

Psychological Factors Affecting the Degree of Binge Drinking in the Elderly in Korea Using the Eighth Korea National Health and Nutrition Examination Survey (KNHANES VIII), 2019 -Focusing on General Variables and Mental Health Variables

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ABSTRACT

This study investigates factors affecting the degree of binge drinking in the elderly in Korea based on the results of 2019 Korea National Health and Nutrition Examination. Among the demographic, health-related and drinking characteristics of the National Health and Nutrition Examination Survey, the research data used were gender, age, education level, occupation, subjective health perception, activity restriction, food stability level by level, binge drinking, usual stress perception, depression for more than one week, suicidal ideation within last one year, suicide plan within last one year, suicide attempt within last one year, and health-related quality of life. The collected data were analyzed by descriptive statistics, Pearson correlation coefficient, and multiple regression analysis. Results revealed that the degree of binge drinking was significantly correlated with gender, age, education level, occupational status, and health-related quality of life. The variables affecting the degree of binge drinking in the elderly were gender ($\beta=-1.171$, $p < .001$) and age ($\beta=-0.042$, $p < .001$), and the explanatory power was 20.4% ($< .001$). This study identified that the degree of binge drinking in the elderly in Korea differs according to gender and age, and provided basic data for preparing policies to prevent binge drinking and improving drinking culture for the elderly.

Keywords: Elderly, Binge drinking, gender, age, mental health

1. INTRODUCTION

In the 2020 survey on drinking among the elderly aged 65 or older, it was found that 32.3% were moderate drinkers (less than seven drinks a week) and 6.3% were heavy drinkers (more than seven drinks a week), meaning that one in six elderly drinkers is a heavy drinker, and that the age group with the highest rate of heavy drinking was 70-74 years old (9.2%) (Lee, 2020). In particular, Korea's rate of binge drinking (more than seven drinks for males and five drinks for females at a time) is very high compared to other countries, where the proportion of drinkers who binge drink more than once a week (47.7%) is significantly higher than the global average (39.5%) (WHO, 2018). The issues of drinking and binge drinking, therefore, have emerged as a serious problem not only for the young and the middle-aged groups but also for the elderly group. Since the 2000s, the increase in the proportion of the elderly aged 65 or older due to the increase in the elderly population has made Korea enter an aged society in a short period of time. The old who were not ready for old age encountered various cultural, social, physical, and mental difficulties, which are likely to promote their drinking and binge drinking.

The ability to cope with problems related to drinking and binge drinking, however, may be low in the elderly group due to their inferior mental and physical functions compared to other age groups. The increase in drinking and binge drinking causes not only physical and mental problems of the elderly but also physical, mental,

and ethical problems of others and, due to negative social and policy issues, may add difficulties to the establishment of welfare and health policies for the elderly.

Elderly people, due to change in family structure such as the loss of a spouse and independence of children, commonly experience changes in their role as a caregiver and in the role of family member, reducing the mental richness they have enjoyed owing to family members. Family is the center of life and is the most influential relationship in life. The quality of elderly's relationship with their spouse and with children is an important supportive resource for maintaining social relationships, thus having a considerable effect on their lives (Park & Heo, 2016). In particular, for the elderly, the family is the most supportive group, and family ties are one of the most effective functions to support them, and they need protection from the family. The industrialization and nuclear family, however, not only made it difficult for children to support their parents but also lowered family cohesion, resulting in a reduction of social support resources. The family-related change, therefore, is one of the important issues that the elderly should deal with during their aging.

In addition, the elderly experience a decline in economic power and economic activity after retirement. In particular, Korean elderly lack preparation for old age due to the dynamic political environment and social changes, and institutional support for them is poor. Therefore, many old people seek reemployment for a living after retirement, but most of the jobs for them are simple labor or non-regular jobs, exacerbating old-age poverty. In addition, emotional decline due to a decrease in economic income and a reduction in the range of social activities lead to a sense of alienation and loneliness, resulting in negative consequences in terms of mental health. Moreover, the simultaneous occurrence of stressor events, such as bereavement, isolation, separation, and illness, develops psychological problems such as depression or anxiety, leading to drinking and the elderly-related negative outcomes such as increase in suicide rate, another problem of aging society (Park & Heo, 2016). According to previous studies, emotional problems such as anxiety, stress, and depression increase the risk of binge drinking, heavy drinking, and problematic drinking as psychological coping behaviors to avoid symptoms and compensate for the psychological difficulties (Ko & Jung, 2018; Kim et al., 2018).

Drinking culture in Korea tends to encourage drinking and is tolerant of drinking itself and drinking behavior (Cho, 2022). Since the elderly accompany drinking with meals and continue to drink to induce sleep, it is not perceived as binge drinking by those around them (Britton et al., 2020), despite their high drinking frequency. In addition, due to the low awareness of the harmful effects of drinking by the elderly and the Korean culture that is relatively tolerant of drinking-related problems, the drinking problem of the elderly receives less attention than that of other age groups such as adolescents and adults (Park and Yang, 2018). Despite habitual drinking of elderly, sufficient and appropriate intervention has not been implemented since those around them as well as the elderly themselves have a low awareness of the problem of their problematic drinking (Lee et al., 2015). As such, the elderly's drinking and binge drinking are influenced by various factors including demographic, social, economic, emotional, and cultural characteristics (Park and Yang, 2018).

Drinking causes decline in physical function and mental problems such as dementia in the elderly. In particular, their experiences of loneliness and chronic illness may lead to helplessness, isolation, self-blame, and depression, and in an attempt to alleviate these difficulties, new trends in drinking and binge drinking may emerge or existing problematic drinking may be exaggerated (Jang, 2008). Despite the report that a small amount of drinking has a protective effect by lowering the risk of cognitive decline (Stampfer et al., 2005) and the results of a previous study that mild drinkers showed lower cognitive function than moderate drinkers in women (Jang, 2008), chronic binge drinking causes cerebrovascular changes such as increased triglycerides and hypertension (Stampfer et al., 2005). In particular, since the brain of the elderly is more vulnerable to the toxic effects of alcohol compared to the brain of general adults, cognitive decline may easily occur in elderly patients with alcohol use disorder (Kim et al., 2016). However, physical and psychological diseases and symptoms in elderly caused by drinking and binge drinking are often recognized as a result of aging and not that of binge drinking-related symptoms.

Since women's ability to metabolize alcohol is generally lower than men's, blood alcohol concentrations are higher for the same amount of alcohol consumed, resulting in higher risk of liver disease, brain damage, and cerebrovascular disease. The most common reason women drink heavily is to avoid psychological problems such as loneliness, sadness, depression, and low self-esteem. It was found that the prevalence of sarcopenia, which increases the risk of falls, disability, morbidity and mortality, was 3.9 times higher in elderly females who drank

heavily every week or every day than in social drinkers (Park and Yang, 2018). Since the proportion of the elderly is higher in women than in men and the life expectancy of women is longer than that of men, the drinking problem of the elderly female should be taken into account in the development of methods for alleviating the elderly drinking problem.

Regarding dental and oral conditions that affect the quality of life of the elderly, old age is a time when oral care is difficult due to their vulnerability to oral infections and dentures. However, the limited access to professional oral care and oral health education lowers the ability of the elderly to self-manage oral hygiene. This adversely affects functions such as chewing and digestion, which are important for food intake, and diseases of the teeth and periodontium cause an imbalance in nutritional intake. In addition, oral diseases such as periodontal disease have been reported as one of the risk factors for malnutrition, systemic diseases such as pneumonia and malnutrition, and life-threatening cardiovascular diseases. The previous studies on oral health found that drinking rates in adults were higher in men than in women, and heavy drinking increased the prevalence of periodontitis (Hyeong & Lee, 2016) and that the risk of periodontal disease, causing tooth loss and eventually lowering the quality of life, was 1.5 times higher in drinking elderly compared to non-drinking elderly (Kang, 2019). Since the teeth and oral cavity are important organs that affect the chewing and digestive function of food, they should be managed through correct drinking habits and lifestyle improvement.

Studies on the relationship between drinking and high blood pressure have shown that heavy drinking, which is more than three drinks a day, increases the risk of hypertension through an increase in blood pressure (Klatsky, 2003), and that in adults and the elderly who drink more than two cups a day, a decrease in alcohol consumption lowers the risk of hypertension by lowering the systolic pressure by 5.50 mmHg and the diastolic pressure by 3.97 mmHg in average (Roerecke et al., 2017). In addition, it has been reported that high-risk drinkers who drink more than seven cups once and drink more than twice a week have a higher risk of developing hypertension than non-risk drinkers (Princewill et al., 2019). Since an increase in drinking frequency increases the risk of cardiovascular diseases such as hypertension and diabetes, it was argued that, in the management of complications in elderly with hypertension, attention should be paid to the amount of alcohol consumed per serving and the frequency of drinking, showing the importance of drinking in the management of hypertension, a representative cardiovascular disease (Choi & Kim, 2021).

Compared to non-drinkers, the risk of disease occurrence in risky drinkers is significantly higher in various cancer diseases, hypertensive diseases, diabetes, liver diseases, and pancreatic diseases, suggesting that the efficient drinking policy should be implemented to prevent and treat risky drinkers' diseases (Ko & Jung, 2018). In addition, since problematic drinking causes not only physical problems but also more serious secondary harms such as suicide and violence, much attention to this problem is desperately needed in the elderly welfare policy and practice (Kwon et al., 2012).

The risk factors of high-risk drinking in adult males include bereavement, divorce, or separation rather than married or single, showing that spouse presence and relationship have an effect on drinking among males. Based on the results that the number and amount of drinking increases on stressful days, and the variety of stressors increases the frequency of high-risk drinking, depression and stress were found to be included as causes of binge drinking in both male and female (Kim, 2022). In addition, when drinking had no effect on drinkers' health, harmful drinking behaviors such as binge drinking or high-risk drinking continued among drinkers who perceived themselves to be in good health (Lee & Cho, 2019).

Depression was identified as an important factor related to binge drinking in the elderly. Depression was found to increase the risk of being a binge drinker. As a variable that can reduce binge drinking, social support has been reported to mitigate the positive (+) effect of depression on binge drinking (Lee, 2022). Considering that depression, a representative psychological change in old age, is a negative outcome due to physical and psychological changes and changes in socioeconomic roles, systematic prevention methods for the resultant drinking and binge drinking should be developed.

If the drinking elderly's depression is high, emotional problems such as suicidal ideation due to depression occur as life satisfaction decreases (Kim & Jeong, 2020). The suicide rate for the Korean elderly aged 65 or older (47.7 per 100,000 population) is relatively high compared to other age groups, and is 2.7 times higher than that (17.9) of OECD member countries (Park, 2020), being a serious social problem. Suicide is an act of voluntarily terminating one's life by one's own desire and will to die. Since suicide is a continuous process of suicidal ideation,

suicide plan, and suicidal attempt, suicidal ideation is a trigger for committing suicide (Yang & Park, 2015). A previous study on suicide and influencing factors in the elderly reported depression and stress as the strongest risk factors for suicide (Kim & Tak, 2018). Other factors reported to cause suicidal ideation include physical pain, chronic illness, and alcohol use. Elderly people often go through a continuum of aging-related negative situations, stress, depression, decreased life satisfaction, drinking and binge drinking, and suicidal ideation. Considering the report that elderly people with higher frequency of drinking experience more suicidal ideation among the elderly living at home and that the amount of alcohol consumed is an influencing factor of suicidal ideation (Dumais et al., 2005; Kim, 2002), drinking may be a contributing factor to suicidal ideation, which is an antecedent factor of suicidal attempt or suicidal behavior.

The results of previous studies ((Ko & Jung, 2018; Kim et al., 2018;(Lee, 2022; Kim & Jeong, 2020) showed that binge drinking was associated with stress, depression, suicide, and quality of life in Korean elderly and that it affects their mental health. It is inferred, therefore, that binge drinking in the elderly is related to their stress and depression, life satisfaction and quality of life, and further affecting their mental health. However, due to the perception that drinking problems and binge drinking are only a problem of young and middle-aged groups and the culture of being permissive for drinking, studies on the influencing factors of binge drinking in Korean elderly have been limited.

The purpose of this study was, therefore, to provide fundamental data for national policy to prevent the harmful effects of drinking and the development of a program for binge drinking prevention in the elderly by using data from the 2019 Korea National Health and Nutrition Examination Survey (KNHANES, 2019), a representative national source, identifying the influencing factors of the degree of binge drinking in Korean elderly, focusing on the general and mental health variables.

2. METHOD

2.1 Design

This secondary analysis study using data from the 2019 KNHANES is a descriptive research study to investigate the general characteristics and mental health characteristics of Korean elderly and to identify influencing factors of their binge drinking.

2.2 Subjects

The subjects in this study are 679 elderly aging from 65-80 who participated in the who participated in the 2019 KNHANES and provided response to the variables (excluding no-response, no-knowledge, and not-available). After approval for use of the raw data from the Centers for Disease Control and Prevention, the online data were downloaded and analyzed.

2.3 Data Collection & Ethical Consideration

The research period of the 2019 KNHANES was from January to December 2019. The trained surveyors personally visited the households selected for the sample and self-report survey to be administered. Anonymity and confidentiality of the respondents and their responses are guaranteed. KNHANES is exempted from review by the Research Ethics Review Board since, in accordance with Article 2 Subparagraph 1 of the Bioethics Act and Article 2 Subparagraph 1 of the Enforcement Rule of the same Act, it is research conducted directly by the state for public welfare.

2.4 Instruments

2.4.1 General Characteristics

Gender, age, education level, occupational status, and activity restrictions were asked.

2.4.2 Subjective Health Perception

Perceptions of one's health were asked, and responses were objectified using the scale of 1-5 where 1 is "very good"; 2 is "good"; 3 is "medium"; 4 is bad; and 5 is very bad. The lower score indicates a more positive perception of one's health.

2.4.3 Food Stability Level

The food stability level was measured using 10 items on 'concern about food', 'experience or frequency of skipping meals', and 'experience of eating'. Each item was answered positively (often/sometimes, yes, every month/several months) (1) or negatively (none, no/not applicable, one or two months/not applicable) (0) and based on the sum of the scores, the food safety level was determined: 'stable group (1)' for secured food stability 'slightly stable group (2)' for initial stage of food instability (without hunger), 'moderately stable group (3)' for intermediate stage of food instability (with hunger), and 'unstable group (4)' for advanced stage of food instability (with hunger). The lower score indicates higher food stability.

2.4.4 Binge Drinking Degree

The frequency of drinking more than seven glasses of soju and liquor or five cans of beer for male, or more than five glasses of soju and liquor or three cans of beer for female was asked. The response options were 'never (1)', 'less than once a month (2)', 'about once a month (3)', 'about once a week (4)', and 'almost every day (5)'. The higher score indicates higher degree of binge drinking

2.4.5 Usual Stress Perception

The level of usual stress perception was asked and response options were 'to feel very much (1)', 'to feel much (2)', 'to feel little (3)', and 'to hardly feel (4)'. The lower score indicates the higher level of usual stress perception.

2.4.6 Presence of Depression for more than two Weeks

The presence of depression for more than two weeks was asked and the response options were 'Yes' and 'No'.

2.4.7 Presence of Suicidal Ideation within last One Year

The presence of suicidal ideation within last one year was asked and the response options were 'Yes' and 'No'.

2.4.8 Presence of Suicidal Plan within last One Year

The presence of suicidal plan within last one year was asked and the response options were 'Yes' and 'No'.

2.4.9 Presence of Suicidal Attempt within last One Year

The presence of suicidal attempt for within last one year was asked and the response options were 'Yes' and 'No'.

2.4.10 Health-related Quality of Life

The health-related quality of life was measured using eight items on climbing stairs, pain, energy, work, depression, memory, sleep, and happiness and response options were ranged from 'no difficulty / always happy (1)' to 'always difficult / always unhappy (4)'. The total score was ranged from 8-32 and the lower score indicates the higher level of health-related quality of life (Cho, 2017).

2.5 Data Analysis

The collected data was analyzed using the SPSS/WIN22.0 program. The subjects' general characteristics and mental health-related characteristics were analyzed using frequency, percentage, mean, and standard deviation, and the association between general characteristics and mental health characteristics & binge drinking degree was analyzed using Pearson's correlation coefficient. The significant predictive ability for the dependent variable of the regression coefficient of each independent variable was determined based on criteria of $p < .05$.

3. RESULT

3.1 General Characteristics

The subjects were 679 elderly 65-80 aged who participated in the 2019 KNHANES (male: $n=394$, 58.0%; female: $n=285$, 42.0%) with an average age of 72.02 ± 4.92 . The most frequent education level was 'below elementary school graduation' ($n=336$, 49.5%) and was followed by 'high school graduation' ($n=147$, 21.6%), 'middle school graduation' ($n=115$, 16.9%), and 'university graduation and above' ($n=81$, 11.9%). Most of them

were unemployed (n=406, 59.8%) and the remaining (n=273, 40.3%) were employed. For the item on subject health perception, 52.4% (n=356) responded as medium, 20.0% (n=139) responded as 'bad' or 'very bad' and 27.1% (n=184) as 'good' or 'very good'. 87.6% (n=595) of subjects reported no activity restriction and remaining (n=84, 12.4%) as having activity restriction. 93.8% (n = 637) were classified as the 'stable group' in the food safety survey. For the binge drinking frequency, most of subjects (n=372, 54.8%) reported no binge drinking and was followed by below once a month (n=97, 14.3%), about once a week (n=91, 13.4%), about once a month (n=66, 9.7%), and almost every day (n=53, 7.8%) (see Table 1).

Table 1. General Characteristics (N=679)

Variable	Classification	n (%)	mean±SD	Max-Min
Gender	Male	394(58.0)		
	Female	285(42.0)		
Age			72.02±4.92	65-80
Education Level	Below Elementary (1)	336(49.5)		
	Middle School	115(16.9)	1.96±1.09	1-4
	High School	147(21.6)		
	Above University (4)	81(11.9)		
Employment Status	Employed	273(40.2)		
	Unemployed	406(59.8)		
Subjective Health Perception	Very Good (1)	31(4.6)	2.94±0.87	1-5
	Good (2)	153(22.5)		
	Medium (3)	356(52.4)		
	Bad (4)	105(15.5)		
	Very Bad (5)	34(5.0)		
Activity Restriction	Yes	84(12.4)		
	No	595(87.6)		
Food Stability	Stable (1)	637(93.8)	1.07±0.30	1-4
	Slightly Stable (2)	34(5.0)		
	Moderately Stable (3)	8(1.2)		
	Unstable (4)	0(0)		
Binge Drinking Frequency	No (1)	372(54.8)	2.05±1.37	1-5
	Below once a month (2)	97(14.3)		
	About once a month (3)	66(9.7)		
	About once a week (4)	91(13.4)		
	Almost every day (5)	53(7.8)		

3.2 Mental Health-related Characteristics

The usual stress perception, depression, suicidal ideation, suicide plan, suicidal attempt, and health-related quality of life were surveyed to characterize the subjects' mental health. The most frequent usual stress perception level was 'little' (n=403, 59.4%) and was followed by 'almost no' (n=179, 26.4%), 'much' (n=71, 10.5%), and 'very much' (n=26, 3.8%), indicating that almost of them had no stress-related burden. Most of them (n=601, 88.5%) reported no depression persisted for more than two weeks and remaining (n=78, 11.5%) reported it. For the suicide, most of them reported no suicidal ideation (93.4%), suicidal plan (98.2%), and suicidal attempt (99.4%) within last one year, indicating that 6.6%, 1.8%, and 0.6% had suicidal ideation, plan, and attempt, respectively, within last one year. The health-related quality of life was

measured using a scale whose responses were one point for the best to four points for the worst in the eight health-related quality of life questions, and the average score was 14.59 ± 4.09 , a medium level based on 16 points (see Table 2).

Table 3. Correlation between General and Mental Health Characteristics

Variable	Characteristics	n (%)	mean±SD	Max-Min
Usual Stress Perception	Very much (1)	26(3.8)	3.08±0.72	1-4
	Much (2)	71(10.5)		
	Little (3)	403(59.4)		
	Almost no (4)	179(26.4)		
Depression for more than two weeks	Yes	78(11.5)		
	No	601(88.5)		
Suicidal ideation within last one year	Yes	45(6.6)		
	No	634(93.4)		
Suicidal plan within last one year	Yes	12(1.8)		
	No	667(98.2)		
Suicidal attempt within last one year	Yes	4(0.6)		
	No	675(99.4)		
Health-related quality of life			14.59±4.09	8-29

3.3 Correlation between Binge Drinking Degree & General Characteristics and Mental Health Characteristics

The degree of binge drinking was found to have a statistically significant correlation with gender, age, education level, employment status, and health-related quality of life. The variable with the strongest correlation with binge drinking degree was gender ($r = -.417$, $p < .001$), and was followed by Education level ($r = .165$, $p < .001$), age ($r = -.130$, $p = .001$), health-related quality of life ($r = -.098$, $p = .011$), and employment status ($r = .083$, $p = .030$). For male, higher education level, proximity to age 65, lower health-related quality of life, and employed were correlated with more frequent binge drinking (see Table 3).

Table 3. Correlation between Binge Drinking and General / Mental Health Characteristics

Variable	Binge Drinking	Gender	Age	Education Level	Employment Status	Health-related quality of life
Binge Drinking	1					
Gender	-0.417***	1				
Age	-0.130***	-0.042	1			
Education Level	0.165***	-0.333***	-0.181***	1		
Employment Status	0.083**	-0.089*	-0.204***	-0.020	1	
Health-related quality of life	-0.098*	0.222***	0.203***	-0.333***	-0.118*	1
*** $p < .001$, ** $p < .005$, * $p < .5$						

3.4 Influencing Factors of Binge Drinking Degree in Korean Elderly

Multiple regression analysis was performed to identify influencing factors of binge drinking degree in Korean elderly with binge drinking degree as dependent variable and gender ($r = -.04$, $p < .001$), age ($r = -.13$, $p = .001$), education level ($r = .17$, $p < .001$), and employment status ($r = .08$, $p = .030$) from general characteristics and health-related quality of life ($r = -.10$, $p = .011$) from mental health-related characteristics, which showed

significant difference in correlation analysis, as independent variables. The appropriateness of multiple regression analysis was reviewed using the autocorrelation of the dependent variable and the multicollinearity between the independent variables, and the result showed that the Durbin-Watson statistic was 1.987, a value close to the standard value of 2 and not close to 0 or 4, indicating no correlation between the residuals and thus suitability of the regression model ($F=24.571$, $p<.001$). The tolerance limit was 0.757- 0.929, which was more than 0.1, and the variance inflation factor (VIF) was 1.08-1.32, which was under 10, indicating no multicollinearity problem. The analysis results showed that the influencing factors of the degree of binge drinking in Korean elderly were gender ($\beta = -1.171$, $p < .001$) and age ($\beta = -0.042$, $p < .001$), accounting for 20.4% of variance. Education level, employment status, and health-related quality of life were shown to be not influencing factors of binge drinking degree. In short, being male and age closer to age of 65 were correlated with a higher degree of binge drinking (see Table 4).

Table 4. Factors influencing Degree of Binge drinking in the Elderly in Korea

Variable	B	SE	β	t	p	VIF
(Constant)	5.273	0.764		6.901	<.001	
Gender=2	-1.171	0.104	0.421	-11.257	<.001	1.182
Age	-0.042	0.010	-0.150	-4.090	<.001	1.127
Education level=2	0.179	0.137	0.049	1.307	0.192	1.185
Education level=3	0.215	0.132	0.065	1.635	0.103	1.321
Education level=4	-0.138	0.165	-0.033	-0.837	0.403	1.281
Employment = 1	0.067	0.100	0.024	0.668	0.504	1.076
Quality of life	0.013	0.013	0.038	1.019	0.308	1.194
$R^2=.204$, Adjusted $R^2=.196$, $F=24.571$, $p<.001$						

4. DISCUSSION

The purpose of this study was, therefore, to provide fundamental data for national policy to prevent the harmful effects of drinking and the development of program for binge drinking prevention in the elderly by, using data from the 2019 KNHANES (KNHANES, 2019), identifying the influencing factors of the degree of binge drinking in Korean elderly, focusing on the general and mental health variables.

According to the definition by WHO, binge drinking is the consumption of 60 mg of pure alcohol in one drinking session at least once a month, or any change of drinking 5-7 cups or more of alcohol within the last 12 months. The specific definition is different among countries (WHO, 2014). In this study, binge drinking was defined, based on the guideline for using 2019 KNHANES analysis and reference definition.

The analysis of the association between general characteristics and mental health characteristics and binge drinking degree showed that, the binge drinking degree in the elderly aged 65-80 is higher in cases of being male, lower age, being employed, higher education level, lower health-related quality of life. The result of this study that the incidence of binge drinking was higher in male elderly than in female elderly is supported by the result, in a study on the effects of depression and family relationships on problematic drinking in 4,933 elderly aged 65 years or older, that the proportion of serious problematic drinking was higher in male (29.8%) than female (3.1%) (Yoon, 2016) and the result of Lee (2022) that the probability of becoming a binge drinker is 9.12 times higher in male than in female. In addition, a study that investigated risky drinking-related factors in elderly people with hypertension over the age of 65 reported that, despite being diagnosed with hypertension, the binge drinking rate was 23.9% in male and 2.2% in female (Choi & Kim, 2021), and it was found that the risky drinking in elderly males tends not to be improve due to habitual drinking in daily life, and the risky drinking rate in elderly females is higher in low-income households (Dullius et al., 2018), suggesting that elderly female seek to relieve the psychological burden and stress of economic difficulties through drinking. These differences in binge drinking propensity by gender should be reflected in the development of policies for prevention of high-risk and binge drinking. Elderly females are more physiologically vulnerable to alcohol than elderly males since they have a higher percentage of body fat and lesser enzymes to break down alcohol. Considering that they are more

vulnerable to various physical diseases compared to male (Kwon et al., 2012), we should pay attention to binge drinking in elderly women, away from the prejudice that high-risk drinking and binge drinking occur mainly in male. In order to develop practical policies to improve drinking habits and prevent binge drinking, it is imperative to consider gender-specific influencing factors.

It was found that the level of binge drinking among the elderly in Korea was higher as they were younger, that is, closer to the age of 65, consistent with the results of previous studies that the risky binge drinking ratio for those aged 65-74 is higher than that for those aged 75 and older (Choi & Kim, 2021) and, in the study on the relationship between demographic factors and drinking problems in 1,892 elderly males aged 65 years or older, that the rate of problematic drinking is higher in those with higher education level, younger, without religion, higher subjective health perception, lower economic level, and urban resident (Shin, 2017).

Although not included in the influencing factors of binge drinking in this study, employed status had a significant correlation with the degree of binge drinking, and Kim (2022) reported that, in adult males, many types of types of jobs increase the harm of risky drinking compared to the unemployed, consistent with the result of a domestic study (Lee et al., 2019) that increased drinking opportunities and higher stress levels due to occupational activities increase high-risk drinking. Since elderly with financial difficulties are more depressed due to drinking problems and have lower life satisfaction, it is considered desirable for them to maintain some form of occupational activity. However, it is necessary to improve the awareness of the drinking culture of the working elderly so that drinking accompanied by social activities does not harm their health in the form of high-risk drinking. These suggest the need to examine in depth the degree of binge drinking according to age and job type in the elderly.

In addition, the results of this study showed a significant correlation between the level of education and the degree of binge drinking, consistent with the result that the binge drinking level in elderly male is higher in those with higher education level (Lee et al., 2019), but inconsistent with the result that elderly people with an education level of elementary school or lower are 2.68 times more likely to take binge drinking than those with an education level of college or higher in elderly female (Park and Yang, 2018). This suggests the need for future research on the degree of binge drinking according to education level and the need for the development of differentiated drinking prevention and programs according to education level

As the elderly get older, their physical and psychological functions deteriorate more and chronic diseases worsen, therefore the degree of aging affects their quality of life. And the health-related quality of life refers to the subjective quality of life for an individual's health status, physical, mental, and social cognition and the interest of the elderly tends to be more focused on improving the quality of life rather than prolonging life. It was found, in this study, that the correlation between health-related quality of life and binge drinking level was significant, but did not influence each other. This result is inconsistent with the result of Yang et al. (2014) that the drinking had negative effect on the health-related quality of life in the elderly using urban senior center, but consistent with the result, in a study on health-related quality of life (EQ-5D) levels and related factors of vulnerable seniors subject to customized visit-type health care in some rural areas, that health behaviors such as exercise, smoking, and drinking have no significant effect on the health-related quality of life (Kim, 2013). Their results suggest that the effect of drinking on health-related quality of life in elderly is different between rural and urban subjects. Although the direct comparison is limited due to the difference in subjects, considering the result that drinking has an effect on quality of life in adults (Chung et al., 2010), follow-up studies considering age and region are needed, and drinking culture needs to be improved to improve quality of life.

Although there have been many reports that drinking and binge drinking are influencing factors of suicide, the results of this study showed that binge drinking has no effect on suicidal ideation, supporting the result of Kwak et al. (2013) that there was no significant correlation between alcohol use and suicidal ideation. The results of this study showed no effect of depression on drinking and binge drinking in elderly, consistent with the report that, compared to non-diagnosis of depression (Park, 2020), a diagnosis of depression lowers the risk of high-risk drinking, inconsistent with the results that depression affects drinking and binge drinking and has a significant effect on drinking problems in the elderly (Yoon, 2016; Kim, 2018; Kim, 2022; Han et al., 2019). Since these mixed results are difficult to apply to the development of solutions to solve the drinking and binge drinking problems of the elderly, a full review through follow-up studies is required.

This study analyzed national panel data and did not consider physical, mental, and sociocultural characteristics that affect binge drinking. Although it is difficult to generalize the factors identified in this study that affect the binge drinking since it used a cross-sectional variable, this study is significant in that it provides basic data for preventing the harmful effects of binge drinking in the elderly aged 65-80 by analyzing the influencing factors of their binge drinking among their general characteristics and mental health characteristics based on representative sample data in Korea. In addition, this study contributed to the development of elderly binge-drinking prevention management and programs by revealing that the risk of binge drinking in the elderly is higher in men and younger (closer to 65 years old). It is recommended for future studies, based on the results of this study, to test the association among complex variables such as occupation, education level, depression, suicide, stress, and subjective health level, and to include more socio-environmental factors.

4. CONCLUSION

This study, using data from 2019 KNHANES, investigated the demographic and mental health characteristics in elderly with binge drinking and identified the influencing factors of the degree of their binge drinking. The subjects were 679 elderly 65-80 aged. This is a cross-sectional study and the general and mental health characteristics affecting the binge drinking in elderly were investigated.

The results of the study showed that gender and age were influencing factors of the degree of binge drinking in Korean elderly and that education level, employment status, and health-related quality of life had no significant effect on the degree of binge drinking, although they had a significant correlation with binge drinking degree. In short, being male and age closer to age of 65 were correlated with a higher degree of binge drinking. The results that education level, employment status, and health-related quality of life are correlated with the degree of binge drinking imply the need for follow-up studies on the factors influencing binge drinking in Korean elderly. The strength of this study is that it identified the factors that should be considered in the development of a program to alleviate binge drinking and improve binge drinking behavior in Korean elderly.

The results of this study suggest that interventions to prevent binge drinking in Korean elderly should be approached in detail considering gender and age, and that the expansion and active implementation of program for prevention of drinking harm with the aiming of improving the drinking culture, which is recognized as an acceptable leisure culture in the elderly, is necessary.

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Authors' contributions

All authors contributed toward data analysis, drafting and revising the paper and agreed to be responsible for all the aspects of this work.

Declaration of Conflicts of Interests

Authors declare that they have no conflict of interest.

Declarations

Author(s) declare that all works are original and this manuscript has not been published in any other journal.

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