

The Influence of Depression on Increased Drinking in Middle-Aged Adults

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Abstract: The increasing prevalence of midlife drinking in our society is characterized by the continuation of drinking patterns into old age, and in recent years, there has been increasing interest in its association with drinking behavior, depression, and social isolation in middle-aged people. It is worth considering that problem drinking at this age may be a result of the increased family and social demands placed on middle-aged people, leading to psychological distress such as depression. Despite the fact that midlife drinking is an issue that should be examined along with social, economic, and family changes, it has been relatively understudied. The purpose of this study was to examine the impact of midlife depression on increased drinking and to explore factors that influence drinking behavior in midlife. Data were collected by an online research company using quota sampling based on demographic proportions. For this study, 255 men and women aged 40-59 years who had ever consumed alcohol were interviewed via an online survey, and hierarchical regression analysis was performed using Stata /MP 17.0. As a result, the study found that men with junior high school graduates had higher levels of drinking, and higher levels of depression in midlife were associated with higher levels of alcohol consumption, frequency of drinking, and binge drinking. On the other hand, social support, income, and marital status had no significant effect on drinking behavior. These results indicate that the increasing prevalence of drinking problems among middle-aged people is strongly associated with depression. These findings suggest that interventions for problem drinking among middle-aged adults may be more effective if they include a concurrent approach to depression. Practical and policy recommendations were proposed to improve mental health, including depression and problem drinking among middle-aged people.

Keywords: Depression, Drinking Behavior, Middle-aged Adults, Alcohol Consumption, Binge Drinking

1. Introduction

In addition to contributing to physical harm and disease, excessive drinking is known to be highly correlated with the development of mental health problems such as depression, anxiety, and suicide, and it is also a social problem that causes socioeconomic losses such as family and interpersonal conflict, loss of a job or social status, loss of access to resources, and social exclusion[1][2]. In 2020, the overall monthly drinking rate for adults aged 19 and older was 58.9%, a decrease of 1.9% from 2019, but the high-risk drinking rate was 14.1% in 2020, up from 12.6% in 2019, and by age, men in their 30s (59.7%) and women in their 20s (40.4%) had the highest high-risk drinking[3]. Not only did Korean middle-aged people receive more than 570 billion won in health insurance benefits due to drinking[4], but the

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monthly drinking rate was reported to be the highest among all age groups, unlike those in their 20s and 30s[3]. In other words, the highest rate of high-risk drinking in Korea was 19.3% in the 40s, followed by the highest rates in the 30s and 50s, confirming the risk of drinking problems among middle-aged people in their 40s and 50s. While problem drinking occurs in all age groups, midlife drinking has the potential to be a barrier to developmental tasks in the transition to older age, given the social, economic, familial, and physical changes that occur during this time. Midlife drinkers are often referred to as "hidden risk drinkers," and studies have reported that midlife drinking patterns carry over into older age[5]. Drinking in midlife can have a serious impact on the quality of life in the long run, and can also increase the financial and emotional burden on families. There is a need for societal attention to the problem of midlife drinking, which is strongly associated with the recent increase in loneliness and suicide in midlife. The purpose of this study was to examine the impact of midlife depression on increased drinking and to explore factors that influence drinking behavior in midlife. The purpose of this study was to provide evidence for interventions for drinking problems among middle-aged people in Korea. The research questions were as follows: Does midlife depression affect drinking behavior?

2. Background

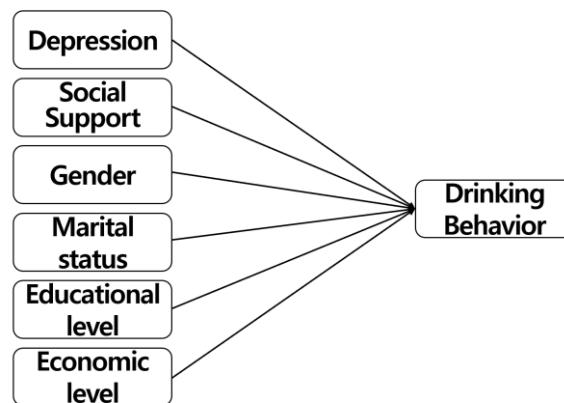
Midlife is a time of high family and social tasks in life development, and the burden of raising children, supporting parents, and preparing for retirement has been shown to be associated with hazardous drinking, poverty, depression, and suicide[6]. Economic hardship has been shown to increase the prevalence of alcohol use disorders in midlife, with a high reliance on drinking to cope with these problems[7][8]. The terms problem drinking, heavy drinking, alcohol dependence, and alcohol abuse are all used to define drinking behavior, but in this study, the term refers to the amount of alcohol consumed, the frequency of drinking, and the frequency of binge drinking[9]. Alcohol consumption is common in late life and drinking behavior in later life is associated with mental health and physical health. The amount of alcohol consumed, frequency of drinking, and binge drinking among middle-aged and older adults vary by gender and age group. Studies have indicated an increase in alcohol consumption among middle-aged and older men and women[10][11]. Gender, educational level, income, and social support have been reported as important factors influencing drinking. Previous studies have shown that men have higher drinking levels than women, and lower levels of education and income are associated with higher levels of heavy or problem drinking[12-16]. Depression is a major factor influencing drinking, and research has shown that among community adults with low distress tolerance, depressive symptoms are significantly associated with alcohol use problems[17]. In addition, depression is also said to be the strongest predictor of problem drinking among middle-aged women[18], and women with higher levels of depression are more likely to abuse alcohol[19]. It is well-recognized that alcohol use disorder and major depressive disorder often co-occur[1][20]. Many studies have been conducted on the relationship between alcohol consumption and depression, which negatively affects an individual's physical and mental well-being, and report a close relationship between depression and alcohol consumption, but no consensus has yet been reached on the causal relationship between the two factors[21][22]. Some studies have found that depressive episodes and childhood traumatic events influence or predict problem drinking[23-25], while others have found that heavy or high-risk drinkers become more depressed, i.e., that drinking is an antecedent of depression[26][27]. Research on the impact of depression on drinking has shown that not only does depression predict changes in drinking problems, but drinking also predicts changes in depression, suggesting a reciprocal causal relationship between the two[28]. Furthermore, a study examining the relationship between depression and substance abuse[29] found that depression was the strongest predictor of drinking and substance use. A study of 6,307 young adults aged 20-64[30] found that the slope of alcohol abuse and dependence with increasing depression was greater for men than for women. In particular, depressed middle-aged and older adults

have been shown to lose interest or experience cognitive changes more rapidly than younger adults, resulting in more affective and somatic symptoms, including depression, and suicide attempts[22][31]. On the other hand, studies have examined social support as a factor affecting drinking behavior. Social support has been shown to reduce psychological and emotional states such as stress and anxiety caused by negative events, and these effects have been reported to influence individuals' health-related behaviors[32]. This suggests that social support is an important factor in reducing isolation, depression, and problem drinking[6][8][33]. Furthermore, family support has been shown to reduce excessive drinking, whereas support from friends and community has been shown to promote excessive drinking[34]. This suggests that social support may mitigate drinking behaviors that may occur in middle-aged people due to the burden of raising children and supporting parents, fear of aging, changing relationships within family and social circles, and shrinking social roles. In summary, despite the great need for research that systematically analyzes the impact of midlife depression on drinking behavior, relatively little research has been conducted on the relationship between midlife depression and drinking behavior, both nationally and internationally. Therefore, there is a need to systematically examine the depressive experiences of middle-aged people who are experiencing unstable psychological, social, and physiological changes.

3. Research Methodology

3.1 Research Design

The present study examined the impact of midlife depression on drinking behavior and tested whether social support moderates this relationship [Fig. 1]. The research model included drinking behavior as the dependent variable, depression and social support as independent variables, and gender, marital status, education, and economic status as independent variables.



[Fig. 1] Research Model

3.2 Research Instrument

3.2.1 Drinking Behavior

Drinking behavior was measured by the sum of the following three items from the 10-item AUDIT-K (Korean version of the Alcohol Use Disorders Identification Scale)[35] developed by the World Health Organization (WHO) to diagnose problem drinking. Drinking behavior was measured by frequency under the following item, “How often do you drink alcohol?” The quantity of drinking was measured under the item, “When you drink alcohol, how many drinks do you have at one time?” The

frequency of heavy drinking was measured under the item, "How often do you drink more than one bottle of soju or four beers at one time?" Frequency of drinking was measured as 0 for "never" and 4 for "4 or more times a week". Quantity of drinking was measured as 0 for "never" and 4 for "1 or more bottles of soju". The frequency of heavy drinking was measured on a 5-point Likert scale, with 0 for 'never' and 4 for 'almost every day'. In this study, the higher the total score, the more serious the drinking behavior, and the reliability of the three questions was $\alpha=.754$.

3.2.2 Depression

The Korean version of the Patient Health Questionnaire (PHQ-9) [36], a self-report screening tool, was used to measure depression. Each item was scored from 0 for 'never' to 3 for 'almost every day', and the higher the total score, the higher the level of depression. The Cronbach's α coefficient in this study was .884.

3.2.3 Social support

The Multi-dimensional Scale of Perceived Social Support (MMPSS)[37] was used to measure social support. The MMPSS is an instrument that assesses the magnitude of a respondent's perceived social support and measures their perception of receiving support from family, friends, and other significant others. It consists of 12 items ranging from 0 (not at all) to 4 (very much so), with higher scores indicating higher social support, and Cronbach's α coefficient was .935.

3.2.4 Demographic factors

Gender and marital status were dummied, with males as the reference variable for gender and single as the reference variable for marital status, comparing cohabitation, marriage, and divorce. The educational level consisted of junior high school, high school, college, graduate school, and above, and the economic level consisted of low, middle, and upper levels.

3.3 Participants of the Study

The research data for this study was collected through a self-administered questionnaire survey commissioned by Embrain Research Company, a national online research organization. Data was collected through an online survey using quota sampling based on demographic proportions. The online survey was conducted from August 5 to August 28, 2019. A nationwide online research organization has the advantage of having a quota survey panel that is similar to the demographic distribution data of the National Statistical Office, which allows for quota sampling based on demographic proportions[38]. In addition, it was evaluated as an alternative method to overcome the potential for regional and class bias due to non-probability sampling, which is common in surveys with convenience sampling. This quota sampling is categorized as either a convenient sampling design or a purpose sampling design[39]. Therefore, the survey period of this study was conducted from August 5 to 23, 2019, and data from 255 respondents aged 40-59 years nationwide who answered the main variables of this study were used for the final analysis. The study was approved by the Institutional Review Board of Jeonbuk National University (JBNU 2019-02-006-001).

3.4 Data Analysis

The collected data were analyzed using Stata/MP 17.0 to meet the objectives of the study in the following ways. First, frequency analysis and descriptive statistics were used to identify the demographic characteristics of the study subjects and the characteristics of the main variables. Second,

T-test and ANOVA were used to examine the differences in the level of drinking behavior according to the general characteristics of the subjects. Third, correlation analysis was used to examine the correlation between variables. Fourth, hierarchical regression analysis was conducted to examine the factors influencing the drinking behavior of middle-aged adults.

4. Results

4.1 Participants' General Characteristics

The general characteristics of the study subjects are shown in [Table 1]. In terms of gender distribution, 59.22% (n=151) were male and 40.78% (n=104) were female, 60.78% (n=155) were high school graduates, followed by 31.76% (n=81) with a college degree, 3.92% (n=10) with a graduate degree or higher, and 3.53% (n=9) with a middle school degree. In terms of marital status, 70.59% (n=180) were married, followed by 2.75% (n=7) who were divorced, 25.49% (n=65) who were single, and 1.18% (n=3) who were cohabiting. In terms of economic level, 64.31% (n=164) were middle class, 28.63% (n=73) were lower class, and 7.06% (n=18) were upper class.

[Table 1] Demographic Characteristics

Category		N	%
Gender	Male	151	59.22
	Female	104	40.78
Education	Middle school	9	3.53
	High school	155	60.78
	College	81	31.76
	Graduate or higher	10	3.92
Marital status	Single	65	25.49
	Cohabitation (legally unmarried)	3	1.18
	Marriage	180	70.59
	Divorce	7	2.75
Economic status	Upper	18	7.06
	Middle	164	64.31
	Low	73	28.63
	Total	255	100

4.2 Main variable statistics

The descriptive statistics of the main variables of this study are shown in [Table 2]. Depression ranged from 0 to 26, with a mean score of 7.204, and social support ranged from 2 to 48, with a mean score of 31.847. Last drinking behavior ranged from 0 to 12 with a mean of 4.957. When examining the normality of each key variable according to the normality criteria proposed by Kline[40], it can be seen that the distribution of variables with a skewness of less than 3 and a kurtosis of less than 10 does not deviate significantly from normality.

[Table 2] Main Variable Statistics

Variable	Minimum	Maximum	Mean	SD	Skewness	Kurtosis
Depression	0	26	7.204	5.399	.917	3.368
Social support	2	48	31.847	9.651	-.434	2.996
Drinking behavior	0	12	4.957	3.841	.145	1.753

4.3 Differences in mean drinking behavior among subjects by sociodemographic characteristics

T-test and ANOVA analyses were conducted to verify whether there was a difference in the mean level of drinking behavior according to the demographic characteristics of the subjects, and the results are shown in [Table 3]. First, it was examined whether there was a difference in the level of drinking behavior by gender, and it was found that the level of drinking behavior was statistically significantly higher in males than in females ($t=6.537$, $p<.001$). The level of drinking also differed according to education ($F=4.05$, $p<.01$). Post hoc analysis showed that high school graduates ($M=5.019$, $SD=4.108$) were not significantly different from other groups, but junior high school graduates ($M=8.556$, $SD=2.698$) had higher levels of drinking than college graduates ($M=4.716$, $SD=3.234$) and graduate students ($M=2.7$, $SD=2.983$). Although education was not reported as a significant variable affecting drinking among middle-aged individuals in the regression analysis, the ANOVA analysis showed that there were differences in mean drinking by education. Specifically, junior high school graduates reported higher levels of drinking than those with college and graduate degrees. This finding supports previous studies [14-16] that reported an association between education and drinking.

[Table 3] Mean Difference in Drinking Behavior among Middle-aged People by Demographic Characteristics

Variables	Categories	Mean	SD	t/F	Scheffe
Gender	Male	6.132	.311	6.537***	-
	Female	3.25	.313		
Education	Middle school (A)	8.556	2.698	4.05	c,d<a
	High School (B)	5.019	4.108		
	College (C)	4.716	3.234		
	Graduate or higher (D)	2.7	2.983		
Marital status	Single	4.877	3.939	0.07	-
	Cohabitation	5.667	3.215		
	Marriage	4.989	3.808		
	Divorce	4.571	4.721		
Economic level	Upper	6.722	3.728	2.10	-
	Middle	4.866	3.814		
	Low	4.726	4.295		

3.4 Correlation between main variables

The correlation between the main variables is shown in [Table 4]. According to the correlation between the main variables, the absolute value of the correlation coefficient of the main variables is less than 5.0, indicating that there is no multicollinearity problem. To verify the multicollinearity problem

more strictly, the tolerance limit and the VIF were checked, and found that the tolerance limit was distributed between .824 and .961, which is greater than .10, and the VIF was distributed between 1.04 and 1.21, which is less than 10, indicating that there is no multicollinearity between the main variables.

[Table 4] Correlation Analysis

	Depression	Social support	Drinking Behavior
Depression	1		
Social Support	-.388***	1	
Drinking Behavior	.250	-.027	1

*p<.05, **p<.01, ***p<.001

3.5 Factors influencing drinking behavior in midlife

[Table 5] shows the results of the factors affecting midlife drinking. Among the demographic factors, gender ($\beta = -.388, p < .001$) was found to have a significant effect on drinking behavior. Specifically, males reported higher levels of drinking than females. Furthermore, depression was found to be a significant predictor of drinking behavior ($\beta = .310, p < .001$). This suggests that as depression levels increase in middle-aged adults, so does drinking.

[Table 5] Factors affecting Drinking Behavior in Midlife

	Drinking Behavior		
	B	β	t
Gender (female)	-3.024	-.388	-6.83***
Education	-.651	-.105	-1.85
Marital status (domestic partnership)	.013	.000	.01
Marital Status (Married)	.084	.010	.16
Marital status (divorce)	.735	.031	.53
Economic level	.526	.076	1.32
Depression	.220	.310	5.10***
Social support	.029	.074	1.20
cons	3.838	.074	2.40
F	9.81***		
R^2	.242		
Adj R^2	.217		

*p<.05, **p<.01, ***p<.001

5. Discussion

Research showed that middle-aged men drink more than women. The findings of higher drinking rates among men are consistent with studies showing that men have higher levels of problem drinking than women[9][10]. In Korea, men are characterized by social drinking to facilitate relationships in social life, while women are known to drink to alleviate negative emotions[6][30]. An even more important reason to pay attention to gender-specific drinking behavior is that the gender gap in drinking has been decreasing in recent years[41]. By understanding the social context in which female drinking is increasing, it will be important to understand how drinking behavior leads to problem drinking and the harm it causes. In addition, depression has also been found to have a significant impact on drinking in middle-aged people. This finding supports the escape and strain reduction theories and is consistent with previous studies showing a relationship between depression and drinking[23-25]. In this study, increased

levels of depression in midlife were associated with increased drinking, which was reported to be highest among high-risk drinkers despite relatively low monthly drinking rates[3]. Therefore, these findings can be interpreted as indicating the need for early intervention and prevention of midlife depression. Based on these findings, the following recommendations are advanced. First, there is a need for primary prevention related to gender-specific drinking behavior. The level of drinking behavior may vary by gender, so it is necessary to approach it based on an understanding of the drinking situation and social context of each gender. Therefore, gender-specific programs should be implemented in community addiction centers and mental health welfare centers, and specialized programs should be actively developed. Second, depression prevention and early intervention strategies are needed. Although the current national health examination includes a mental health (depression) test, it is not included in every examination, but only once every 10 years. To prevent depression in middle-aged people and to prevent depression-related increases in drinking, mental health screening should be included in every health examination. In addition, midlife is a time in the life cycle when people are transitioning into old age and are vulnerable to mental health problems due to menopausal symptoms and changes in family and social roles, yet less attention has been paid to depression in midlife than in older adults and young adults[5][8]. Therefore, there is a need to improve the accessibility of mental health services for midlife, to provide mental health services that are appropriate for people in midlife, and to improve accessibility even when it is difficult to access services due to cost or geographical constraints. Third, it is necessary to provide vocational retraining programs and vocational employment support services that take into account the educational level of middle-aged people. It has been shown that the drinking behavior of middle-aged people may vary according to their level of education, which may be related to their economic activities. By 2021, involuntary early retirement was on the rise in South Korea, and the average retirement age in the 55-64 age group was 49.3 years[42]. This means that people lose their jobs around midlife, and the lower their level of education, the more constraints they face in re-entering the labor market. Midlife is a time for supporting parents, raising children, and preparing for one's own retirement, but early retirement and limited re-employment opportunities due to low educational attainment can be a psychological burden for midlife individuals, and they may show a high dependence on alcohol to relieve this burden[7][8]. Therefore, vocational retraining programs that take into account educational level and professional employment support services can help middle-aged people to re-enter the labor market and continue their economic activities, thereby preventing excessive drinking behavior.

6. Conclusion

The aim of this study was to examine the effect of midlife depression on drinking behavior. To conduct the study, 258 middle-aged people were analyzed. The results showed that men had higher levels of alcohol consumption than women. The study also found that midlife depression had a statistically significant effect on drinking. The higher levels of depression were associated with higher levels of drinking behavior. Based on these findings, various community programs should be provided and developed to overcome depression and drinking problems in midlife and improve quality of life. More systematic mental health policy formulation and program implementation for depression among middle-aged people should be made, and practical services that can intervene in depression and drinking problems simultaneously should be developed. This study is significant in that it systematically examined depressive experiences in midlife, a relatively understudied period of unstable psychological, social, and physiological change, and identified factors that influence drinking behavior. However, the study was not longitudinal, so it was not possible to test for changes in drinking behavior over time. Another limitation is that the survey was conducted before COVID-19 and does not reflect the pandemic or post-pandemic situation. In future studies, it will be necessary to verify the chronological order and the pandemic situation based on a time series survey.

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