korea Centers for Disease Control and Prevention (KCDC) complies with the Personal Information Protection Act and the Statistical Act, providing only deidentified data so that individuals cannot be traced in the survey data [31].

Results and Discussion

Depression, demographic factors, health-related factors, and disease-related factors

Table 1 shows the frequencies and differences of variables by age group. Depression scored 3.07 points in the young-aged group, 2.24 points in the middle-aged group, and 2.51 points in the aged group. The average age of all subjects was 48.76 years, 32.24 years for the young aged group, 54.02 years for the middle-aged group, and 73.12 years for the aged group. The level of education was high in the young people group, and there were many unmarried people. In the aged group, there were many single-person households, and the rate of no job was high, and it was found that the dietary situations were poor. The percentage of smoking and drinking was higher in the young people group. In the aged group, health and cancer screenings were conducted for the past two years and their subjective health was poor. and they did not engage in aerobic physical activity or walking. No aerobic physical activity and no walking were found. Weekday sleep time and weekend sleep time were less than 6 hours, and subjective body type was perceived as thin. As for disease-related factors, obesity, high blood pressure, osteoarthritis, rheumatoid arthritis, osteoporosis, diabetes, and breast cancer were higher in the aged group. Dyslipidemia was higher in the middle-aged group, and cervical and thyroid cancer were higher in the middle-aged group and the aged group.

Table 1. Differences of variables by age group

Characteristics		Classification	Young aged	Middle-aged	Aged	χ^2(p)
			n(%)	n(%)	n(%)	
Depression (PHQ-9) (n=3006)		2.64	3.07	2.24	2.51	
Mean age (n=3148)		48.76	32.24	54.02	73.12	
Demographic	Education level (n=3036)	≤ Middle school	25 (2.4)	336 (26.1)	695 (80.5)	405.754 (.000)
		≥ High school	1031 (97.6)	826 (73.9)	123 (19.5)	

	Marrige (n=3148)	Yes	717 (58.7)	1165 (97.6)	848 (98.9)	361.219 (.000)
		No	377 (41.3)	33 (2.4)	8 (1.1)	
	Household composition (n=3148)	One	64 (6.4)	114 (7.0)	284 (26.9)	64.454 (.000)
		With spouse & 1 household	85 (9.6)	301 (19.7)	297 (30.6)	
		≥ 2 household	945 (84.0)	783 (73.3)	275 (42.5)	
	Occupation (n=3035)	Yes	647 (60.6)	738 (61.6)	231 (26.8)	91.482 (.000)
		No	408 (39.4)	424 (38.4)	587 (73.2)	
	Dietary level (n=3146)	Good	1087 (99.3)	1175 (98.4)	811 (95.0)	17.912 (.000)
		Bad	7 (0.7)	23 (1.6)	43 (5.0)	
	Regular health screening (n=3044)	Yes	622 (56.7)	905 (77.7)	577 (70.2)	55.397 (.000)
		No	435 (43.3)	258 (22.3)	247 (29.8)	
	Regular cancer screening (n=3043)	Yes	570 (50.7)	877 (75.8)	557 (67.3)	71.506 (.000)
		No	487 (49.3)	285 (24.2)	267 (32.7)	
	Smoking (n=3123)	Yes	82 (8.8)	64 (5.4)	14 (1.3)	19.862 (.000)
		No	1007 (91.2)	1124 (94.6)	832 (98.7)	
	Drinking (n=3124)	Drinking	659 (61.5)	476 (42.7)	136 (15.8)	155.855 (.000)
		No	430 (38.5)	713 (57.3)	710 (84.2)	
	Subjective health status (n=3050)	Good	379 (37.6)	319 (27.8)	136 (17.7)	33.110 (.000)
		Bad or not bad	679 (62.4)	844 (72.2)	693 (82.3)	
	Aerobic activity (n=3035)	Yes	519 (52.8)	456 (41.3)	210 (25.3)	43.275 (.000)
		No	537 (47.2)	704 (58.7)	609 (74.7)	
Health-related factor	Walking days (day/week) (n=3032)	0	132 (9.8)	223 (17.6)	244 (27.8)	20.309 (.000)
		1-2	198 (17.5)	197 (15.6)	114 (14.9)	
		≥3	726 (72.7)	742 (66.8)	456 (57.2)	
	Weekday sleep times (hours/day) (n=3033)	<6	207 (21.7)	352 (32.4)	238 (31.1)	15.539 (.000)
		6-8	445 (41.3)	529 (45.0)	277 (33.1)	
		≥8	404 (36.9)	280 (22.7)	301 (35.8)	
	Weekend sleep times (hours/day) (n=3033)	<6	98 (9.3)	220 (19.9)	217 (28.0)	47.197 (.000)
		6-8	249 (23.1)	450 (38.4)	252 (30.3)	
		≥8	709 (67.6)	491 (41.7)	347 (41.7)	
	Subjective body awareness (n=3126)	Thin	129 (11.6)	109 (8.4)	157 (18.9)	9.849 (.000)
		Normal	464 (43.9)	473 (41.8)	354 (42.2)	
		Overweight	496 (44.5)	607 (49.8)	337 (39.0)	
	BMI (n=3104)	<18.5	102 (9.2)	35 (3.0)	17 (1.8)	31.795 (.000)
		18.5-24.9	752 (70.2)	811 (68.1)	473 (56.9)	
		≥25	220 (20.6)	350 (28.9)	344 (41.3)	
	Hypertension (n=3147)	Yes	21 (1.9)	240 (18.1)	515 (59.4)	291.431 (.000)
		No	1072 (98.1)	958 (81.9)	341 (40.6)	
	Dyslipidemia (n=3147)	Yes	21 (1.7)	492 (35.1)	364 (43.7)	182.934 (.000)
		No	1072 (98.3)	908 (64.9)	492 (56.3)	
	Osteoarthritis (n=3047)	Yes	12 (0.9)	164 (12.6)	364 (42.2)	228.457 (.000)
		No	1045 (99.1)	999 (87.4)	463 (57.6)	
	Rheumarthritis (n=3047)	Yes	8 (0.6)	22 (1.7)	53 (6.1)	27.437 (.000)
		No	1049 (99.4)	1141 (98.3)	774 (93.9)	
Disease-related factor	Osteoporosis (n=3047)	Yes	2 (0.1)	98 (8.1)	329 (39.1)	427.818 (.000)
		No	1055 (99.9)	1065 (91.9)	498 (60.9)	
	Diabetes mellitus (n=3147)	Yes	9 (0.9)	82 (5.9)	180 (19.8)	86.968 (.000)
		No	1084 (99.1)	1116 (94.1)	676 (80.2)	
	Breast cancer (n=3046)	Yes	0(0)	30 (2.8)	18 (2.4)	11.244 (.000)
		No	1057 (100.0)	1133 (97.2)	808 (97.6)	
	Cervical cancer (n=3046)	Yes	2 (0.1)	12 (1.4)	12 (2.1)	9.581 (.000)
		No	1055 (99.9)	1151 (98.6)	814 (97.9)	
	Thyroid cancer (n=3046)	Yes	8 (0.7)	30 (3.5)	18 (2.1)	8.211 (.000)
		No	1049 (99.3)	1133 (96.5)	808 (97.9)	

Note. BMI = Body mass index; n=Unweighted population; % = weighted %

Comparison of factors affecting depression in women by age group

Table 2 presents factors influencing depression by age group. Marital status (t=-3.120, p=.002), occupation (t=-2.254, p=.025), smoking (t=-2.989, p=.003), subjective health status (t=-7.798, p=.000), aerobic physical activity (t=-2.214, p=.028), weekend sleep time (t=2.338, p=.021), subjective body type recognition (t=-3.861, p=.000), BMI (t=2.618, p=.010), and thyroid cancer diagnosis (t=2.154, p=.033) were significantly associated with depression of young aged (F=5.598, p <.001). Married, working, non-smoking individuals having good subjective health, performing aerobic physical activity, and perceiving skinny subjective body type showed lower levels of depression. Those who slept less than 6 hours on weekends, those who had a low BMI, and those who had not been diagnosed with thyroid cancer were found to have high levels of depression.

In the middle aged group, marital status (t=-2.336, p=.021), smoking (t=-3.107, p=.002), subjective health status (t=-6.867, p=.000), walking days (t=2.021, p=.045), weekly sleep time (t=2.534, p=.012), subjective body awareness (t=-2.189, p=.030), BMI (t=2.651, p=.009), osteoarthritis diagnosis (t=-2.374, p=.019), and rheumatoid arthritis diagnosis (t=-2.357, p=.020) were the influencing factors (F=4.913, p <.001). Married, non-smoking, good subjective health status, normal subjective body type recognition, and those who were not diagnosed with osteoarthritis and rheumatoid arthritis showed lower levels of depression. The degree of depression was higher when the number of walking days was 0 or 1-2 days, the sleep time during the week was less than 6 hours, and the BMI was moderate.

Education level (t=2.746, p=.007), subjective health status (t=-3.776, p=.000), dietary level (t=-2.220, p=.028), walking days (t=3.257, p=.001), subjective body type recognition (t=-2.507, p=.013), and hypertension diagnosis (t=2.106, p=.037) affected depression of the aged (F=3.852, p <.001). Depression was low in the case of good eating habits, good subjective health, and normal subjective body type recognition. Those who were younger than middle school, walked 0 days, and had not been diagnosed with high blood pressure had a higher degree of depression.

Table 2. Factors influencing depression by age group

Group	Characteristics	Classification	B	SE	t	p	Adj.R^2	F(p)
Young aged	Marrige (n=3148)	Yes	-.882	.283	-3.120	.002	0.196	5.598 (.000)
		No (ref)	.000					
	Occupation (n=3035)	Yes	-.548	.243	-2.254	.025		
		No (ref)	.000					
	Smoking (n=3123)	Yes (ref)	.000					
		No	-1.907	.638	-2.989	.003		
	Subjective health status (n=3050)	Good	-1.673	.215	-7.798	.000		
		Bad or not bad (ref)	.000					
	Aerobic activity (n=3035)	No (ref)	.000					
		Yes	-0.495	0.224	-2.214	.028		
	Weekend sleep times (hours/day) (n=3033)	<6	1.491	.637	2.338	.021		
		6-8	.360	.280	1.287	.200		
		≥8 (ref)	.000					
	Subjective body awareness (n=3126)	Thin	-1.590	.412	-3.861	.000		
		Normal	-0.421	.271	-1.556	.122		
		Overweight (ref)	.000					
	BMI (n=3104)	<18.5	1.580	.604	2.618	.010		
		18.5-24.9	.144	.372	.387	.699		
		≥25 (ref)	.000					
	Thyroid cancer (n=3046)	Yes (ref)	.000					
		No	1.588	.737	2.154	.033		
Middle-aged	Marrige (n=3148)	Yes	-2.089	.894	-2.336	.021	.153	4.913 (.000)
		No (ref)	.000					
	Smoking (n=3123)	Yes (ref)	.000					
		No	-2.048	.659	-3.107	.002		
	Subjective health status (n=3050)	Good	-1.398	.204	-6.867	.000		
		Bad or not bad (ref)	.000					
	Walking days (day/week) (n=3032)	No	.612	.303	2.021	.045		
		1-2	.575	.277	2.072	.040		
		≥3 (ref)	.000					
	Weekday sleep times (hours/day) (n=3033)	<6	.709	.280	2.534	.012		
		6-8	.219	.229	.958	.339		

		≥8 (ref)	.000					
	Subjective body awareness (n=3126)	Thin	-.511	.474	-1.079	.282		
		Normal	-.672	.307	-2.189	.030		
		Overweight (ref)	.000					
	BMI (n=3104)	<18.5	1.157	.778	1.487	.139		
		18.5-24.9	.752	.283	2.651	.009		
		≥25 (ref)	.000					
	Osteoarthritis (n=3047)	Yes (ref)	.000					
		No	-.822	.346	-2.374	.019		
	Rheumarthritis (n=3047)	Yes (ref)	.000					
		No	-2.047	.869	-2.357	.020		
	Education level (n=3036)	≤ Middle school	.832	.303	2.746	.007		
		≥ High school (ref)	.000					
	Subjective health status (n=3050)	Good	-1.215	.322	-3.776	.000		
		Bad or not bad (ref)	.000					
	Dietary level (n=3146)	Good	-2.720	1.255	-2.220	.028		
		Bad	.000					
Aged	Walking days (day/week) (n=3032)	0	1.432	.440	3.257	.001	.161	3.852 (.000)
		1-2	.246	.441	.559	.577		
		≥3 (ref)	.000					
	Subjective body awareness (n=3126)	Thin	-.283	.645	-.440	.661		
		Normal	-.850	.339	-2.507	.013		
		Overweight (ref)	.000					
	Hypertension (n=3147)	Yes (ref)	.000					
		No	.621	.295	2.106	.037		

This study identified factors affecting depression by age in Korean women using data from the 7th period of the National Health and Nutrition Examination Survey. As a result of classifying the age groups into 'young people', 'middle-aged', and 'aged', it was confirmed that the influencing factors of depression were different for each age group.

Depression in young aged women

In relation to job and economic deprivation, it was found that employment status affected depression [16]. There is a study showing that the economic activity status variable is the factor with the most significant correlation with whether or not anxiety and depressive symptoms are experienced [32]. Depression tends to be higher in the lower socioeconomic level, indicating that there is a close relationship between economic activity status and mental health, that is, depression [33]. Social support through occupation acts as an important factor in maintaining mental health because individuals can obtain positive resources through interaction with others. For young women, individual difficulties such as employment and marriage, pregnancy and childrearing, and social and economic crises are expected to vary, and it will be necessary to consider customized measures.

This is consistent with the results of current smokers showing higher levels of depression than non-smokers [18]. Depression was significantly related to the average daily smoking rate of women [20]. It seems that it is necessary to prepare the conditions to provide an effective smoking cessation education program. This should be considered along with the result of low depression among non-smokers in middle-aged women in this study. When the aerobic physical activity was practiced, depression was found to be lower among young women. This is consistent with the result that in female college students, the probability of not experiencing depression was 2.36 times higher than that of those who did vigorous exercise 5 or more times a week [18]. It is necessary to support the development of an active coping mechanism that forms a desirable lifestyle through health promotion behavior.

Depression was found to be high when the BMI was less than 18.5, and it was consistent with the result [21] that the degree of depression was higher in the group with a BMI of less than 18.5 or greater than 25. In order to prevent depression in women of that age, BMI should be monitored regularly, and information should be provided so that subjects under 18.5 can manage their diet properly. Those who were not diagnosed with thyroid cancer had a higher level of depression. Thyroid cancer is less severe than other cancers and has a high survival rate because it is relatively easy to manage after treatment such as surgery compared to other cancers. As a result, they will have an impact on having a positive lifestyle through active health management. However, it is difficult to generalize these results due to the lack of previous studies related to them. In addition, among the study subjects of youth, 99.3% were not diagnosed with thyroid cancer, and only 0.7% were diagnosed with thyroid cancer, suggesting a reduced relevance to subjects experiencing depression. In this regard, an in-depth analysis of the relationship between depression and cancer should be conducted through additional studies considering the stage or duration of cancer in those diagnosed with thyroid cancer.

Depression in middle-aged women

Depression levels were higher in the absence of a spouse than in the presence of a spouse [13]. It is analyzed that interaction with a spouse and emotional support lowered the degree of depression. Compared to being alone, being with someone can provide emotional support and a sense of belonging. It was difficult to analyze whether there was a spouse due to separation, divorce, or widowhood but living with children or parents or a single-person household in this study. Women who do not have a spouse will need social help, such as establishing a support system within the family other than a spouse for emotional support.

According to the study of depression in the sleep time of middle-aged women [14], depression was the lowest in women who slept more than 7 hours per week, and the depression level was the highest in women who slept less than 5 hours, which is consistent with the results of this study. Therefore, for the prevention and management of depression in middle-aged women, it is necessary to identify sleep time and mediate sleep disturbance factors to maintain proper sleep time.

Those who were not diagnosed with osteoarthritis and rheumatoid arthritis had lower levels of depression. It is similar to the result of a study [8] of middle-aged women showing that depression was high depending on the presence of a chronic disease lasting more than 3 months. Osteoarthritis and rheumatoid arthritis are chronic diseases that may interfere with daily activities due to pain or changes in appearance and require continuous management. Continuous efforts are needed to develop healthy lifestyle habits by carefully examining the physical and psychological characteristics of each individual.

Depression in aged women

A study of the elderly reported that lower educational attainment was associated with a risk of depression [15]. Those who have higher education levels are more likely to cope with stressful situations more effectively because they have more opportunities to obtain the resources they need to deal with them[14]. Therefore, it is necessary to focus on women with a low educational level for the management of depression in the elderly. It was found that the degree of depression was higher among older women when they had financial difficulties and a lack of food. Dietary deprivation, such as reducing the number of meals or skipping meals due to economic difficulties, has been shown to affect depression in the elderly [34, 35]. The dietary situation reflects whether the economic conditions are good enough to eat a sufficient amount of food, and the more unstable the economic situation, the higher the level of depression [17]. Therefore, it is thought that it is necessary to establish dietary management measures for nutrition education and nutrition intervention in consideration of economic conditions in order to reduce depression among aged women.

A previous study [36] related to walking exercise reported that the number of days of walking per week is an important factor in the health-related quality of life of age. In the middle-aged women in this study, when the number of walking days was 0, the degree of depression was higher. It is consistent with previous studies [37] that physical activity is closely related to mental health for Korean women. Since appropriate physical activity can reduce depression and improve health-related quality of life, it is considered important to increase the walking practice rate through continuous education.

The prevalence of depression was associated with 14.5% of patients with uncontrolled hypertension compared to 7.4% of patients with controlled hypertension [38]. Mental health issues are closely linked to the success of high blood pressure management strategies, as people with high blood pressure are more likely to suffer from depression and anxiety [39]. However, this study differs from the results of high levels of depression among aged women who were not diagnosed with hypertension in this study, it may be a result of the subjects of this study managing hypertension well. It shows that it is necessary to accumulate evidence data through repeated studies on the relationship.

On the other hand, in the age groups 'young-aged women,' 'middle-aged women,' and 'aged women,' the better the subjective health status was, the lower the depression was. This indicates that there is a significant difference in depression according to the perceived health status, and the depression in the unhealthy group was higher [40]. Recognizing poor health can increase your chances of feeling helpless and experiencing mental problems such as depression. It is necessary to provide appropriate interventions so that women can perceive their health status positively by identifying the level of health awareness and related causes [14]. As for subjective body type recognition, depression was lower in the young-aged group when perceived as underweight, the middle-aged group, and the aged group as normal. A study on adults found that women were more depressed when perceived as underweight or obese [19]. Korean women's ideal body type tends to think of an overly slender body as an ideal [41]. Considering the results of studies in which the sociocultural pressure on body shape through mass media is stronger on women [42], it is necessary to take a social-level approach such as public service advertisements so that Korean women can positively perceive their body shape.

Conclusion

This study tried to identify factors affecting depression by dividing the ages of Korean women into young, middle-aged, and aged using data from the 7th year of the National Health and Nutrition Examination Survey (2018). It is meaningful that the factors affecting depression were identified in a multidimensional aspect, including demographic factors, health-related factors, and disease-related factors, and that there were differences in the factors affecting depression by age group. However, because of the following limitations, suggestions for future research are as follows. First, this study is a secondary analysis study using raw data from the 7th and 3rd years of the National Health and Nutrition Examination Survey, and it was possible to identify only the depressive factors of Korean women by age, rather than

the causal relationship between the variables. An in-depth study, on the causal relationship between depression-related variables is needed. Second, although this study is to identify factors affecting depression by age in Korean women, there may be limitations in generalizing the results of this study as non-depressed subjects were also included. Third, in the case of various disease-related data, only the diagnosis was confirmed, and there was a limitation in that it was not possible to confirm the stage or duration of the disease that could affect the severity of symptoms. Further studies considering the duration of the disease and the severity of symptoms are needed. Despite these limitations, this study is meaningful in that it comprehensively identified depressive factors by age in Korean women using representative national survey data. It is necessary for young-aged to have a job and to practice aerobic physical activity. For middle-aged women, it will be necessary to maintain 6 hours of sleep during the week and manage osteoarthritis and rheumatoid arthritis. Aged women are required to take care of their health status, such as walking activities, by examining their educational level and eating habits. In particular, subjective health status and subjective body type perception were confirmed as significant influencing factors of depression for women of all ages, so it is necessary to prepare and approach health promotion policies to improve the social awareness of Korean women. For the management of depression in Korean women, it is thought that a customized application is necessary by considering the factors affecting depression by age in detail.

Acknowledgments: None

Conflict of interest: None

Financial support: None

Ethics statement: This study was approved by the Research Ethics Review Committee (IRB: 2018-01-03-P-A) of the Korea Centers for Disease Control and Prevention.

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