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A Comparative Study on the Cognitive Function of the Elderly with Normal and Mild Cognitive Disabilities*

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Abstract

Purpose: The purpose of this study is to compare and analyze the differences in general characteristics (gender, age, educational background, presence of spouse, alcohol consumption) and cognitive function between elderly individuals aged 65 or older with mild cognitive impairment (MCI) in Buan, Jeollabuk-do. **Research design, data and methodology:** This study evaluated cognitive function among 345 elderly participants using K-MOCA. Data were collected from July 10, 2024 to Aug. 10, 2024. **Results:** The analysis revealed statistically significant differences between the elderly with MCI and those with normal cognitive function, particularly in age and education level. Those in their 70s or older and individuals with less than a university education were at a higher risk of MCI. Sub-item analysis of K-MOCA showed significant cognitive function differences in areas such as spatial execution ability, vocabulary, attention, sensitive power, delayed recall, and sentence power, with MCI patients performing worse than the normal group. **Conclusions:** This study highlights the importance of demographic factors such as age, education, cohabitation with a spouse, and alcohol consumption in the cognitive health of the elderly. These findings emphasize the need for early diagnostic tools, such as K-MOCA, to identify at-risk individuals and intervene early to prevent progression to dementia

Keywords : Mild Cognitive Impairment, K-MOCA, Elderly, Cognitive Function, Early Diagnosis

JEL Classification Code I10, I12, I18

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1. Introduction

With the rapid progress of an aging society, cognitive health among the elderly has emerged as a critical social issue. In Korea, the population aged 65 and older represented 13.1% of the total population in 2015, and this figure is projected to increase to 24.3% by 2030 and 40% by 2060 (Statistics Korea, 2020). The rapid growth of the elderly population is directly linked to an increase in age-related health problems, among which dementia is one of the most feared conditions (Lee & Kim, 2012). In 2012, 9.1% of the population aged 65 or older suffered from dementia, and this number is expected to surpass 10% by 2025. Dementia, characterized by gradual memory and cognitive decline, leads to impairments in memory, thinking, behavior, and daily functioning (American Psychiatry Association, 2013), with the management cost projected to rise from KRW 8.7 trillion in 2010 to KRW 38.9 trillion by 2030.

Mild Cognitive Impairment (MCI), which lies at the boundary between normal aging and dementia, represents a state in which cognitive decline partially interferes with daily life but does not yet meet the criteria for dementia. Early detection and management of MCI are crucial, as it can delay or even prevent the progression to dementia. Research shows that while 12% of cognitively normal elderly individuals develop dementia annually, 10-15% of those with MCI progress to dementia within one year (Petersen et al., 2001; Kwon & Kim, 2019). Thus, early diagnosis and prevention of MCI are essential in mitigating the broader impact of dementia.

Existing tools like the K-MOCA (Korean version of MoCA) allow for simple and quick cognitive function assessments, facilitating the identification of MCI in the elderly. There is substantial evidence suggesting that early interventions, particularly cognitive-based and exercise interventions, can significantly improve cognitive function in individuals with MCI (Kim & Park, 2007; Lee et al., 2015; Park et al., 2020). These findings underscore the importance of early detection and intervention.

However, despite the increasing recognition of MCI and its potential to develop into dementia, there remains a need for further research that delves into the cognitive health status of the elderly in specific regions. Previous studies have primarily focused on broad national or clinical populations, but local studies focusing on rural or less-researched areas are limited. This study, therefore, aims to compare and analyze the general characteristics and cognitive functions of elderly individuals with and without MCI, specifically in Buan-gun, Jeollabuk-do. By providing data on this local population, the study will contribute to the early diagnosis and prevention of MCI and offer insights into the potential for improving cognitive health outcomes and reducing the social costs associated with cognitive decline. Through this research, we aim to propose more targeted and effective strategies for managing and preventing MCI, thus addressing a critical gap in existing literature and practice.

2. Theoretical Background

2.1. Cognitive Health of the Elderly

Changes in cognitive function in normal elderly people mainly do not interfere significantly with daily task performance, and this condition is understood as a natural phenomenon experienced by most elderly people. However, accumulation of these minor changes can lead to mild cognitive impairment (MCI), which serves as an important indicator of increasing the risk of transition to dementia (Petersen et al., 2001).

MCI is defined as a condition in which some degree of cognitive decline appears in daily life, but does not meet the criteria for diagnosis of dementia, and early detection and management are important reasons (American Psychiatric Association, 2013). Recent studies have emphasized the importance of early intervention in MCI to delay its progression to dementia (Ryu & Lee, 2018).

In particular, patients with MCI have distinct symptoms in certain cognitive functions, such as memory loss, decreased attention, and decreased language ability. The importance of early diagnosis and management of MCI is further emphasized in that 12% of normal elderly people progress to dementia every year, whereas those with MCI have a high risk of progressing to dementia in 10-15% of elderly people every year (Kwon & Kim, 2019).

Early detection of MCI can be of great help in preventing or delaying progression to dementia, which can contribute to improving the quality of life of the elderly and reducing social costs (Lee & Kim, 2019).

In addition, the cognitive health of the elderly has a great influence on the quality of life of the individual. Cognitive decline can lead to emotional problems such as social isolation, depression, and anxiety, which in turn can lead to a vicious cycle that worsens cognitive decline (Choi et al., 2012).

Therefore, it is essential to develop policies and programs to improve cognitive health of the elderly, and in this process, the use of simple cognitive function evaluation tools such as K-MOCA is expected to contribute to early diagnosis and prevention strategies (Lee et al., 2015). Recent research further highlights the use of K-MOCA in early identification of MCI, supporting its role in developing tailored interventions for older adults (Kim et al., 2020).

2.2. Mild Cognitive Impairment

Mild cognitive impairment (MCI) represents a condition where individuals experience noticeable cognitive decline that is greater than expected for their age, but not severe enough to meet the criteria for dementia. MCI primarily involves changes in specific cognitive functions, such as memory loss, which is more evident in comparison to normal aging (Petersen et al., 2001).

Although MCI patients are not diagnosed with dementia, they are at a heightened risk of progressing to it, with an annual conversion rate of 10-15%, significantly higher than that of cognitively normal elderly individuals (Petersen et al., 2001). This progression from MCI to dementia, particularly Alzheimer's disease, underscores the critical importance of early recognition and intervention in managing cognitive health in the elderly (Park & Ha, 2016).

Research comparing the cognitive functions of individuals with MCI to those of cognitively normal elderly individuals has identified significant differences in several cognitive domains. MCI patients exhibit more pronounced declines in cognitive functions such as attention, memory, and problem-solving ability (Park & Ha, 2016; Kim et al., 2007). Specifically, these patients demonstrate greater difficulties in areas like visual execution ability, vocabulary, attention, and sentence construction, which are not as affected in normal aging.

These differences further emphasize the urgency of early diagnosis and intervention, as cognitive decline in MCI is often an early indicator of more severe cognitive disorders, including dementia. Given that MCI often progresses to dementia, early detection is vital, and tools like the K-MOCA (Korean version of MoCA) offer a reliable means for this purpose. Additionally, non-pharmaceutical interventions, such as cognitive training and physical exercise, have shown to be effective in improving cognitive functions in MCI patients, thereby enhancing cognitive health and potentially delaying the onset of dementia (Lee & Kim, 2020).

Such interventions are essential for mitigating the effects of cognitive decline and managing the risks associated with MCI. In addition to these cognitive aspects, the cognitive reserve hypothesis plays a significant role in understanding how individuals cope with cognitive decline. Cognitive reserve refers to the brain's ability to adapt to age-related changes or neurological damage, which is influenced by factors such as education, occupation, and social engagement (Stern, 2009).

Individuals with higher levels of cognitive reserve may be better equipped to withstand the early stages of cognitive decline without showing significant symptoms. This theory underscores the importance of enhancing cognitive reserve through lifelong learning, social engagement, and other cognitive enrichment activities (Jung, 2020).

The concept of social support is also central to the management of MCI and cognitive health. Studies have consistently shown that individuals with strong social connections are less likely to experience cognitive decline.

Social support, especially from family members or spouses, can reduce stress, promote emotional well-being, and stimulate cognitive functions, thus playing a protective role in delaying the progression from MCI to dementia (Jung, 2013; Park & Lee, 2015).

Therefore, understanding the roles of cognitive reserve and social support, alongside early detection and intervention strategies, is essential in addressing the challenges posed by MCI.

3. Research Method

3.1. Research Flow Chart

The flow chart of the study is as follows (see Figure 1).

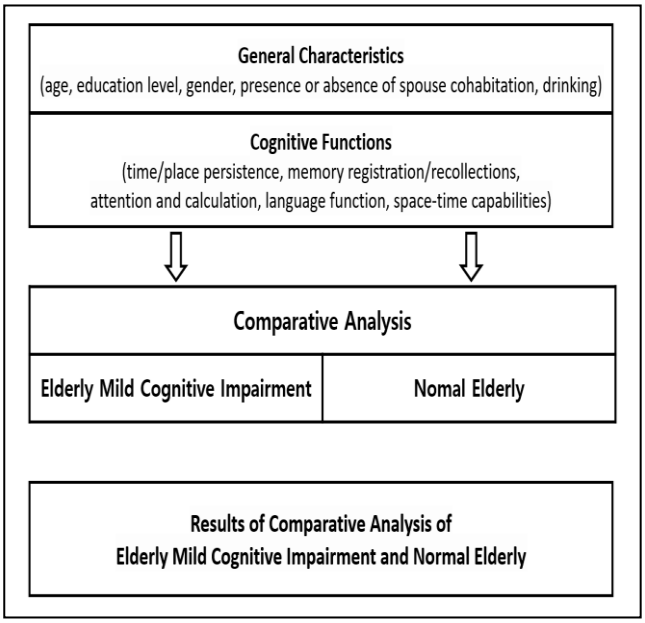

Figure 1: Research Flow Chart

The following study is a comparative analysis of the elderly with mild cognitive impairment and the elderly with normal conditions.

The subjects of the study are divided into two groups and evaluate general characteristics (age, education level, gender, presence of living with a spouse, alcohol consumption) and seven cognitive functions (time/place persistence, memory registration/recollections, attention and calculation, language function, and space-time ability).

Statistically analyze the differences between the two groups with the collected data.

Through this, we derive the characteristics of cognitive decline associated with mild cognitive impairment.

3.2. Research Tools

3.2.1. General Characteristics

In this study, the demographic characteristics of participants were measured based on several key variables: age, education level, gender, cohabitation with a spouse, and alcohol consumption, following methods established by previous research. Each of these variables was assessed in detail to provide a comprehensive understanding of the participants' backgrounds and their potential influence on cognitive function. Age was calculated as a continuous variable based on the participant's exact birth date. The calculation of age followed the methodology used by Kim et al. (2012) in their study on aging and cognitive decline. Specifically, the participants' ages were computed as the difference between their birth year and the year of assessment, ensuring precise age measurement. For some analyses, age may also be categorized into specific age ranges (e.g., 60–69 years, 70–79 years, and 80 years or older) to explore patterns across different age groups.

Education level was classified into three categories according to the framework set by Choi (2011) in his study on the classification of education levels in South Korea. These categories were: (1) elementary school graduation, referring to individuals who completed primary education (typically six years of schooling); (2) middle and high school graduation, which includes participants who completed secondary education, covering both middle school (three years) and high school (three years); and (3) university graduation or higher, encompassing participants who completed at least a 4-year university degree, with some potentially having pursued graduate or postgraduate studies. This classification of education level allows for a clear distinction between different levels of educational attainment, which is critical in understanding the role education plays in cognitive health and aging.

Gender was recorded as a binary variable, distinguishing between male and female participants. This simple classification followed the method used by Park and Lee (2015) in their research on demographic measurements. Participants were asked to identify their gender as either male or female, with the expectation that gender may play a significant role in health outcomes, including cognitive function, based on existing literature. Cohabitation with a spouse was measured as a binary variable (yes/no), based on Jung (2013)'s survey on the structure of elderly households in Korea. Participants were asked whether they currently lived with a spouse. A "yes" response indicated that the participant lived with their spouse at the time of the survey, while a "no" response meant they either lived alone or with someone other than their spouse, such as children or other relatives. Living arrangements are often considered an important social determinant of health, particularly in older adults, as the presence or absence of a spouse can influence emotional support, mental well-being, and potentially cognitive function. Alcohol consumption was assessed by examining both past drinking experiences and current drinking habits, using a methodology based on Lee and Kim (2014)'s survey on the health behaviors of elderly individuals in South Korea. For past drinking experiences, participants were asked whether they had ever consumed alcohol at any point in their lives (yes/no). For current drinking habits, participants were further categorized based on their recent drinking behavior into three groups: (1) non-drinker, referring to participants who had not consumed alcohol in the past year; (2) occasional drinker, referring to those who consumed alcohol less than once a week; and (3) regular drinker, defined as individuals who consumed alcohol at least once a week or more frequently. By capturing both past and present alcohol consumption, the study aimed to analyze the potential impact of alcohol use on cognitive function, as previous research has suggested a relationship between alcohol consumption and cognitive health in older adults. These demographic characteristics were measured using well-established scales and methods to ensure consistency and comparability with previous studies on aging and cognitive health in Korea. The detailed assessment of age, education level, gender, cohabitation with a spouse, and alcohol consumption provided a comprehensive demographic profile of the participants, allowing for a nuanced analysis of how these factors might influence cognitive outcomes in both elderly individuals with mild cognitive impairment (MCI) and those with normal cognitive function. By utilizing validated methods from previous research, the study was able to draw meaningful comparisons and contribute to the growing body of knowledge on aging and cognitive health.

3.2.2. Cognitive Function

In this study, Korean Version of the Montreal Cognitive Assessment (MoCA-K) and The Korean Mini-Mental State Examination (K-MMSE) were used to measure cognitive function. MoCA-K (Lee et al., 2008) is a tool created through revision, supplementation, Korean translation, and validity evaluation based on the Montreal Cognitive Assessment (MoCA) developed by Nasreddine et al. (2005) to select mild cognitive impairment. This tool consists of 7 areas for overall cognitive function evaluation: time-space execution (5questions), vocabulary (3questions), attention (8 questions), sentence (2questions), delayed recall (5questions), and persistence (6questions), and 1 point was

added to correct the difference in cognition according to educational background. This tool presents a cutting point of 22 points or less for the screening of mild cognitive impairment (Lee et al., 2008), which means a decrease in cognitive function. In this study, subjects with cognitive impairment (MoCA-K 22 points or less) among non-dementia subjects were classified as mild cognitive impairment. The reliability at the time of development of the original tool was Cronbach's α=.83 (Nasreddine et al., 2005), the translated tool MoCA-K was Cronbach's α =.81~.84 (Lee et al., 2008), and MoCA-K and MMSE were found to be r=.65 (p<.001) and the Clinical Dementia Rating Scale (CDR) as r=-.62 (P<.001) (Lee et al., 2008), proving the validity of the tool. The reliability in this study was Cronbach's α =.80.

K-MMSE is a tool (Kang, Na, & Hahn, 1997) adapted into Korean while maintaining the original MMSE developed by Folstein, and McHugh (1975). The big difference from MMSE of this tool is that it evaluates persistence by classifying it into time and place persistence, and the evaluation method of drawing two overlapping pentagonal models included as items for the existing language function evaluation is measured by separating them into items that measure space-time composition ability. This tool consists of a total of 30 questions including seven cognitive domains: time persistence, place persistence, memory registration, attention and calculation, memory recall, language function, and visual space composition ability, and 1 points are given for each question if not performed properly, resulting in a total of 30 points.

In this tool, less than 24 points are classified as dementia (Kang et al., 1997), but in this study, dementia was classified by referring to the criteria for selecting dementia diagnosis that controlled education and age of Health & Welfare (2010). The criterion validity test of this tool was confirmed through the correlation (r=-.78, p<.001) with the Blessed Orientation - Memory - Concentration Test (Kang et al., 1997). The reliability in this study was Cronbach's α =.74.

3.3. Collection of Research Subjects and Data

The analysis targets of this study were 345 elderly people over 65 years of age living in Buan-gun, Jeollabuk-do. Participants were evaluated for cognitive function through the MoCA-K (Korean version of Mocha) test, and the general characteristics of each group were thoroughly investigated. Specifically, the study assessed general characteristics such as gender, with an analysis of the distribution of male and female participants; age, categorizing participants into groups of 65-69, 70-74, and 75-79; education level, classifying educational backgrounds into categories of under middle school, high school graduates, and university graduates; cohabitation status, examining whether participants lived with a spouse or independently; and alcohol consumption, assessing participants' drinking habits and frequency.

All analysis subjects voluntarily participated in the study, and consent was obtained after a sufficient explanation of the study. The data collection period for this study was from July 10, 2024, to August 10, 2024.

3.4. Data Analysis

The collected data were analyzed using statistical software. For comparison of general characteristics, the Chi-Square test was used, and the difference in cognitive function between the MCI group and the normal group was analyzed through an independent sample t-test. In addition, statistical significance was examined by performing multivariate analysis of variance (ANOVA) for the score difference in each cognitive domain. The study results were considered statistically significant at the significance level of $p < 0.05$.

3.5. Ethical Considerations for Subjects

Considering the ethical aspects of the subject, the pre-trained research assistant verbally explained the purpose of the study, research method, anonymity, confidentiality, and the possibility of withdrawing participation at any point if the participant did not wish to continue during the research process. This explanation was provided before the interview began to ensure transparency and understanding. Furthermore, the study was conducted only with the voluntary consent and active participation of the study subjects, as confirmed by their handwritten signature on the consent form, which was attached to the questionnaire. This process ensured adherence to ethical guidelines and respected the autonomy and rights of the participants.

4. Analysis Results

4.1. Differences in General Characteristics between the Elderly with Mild Cognitive Impairment and the Normal Elderly

In this study, 345 elderly individuals aged 65 years or older residing in Buan-gun, North Jeolla Province, were classified into two groups: those with mild cognitive impairment (MCI) and those with normal cognitive function. Cognitive function was evaluated using the K-MOCA (Korean version of MoCA), resulting in 53 participants (15.4%) being categorized into the mild cognitive

impairment group and the remaining 292 participants (84.6%) into the normal group. Comparison of the General Characteristics of the Elderly with Mild Cognitive Disabilities and the Normal Elderly is as follows (see Table 1).

Table 1: Comparison of the General Characteristics of the Elderly with Mild Cognitive Disabilities and the Normal Elderly(5 Topics)

General Characteristics		Elderly Mild Cognitive Impairment	Normal Elderly	X^2
		N(%)	N(%)	
Age	65-69	8 (32)	4(8.5)	14.43**
	70-74	8 (32)	7(14.9)	
	75-79	9 (36)	36(76.6)	
Education Level	Under Junior	19(76)	16(34)	11.5 **
	Highschool Graduation	6(24)	16(34)	
	College Graduation	.	31(66)	
Gender	Male	15(60)	24(51.1)	0.53*
	Female	10(40)	23(48.9)	
Whether to Live with Spouse		24(45.3)	196(67)	18.74*
Drinking		16(30)	44(15)	10.12*

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

In the mild cognitive impairment group, 60% (15 participants) were men and 40% (10 participants) were women. In the normal group, 51.1% (24 participants) were men and 48.9% (23 participants) were women. The analysis showed no significant difference in mild cognitive impairment prevalence based on gender ($\chi^2 = 0.53$, $p > .05$*).

Regarding age distribution, the mild cognitive impairment group included 32% (8 participants) aged 65-69 years, 32% (8 participants) aged 70-74 years, and 36% (9 participants) aged 75-79 years. In contrast, the normal group comprised 76.6% (36 participants) aged 65-69 years, 14.9% (7 participants) aged 70-74 years, and 8.5% (4 participants) aged 75-79 years, indicating a significant age-related difference ($\chi^2 = 14.43$, $p < .01$**).

In terms of education level, the mild cognitive impairment group consisted of 76% (19 individuals) with less than middle school education, 24% (6 individuals) who were high school graduates, and there were no university graduates. In contrast, the normal elderly group had 34% (16 individuals) with less than middle school education, 34% (16 individuals) who were high school graduates, and 66% (31 individuals) who were university graduates.

This shows a significant difference in distribution based on education level ($\chi^2 = 11.5$, $p < .01$**). Regarding cohabitation with a spouse, 24 participants (45.3%) in the mild cognitive impairment group lived with a spouse, while 196 participants (67.1%) in the normal group lived with a spouse. This finding suggests that cohabitation with a spouse may positively influence cognitive function, as confirmed by statistical analysis ($\chi^2 = 18.74$, $p < .05$*). Lastly, in terms of alcohol consumption, 16 participants (30%) in the mild cognitive impairment group reported not drinking alcohol, compared to 44 participants (15%) in the normal group. This result also indicated statistically significant differences between the two groups ($\chi^2 = 10.12$, $p < .05$*).

4.2. Comparison of Cognitive Functions between the Elderly with Mild Cognitive Impairment and the Normal Elderly

Analysis of the sub-items of the MoCA-K tool to compare the cognitive functions of the elderly with mild cognitive impairment and the elderly with normal conditions revealed statistically significant differences in several items. The scores of the mild cognitive impairment group were significantly lower in 'time persistence' ($t = -4.97$, $p<.001$), and the elderly with mild cognitive impairment scored statistically low in 'place persistence' ($t = -5.12$, $p<.001$). In the 'memory registration' category, the scores of the elderly with mild cognitive impairment were significantly lower ($t = -5.20$, $p<.001$), and the attention score of the mild cognitive impairment group was statistically significantly lower in 'attention and calculation' ($t = -4.07$, $p<.001$).

The cognitive function of the elderly with mild cognitive impairment was significantly lower in the 'memory recall' ($t = -5.22$, $p<.001$), and the mild cognitive impairment group recorded statistically low scores in the 'language function' category ($t = -4.19$, $p<.001$). Finally, the elderly with mild cognitive impairment also scored significantly lower in the 'visual space composition ability' ($t = -3.36$, $p<.01$), whereas there was no difference between the two groups in the 'abstract power' category ($t = -1.50$, $p> .05$). These results suggest that cognitive function in the elderly with mild cognitive impairment is deteriorated in many ways compared to the normal elderly. A comparison of cognitive functions between the elderly with mild and normal

cognitive impairments is as follows (see Table 2).

Table 2: Comparison of cognitive functions between the elderly with mild and normal cognitive impairments (8 Topics)

Items	Elderly with Mild Cognitive Impairment	Normal Elderly	t
	M±S.D	M±S.D	
Time Orientation	3.1 ± 0.9	4.8 ± 0.5	-4.97***
Place Orientation	2.6 ± 0.7	4.4 ± 0.6	-5.12***
Memory Registration	3.5 ± 1.2	5.0 ± 0.8	-5.20***
Attention and Calculation	4.0 ± 1.3	6.1 ± 0.9	-4.07***
Memory Recall	1.7 ± 0.9	3.8 ± 1.0	-5.22***
Language Function	4.2 ± 1.0	6.5 ± 0.6	-4.19***
Visual-Spatial Construction	2.5 ± 1.1	4.0 ± 0.8	-3.36**
Abstract Reasoning	1.8 ± 0.6	2.1 ± 0.5	-1.50*

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

5. Discussion

The results of this study provide meaningful insights into mild cognitive impairment (MCI) and closely align with its research objectives by systematically analyzing key demographic, social, and cognitive factors. This discussion has been refined to more explicitly connect the findings with the objectives of the study, emphasizing their implications for policy, practice, and future research.

The findings reaffirm the critical role of delayed recall in distinguishing MCI from normal cognitive function. Consistent with recent studies, such as Lee et al. (2020) and Barker et al. (2016), this study identifies delayed recall deficits in both verbal and spatial memory as significant indicators of cognitive decline. This reinforces the need for early identification and targeted intervention, as delayed recall is a key marker of conditions such as dementia and Alzheimer's disease. Additionally, these results align with the multiple memory model by Kahana and Shankar (2001), which explains memory processes as encoding, storage, and retrieval. Our study supports the hypothesis that impairments in memory maintenance and retrieval are central to the cognitive decline observed in MCI. This connection underscores the importance of designing interventions specifically aimed at strengthening memory retrieval processes to delay the progression of cognitive decline.

Statistically significant differences in age and education level between MCI and normal groups further strengthen the study's objectives of identifying demographic risk factors. The results reveal that individuals with lower educational attainment are disproportionately affected by MCI, with 76% of participants in the MCI group having less than a high school education, compared to 34% in the normal group. These findings are consistent with Kim et al. (2020) and Stern's (2009) cognitive reserve hypothesis, which highlights how higher education enhances cognitive resilience. This supports the study's aim of identifying education as a protective factor and reinforces the importance of lifelong learning initiatives to mitigate cognitive decline.

Social factors were also found to significantly impact cognitive health, aligning with the research objective of exploring the role of social support in cognitive outcomes. Participants with MCI were less likely to live with a spouse (45.3%) compared to the normal group (67.1%), consistent with the findings of Jung (2013) and Park and Lee (2015), who emphasized the cognitive benefits of social engagement and emotional stimulation. This study confirms that spousal cohabitation and broader social support networks are crucial in protecting against cognitive decline, underscoring the need for policies and programs that promote social connections and emotional support among older adults, particularly those living alone.

Alcohol consumption patterns presented an additional lifestyle factor influencing cognitive health. While moderate alcohol consumption has been associated with better cognitive outcomes (Lee & Kim, 2014), the study revealed that 30% of MCI participants abstained from alcohol, compared to 15% in the normal group. This suggests a complex relationship between alcohol consumption and cognitive health, potentially explained by the cognitive reserve theory. These findings highlight the importance of fostering balanced lifestyle behaviors that promote cognitive resilience.

By focusing on a specific regional population (Buan-gun, Jeollabuk-do), this study contributes localized data that can inform tailored regional policies to support cognitive health. This aligns with the study's objective of understanding how socio-demographic factors influence MCI within a specific context. The integration of demographic, social, and lifestyle factors into the study provides a comprehensive perspective on cognitive health, setting it apart from existing research that often narrows its focus to isolated risk factors.

To strengthen the connection between the results and study

objectives, the findings clearly emphasize the interplay between education, social support, and lifestyle behaviors in shaping cognitive outcomes. This supports the objective of identifying actionable targets for early intervention and policy development. For instance, the association between lower education levels and cognitive decline reinforces the need for educational policies targeting older populations. Similarly, the findings on spousal cohabitation and social support highlight the importance of fostering social engagement as a protective factor.

Table 1 emphasizes key demographic disparities, while Table 2 presents detailed cognitive deficits in the MCI group, particularly in delayed recall, verbal memory, and spatial memory. These results clearly align with the study's objectives of identifying significant risk factors and providing evidence to guide early diagnosis and intervention strategies.

In conclusion, this study effectively connects its findings to the objectives by demonstrating how demographic, social, and lifestyle factors interact to influence cognitive health. However, further research is needed to explore the combined impact of these factors and how they shape cognitive resilience. By investigating these interactions in greater detail, future studies can develop more comprehensive interventions and prevention strategies tailored to the needs of aging populations, thereby strengthening the academic and practical contributions of this field.

6. Conclusions and Suggestions

This study analyzed the differences in cognitive function and general characteristics between mild cognitive impairment (MCI) and normal elderly people over 65 years of age living in Buan-gun, Jeollabuk-do. As a result of the study, the mild cognitive impairment group showed significant differences from the normal elderly group in terms of age, education level, spouse cohabitation, and alcohol consumption. Notably, elderly people with a low education level and those not cohabiting with a spouse are more likely to experience MCI. The study results are summarized as follows.

First, the difference in age and education level significantly impacts cognitive health, consistent with Lee et al. (2020), which highlighted delayed recall as an important indicator of cognitive decline. In this study, the MCI group showed a significant relationship with the decrease in delayed recall in both verbal and spatiotemporal memory. These results reinforce the previous finding that delayed recall is crucial for differentiating cognitive decline, such as Alzheimer's dementia and depression. Additionally, the concept of cognitive reserve suggests that individuals with higher educational levels may have a greater capacity to compensate for brain changes, thus preserving cognitive function longer. Education enhances the brain's resilience to neurodegenerative changes, supporting the study's finding that a higher education level is linked to better cognitive health.

Second, the discussion of education level showed that high school graduates accounted for 76% of the MCI group, while university graduates represented 66% of the normal group. This emphasizes the importance of education in cognitive health, in line with Choi (2020). The fact that older adults with a lower education level are more likely to experience MCI highlights the need for policy development related to maintaining cognitive function in older adults. This is further supported by research on cognitive reserve, which suggests that individuals with higher education levels tend to have better cognitive outcomes as they age.

Third, whether or not to live with a spouse was found to be an important factor positively affecting the cognitive health of the elderly. Cohabitation with a spouse can contribute to maintaining cognitive function by promoting emotional support and social interaction, which ties into the concept of social support. Social support plays a crucial role in protecting cognitive health by reducing stress and providing a network for emotional well-being. The presence of a spouse, particularly in the context of the elderly, can foster a sense of security and well-being, offering the emotional and social resources necessary for cognitive health. Therefore, strengthening social support systems to enable the elderly to live with their spouses is crucial.

Fourth, it is an important finding that drinking habits are related to cognitive function. In this study, the percentage of non-drinkers was higher in the MCI group, which emphasizes the effect of maintaining a healthy lifestyle on cognitive health. There is a need to foster a healthy drinking culture through education and awareness-improving activities targeted at the elderly.

Based on these findings, the following four suggestions are made to improve the cognitive health of the elderly population.

First, it is necessary to develop educational programs for maintaining and improving cognitive function in the elderly to prevent cognitive decline and promote healthy aging. These programs should include cognitive training and memory enhancement activities that incorporate elements that enhance cognitive reserve.

Second, social support should be strengthened so that the elderly can live with their spouses, and emotional and social support programs should be prepared for the elderly living alone. These programs can reduce emotional isolation by promoting community activities and encouraging social connections.

Third, education on drinking habits and activities to

improve awareness should be conducted in the elderly population to encourage healthy drinking habits. Education programs emphasizing the relationship between drinking and cognitive functioning are very important in promoting better lifestyle choices.

Fourth, policies should be implemented so that older adults can undergo regular cognitive tests and establish systems for early detection and intervention. Early detection of MCI and provision of appropriate interventions can help maintain cognitive health and prevent further decline.

This study contributes to understanding the cognitive function and general characteristics of the elderly with mild cognitive impairment and is expected to be a useful basic data for related research and policy development.

Based on these proposals, practical efforts are needed to improve the cognitive health of the elderly population in Buan-gun, and based on this, it is necessary to comprehensively promote cognitive reserve and social support strategies to promote well-being in old age.

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