How Unequal Time Use Affects the Elderly's Life Satisfaction: Focusing on Gender Differences in the 2019 Time Use Survey

By

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THESIS

Submitted to

KDI School of Public Policy and Management

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ABSTRACT

The purpose of this study is to explore how time use among the elderly in South Korea varies by demographic characteristics and how it affects life satisfaction. The data for this study come from the 2019 Time Use Survey of Statistics Korea, and the participants include 5,960 elderly individuals aged 65 and older who complete a time diary for two days. The research methods used are mean and standard error, t-test, ANOVA, multiple regression, and sequential logit regression. When comparing the time use of Korean elderly people by activity type (total average time), men spend more time sleeping (509.5 minutes), leisure (439.6 minutes), employment (120.8 minutes), and housework (73.4 minutes), while women spend more time sleeping (511.2 minutes), leisure (391.8 minutes), housework (188.6 minutes), and employment (64.1 minutes). The most influential time uses on the elderly's life satisfaction are employment, caring for minors, and social activities for men, while sleep is the most influential for women. Men's paid work and women's sleep are found to have a negative impact, while men's care of minors and men and women's socializing activity are found to have a positive impact. This breaks down patriarchal gender role stereotypes. The threshold between positive and negative effects on life satisfaction is analyzed in terms of voluntary and involuntary time use. Voluntary time use seems to increase life satisfaction, while unavoidable time use seems to decrease life satisfaction. Therefore, it is expected that increasing the amount of time that the elderly voluntarily choose to spend is likely to increase their life satisfaction.

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I Introduction

South Korea is on the verge of becoming an ultra-elderly society, where the proportion of people aged 65 and over is rapidly increasing. The World Bank classifies a society as an “aging society” if the proportion of people aged 65 and over is 7% or more, an “older society” if it is 14% or more, and an “ultra-older society” if it is 20% or more. According to Statistics Korea, South Korea entered an aging society and an older society in 2000 (7.2%) and 2018 (14.3%), respectively. With the baby boomers entering the elderly generation, South Korea is expected to become an ultra-elderly society in 2025, when the proportion of elderly people will exceed 20%. Korea is expected to experience faster and more severe aging than other OECD countries, such as Japan, which has entered the aging society earlier, due to the world’s unprecedentedly low fertility rate.

In order to ensure a healthy and happy old age in the ultra-elderly society, the Korean government must actively implement welfare policies for the elderly. South Korea’s Ministry of Health and Welfare, which is in charge of elderly policy, has set the policy goal of “improving the quality of life of the elderly” and is promoting welfare policies that improve the quality of life (Ministry of Health and Welfare, 2024).

With the rapid increase in the number of the elderly, there has been increasing interest in the quality of life of the elderly and a growing body of research. Quality of life is a subjective sense of happiness and satisfaction that individuals feel about their lives. Previous studies on the elderly have replaced quality of life with subjective measures, such as life satisfaction (Jo, 2010). Shin (1981) stated that quality of life lies in the eye of the beholder, which means that quality of life is a subjective feeling experienced in daily life. Koh (2003) also noted that subjective variables have more explanatory power than objective variables when it comes to quality of life.

However, many previous studies have considered only limited variables such as health status, depression, and stress as influences on life satisfaction (Shin, 2010; Park, 2011; Park & Hur, 2017) Only recently have studies examined the impact of "time use," a bird's-eye view of daily life, on quality of life. This is despite the fact that how we spend our 24 hours a day is closely related to our life satisfaction, as sleeping, eating, caring for our families, and interacting with our neighbors build up to create a satisfying life.

While 24 hours in a day is an equally available resource for everyone, how we use it varies based on characteristics like gender, age, education, income, occupation, health, and more. For the elderly, time allocation is even more unequal and varies by demographic characteristics. Unlike adolescence or middle age, the elderly have more autonomy over how they spend their time because they don't have regular places to go, such as school or work.

In addition, as life expectancy increases, the elderly have more time on their hands. Life expectancy in South Korea is reported to be 79.9 years for men and 85.6 years for women, ranking third among OECD countries after Japan and Spain. As of 2022, the life expectancy of a 60-year-old man is 22.8 years, and for women, it is 27.4 years. This represents an increase of 10.1 years for men and 9 years for women compared to 1970 (Statistics Korea, 2023)

While there are positive aspects to living longer, it also brings with it a variety of social issues and the use of time by the elderly. If they do not spend their time in a balanced way, their quality of life will deteriorate, and successful aging will be farther away (Wilcock, 1998). Research by Christiansen and Matuska (2006) showed that if the elderly spend their time in an unbalanced way, they will not be able to maintain their daily routines and may ultimately lose their health.

This study aims to analyze the impact of sleep, employment, household chores, and leisure time on the quality of life of 65-year-olds using the Time Use Survey from the 2019 Statistics Korea. Based on the respondents' time diaries, I identified the actual use of time and examined

how time use varies by demographic characteristics. I also analyzed how different time uses affect the quality of life of the elderly. Quality of life was measured using subjective indicators that assessed mood and overall satisfaction with life on the day the time was spent.

Previous research has shown that gender differences in time use among the elderly are evident (Kim, E.-K., and Kim, E.-R 2002; Choi et al. 2006; Kim, 2007; Kim & Choi, 2019, Jung & Lee 2022). Because older adults in South Korea have strong traditional gender role stereotypes, men spend more time working, while women noticeably spend more time doing housework. However, most studies have only stated that men's and women's time use is different. My research, however, will not only empirically reveal the inequalities in men's and women's time use but will also demonstrate how that unequal time use affects men's and women's satisfaction differently, and will infer why. This is why I conducted all my analyses separately for male and female seniors.

II Literature Review

II.1 Analysis of Time Use of the Elderly and Influencing Characteristics

Since 1999, when Statistics Korea released the Time Use Survey every five years to understand the living conditions of Koreans, there have been many studies on time use among the elderly.

Some studies have analyzed the actual time use of the elderly, identified variables that affect time use (Jung, 2001; Kim, E.-K., & Kim, E.-R., 2002; Kim, 2006; Lee, 2011), and categorized time use by type to examine their characteristics (Choi et al., 2006; Kim, 2007; Jeon, 2010; Ji, 2012; Kim, 2015).

Others have focused on leisure activities that are significantly more prevalent among the elderly than other age groups (Park & Lee, 2003; Hwang, 2014; Kang et al., 2017; Kim, H.-M., & Kim, D.-H., 2019), and singled out specific demographic groups such as single-person households, retired couples, institutionalized elderly, and rural elderly (Park, 2010; Hwang & Lee, 2021; Kim, 2023).

II.1.1 Analyzing the Time Use of the Elderly

A number of studies have examined the lives of the elderly (Jung, 2001; Kim, E.-K., & Kim, E.-R., 2002; Kim, 2006; Park, 2007; Park & Byun, 2013), focusing on economic activities, housework activities, and leisure activities, and have concluded that time spent on employment decreases significantly in old age. Instead, leisure time increases remarkably, mostly concentrated on passive leisure such as watching TV, and the quality of leisure time is relatively poor.

Jung (2001) and Kim, E.-K., and Kim, E.-R (2002), who analyzed data from 1999, the first year of Statistics Korea Time Use Survey, identified an inverse correlation between working time and leisure time. Kim, E.-K., and Kim, E.-R (2002) noted that there were large gender differences in time use among the elderly, most notably in household chores. They

concluded that leisure time was longer with age and higher education, and that economic activity and farm residence were key variables that determined the amount of leisure time spent.

Park and Byun (2013) also indicated that paid labor time gradually decreased in middle-aged and older adults, while housework and passive leisure increased. Time use varied according to demographic variables: the higher the education level, the older the age, and the unmarried had a sharper decline in paid labor time and a steeper increase in leisure time than married individuals.

Kim (2006), using data from the 2004 Statistics Korea Time Use Survey, discovered that as people retired from their primary workplace in old age, they tended to spend less time on work and more time on leisure. However, except for a few with high levels of education, they were spending their leisure time in boring ways, mainly watching TV. Jung (2001) revealed that urban elderly people had more leisure time than rural elderly people, but their leisure activities were concentrated on mass media and suggested that the government should have implemented policies to diversify the leisure activities of the elderly.

Another study that analyzed the characteristics of economically active seniors in depth was Park (2007). Similar to young and middle-aged adults, men reported longer paid work hours than women in the elderly, but women reported significantly higher unpaid work hours than men. The double burden of paid and unpaid work for employed women was also revealed in older age, as gender-based division of labor practices persisted.

II.1.２ Analyzing the Types of Time Use by the Elderly

Previous studies that analyzed time use by type (Choi et al., 2006; Kim, 2007; Jeon, 2010; Ji, 2012; Kim, 2015) have focused on the demographic characteristics that affect the time use of the elderly. The results indicated that the elderly spent their time differently through a variety of behaviors, contrary to the social stereotype of the elderly as static and uniform (Choi et al., 2006).

Kim (2007) defined economic activities and caregiving as productive activities and divided them into household activity type, passive type, active maintenance type, and self-enjoyment type. Productive activities in old age differed significantly by gender, with women spending significantly more time on various productive activities than men. Choi et al. (2006) observed that women spent a lot of time on other family members such as domestic work, while men spent a lot of time for personal purposes such as socializing and leisure activities.

Jeon (2010) categorized the types of the elderly into daily life, leisure-excessive, labor-excessive, and balanced, and examined the characteristics that determine these types. Being male, older, religious, and more educated were more likely to be associated with the leisure-excessive type. Having a spouse, having a job, and working on a weekday were more likely to be associated with the labor-excessive type. Additionally, having a spouse, being religious, having a high level of education, and having a job were more likely to be associated with the balanced type.

Ji (2012), using the 2009 Statistics Korea Time Use Survey, conducted a cluster analysis based on demographic variables and discovered that the number of hours worked, and the presence of a spouse were significant characteristics affecting leisure type. Kim (2015) categorized the time allocation of the elderly as personal maintenance-oriented, work-oriented, leisure-oriented, and balanced. The leisure-oriented type had the highest percentage, followed by the balanced type. The main variable that distinguished the balanced type from the other types was whether they were employed.

In terms of studies focusing on specific groups with common demographic characteristics, Park (2010) compared the institutionalized and community-dwelling elderly. Park identified that community-dwelling elderly spent more leisure time than institutionalized elderly, and that their time-use patterns were nearly identical as a group, especially for institutionalized elderly.

Hwang and Lee (2021) focused on the leisure activities of single-person elderly households. They revealed that single-person households spent most of their time “alone” and ‘leisure using media’. Men spent more time “alone” than women, and both men and women were more satisfied with leisure when they engaged in “leisure with non-family members”.

Kim (2023) looked at how retired couples spent their leisure time. Both men and women spent the most time in passive leisure, and when they shared active leisure activities with their spouses, husbands’ leisure satisfaction and wives’ mood states increased significantly and positively.

Internationally, various studies have compared time use between retired elderly individuals and those working full-time or part-time, as well as between married elderly women and those whose spouses have passed away (Hahn et al., 2011; Kalenkoski & Oumtrakool, 2014).

In terms of activity-specific studies, a number of studies have focused on the amount of leisure time spent by the elderly (Park & Lee, 2003; Hwang, 2014; Kang, Park, J.-H., & Park, H. Y., 2017; Kim, H.-M., & Kim, D.-H., 2019). A common conclusion of these studies was that the majority of leisure time was focused on passive leisure with low quality of leisure.

Park & Lee (2003) reported that the elderly spent most of their leisure time watching TV, especially women who were 75 years old or older, unemployed, without a spouse, and without a car. ; Kim, H.-M., & Kim, D.-H (2019) also found that the elderly spent the most time on leisure activities using media, and reported that gender, age, education level, economic activity status, and average monthly income had significant effects on the type of leisure activity.

Min (2020) discovered that while overall average leisure time increased significantly for the elderly compared to previous generations, the amount of money they spent on leisure activities decreased dramatically. As a result of lower leisure expenditures, the elderly’s leisure

time was concentrated on relaxation activities such as “napping,” “watching TV,” and “doing nothing.”

Kang, Park, J.-H., & Park, H. Y. (2017) found that Korean older adults engaged in the most leisure time, excluding rest and sleep, but compared to their international counterparts, they had less leisure time and more unpaid work time.

Hwang (2014), who analyzed demographic characteristics affecting leisure time, determined that older women with limitations in daily activities, having a caring family member, and being employed were more likely to have insufficient leisure time. Park and Heo (2019) also reported that the amount of time spent on “cultural and artistic activities” was determined by education and income.

II.2 Things that Affect Life Satisfaction among the Elderly

Life satisfaction is a measure of a happy life, which can be evaluated objectively or subjectively (Chang & Park, 2012), but it has become increasingly important to consider subjective indicators because objective indicators do not always guarantee happiness. Therefore, life satisfaction has gradually evolved into a broad concept that encompasses objective indicators such as physical health and economic level as well as subjective indicators such as emotional stability and family and social correlations (Chung & Kim, 2010).

In particular, life satisfaction of the elderly is a subjective emotion or attitude that encompasses not only the present but also the past (Kim & Park, 2007), and it is a comprehensive indicator of how satisfied they are with the life they have lived so far (Cha & Kim, 2015). In addition, life satisfaction is also considered an important indicator of successful aging, as the elderly experience a decline in quality of life across various life domains (Cha & Kim, 2015).

Previous studies have focused on identifying the demographic and social characteristics that determined life satisfaction among the elderly (Kwon & Cho, 2000; Kang, 2010; Park,

2010; Lee, Choi, & Nam, 2017) or how specific activities affected life satisfaction (Park, 2004; Kim, 2007; Park, 2011; Kim, 2016; Lee & Shin, 2016).

II.2. 1 Differences in Life Satisfaction by Demographic Characteristics

A number of studies have examined how sociodemographic characteristics such as gender, age, education, income, and health status affected life satisfaction among the elderly. Regarding gender, many studies have found that elderly men were more satisfied with their quality of life than elderly women (Kwon & Cho, 2000; Baek & Kwon, 2007; Jo, 2010; Lee, 2010; Kim, 2018; Kwon et al., 2006), but there were also studies that have showed that elderly women were more satisfied than elderly men (Park, 2004; Hur, 2004). Kim (2018) identified that elderly women were more depressed than men, and Jo (2010) reported that elderly women suffered from more health problems due to heavy domestic work, which led to lower life satisfaction. On the other hand, Park (2004) discovered that elderly women's satisfaction was closely related to their education level, residence area, and pocket money, and when controlling for these characteristics, their life satisfaction was higher than that of men.

Age was inversely related to life satisfaction (Kwon et. Al., 2006). This might have been due to the fact that older people were more likely to have chronic illnesses and reduced social roles due to weaker physical functioning.

Several studies have also examined the impact of spouses on life satisfaction, but the results were mixed. While most analyses have shown that the elderly with spouses had higher life satisfaction than those without (Kim & Suh, 2002; Baek & Kwon, 2007; Oh & Kwon, 2012; Kim, 2018), there were also studies that have concluded the opposite (Chung & Kim, 2010; Park, Jung & Yu, 2012).

Kim & Suh (2002) revealed that people without a spouse were more depressed and dissatisfied with their lives, while Lee (2011) concluded that retired seniors were more satisfied with their lives when they had a spouse, good health, and economic status. Park et al. (2012)

found that the elderly without a spouse reported more loneliness, isolation, and financial difficulties than those with a spouse, and this trend was more pronounced among male older adults. In contrast, there was no association between having a spouse and depression in female seniors. Chung and Kim (2010) also observed that spending too much time with a retired spouse actually decreased life satisfaction in middle-aged and older women.

The level of education was also a major determinant of life satisfaction. Many studies (Kwon & Cho, 2000; Kim, 2005; Cha & Kim, 2015; Oh & Kwon, 2012; Lee et al., 2017) have shown that higher levels of education were associated with higher levels of life satisfaction. However, there was also a study that found no statistically significant difference between education level and life satisfaction among the elderly (Kim & Lee, 2013).

Kwon and Cho (2000) indicated that among demographic characteristics, the strongest influence on life satisfaction was the education level of the elderly, as higher education was associated with higher social status and economic wealth, which increased the likelihood of enjoying a comfortable old age. Highly educated seniors also had a strong desire to live a meaningful life and engage in activities that pursued self-actualization, which increased their self-esteem and positively affected their life satisfaction. Kim (2005) estimated that education level affected occupation and income level, which in turn positively influenced economic situation and life satisfaction after retirement. Lee et al. (2017) discovered that education level positively influenced life satisfaction among the elderly living in rural areas.

In South Korea, where poverty among the elderly is severe, financial status is an important variable that determine the quality of life of the elderly (Kang & Lee, 2007; Park, 2004: Cho, 2002; Kwon & Cho, 2000; Shin, 2010; Lee, 2011; Kwon et al., 2006). It has a significant impact on life satisfaction in terms of the continuity of economic conditions in old age without new sources of income. Kwon and Cho (2000) reported that the elderly with low economic independence and who did not participate in economic activities had relatively low

life satisfaction. Kang and Lee (2007) and Kwon et al. (2006) concluded that life satisfaction of the elderly increased with higher monthly living expenses.

A number of studies have also identified physical and mental health as key characteristics in determining life satisfaction (Kim & Nam, 2017; Kim, 2018; Lee, 2020; Youn & Kim, 2023; Borg et al., 2006). Lee (2020) revealed that the worse the subjective health status, the lower the life satisfaction. In contrast, Cha and Kim (2015), Kim and Nam (2017), and Park, Lee, and Yeum (2024) reported that the better the subjective health status of the elderly, the higher the life satisfaction and the lower the levels of depression, which is also a factor that reduced life satisfaction.

II.2. 2 The Impact of Work, Housework, and Leisure Time on Life Satisfaction

Several previous studies have analyzed how specific activities of the elderly, such as sleep, work, family caregiving, and volunteering, affected life satisfaction. Sleep was considered a basic human need, a means to restore daily vitality, and an important determinant of physical health and life (Harano et al., 2008). Many people experienced changes in sleep as they aged, and irregular sleep, which accounted for one-third of the day, could disrupt daily patterns and reduce quality of life.

Moon (2017) analyzed the elderly by sleep duration, dividing them into over-sleepers (9 hours or more), adequate sleepers (6 to 8 hours), and under-sleepers (5 hours or less), and identified a significant correlation between sleep duration and quality of life. The adequate sleepers had the highest quality of life, while the under-sleepers had the lowest quality of life among men, and the over-sleepers had the lowest quality of life among women.

Oh (2021) reported that the probability of both short and long sleep increased with age. Longer sleep in the elderly was attributed to their weakened bodies, which led to longer periods of lying down. Choi and Kwon (2018) found that gender (female), median income (economic level), and age (70-79 years) were characteristics in determining sleep duration.

In a previous study analyzing economic activity, Yoon and Han (2004) discovered that working in old age had a positive impact on life satisfaction by providing not only economic security but also a sense of social belonging. Their analysis suggests that economic activity enhanced physical and psychological satisfaction, thereby improving the quality of life in old age.

Kwon and Cho (2000) reported that the elderly with low economic independence and economic inactivity had relatively low life satisfaction. A study comparing the differences in life satisfaction among the elderly by time allocation type (Kim, 2015) also revealed that those who were employed had higher life satisfaction overall. Shin (2010) noted that the more socially active the elderly were, the more positive their subjective perception of their life was, and that this cognitive evaluation led to higher life satisfaction.

On the other hand, Kim (2007) analyzed that paid work affected life satisfaction both positively and negatively depending on the economic status and employment motivation of the elderly. In other words, the same paid work was associated with higher life satisfaction when the economic status was good and the motivation for participation was voluntary, compared to when it was an unavoidable choice to solve poverty.

The literature on family caregiving was mixed, with some studies showing positive effects of grandchild care on the psychological and physical health of the elderly (Jun et al., 2013; Song et al., 2015; Kim et al., 2019) and others showing negative effects on the health and psycho emotional aspects of the elderly, including depressive stress (Won, 2011; Kim, 2012). Voluntariness of caregiving and social support were often cited as the key characteristics that differentiated between positive and negative effects (Kim, 2016; Choi et al., 2012).

The elderly who had difficulty with household chores and caregiving activities, as well as poor economic conditions and poor relationships with their care recipients, rated their life satisfaction negatively (Kim, 2016). The negative impact was more pronounced for women

than men, and spousal care among elderly couples significantly lowered their life satisfaction. Spousal care was analyzed as a characteristic that reduced life satisfaction because the care provider was elderly and had to be responsible for care alone in an isolated space (Lee & Kim, 2009). Choi et al. (2012) also studied the impact of grandchild care on the life satisfaction of female older adults and identified the voluntariness of grandchild care, positive evaluation of care, and social support as variables affecting life satisfaction.

Lee and Chun (2011) analyzed the correlation between economic activities, care work, and social participation activities and life satisfaction, and concluded that economic activities and care work had a negative effect, while social participation activities had a positive effect.

Analyzing leisure activities Kwon, G.-C., and Kwon, S.-S. (2020) reported that the more active older adults were in leisure activities and the more they perceived leisure activities to be important, the more successful they were in aging. The elderly's leisure activities were discovered to strengthen social capital, including trust, norms, engagement, and networks, which in turn positively impacted their success in later life.

Some studies have also shown that social leisure activities, including volunteer activities that expanded social networks, had positive effects in old age (Yang, 2007; Nam & Lee, 2021Nam and Lee (2021) identified that among male older adults, longer volunteer hours were associated with higher life satisfaction, suggesting that volunteering not only rejuvenates life but also compensates for socially atrophied social networks.

Kim and Choi (2019) and Jung and Lee (2022) determined that men spent more leisure time than women. While there were distinct gender differences in the types of leisure activities, the majority of leisure time was spent on passive leisure. It seemed that the older generation in South Korea did not enjoy leisure because they were immersed in work during their middle age, so even after retirement, they spent most of their leisure time watching TV instead of engaging in cultural and social activities. Lee (2011) observed the correlation between time use

and life satisfaction among retired seniors and noted that the less time spent listening to TV or radio, doing housework, and sleeping, the higher the life satisfaction.

III Research Questions and Hypotheses

Research on the elderly's time use initially dealt with the overall usage patterns of how older adults spend their 24 hours (Jung, 2001; Kim, E.-K., & Kim, E.-R., 2002; Kim, 2006; Park, 2007; Park & Byun, 2013). However, since then, most studies have focused on specific activities such as sleep, work, household chores, and leisure time (Choi et al., 2006; Kim, 2007; Jeon, 2010; Ji, 2012; Hwang, 2014; Kim, 2015; Kang et al., 2017). After the Statistics Korea included a question on life satisfaction in the time use questionnaire, studies have begun to analyze the impact of specific activities on life satisfaction (Moon, 2017; Kwon, G.-C., and Kwon, S.-S., 2020; Nam & Lee, 2021).

Many previous studies on the elderly's time use have highlighted both similarities and differences in the time use patterns of the elderly. While there is a commonality of spending less time working and more time doing leisure activities in retirement, individual time use varies by demographic characteristics such as gender, age, education level, economic status, and spousal status. Research has been conducted for more than 20 years on how demographic characteristics affected the elderly's time use, but the results are still mixed.

Also, there are many different opinions on what quality of life is, but there is no consensus definition. In medicine, patients' quality of life has been mainly measured by the change in physical condition before and after treatment. Psychology has focused on intangible aspects of quality of life, such as human emotions, motivation, and happiness, while economics has emphasized standard of living and economic factors (Hajiran, 2006).

I agree with Costanza et al. (2007) and Han (2008) that quality of life is an expression of an individual's subjective satisfaction or dissatisfaction in various areas of life. Therefore, in this study, I define quality of life as a person's subjective sense of well-being regarding his or her life in general. To measure subjective well-being, it should include both

cognitive and emotional evaluations (Han, 2008). Thus, I chose to measure quality of life through two questions from the 2019 Statistics Korea Time Use Survey: “How do you feel about your life in general?” as a cognitive assessment, and “How did you feel overall on your day?” as an affective assessment. The cognitive assessment is represented by ‘life satisfaction’ and the affective assessment is represented by ‘daily mood’ in this study.

In this study, I analyze the main time use of Korean seniors aged 65 and older based on the 2019 Statistics Korea Time Use Survey, focusing on the demographic characteristics that influence seniors’ time use for work, sleep, housework, and leisure activities. I also study how sleep, work, household chores, and leisure time affect the elderly’s life satisfaction and daily mood.

What makes my study different is that it comprehensively analyzes the elderly’s time use using recent statistics while also examining the impact of each time use on life satisfaction. While other studies have shown that time spent working has both positive and negative effects on life satisfaction, my study will go a step further to find commonalities among the elderly’s work, leisure, and housework time that affect life satisfaction both positively and negatively. Previous studies have analyzed work time, caregiving time, and leisure time separately and have not identified commonalities.

Another difference from previous studies is that I conduct all analyses separately for male and female seniors to clearly show gender differences. This is because the elderly generation in South Korea is the most gender-stereotyped of any generation, making it likely that the time use of men and women is significantly different. Nevertheless, existing studies have not analyzed men’s and women’s time use completely separately or examined how time use affects life satisfaction differently.

This study also aims to identify the sociodemographic characteristics and time use that affect the life satisfaction of male and female older adults, as well as to analyze how the

different uses of time for work, household chores, care, and leisure activities by male and female older adults affect their life satisfaction. This study will reveal that not only do men and women use time differently, but even when they use time for the same activities, the impact on life satisfaction is different for men and women. Therefore, government policies to improve the quality of life for men and women should be different.

For these research purposes, the research questions and hypotheses are as follows.

III.1 Research Questions

First, how do Korean seniors allocate 24 hours a day between sleep, work, household chores, and leisure activities?

Second, how do demographic characteristics such as gender, age, education, and economic status affect the use of time among the elderly in South Korea?

Third, how do demographic characteristics such as gender, age, education, and economic status affect life satisfaction and daily mood among the elderly in South Korea?

Fourth, how do sleep, work, household chores, and leisure activities affect life satisfaction and daily mood among the elderly in South Korea?

III.2 Hypotheses

III.2. 1 Characteristics that Influence the Elderly's Primary Time Use

①. The time use of the elderly will vary depending on their demographic characteristics.

②. The time use will be concentrated on work and leisure activities for men and domestic work for women.

③. Leisure time will be dominated by passive leisure time for both men and women.

④. Older adults will sleep more and spend less time working and doing household chores.

⑤. The higher the education level, the more time spent on leisure activities and the less time spent on working.

⑥. The better off they are, the less they work and the more leisure time they have.

III.2. 2 Characteristics Affecting the Life Satisfaction of the Elderly

①. The life satisfaction of the elderly will vary depending on their demographic characteristics.

②. Elderly males will have higher life satisfaction than elderly females.

③. The older the elderly, the less satisfied they are with life.

④. Higher levels of education and income are associated with increased life satisfaction.

⑤. Better subjective health is associated with higher life satisfaction

⑥. Life satisfaction will vary depending on how the elderly spend their time.

⑦. More hours of sleep may decrease life satisfaction.

⑧. More hours of work may increase life satisfaction.

⑨. More hours of caregiving may decrease life satisfaction.

⑩. More hours of socializing and active leisure, along with less passive leisure in leisure activities may increase life satisfaction.

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IV Research Methods

IV.1 Research Methodology

This study was analyzed using raw data from the Time Use Survey published by Statistics Korea in 2019. The Time Use Survey has been conducted every five years since 1999 to understand how Koreans spend their 24 hours a day. The data is collected at the household level using the time diary method, which requires respondents to record their behavior, mode of transportation, location, and who they are with every 10 minutes for two days. I believe that detailed information about where, when, and with whom people are engaging in behaviors over a “24-hour period” provides a comprehensive picture of time use for people aged 65 and older.

The most recent 2019 Time Use Survey was conducted in three rounds. The first wave was conducted from July 19 to July 28, the second wave from September 20 to September 29, and the third wave from November 29 to December 8 in 2019. The survey covered approximately 27,000 household members under the age of 10 living in about 12,435 nationally representative households.

In addition to the 11 time diary-related items that are the focus of the survey, there are various other household and individual-related items. The details vary slightly depending on the year of the survey; however, in 2019, there were a total of 26 items, including life satisfaction, monthly household income, and marital status.

This study focused on people aged 65 and older. However, since the Time Use Survey required one respondent to fill out a diary for two days each, this study used both days of diaries for analysis. Therefore, the actual number of cases used in the analysis was twice the number of eligible respondents. The time data collected on the first and second days were combined to calculate the average time for each behavior (including those who did not perform a particular

behavior). This was done to mitigate the problem of respondents' irregular or unusual use of time and to improve the reliability of the measure.

IV.2 Data and Methodology

IV.2. 1 Socio-demographic Characteristics

Among the respondents of the 2019 Time Use Survey, there were 5,960 people aged 65 and older, with a total of 11,380 samples. Table 1 shows the socio-demographic characteristics of the elderly analyzed.

Firstly, among the sampled elderly, there were more women (56.22%) than men (43.78%). The average age of women (74.3 years) was about one year older than that of men (73.4 years). In the age group of 65 to 75 years, men (59.9%) outnumbered women (54.11%), whereas in the age group of 75 years and above, women (45.89%) outnumbered men (40.1%).

When examining marital status, the difference between men and women became even more pronounced. Women were four times more likely to be widowed (47.83%) than men (10.21%). Conversely, the marriage rate for women was 48.36%, which was 35.93 percentage points lower than that for men (84.34%). The higher rates of widowhood and divorce among women were likely due to their longer life expectancy compared to men.

The gender gap was also evident in education. About 46.97% of men had a high school education or higher, compared to only 19.28% of women. Additionally, only 4.78% of men were uneducated, whereas 19.6% of women were uneducated, which was four times the rate for men. Overall, men tended to be more educated than women.

In terms of personal monthly average income, 89.06% of women reported earning "less than one million won," which was 30.69 percentage points higher than men (58.37%). On the other hand, men earning more than two million won (19.19%) outnumbered women (2.78%) by seven to one. The proportion of economic activity was 43.64% for men, but only 28.29% for women, showing a difference of 15.35 percentage points. To further explore economic status, I also examined whether individuals owned and resided in their homes. The

homeownership rate was also higher for men (81.47%) compared to women (69.81%) by 11.66 percentage points. Regarding the area of residence, both men and women predominantly lived in urban areas, with 82.10% and 85.90% respectively, far surpassing rural areas.

When it comes to subjective health, 21.40% of women rated their health as "bad," compared to 13.99% of men. However, 22.77% of men reported being in "good" health, compared to 21.13% of women. Those who felt their health was "neutral" were evenly split, with 56.24% of men and 57.47% of women. Lastly, more women (15.29%) than men (11.24%) reported having a family member who needed care, such as a household member under the age of 10.

Table 1
Household and personal characteristics of the Korean elderly

(unit: %)

Characteristics		Male (n=4982)	Female (n=6398)	t-test or chi-square
Gender		43.78	56.22	
Age	65 to 60 years	33.12	29.79	***
	70 to 74 years	26.78	24.32	
	75 to 79 years	22.04	23.29	
	80 years and over	18.07	22.60	
Marital status	Married (incl. cohabiting)	84.34	48.36	***
	Never Married	0.40	0.53	
	Widowed	10.12	47.83	
	Divorced (incl. separated)	5.14	3.28	
Education level	No education	4.78	19.63	***
	Elementary school graduate	25.13	42.48	
	Middle school graduate	23.12	18.6	
	High school graduate	29.71	14.22	
	College graduated or higher	17.26	5.06	
Personal monthly average income	One million won or less	58.37	89.06	***
	One to two million won	22.44	8.16	
	Two million won or more	19.19	2.78	
Economic activity	Employed	43.64	28.29	***

	Unemployed	56.36	71.71	
Residence(n=7164)	Owned	81.47	69.81	***
	Jeonse(lump-sum deposit)	6.09	9.76	
	Monthly rent	10.96	17.13	
	Free rent	1.47	3.3	
Residential area	City	82.10	85.90	***
	Farm	17.90	14.10	
Subjective health	Very good	3.15	1.89	***
	Good	26.62	19.24	
	Neutral	56.24	57.47	
	Bad	12.14	19.15	
	Very Bad	1.85	2.25	
Needs care	Not required	88.76	84.71	***
	Required	11.24	15.29	

*p<0.05 **p<0.01 ***p<0.001

IV.2. 2 Variables

IV.2. 2.1 Control Variables

Based on previous studies indicating that the characteristics of the elderly may vary by gender, age, region, socioeconomic level, and marital status, I used age, spousal status, education level, personal monthly average income, economic activity, home ownership, farmhouse residence, health status, and care needs as control variables. And all analyses were conducted separately for women and men.

Spousal status was analyzed by categorizing all respondents who answered anything other than marriage as “not married” and home ownership was categorized as “not self” for all respondents who answered anything other than their own home.

Education level was analyzed as “university or higher” from 4) college (less than 4 years) to 7) postgraduate doctoral program, and monthly average income was analyzed as “more than 2 million won” from 3) less than 2 to 3 million won to 9) more than 8 million won. In terms of economic activity status, 2) vacations and temporary leaves of absence were reclassified as “not working”. Health status was measured on a 5-point Likert scale from 1) very good to 5) very bad, and it was reverse-coded so that higher scores indicate better health.

IV.2. 2.2 Explanatory Variables

The explanatory variables include work type, household work type, and leisure activity type. Each type was reclassified based on the daily activities categorized in the 2019 Time Use Survey by Statistics Korea. The Time Use Survey classified behaviors into 9 large categories, 45 medium categories, and 153 small categories, depending on the purpose of the respondent's behavior. The behavior classification number consisted of three digits: the first digit indicates the large category, the second digit indicates the medium category, and the third digit indicated the small category. However, this behavioral classification system was too detailed and was not suitable for summarizing the time use of the elderly.

Therefore, this study divided the elderly's time use into four main categories: sleep, employment, housework, and leisure, and analyzed older adults' daily routines in detail through each of these time uses. The time-use classification criteria defined in this study are shown in Table 2, and the dependent, control, and explanatory variables, along with their measurement methods, are described in Table 3.

Firstly, 'sleep' duration included both the time spent sleeping and the time spent trying to sleep.

Secondly, 'employment' duration was divided into paid and unpaid work time. Paid work referred to activities for which one received compensation, while unpaid work included tasks such as job searching, entrepreneurship, and work for self-consumption.

Thirdly, 'housework' duration encompassed traditional household tasks like cooking and caring for family members, with family care further divided into care for minors and adults.

Fourthly, 'leisure' duration was categorized into three types based on the nature of the activity: socializing, active leisure, and passive leisure. Socializing involved activities that included interacting with others, such as volunteering, social networking, and religious activities. Active leisure included physical activities like exercising, walking, traveling, and outings such as going to the movies or theater. Passive leisure was defined as media-related

activities like watching TV, reading, listening to the radio, searching for information on the Internet, and activities that did not require active physical movement, such as resting.

Table 2
Classification of activities: sleep, employment, housework, leisure

My study	2019 Time use survey
1. Sleep	11 Sleeping (Sleeping, Sleeplessness)
2. Employment	
Paid work	21. Corporations, government and non-profit institutions 22. Household enterprises to produce goods
Unpaid work	23. Unpaid family work 24. Other employment-related activities 25. Seeking employment and starting a business 26.Unpaid work for own final use
3. Housework	
Household care	41. Food preparation 42. Care and maintenance of clothes and footwear 43. Cleaning and organizing 44. Repairs and maintenance of house and housewares 45. Vehicle maintenance and repairs 46. Domestic pet and plant care 49. Other household care
Caring for children under 10	51 Caring for children under 10 52 Caring for children 10 and older
Caring for adults	53 Caring for dependent adult household and family members 54 Helping non-dependent adult household and family members
4. Leisure	
Socializing	6. Volunteering Activities and unpaid trainee work 7. socializing and community participation (religious activities, ritual activities) 893 Drinking alcohol/social drinking
Active leisure	81. Culture and tourism 83. Sports and outdoor activities (Walking/strolling, hiking, personal exercises, fishing)

Passive leisure	82. Media use (Reading newspapers, Reading magazines, Watching live TV) 84. Games/play (PC games, Mobile games) 85. Activities related to rest 89. Other leisure activities

Table 3

Defining and measuring variables

Type of variable	Indicator	Measurement method
Dependent	Life satisfaction	Higher scores indicate higher life satisfaction. Measured on a 5-point Likert scale
	Daily mood	Higher scores indicate better mood Measured on a 7-point Likert scale
Explanatory	Sleep duration	Sleeping and sleepiness
	Work hours	Paid work and unpaid work
	Household work hours	Household care and caring for minors and adults
	Leisure time	Socializing, active leisure and passive leisure
Control	Gender	Analyzed by men and women
	Age	By number
	Marital status	0=not married 1=married
	Education level	1=no education 2=elementary school graduate 3=middle school graduate 4=high school graduate 5=University graduate or higher
	Personal monthly average income	0=one million won or less 1=one to two million won 2=two million won or more
	Economic activity	0=unemployed 1=employed
	Home owned	0=not owned 2=owned
	Residential area	0=not farmhouse 1=farmhouse
	Subjective health	Higher scores mean better subjective health Measured on a 5-point Likert scale
	Needs care	0=no family care for 1= having a family to care for

IV.2. 2.3 Dependent Variables

The dependent variables were life satisfaction and feeling of the day. Life satisfaction was measured by asking “How do you feel about your life in general?” to capture the difference between time utilization and subjective satisfaction with life in general. Answers to each item were measured on a 5-point Likert scale ranging from 1) very satisfied to 5) very dissatisfied. A lower score indicated higher satisfaction.

Feeling of the day consisted of the item “How did you feel overall on the first day?”, which measured time utilization and subjective mood about the day on a 7-point Likert scale from 1) very good to 7) very bad. Again, the lower the score, the better the mood. These two variables were reverse coded so that the higher the score, the better the condition.

Table 4 provides descriptive statistics such as mean, standard deviation, skewness, and kurtosis for life satisfaction and daily mood by gender. Life satisfaction averages were 3.134 for men and 3.057 for women, a statistically significant difference (p=.000). Daily mood was again higher for men at 4.414 and women at 4.399, but not statistically significant (p=.374).

Meanwhile, Table 5 presents the percentage of responses to each item, simplified into categories of “satisfied (good)”, “neutral”, and “dissatisfied (bad)”. On average, men tended to be more positive than women in both life satisfaction and daily feelings. Men were significantly more likely to be satisfied with their lives (30.43%) compared to women (19.71%), while women were more evenly split between being satisfied (26.54%) and dissatisfied (19.71%). Regarding daily feelings, slightly more men (36.08%) than women (35.55%) reported feeling good, but more women (6.84%) than men (5.64%) reported feeling bad, indicating that women tended to feel slightly worse overall.

This is consistent with the findings of many previous studies that men had higher life satisfaction than women (Kwon & Cho 2000; Baek & Kwon 2007; Jo 2010; Lee 2010; Kim 2018; Kwon et al 2006). Kim (2018) and Jo (2010) reported that female elders were often tied to domestic work even as they aged, which was often a red flag for their physical and mental health.

Table 4

Descriptive statistics of life satisfaction and degree of daily mood

	Men(n=4982)				Women(n=6398)			
	Mean	S.D.	Skewness	Kurtosis	Mean	S.D.	Skewness	Kurtosis
Life satisfaction	3.134	0.906	-0.047	3.144	3.057	0.894	0.012	3.194

Daily mood	4.414	0.902	0.528	4.637	4.399	0.919	0.845	4.484

Table 5
Proportion of life satisfaction and daily mood by gender
(unit: %)

	Life satisfaction		Daily mood	
	Men	Women	Men	Women
Satisfied (Good)	30.43	26.54	35.55	36.08
Neutral	49.86	51.14	58.81	57.08
Unsatisfied (Bad)	19.71	22.32	5.64	6.84

IV.2. 3 Analysis Method

The data was analyzed using STATA 18. Recognizing that time use and satisfaction with life may differ by gender, the subjects were separated by gender to further explore these characteristics.

Initially, the time use patterns of the elderly were investigated, and variations were analyzed based on demographic characteristics. To determine which demographic characteristics influence the categorization of behaviors such as sleep, employment, housework, and leisure, and to see if these categorizations differ among groups, a proportion of participants analysis was conducted along with tests for mean differences between groups (t-test, ANOVA, and Scheffe test for post hoc analysis).

To examine the impact of the overall average time spent on sleep, employment, housework, and leisure activities, as well as the impact of each type on satisfaction with life and mood of the day, a multiple regression analysis was conducted. Employment was categorized into unpaid and paid work, housework into household care, childcare, and adult care, and leisure activities into socializing, active leisure, and passive leisure.

Additionally, a comparison was made between the life satisfaction of individuals who engaged in specific activities (participants) and those who did not. Individuals with employment, housework, and leisure time were coded as 1, while those without were coded as

0. The average satisfaction with life of the two groups was calculated, and statistical significance was verified using a t-test.

Finally, since the dependent variables, satisfaction with life and mood of the day, were ordinal variables, an ordinal logit model, commonly used in existing studies, was employed to analyze the impact on life satisfaction and daily mood while controlling for various variables. For the analysis, satisfaction with life and mood of the day were reverse-coded.

V Empirical Results and Discussion

V.1 Characteristics of Time Use among the Elderly Aged 65 and Over

Table 6 presents an analysis of the total average time (minutes), the proportion of participants (%), and the average time (minutes) spent by participants, categorized by gender into sleep, employment, housework, and leisure activities.

In detail, the overall average sleep duration was 509.5 minutes for men and 511.2 minutes for women, showing a statistically insignificant difference ($p = .335$). For employment, the total average time was 120.8 minutes for men and 64.1 minutes for women, with the proportion of participants being 42.65% for men and 29.96% for women ($p = .000$). The gender gap became more evident when distinguishing between paid and unpaid work.

Men engaged in paid work for an average of 105.3 minutes, while women did so for 49.8 minutes, a difference that was statistically significant ($p = .000$). In contrast, men spent 15.6 minutes on unpaid work and women 14.3 minutes, a difference that did not reach the common threshold for statistical significance ($p < .05$) with a p-value of .135. The gender gap in paid work participation was twice as large, with 66.46% for men and 33.54% for women, whereas the gender gap in unpaid work participation was similar, with 22.78% for men and 18.77% for women.

Analyzing just the participants, men dedicated more time to paid work, averaging 313.85 minutes compared to women's 262.21 minutes. Conversely, women spent more time on unpaid work, averaging 76.19 minutes compared to men's 68.24 minutes. The gender difference in paid work ($p = .000$) and unpaid work ($p = .009$) was statistically significant. In general, women worked fewer hours than men, even when they were employed. However, when focusing on unpaid work, women worked longer hours than men.

This result is consistent with Park (2007), who found that men work longer hours in paid labor than women, while women work longer hours in unpaid labor. However, while

Park's study included domestic work as unpaid labor, this study found that even excluding domestic work, women still worked more hours in unpaid labor than men.

Domestic work also showed a strong gender disparity. The overall average time was 73.4 minutes for men and 188.6 minutes for women, more than twice as much as men ($p = .000$). The gender gap was most pronounced in household care. Women (180.5 minutes) exceeded men (67.5 minutes) in total average hours, and women constituted the majority of participants (94.89%), while only about 70.49% of men participated. When examining the average minutes per participant, women (190.2 minutes) more than doubled the time of men (95.8 minutes). The gender gap was statistically significant for total household management time ($p = .000$) and participant household management time ($p = .000$).

Among housework activities, women's overall average time spent on family care was higher (8.2 minutes) than men's (5.9 minutes). The percentage of women participating in family care was 11.24%, which was higher than that of men at 8.09%, and the average caregiving time for actual participants was similar for both genders.

The average time spent caring for a minor was 2.9 minutes for men and 4.5 minutes for women, a significant difference ($p = .000$). The percentage of participants was also higher for women (4.97%) than men (3.61%). When it came to caring for adults, women spent an overall average of 3.6 minutes, slightly more than men, who spent just over 3 minutes, showing no statistically significant difference ($p = .105$).

In leisure activities, there was a statistically significant difference between men and women in both total average time ($p = .000$) and average time per participant across all types: socializing ($p = .000$), active leisure ($p =. 000$), and passive leisure ($p = .000$).

In terms of total average time, women spent more time socializing (101.5 minutes) than men (72.5 minutes), while men spent more time in active leisure (63.7 minutes) than women (33.8 minutes). The proportion of participants also favored women for socializing and

men for active leisure. In contrast, passive leisure, in which 98% of the elderly aged 65 and over participated, was more common among men (303.4 minutes) than women (256.4 minutes), resulting in an overall average of 439.6 minutes of leisure time for men and 391.8 minutes for women.

The hypothesis of this study, which posited that both men and women would predominantly engage in passive leisure activities during their free time, was supported. This finding aligns with earlier research indicating that leisure time tended to increase (Kim, 2006) but was primarily spent on passive activities like watching television (Park & Lee, 2003; Kim, H.-M., & Kim, D.-H., 2019). Additionally, this study corroborated the results of Kim & Choi (2019) and Jung & Lee (2022), which found that men tended to have more leisure time than women. It is also consistent with previous studies (Kim & Choi, 2019; Jung & Lee, 2022) that have highlighted distinct gender differences in leisure activities, while noting that the majority of leisure time was still spent on passive pursuits.

As hypothesized in this study, statistically significant gender differences were found in employment, housework, and leisure time, excluding sleep, among the main activities of the elderly. When comparing by activity type (overall average time), the order is: sleep (509.5 minutes) > leisure (439.6 minutes) > employment (120.8 minutes) > housework (73.4 minutes) for men, and sleep (511.2 minutes) > leisure (391.8 minutes) > housework (188.6 minutes) > employment (64.1 minutes) for women. This aligns with earlier research that identified significant gender differences in time use among the elderly (Kim, E.-K., & Kim, E.-R., 2002).

This study indicated that men focused their time on leisure activities and work, while women focused their time on leisure activities and housework. This was somewhat different from the hypothesis of this study, which suggested that men would spend time on leisure and work, and women would spend time on household chores. Both men and women spent the most time on leisure activities, with the exception of sleep.

Table 6

Average time usage for the elderly aged 65 and over and participant ratio

		Men	Women	t-test
1. Sleep	Total Average Time (minutes)	509.49	511.23	t=-0.96
	Percentage of Participants (%)	**99.98**	**100**	
	Average Time for Participants (minutes)	509.59	511.23	
2. Employment	Total Average Time (minutes)	120.82	64.1	t=17.88***
	Percentage of Participants (%)	**42.65**	**29.96**	
	Average Time for Participants (minutes)	283.26	213.92	t=12.11***
Paid work	Total Average Time (minutes)	105.27	49.79	t=18.27***
	Percentage of Participants (%)	**33.54**	**18.99**	
	Average Time for Participants (minutes)	313.85	262.21	t=7.88***
Unpaid work	Total Average Time (minutes)	15.55	14.3	t=1.50
	Percentage of Participants (%)	**22.78**	**18.77**	
	Average Time for Participants (minutes)	68.24	76.19	t=-2.62***
3. Housework	Total Average Time (minutes)	73.41	188.63	t=-58.90***
	Percentage of Participants (%)	**71.86**	**95.25**	
	Average Time for Participants (minutes)	102.16	198.04	t=-45.66***
Household care	Total Average Time (minutes)	67.54	180.46	t=-61.99***
	Percentage of Participants (%)	**70.49**	**94.89**	
	Average Time for Participants (minutes)	95.81	190.18	t=-48.24***
Family care	Total Average Time (minutes)	5.88	8.17	t=-3.86***
	Percentage of Participants (%)	**8.09**	**11.24**	
	Average Time for Participants (minutes)	72.66	72.68	t=-0.0063
Minors	Total Average Time (minutes)	2.86	4.49	t=-3.78***
	Percentage of Participants (%)	**3.61**	**4.97**	

		Average Time for Participants (minutes)	79.17	90.41	t=-1.60
	Adults	Total Average Time (minutes)	3.02	3.67	t=-1.62
		Percentage of Participants (%)	**4.82**	**6.75**	
		Average Time for Participants (minutes)	62.63	54.42	t=1.48
4. Leisure		Total Average Time (minutes)	439.58	391.78	t=14.57***
		Percentage of Participants (%)	**99.78**	**99.99**	
		Average Time for Participants (minutes)	440.56	393.13	t=14.53***
	Socializing	Total Average Time (minutes)	72.51	101.54	t=-17.32***
		Percentage of Participants (%)	**77.7**	**84.29**	
		Average Time for Participants (minutes)	93.31	120.46	t=-14.83***
	Active leisure	Total Average Time (minutes)	63.65	33.83	t=24.02***
		Percentage of Participants (%)	**61.86**	**43.42**	
		Average Time for Participants (minutes)	102.89	77.9	t=15.55***
	Passive leisure	Total Average Time (minutes)	303.43	256.42	t=16.03***
		Percentage of Participants (%)	**98.59**	**98.03**	
		Average Time for Participants (minutes)	307.75	261.56	t=15.93***

*p<0.05 **p<0.01 ***p<0.001

V.2 Characteristics that Influenced the Time Use of the Elderly Population

To explore the demographic and social characteristics influencing the time use of the elderly, I conducted a multiple regression analysis using sleep time, work time, housework time, and leisure time as dependent variables. I checked for multicollinearity among the independent variables using the Variance Inflation Factor (VIF) and found no multicollinearity in the model. The results of the multiple regression analysis are summarized in Table 7. Each value represents a regression coefficient.

Sleep takes up one-third of a 24-hour day and is responsible for rejuvenating our daily routines. However, as people age, their sleep patterns gradually change and routines become

disrupted (Harano et al., 2008). Table 7 highlights the demographic characteristics affecting sleep time. Age (p = .000), marital status (p = .002), education level (p = .000 to .001), personal income level (p = .001 to .010), economic activity (p = .000), residential area (p = .000), and health status (p = .000) were statistically significant. For both men and women, older age was associated with longer sleeping duration, while higher education and income were linked to shorter sleeping time. Economic activity and better health also reduced sleeping hours. This study's hypothesis that people would sleep less and work more as they age was accepted.

Notably, sleep patterns differed by marital status: men tended to sleep more when they had a spouse, whereas women tended to sleep less. Due to traditional gender role stereotypes that perceive housework as women's work, having a spouse was likely to decrease the hours men spent on housework while increasing the hours women spent on housework. This is thought to be the source of the difference in sleep duration between men and women, both with and without a spouse.

This finding is in line with Oh (2021), who found that age, gender, marital status, and education were influential characteristics for longer sleep. It was believed that the increase in sleep in old age was due to decreased activity and increased time spent in bed as the body becomes weaker (Grandner et al., 2010).

In the analysis of work hours, both men and women worked fewer hours as they aged (p = .000) and became more educated (p =.000 to .202). While there was a clear decrease in hours of employment for women as education level increases, there was no statistically significant effect for men, except for those with a college degree or higher. Income and hours of employment were positively related. For both women and men, the higher the average monthly income of an individual, the more hours they worked.

While there was a positive correlation between hours worked and monthly income, this did not mean that seniors with higher monthly income work more hours. Rather, it was

shown that the more hours they work, the more money they earn each month. Since the economic conditions of the elderly in South Korea are generally poor, it was estimated that the majority of the elderly have to work for hours to earn enough monthly income to live on.

When employment type was considered separately, the impact of health status ($p = .000$) and farm residence ($p = .001$) was evident in both paid and unpaid work for men. However, this pattern did not hold true for women. More educated and healthier older men were predicted to spend more time on leisure activities than on work.

Housework hours decreased with age for both men ($p = .013$) and women ($p = .000$) but increased with better health ($p = .000$ to $.013$), suggesting that younger and healthier seniors were more active in household tasks. For men, higher education levels were associated with fewer housework hours ($p = .010$ to $.050$). Economic activity ($p = .000$) and higher income levels ($p = .000$ to $.942$) were linked to less housework, and having a spouse resulted in less housework for men ($p = .000$) but more for women ($p = .000$), likely due to traditional gender roles.

Household care time, which accounted for over 90% of all housework time, followed a similar trend. However, for men, having a spouse decreased household care time ($p = .000$) but increased family care time ($p = .000$), including time spent caring for both minors ($p = .001$) and adults ($p = .000$). For women, having a spouse increased both household care time ($p = .000$) and family care time ($p = .000$).

Economic activity reduced family caregiving time, especially for women ($p = .001$). When looking at different types of care, economic activity had a statistically significant effect on reducing the time spent caring for minors ($p = .001$). Economic participants had less leisure time than non-participants ($p = .000$). This study confirmed Kim, E.-K., & Kim, E.-R. (2002)'s findings that economic activity was a determinant of leisure time consumption.

For both men and women, having a college degree or higher was associated with an increase in leisure time, with a statistically significant increase in socializing for women and active leisure for men. Income and leisure time were negatively related. For men, there was a clear decrease in leisure time as the average monthly income increased, and for women, the decrease in leisure time was statistically significant at $2 million won and above. By leisure type, passive leisure time decreased significantly with income for both men and women. Men and women with higher average monthly incomes were more likely to be employed and therefore had less leisure time, especially passive leisure time. This is consistent with the Kim, H.-M., and Kim, D.-H. (2019) study, which found that average monthly income significantly influenced leisure time and types of leisure activities.

By type of leisure, time spent socializing activities ($p = .000$) and engaging in active leisure ($p = .000$) increased with better health for both genders, while passive leisure decreased ($p = .000$). This likely reflects the different leisure activities chosen by healthy versus unhealthy seniors.

In passive leisure, which constituted over 65% of all leisure time, gender differences by marital status were evident: having a spouse increased men's passive leisure ($p = .035$) but decreased women's ($p = .017$). As income levels rose, there was a notable reduction in passive leisure time for both men ($p = .000$) and women ($p = .002$ to 003).

These findings indicated that demographic and social characteristics affecting time use among the elderly differ by gender. Traditional gender roles, in particular, lead to distinct differences in time use depending on whether a spouse was present. Men tended to spend less time on housework and more on leisure activities when they had a spouse, while women spent more time on housework and less on leisure. This suggested that men enjoyed more leisure time when they had a spouse, whereas women had more leisure time when they did not.

In summary, this study's hypothesis that the elderly's time use would vary by demographic characteristics was accepted. However, the hypothesis that higher levels of education would lead to more time spent on leisure activities and less time working was not entirely valid; this was only statistically significant among college graduates and above for both men and women.

I could neither support nor reject the hypothesis that higher economic levels would be associated with less time spent working and more time spent on leisure activities. This was because this study found that the higher the average monthly income of seniors, the more hours they worked and the less time they spent on leisure activities. However, this finding could not be interpreted to mean that seniors with higher incomes worked more and had less leisure time. In South Korea, where the pension system is not well-developed, it is likely that more economically disadvantaged seniors are employed and thus have higher average monthly incomes. The correlation between economic level and hours worked was found to be limited in this study.

Table 7

Characteristics affecting time use of the elderly aged 65 and over (continued)

		Sleeping		Employment (overall)		Paid Work		Unpaid Work	
		Men	Women	Men	Women	Men	Women	Men	Women
Age		6.65 ***	9.93 ***	-14.47 ***	-11.26 ***	-12.85 ***	-10.40 ***	-12.85 ***	-10.40 ***
Spouse (ref. = none)		8.75 **	-13.77 ***	5.76	-10.19 *	2.63	-8.60	2.63	-8.60
Education level (ref.= no education)	Elementary school graduate	2.88	-17.61 ***	0.42	-16.01 ***	4.18	-6.71 *	4.18	-6.71 *
	Middle school graduate	-6.51	-16.01 ***	2.85	-12.30 **	12.11	-1.93	12.11	-1.93
	High school graduate	-14.51 **	-16.36 **	-0.29	-22.69 ***	8.04	-7.30	8.04	-7.30
	College graduated or higher	-22.59 ***	-41.68 ***	-23.75 **	-25.49 **	-12.65	-14.67	-12.65	-14.67

Personal monthly average income ref. = one million won or less)	One to two million won	-14.00***	-8.28	44.10***	52.87***	44.05***	57.58***	44.05***	57.58***
	Two million won or more	-12.68***	-17.02*	51.06***	58.64***	55.87***	61.01***	55.87***	61.01***
Economic activity (Ref. = unemployed)		-26.98***	-27.10***	222.21***	151.93***	215.32***	144.99***	215.32***	144.99***
Home owned (ref. = none)		4.94	-10.56***	5.37	5.55	-0.73	-3.97	-0.73	-3.97
Farmhouse (ref. = city)		12.97***	26.68***	-33.80***	3.04	-29.30***	6.36	-29.30***	6.36
Subjective health		-11.45***	-7.72***	-14.34***	0.83	-15.68***	1.50	-15.68***	1.50
Needs care (ref. = none)		-1.09	8.36	4.22	-7.15	6.56	-0.60	6.56	-0.60
Cons		540.63***	536.94***	79.79***	47.92***	65.40***	27.85***	65.40***	27.85***
R2		0.078	0.086	0.43	0.379	0.443	0.412	0.443	0.412
F(sig)		25.29	22.09	197.54	65.64	202.44	63.16	202.44	63.16
N		4070	3094	4070	3094	4070	3094	4070	3094

*p<0.05 **p<0.01 ***p<0.001

Table 7

Characteristics affecting time use of the elderly aged 65 and over (continued)

		Housework (overall)		Household care		Family care		Minors care		Adult care	
		Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Age		-3.42**	-17.46***	-3.02**	-13.48***	-0.40	-3.97***	-1.90***	-3.40***	1.50***	-0.57
Spouse (ref. = none)		-52.21***	49.68***	-58.31***	36.00***	6.10***	13.68***	2.52***	1.39	3.59***	12.30***
Education level (ref.= no education)	Elementary school graduate	-16.88**	-0.46	-16.44**	-2.24	-0.43	1.78	-1.58	1.23**	1.14	0.55
	Middle school graduate	-20.03**	-2.14	-20.22***	-2.01	0.19	-0.13	-1.57	0.28	1.76	-0.41
	High school graduate	-19.62**	-0.93	-18.46***	-4.12	-1.16	3.20	-0.96	6.14**	-0.20	-2.95*

	College graduated or higher	-15.79**	-17.68*	-14.56**	-14.26	-1.22	-3.43	-1.10	-0.45	-0.12	-2.97
Personal monthly average income ref. = one million won or less)	One to two million won	-8.23**	-24.35***	-9.29***	-26.69***	1.06	2.34	-0.04	0.50	1.10	1.84
	Two million won or more	-14.61***	-0.92	-15.71***	-3.63	1.10	2.71	-1.04	2.47	2.13**	0.24
Economic activity (Ref. = unemployed)		-23.28***	-27.12***	-21.08***	-21.98***	-2.20*	-5.14***	-0.93	-3.61***	-1.28	-1.53
Residence owned (ref. = none)		-1.37	17.46***	0.18	10.41***	-1.55	7.05***	-0.95	3.85***	-0.59	3.20***
Farmhouse (ref. = city)		-0.18	15.06*	2.50	19.43***	-2.68***	-4.37***	-1.15*	-1.42*	-1.53**	-2.94**
Subjective health		8.59***	6.64**	7.44***	5.66**	1.14*	0.98	0.21	1.07*	0.93**	-0.09
Needs care (ref. = none)		21.87***	11.11	-3.55	-15.43***	25.42***	26.54***	9.03***	10.50***	16.39***	16.05***
Cons		133.96***	188.74***	135.14***	184.22***	-1.18	4.52	6.31***	4.57**	-7.49***	-0.05
R2		0.0942	0.0903	0.110	0.0676	0.0711	0.1057	0.0286	0.0518	0.0675	0.0774
F(sig)		34.73	20.14	41.1	15.83	7.56	7.66	4.03	4.15	5.13	5.36
N		4070	3094	4070	3094	4070	3094	4070	3094	4070	3094

*p<0.05 **p<0.01 ***p<0.001

Table 7

Characteristics affecting time use of the elderly aged 65 and over

		Leisure (overall)		Socializing		Active leisure		Passive leisure	
		Men	Women	Men	Women	Men	Women	Men	Women
Age		17.19***	26.98***	1.36	8.44***	-1.32	-2.25**	17.14***	20.79***
Spouse (ref. = none)		12.81*	-28.59***	-1.31	-7.03	-0.16	-6.14**	14.28**	-15.41**
Education level	Elementary school graduate	11.09	12.14*	-3.33	9.57**	16.98***	0.92	-2.56	1.65

(ref.= no education)	Middle school graduate	15.70	-1.64	-0.98	15.85 ***	24.94 ***	1.23	-8.25	-18.73 **
	High school graduate	27.70 **	-3.20	-7.12	7.65	23.70 ***	6.17 *	11.11	-17.02 *
	College graduated or higher	43.46 ***	37.76 ***	0.38	33.03 ***	25.76 ***	13.07 **	17.31	-8.34
Personal monthly average income (ref. = one million won or less)	One to two million won	-26.47 ***	-22.26 **	0.42	0.03	-3.18	0.45	-23.72 ***	-22.74 ***
	Two million won or more	-41.81 ***	-41.48 ***	2.98	-5.05	-3.67	-0.77	-41.12 ***	-35.67 ***
Economic activity (Ref. = unemployed)		-170.99 ***	-95.65 ***	-22.68 ***	-13.06 ***	-35.55 ***	-13.36 ***	-112.75 ***	-69.23 ***
Residence owned (ref. = none)		0.16	-6.88	-2.23	4.14	3.27	3.58 *	-0.88	-14.60 **
Farmhouse (ref. = city)		29.11 ***	-32.59 ***	14.00 ***	-1.01	-18.46 ***	-15.41 ***	33.57 ***	-16.17 *
Subjective health		19.05 ***	3.39	10.54 ***	13.16 ***	14.73 ***	4.36 ***	-6.22 *	-14.13 ***
Needs care (ref. = none)		-19.66 **	-6.67	-5.66	-8.03	-4.05	-2.73	-9.95	4.08
Cons		394.62 ***	370.05 ***	50.79 ***	46.38 ***	16.82 **	30.27 ***	327.00 ***	293.40 ***
R2		0.2728	0.1755	0.025	0.0246	0.1105	0.0406	0.1823	0.1433
F(sig)		116.21	50.73	8.61	6.27	44.54	16.23	72.14	43.49
N		4070	3094	4070	3094	4070	3094	4070	3094

*p<0.05 **p<0.01 ***p<0.001

V.3 Correlation between Time Use and Life Satisfaction in the Elderly

V.3. 1 Differences in Life Satisfaction and Mood between Participants and Non-participants

I compared the life satisfaction and daily mood states of individuals who engaged in specific time use activities with those who did not. I coded individuals who participated in employment, housework, and leisure activities (excluding sleep) as 1, and those who did not participate as 0. I calculated the mean scores of life satisfaction and daily mood for both groups and tested for statistical significance using a t-test by gender.

Table 8 shows that among men, those who participated in employment (3.246) had higher life satisfaction than non-participants (3.051), and this difference was statistically significant (p = .000). This was true for both paid (p = .000) and unpaid work (p = .000). For women, employment participants (3.078) had slightly higher life satisfaction than non-participants (3.048), but this difference was not statistically significant (p = .209).

In terms of housework, female participants reported significantly (p = .000) higher life satisfaction (3.072) compared to non-participants (2.75). Similarly, men's life satisfaction was higher for those who participated in housework (3.155) than for those who did not (3.083) (p = 0.012).

When broken down by type of caring, those involved in caring for minors (3.322 for men and 2.997 for women) reported higher life satisfaction than non-participants (3.127 for men and 3.060 for women), with the difference being statistically significant for men (p = .005) but not for women (p = .213). The opposite was true for female seniors who participated in adult caregiving. Women who participated in adult care (2.958) had lower life satisfaction than non-participants (3.167) and was statistically significant (p = .035).

Among leisure activities, socializing activities were significantly associated with higher life satisfaction for both women (p = .028) and men (p = .000). Women who participated in active leisure also had a higher life satisfaction than those who did not (p = .032).

The findings in Table 9 indicate that the outcomes of daily mood closely resemble those for life satisfaction. Overall, engagement in specific time use activities had a positive impact on life satisfaction and daily mood. However, demographic characteristics such as age and subjective health status might differ between participants and non-participants in a particular time use activity. Therefore, it could not be concluded that participation in work, household chores, and leisure activities necessarily increased life satisfaction and daily mood. (This should be analyzed to obtain a more accurate analysis. The effect of the time use of the

elderly on life satisfaction will be examined in a later ordered logit regression analysis, after controlling demographic characteristics.)

Table 8

Differences in life satisfaction between participants and non-participants

	Men				Women			
Life Satisfaction	Non-participants	Participants	Percentage of participants	t	Non-participants	Participants	Percentage of participants	t
Employment	3.051	3.247	43.65	***	3.048	3.078	29.96	
Paid work	3.080	3.243	33.54	***	3.050	3.086	18.99	
Unpaid work	3.103	3.242	22.78	***	3.050	3.086	18.77	
Housework	3.083	3.155	71.86		2.750	3.072	95.25	***
Household care	3.086	3.155	70.49	*	2.780	3.072	94.89	***
Family care	3.125	3.238	8.09	*	3.065	2.990	11.24	*
Minor care	3.127	3.322	3.61	**	3.060	2.997	4.97	
Adult care	3.133	3.167	4.82		3.064	2.958	6.75	*
Leisure	2.636	3.136	99.78		3.182	3.056	99.99	
Socializing	2.997	3.174	77.7	***	3.000	3.067	84.29	*
Active leisure	3.119	3.144	61.86		3.036	3.084	43.42	*
Passive leisure	3.086	3.135	98.56		3.143	3.055	98.03	

*p<0.05 **p<0.01 ***p<0.001

Table 9

Differences in daily mood between participants and non-participants

	Men				Women			
Daily mood	Non-participants	Participants	Percentage of participants	t	Non-participants	Participants	Percentage of participants	t
Employment	4.388	4.449	43.65	*	4.401	4.392	29.96	
Paid work	4.411	4.420	33.54		4.402	4.386	18.99	
Unpaid work	4.403	4.449	22.78		4.398	4.400	18.77	
Housework	4.308	4.455	71.86	***	4.043	4.416	95.25	***
Household care	4.313	4.456	70.49	***	4.061	4.417	94.89	***
Family care	4.412	4.437	8.09		4.400	4.387	11.24	
Minor care	4.409	4.533	3.61		4.395	4.462	4.97	
Adult care	4.416	4.363	4.82		4.405	4.308	6.75	*
Leisure	4.000	4.415	99.78		3.864	4.400	99.99	**

Socializing	4.261	4.458	77.7	***	4.239	4.428	84.29	***
Active leisure	4.343	4.457	61.86	***	4.340	4.476	43.42	***
Passive leisure	4.429	4.414	98.56		4.341	4.400	98.03	

*p<0.05 **p<0.01 ***p<0.001

V.3. 2 Differences in Time Use between Life Satisfiers and Dissatisfiers

To compare time use among groups with varying levels of life satisfaction (satisfied, neutral, and dissatisfied), a one-way ANOVA analysis was performed, with the results summarize in Tables 10, 11 and 12. I examined how the elderly's time use varied based on their daily mood and the results are summarized in Tables 13, 14 and 15. It was found that daily mood was a statistically more significant predictor of time use among the elderly than life satisfaction.

When I compared sleep duration, I found that both men and women who were dissatisfied with their lives spent significantly more time sleeping. Elderly individuals with poor mood also tended to sleep longer, and this trend was more pronounced in women. Increased sleep duration negatively impacted life satisfaction, likely because more sleep means less time for other activities that contribute to life satisfaction.

The differences between the satisfied and dissatisfied groups were more pronounced in terms of employment time for men and housework time for women. Satisfied men spent significantly more time working compared to dissatisfied men ($p = .000$). For women, those who were satisfied with their lives spent significantly more time on housework than those who were dissatisfied ($p = .000$).

Tables 11 and 12 show the distribution of household and leisure time for life satisfiers and dissatisfiers. For men, those who were dissatisfied with life spent more time on household care ($p = .042$) and adult care ($p = .012$), while those who were satisfied spent more time on minor care ($p = .029$). In contrast, women in the satisfied group spent less time caring for both minors ($p = .689$) and adults ($p = .042$). Contrary to traditional gender role stereotypes, men

involved in caring for minors reported higher life satisfaction, whereas this was not the case for women.

Table 14 shows a similar correlation between daily mood and household labor. For both male and female seniors, adult caregiving hours were highest in the poor mood group, with the difference being statistically significant for women (p = .004).

Leisure time patterns were similar for both men and women, with those satisfied with life spending more time socializing and engaging in active leisure and less time in passive leisure activities (p = .000). Similar trends were observed for mood states. For both men and women, time spent socializing (p = .000), as well as active leisure time (p = .000), was highest when in a good mood. Conversely, passive leisure time was highest when in bad mood (p = .000).

Table 10

Differences in time use between life satisfiers and dissatisfiers

Life satisfaction	Men				Women			
	Sleep	Employment	Housework	Leisure	Sleep	Employment	Housework	Leisure
Satisficed	502.16	123.21	73.17	438.58	499.81	60.97	198.19	388.00
Neutral	509.42	129.19	71.67	434.47	511.92	65.70	189.98	390.42
Unsatisfied	520.95	95.96	78.21	454.07	523.26	64.15	174.17	399.40
Total	509.49	120.82	73.41	439.58	511.23	64.10	188.63	391.78
F	11.30***	10.94***	1.92	4.11*	23.81***	0.7	16.07***	2.16

*p<0.05 **p<0.01 ***p<0.001

Table 11

Correlation between housework types and life satisfaction

Life satisfaction	Men			Women		
	Household care	Minor care	Adult care	Household care	Minor care	Adult care
Satisficed	68.16	3.17	1.84	190.48	4.06	3.64
Neutral	65.08	3.27	3.31	182.30	4.56	3.11
Unsatisfied	72.78	1.34	4.08	164.31	4.85	5.00
Total	67.54	2.86	3.02	180.46	4.49	3.6745858

F	3.16 *	3.56 *	4.45 *	22.14 ***	0.37	3.17 *

*p<0.05 **p<0.01 ***p<0.001

Table 12

Correlation between leisure types and life satisfaction

Life satisfaction	Men			Women		
	Socializing	Active	Passive	Socializing	Active	Passive
Satisficed	80.13	65.26	293.19	112.93	36.55	238.53
Neutral	70.24	63.55	300.68	100.23	33.18	257.00
Unsatisfied	66.47	61.43	326.18	90.99	32.06	276.34
Total	72.51	63.65	303.43	101.54	33.83	256.42
F	10.81 ***	0.78	13.11 ***	19.69 ***	3.52 *	26.33 ***

*p<0.05 **p<0.01 ***p<0.001

Table 13

Differences in time use between good and bad mood

Daily mood	Men				Women			
	Sleep	Employment	Housework	Leisure	Sleep	Employment	Housework	Leisure
Good	499.12	111.37	77.80	441.92	500.71	56.53	191.18	395.64
Neutral	513.66	127.05	72.13	440.59	513.94	70.36	190.70	391.85
Bad	525.90	120.50	61.80	412.27	538.22	53.19	165.56	376.06
Total	509.18	121.11	73.56	439.46	510.83	64.20	189.15	392.14
F	17.00 ***	3.70 *	4.83 **	3.31 *	33.16 ***	9.05 ***	9.07 ***	2.68

*p<0.05 **p<0.01 ***p<0.001

Table 14

Correlation between housework types and daily mood

Daily mood	Men			Women		
	Household care	Minor care	Adult care	Household care	Minor care	Adult care
Good	72.07	3.50	2.24	183.68	4.79	2.71
Neutral	66.08	2.60	3.46	182.47	4.45	3.78
Bad	55.86	2.12	3.81	155.25	3.68	6.62
Total	67.63	2.89	3.04	181.05	4.52	3.59
F	5.97 **	1.32	2.31	12.43 ***	0.35	5.51 **

*p<0.05 **p<0.01 ***p<0.001

Table 15

Correlation between leisure types and daily mood

Daily mood	Men			Women		
	Socializing	Active	Passive	Socializing	Active	Passive

Good	88.00	70.91	283.01	118.21	38.12	239.32
Neutral	64.96	61.39	314.23	94.34	31.76	265.75
Bad	53.99	45.97	312.30	80.63	30.28	265.16
Total	72.53	63.91	303.02	102.01	33.95	256.17
F	55.12 ***	17.22 ***	20.94 ***	51.86 ***	11.98 ***	24.14 ***

*p<0.05 **p<0.01 ***p<0.001

V.3. 3 Demographic Characteristics Affecting Life Satisfaction and Daily Mood

An ordered logit regression analysis was performed with time use as the primary independent variable, and life satisfaction and daily mood of the elderly as the dependent variables. The study aimed to explore how employment, housework, and leisure time would influence the life satisfaction and daily mood of the elderly. Initially, the independent variables listed in Table 7 were used as control variables to assess the impact of demographic characteristics on life satisfaction and daily mood. The Brant test for parallelism showed that the test statistics were not significant in any of the analyses, confirming the validity of using the ordered logit model.

Demographic characteristics such as age (p = .000), education level (p = .000 to .002), personal monthly income (p = .000 to .462), home ownership (p = .000), health status () and need for care (p = .000) had a significant impact on life satisfaction. The results in Table 16 show that the characteristics that affect life satisfaction were quite different for men and women.

The effect of having a spouse on life satisfaction differed significantly between men and women. Married men tended to be much more satisfied with their lives compared to unmarried men (p = .001), whereas for women, having a spouse did not influence their life satisfaction (p = .34). Additionally, both subjective health status and caregiving responsibilities impacted life satisfaction for both genders. Better health was linked to higher life satisfaction (p = .000), while having someone in the household who required care negatively affected life satisfaction (p = .000).

The impact of education level was more significant for women (p = .000 to .008) than men (p =.000 to .641). However, having a college degree or higher significantly boosted life satisfaction for both genders (p = .000). Economic activity positively influenced men's life satisfaction (p = .012).

I also analyzed demographic characteristics that affected daily mood. And just like life satisfaction, one of the most significant things affecting mood was subjective health (p = .000). The healthier the elderly perceived themselves to be, the more likely they were to report being in good mood. However, demographic characteristics affecting life satisfaction, such as caregiving needs (p = .007) and home ownership (p = .019), did not significantly influence daily mood.

The hypothesis that life satisfaction among the elderly would vary by demographic characteristics was supported. The results of this study and most previous studies on demographic characteristics that affect life satisfaction were similar. The hypothesis that better subjective health was associated with higher life satisfaction was not rejected by men and women alike.

However, while it was suggested that higher levels of education would be correlated with higher life satisfaction, this hypothesis was not fully supported. In this study, education had a significant positive impact on life satisfaction for women but was only significant for men with a college degree or higher. This means that in old age, the lives of women with no education and women who had completed elementary and high school would differ significantly, but not so much among men.

Rather, life satisfaction was only significant for men who graduated from college versus those who did not graduate from college. This is likely due to the fact that working and socializing in old age was different for college graduates than it was for men with less than a high school education. Among South Korean men aged 65 and older, only 17.26% have

graduated from college. These men might have been involved in leadership positions in South Korean society in middle age and maintained some of those social roles in retirement, leading to higher levels of life satisfaction than men with lower levels of education.

The hypothesis that higher income would lead to higher life satisfaction was also only partially accepted. Life satisfaction was significantly higher for men only above 2 million won and for women only between 1 million and 2 million won. Instead, owning one's own home was associated with higher life satisfaction for both men and women. It was clear that economic affluence and stability in old age had a positive impact on life satisfaction, but the correlation between monthly income and life satisfaction was not as clear-cut as it might seem due to the overall poor economic conditions of older Koreans. Currently, the average cost of living for a single person in South Korea varies by region, standard of living, and individual spending habits, but is generally around 1.5 million won per month. Most of the elderly in South Korea live below the average cost of living and feel financially strapped.

Table 16

Logistic regression of life satisfaction and daily mood by gender (control variables)

Control variables		Men				Women			
		Life satisfaction		Daily mood		Life satisfaction		Daily mood	
		Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Age		0.152***	0.030	0.056	0.032	0.119***	0.034	0.047	0.036
Spouse (ref. = none)		0.297***	0.087	-0.111	0.093	0.032	0.096	-0.115	0.101
Education level	Elementary school graduate	0.072	0.155	0.017	0.163	0.374***	0.089	0.180	0.093
(ref.= no education)	Middle school graduate	0.151	0.158	0.016	0.167	0.306**	0.115	0.188	0.121
	High school graduate	0.203	0.157	0.072	0.165	0.438**	0.136	0.231	0.139

	College graduated or higher	0.732***	0.167	0.370*	0.174	1.740***	0.200	0.666***	0.195
Personal monthly average income ref. = one million won or less)	One to two million won	-0.027	0.083	0.002	0.088	0.232*	0.116	0.142	0.120
	Two million won or more	0.522***	0.091	0.043	0.095	0.124	0.196	-0.110	0.205
Economic activity (Ref. = unemployed)		0.199*	0.079	-0.136	0.083	-0.034	0.090	-0.072	0.094
Residence owned (ref. = none)		0.829***	0.088	0.040	0.091	0.519***	0.078	0.076	0.080
Farmhouse (ref. = city)		0.139	0.091	0.100	0.096	0.069	0.135	0.094	0.139
Subjective health		0.804***	0.045	1.585***	0.052	0.808***	0.049	1.520***	0.057
Needs care (ref. = none)		-0.501***	0.112	-0.307*	0.123	-0.720***	0.104	-0.060	0.106
R2			0.0776		0.1165		0.0709		0.1185
N					4070				3094

*p<0.05 **p<0.01 ***p<0.001

V.3. 4 The Types of Time Use that Affect Life Satisfaction and Daily Mood

I analyzed the impact of sleep, employment, housework, and leisure time on life satisfaction while controlling demographic characteristics. The time spent on each activity was converted from minutes to hours for this analysis. The results are shown in Tables 17, 18, 19, 20, 21, and 22. Tables 23, 24, 25, 26, 27 and 28 summarize the correlation between daily mood and time use as determined by ordered logistic regression.

According to Table 20, for women, the duration of sleep negatively affected life satisfaction (p = .010, Model 1). As sleep duration increased, life satisfaction decreased, a trend not observed in men (p = .584, Model 1) in Table 17. Consistent with previous research (Moon 2017; Oh 2021), this study's hypothesis that longer sleep duration would lead to lower life satisfaction was accepted.

For men, the number of hours worked was negatively correlated with life satisfaction (p = .004, Model 2) in Table 17. When broken down by employment type, paid work had a negative effect (p = .000), while unpaid work had a positive effect (p = .004), both of which were statistically significant (Model 3). Conversely, employment hours did not have a statistically significant impact on life satisfaction for women (p=.622 to .865, Models 2 and 3) in Table 20. For both men and women, working more hours negatively impacted their daily mood (p = .000, Model 2) in Tables 23 and 26. Among employment types, paid work was associated with a worse mood, and this effect was statistically significant (p=.000, Model 3).

The previous comparative study (t-test) showed that participants in paid labor had better life satisfaction and mood than non-participants. However, regression analysis after controlling sociodemographic variables showed a negative correlation between paid work and life satisfaction and mood. The t-test failed to show the correlation between hours of employment and life satisfaction because the working elderly shared demographic characteristics that were associated with higher life satisfaction, such as better health.

Kim (2007) explained the reason why paid labor activities were found to lower life satisfaction as economic conditions and involuntary employment motivation. Economic situations and involuntary employment motivation were the reasons why paid labor was found to decrease life satisfaction. On the other hand, voluntarily choosing paid work because they liked the job even though they could afford it had a positive effect on life satisfaction. In the study, the majority of the elderly were in poor economic conditions, with 19.19% of male seniors and only 2.78% of female seniors earning an average monthly income of more than 2 million won. Considering that the poverty rate among the elderly in South Korea is one of the highest in the OECD, it is likely that many of the elderly who participated in paid work had involuntary motivations for working, such as needing money. As a result, paid work had a

negative impact on their life satisfaction and daily mood. In the end, the study's hypothesis that working more hours would lead to higher life satisfaction was rejected.

Tables 18, 19, 21 and 22 present a summary of how housework and leisure time affect life satisfaction, while Tables 24, 25, 27 and 28 outline the impact of housework and leisure time on mood. For men, an increase in total housework time was associated with higher life satisfaction ($p = .044$, Model 4), and time spent on household care also had a positive effect ($p = .039$, Model 5) in Table 18. However, the amount of time women spent on housework did not have a statistically significant impact on life satisfaction ($p = .103$, Model 4) in Table 21. This is consistent for both household management ($p = .075$) and family care ($p = .903$). On the other hand, there was no correlation between daily mood and household work for men ($p = .338$) and women ($p = .441$, Model 4) in Tables 24 and 27. The same was true when looking at household management and care (Model 5).

In the comparative study, life satisfaction was statistically significantly higher for men and women who participated in domestic work, but in the regression analysis, which controlled for demographic variables, life satisfaction was higher for men only. Instead, the elderly men who participated in family caregiving had higher life satisfaction in both the comparative and regression analyses. Taken together, when analyzing the time use of the elderly, women performed more household chores such as housekeeping and caregiving than men, but the correlation between household chores and life satisfaction was positive only for men.

This study's hypothesis that more time spent on caregiving would be associated with lower life satisfaction was rejected. Instead, for men, housework and time spent on caring for minors was associated with higher life satisfaction. This finding is consistent with previous studies that have focused on voluntariness and social support when analyzing the correlation between family caregiving and life satisfaction (Kim, 2007; Choi et al., 2012). Due to traditional patriarchal gender roles, the elderly men perceive household chores and caregiving

as activities that they can choose to do, whereas the elderly women tend to perceive them as "something they have to do" (Choi et al., 2012). Therefore, men's participation in household chores and caregiving was more likely to be voluntary and socially supported, which might explain the difference in life satisfaction between men and women who participated in household chores and caregiving. While Kim (2007) found that life satisfaction increased when people voluntarily chose to do the work, not whether or not they did the work, my research confirms that the same principle applies not only to work, but also to housework and family care.

There was no significant link between overall leisure time and life satisfaction ($p = .189$). However, engaging in social activities had a statistically significant positive impact ($p = .000$), while passive leisure activities had a statistically significant negative impact ($p = .016$). When analyzing men and women separately in Tables 19 and 22, socializing activities positively influenced men's life satisfaction ($p = .007$, Model 7), whereas there was no statistically significant effect for women ($p = .057$ to $.242$, Model 7).

Results of a regression with mood as the dependent variable, leisure time positively affected men's mood ($p = .022$) in Table 25, but this effect was not statistically significant for women ($p = .084$) in Table 28. By specific activity type, men's mood improved when they engaged in socializing ($p = .000$) and active leisure ($p = .003$). Women's mood was statistically significantly affected by social activities ($p = .000$).

This study's hypothesis that more social and active leisure and less passive leisure would be associated with higher life satisfaction was accepted, and the effect was more pronounced for men than for women. This might be because men were able to energize their daily lives and expand their social correlations through socializing and active leisure (Nam & Lee 2021).

Table 17

Logistic regression of life satisfaction for men (using sleep and employment as independent variables)

Life satisfaction		Men					
		Model 1		Model 2		Model 3	
		Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Sleeping		0.011	0.020				
Employment(overall)				-0.036**	0.013		
Paid work						-0.053***	0.013
Unpaid Work						0.114**	0.040
Age		0.151***	0.030	0.143***	0.031	0.144***	0.031
Spouse (ref. = none)		0.296***	0.087	0.300***	0.087	0.295***	0.087
Education level (ref.= No education)	Elementary school graduate	0.072	0.155	0.069	0.155	0.072	0.155
	Middle school graduate	0.152	0.158	0.150	0.158	0.170	0.158
	High school graduate	0.206	0.157	0.200	0.157	0.216	0.157
	College graduated or higher	0.737***	0.167	0.716***	0.167	0.736***	0.167
Personal monthly average income (ref. = one million won or less)	One to two million won	-0.025	0.083	0.000	0.084	0.014	0.084
	Two million won or more	0.524***	0.091	0.554***	0.092	0.583***	0.092
Economic activity (Ref. = unemployed)		0.204*	0.079	0.331***	0.091	0.375***	0.092
Residence owned (ref. = none)		0.828***	0.088	0.833***	0.088	0.815***	0.088
Farmhouse (ref. = city)		0.136	0.091	0.120	0.091	0.120	0.091
Subjective health		0.806***	0.045	0.796***	0.045	0.790***	0.045
Needs care (ref. = none)		-0.501***	0.112	-0.500***	0.112	-0.498***	0.112
R2			0.0777		0.0784		0.0799
N							4070

*p<0.05 **p<0.01 ***p<0.001

Table 18

Logistic regression of life satisfaction for men (using housework as independent variables)

Life satisfaction	Men			
	Model 4		Model 5	
	Coef.	S.E.	Coef.	S.E.

Housework (overall)		0.042*	0.021		
Household care				0.047*	0.023
Family care				0.007	0.068
Age		0.154***	0.030	0.154***	0.030
Spouse		0.336***	0.089	0.345***	0.091
Education level (ref.= no education)	Elementary school graduate	0.088	0.155	0.088	0.155
	Middle school graduate	0.169	0.158	0.170	0.158
	High school graduate	0.219	0.157	0.220	0.157
	College graduated or higher	0.747***	0.167	0.747***	0.167
Personal monthly average income (ref. = one million won or less)	One to two million won	-0.023	0.083	-0.022	0.083
	Two million won or more	0.532***	0.091	0.535***	0.092
Economic activity		0.215**	0.079	0.215**	0.079
Residence owned		0.828***	0.088	0.828***	0.088
Farmhouse		0.139	0.091	0.137	0.091
Subjective health		0.799***	0.045	0.799***	0.045
Needs care		-0.520***	0.112	-0.505***	0.116
R2			0.0780		0.0781
N					4070

*p<0.05 **p<0.01 ***p<0.001

Table 19

Logistic regression of life satisfaction for men (using leisure as independent variables)

Life satisfaction		Men			
		Model 6		Model 7	
		Coef.	S.E.	Coef.	S.E.
Leisure(overall)		0.002	0.012		
Socializing				0.065**	0.024
Active leisure				0.002	0.025
Passive leisure				-0.008	0.013
Age		0.151***	0.031	0.152***	0.031
Spouse		0.297***	0.087	0.301***	0.087
Education level (ref.= no education)	Elementary school graduate	0.072	0.155	0.076	0.155
	Middle school graduate	0.150	0.158	0.150	0.159
	High school graduate	0.202	0.157	0.212	0.158
	College graduated or higher	0.731***	0.167	0.735***	0.168
Personal monthly	One to two million won	-0.027	0.083	-0.033	0.083

average income (ref. = one million won or less)	Two million won or more	0.523***	0.092	0.512***	0.092
Economic activity		0.203*	0.085	0.210*	0.085
Residence owned		0.829***	0.088	0.831***	0.088
Farmhouse		0.138	0.091	0.127	0.091
Subjective health		0.804***	0.045	0.792***	0.045
Needs care		-0.501***	0.112	-0.497***	0.112
R2			0.0777		0.0785
N					4070

*p<0.05 **p<0.01 ***p<0.001

Table 20

Logistic regression of life satisfaction for women (using sleep and employment as independent variables)

Life satisfaction		Women					
		Model 1		Model 2		Model 3	
		Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Sleeping		-0.057*	0.022				
Employment(overall)				-0.003	0.02		
Paid work						-0.01	0.022
Unpaid Work						0.021	0.042
Age		0.130***	0.035	0.119***	0.035	0.118***	0.035
Spouse		0.018	0.097	0.032	0.096	0.032	0.096
Education level	Elementary school graduate	0.358***	0.089	0.373***	0.089	0.376***	0.089
(ref.= no education)	Middle school graduate	0.296*	0.115	0.305**	0.115	0.309**	0.116
	High school graduate	0.425**	0.136	0.437**	0.136	0.443**	0.137
	College graduated or higher	1.704***	0.201	1.738***	0.2	1.741***	0.2

Personal monthly average income	One to two million won	0.223	0.116	0.235*	0.117	0.243*	0.118
(ref. = one million won or less)	Two million won or more	0.108	0.196	0.127	0.197	0.135	0.198
Economic activity		-0.06	0.091	-0.025	0.103	-0.013	0.105
Residence owned		0.510***	0.078	0.519***	0.078	0.515***	0.078
Farmhouse		0.098	0.136	0.069	0.135	0.072	0.135
Subjective health		0.801***	0.049	0.808***	0.049	0.808***	0.049
Needs care		-0.713***	0.104	-0.720***	0.104	-0.718***	0.104
R2			0.0717		0.0709		0.0709
N							3094

*p<0.05 **p<0.01 ***p<0.001

Table 21
Logistic regression of life satisfaction for women (using housework as independent variables)

Life satisfaction		Women			
		Model 4		Model 5	
		Coef.	S.E.	Coef.	S.E.
Housework (overall)		0.032	0.019		
Household care				0.037	0.021
Family care				-0.007	0.058
Age		0.128***	0.035	0.127***	0.035
Spouse		0.009	0.098	0.013	0.098
Education level	Elementary school graduate	0.375***	0.089	0.377***	0.089
(ref.= no education)	Middle school graduate	0.308**	0.115	0.310**	0.115
	High school graduate	0.439**	0.136	0.442**	0.136
	College graduated or higher	1.753***	0.200	1.755***	0.200

Personal monthly average income ref. = one million won or less)	One to two million won	0.244*	0.116	0.247*	0.116
	Two million won or more	0.126	0.196	0.127	0.196
Economic activity		-0.021	0.091	-0.023	0.091
Residence owned		0.510***	0.078	0.514***	0.078
Farmhouse		0.062	0.135	0.058	0.135
Subjective health		0.803***	0.049	0.804***	0.049
Needs care		-0.728***	0.104	-0.710***	0.107
R2			0.0712		0.0713
N					3094

*p<0.05 **p<0.01 ***p<0.001

Table 22

Logistic regression of life satisfaction for women (using leisure as independent variables)

Life satisfaction		Women			
		Model 6		Model 7	
		Coef.	S.E.	Coef.	S.E.
Leisure(overall)		-0.013	0.014		
Socializing and community Participation				0.038	0.021
Active leisure				-0.047	0.040
Passive leisure				-0.030	0.016
Age		0.125***	0.035	0.122***	0.035
Spouse		0.027	0.097	0.023	0.097
Education level (ref.= no education)	Elementary school graduate	0.378***	0.089	0.371***	0.089
	Middle school graduate	0.306**	0.115	0.292*	0.115
	High school graduate	0.438**	0.136	0.436**	0.136
	College graduated or higher	1.751***	0.200	1.737***	0.201
Personal monthly average income	One to two million won	0.227	0.116	0.215	0.116

ref. = one million won or less)	Two million won or more	0.114	0.197	0.107	0.197
Economic activity		-0.054	0.093	-0.068	0.093
Residence owned		0.517***	0.078	0.511***	0.078
Farmhouse		0.062	0.135	0.049	0.136
Subjective health		0.808***	0.049	0.797***	0.049
Needs care		-0.722***	0.104	-0.715***	0.104
R2			0.0710		0.0723
N					3094

*p<0.05 **p<0.01 ***p<0.001

Table 23

Logistic regression of daily mood for women (using sleep and employment as independent variables)

Daily mood		Men					
		Model 1		Model 2		Model 3	
		Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Sleeping		-0.040	0.022				
Employment(overall)				-0.065***	0.014		
Paid work						-0.077***	0.014
Unpaid Work						0.053	0.042
Age		0.060	0.032	0.042	0.032	0.043	0.032
Spouse		-0.104	0.093	-0.101	0.093	-0.105	0.093
Education level	Elementary school graduate	0.019	0.163	0.018	0.163	0.027	0.163
(ref.= no education)	Middle school graduate	0.011	0.167	0.018	0.167	0.039	0.167
	High school graduate	0.061	0.165	0.072	0.165	0.091	0.165
	College graduated or higher	0.354*	0.174	0.345*	0.175	0.364*	0.175
Personal monthly average income	One to two million won	-0.007	0.088	0.046	0.088	0.055	0.088

ref. = one million won or less)	Two million won or more	0.033	0.096	0.094	0.096	0.115	0.096
Economic activity		-0.153	0.083	0.097	0.096	0.129	0.096
Residence owned		0.040	0.091	0.048	0.091	0.037	0.091
Farmhouse		0.109	0.096	0.066	0.096	0.068	0.096
Subjective health		1.577***	0.052	1.577***	0.052	1.572***	0.052
Needs care		-0.310*	0.123	-0.301*	0.123	-0.298*	0.123
R2		0.1189		0.1208		0.1217	
N							4070

*p<0.05 **p<0.01 ***p<0.001

Table 24

Logistic regression of daily mood for men (using housework as independent variables)

Daily mood		Men			
		Model 4		Model 5	
		Coef.	S.E.	Coef.	S.E.
Housework (overall)		0.021	0.022		
Household care				0.035	0.024
Family care				-0.076	0.073
Age		0.057	0.032	0.058	0.032
Spouse		-0.091	0.095	-0.069	0.096
Education level	Elementary school graduate	0.022	0.163	0.024	0.163
(ref.= no education)	Middle school graduate	0.022	0.167	0.023	0.167
	High school graduate	0.078	0.165	0.078	0.165
	College graduated or higher	0.374*	0.174	0.374*	0.174
Personal monthly average income	One to two million won	0.004	0.088	0.010	0.088

ref. = one million won or less)	Two million won or more	0.047	0.096	0.053	0.096
Economic activity		-0.127	0.083	-0.126	0.083
Residence owned		0.040	0.091	0.037	0.091
Farmhouse		0.100	0.096	0.096	0.096
Subjective health		1.582***	0.052	1.583***	0.052
Needs care		-0.315*	0.123	-0.274*	0.126
R2		0.1186		0.1188	
N					4070

*p<0.05 **p<0.01 ***p<0.001

Table 25

Logistic regression of daily mood for men (using leisure as independent variables)

Daily mood		Men			
		Model 6		Model 7	
		Coef.	S.E.	Coef.	S.E.
Leisure(overall)		0.028*	0.012		
Socializing				0.186***	0.025
Active leisure				0.079**	0.027
Passive leisure				-0.009	0.014
Age		0.049	0.032	0.057	0.033
Spouse		-0.116	0.093	-0.109	0.093
Education Level	Elementary school graduate	0.015	0.163	0.005	0.163
(ref.= no education)	Middle school graduate	0.010	0.167	-0.015	0.168
	High school graduate	0.060	0.165	0.067	0.166
	College graduated or higher	0.351*	0.174	0.347*	0.175
Personal monthly average income	One to two million won	0.015	0.088	-0.003	0.088

ref. = one million won or less)	Two million won or more	0.062	0.096	0.029	0.096
Economic activity		-0.057	0.090	-0.034	0.090
Residence owned		0.040	0.091	0.049	0.091
Farmhouse		0.085	0.096	0.080	0.097
Subjective health		1.577***	0.052	1.544***	0.052
Needs care		-0.299*	0.123	-0.286*	0.123
R2		0.1191		0.1254	
N					4070

*p<0.05 **p<0.01 ***p<0.001

Table 26

Logistic regression of daily mood for women (using sleep and employment as independent variables)

Daily mood		Women Model 1		Model 2		Model 3	
		Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Sleeping		-0.039	0.023				
Employment(overall)				-0.080***	0.021		
Paid work						-0.095***	0.023
Unpaid Work						-0.017	0.047
Age		0.054	0.036	0.032	0.036	0.030	0.036
Spouse		-0.124	0.101	-0.125	0.101	-0.126	0.101
Education level	Elementary school graduate	0.170	0.093	0.162	0.093	0.171	0.094
(ref.= no education)	Middle school graduate	0.179	0.121	0.174	0.121	0.183	0.122
	High school graduate	0.220	0.140	0.205	0.140	0.219	0.140
	College graduated or higher	0.639**	0.196	0.635**	0.196	0.642**	0.196
Personal monthly average income	One to two million won	0.138	0.120	0.209	0.122	0.227	0.122

ref. = one million won or less)	Two million won or more	-0.123	0.205	-0.026	0.206	-0.008	0.206
Economic activity		-0.090	0.095	0.131	0.108	0.157	0.109
Residence owned		0.070	0.080	0.086	0.081	0.075	0.081
Farmhouse		0.109	0.140	0.105	0.139	0.112	0.139
Subjective health		1.515***	0.057	1.521***	0.057	1.524***	0.057
Needs care		-0.057	0.106	-0.068	0.106	-0.062	0.106
R2		0.115		0.1165		0.1168	
N							3094

*p<0.05 **p<0.01 ***p<0.001

Table 27

Logistic regression of daily mood for women (using housework as independent variables)

Daily mood		Women			
		Model 4		Model 5	
		Coef.	S.E.	Coef.	S.E.
Housework (overall)		0.016	0.020		
Household care				0.015	0.022
Family care				0.022	0.059
Age		0.051	0.036	0.051	0.036
Spouse		-0.127	0.102	-0.128	0.102
Education level	Elementary school graduate	0.179	0.093	0.179	0.093
(ref.= no education)	Middle school graduate	0.189	0.121	0.189	0.121
	High school graduate	0.229	0.139	0.229	0.140
	College graduated or higher	0.669***	0.195	0.669***	0.195
Personal monthly average income	One to two million won	0.149	0.121	0.148	0.121
ref. = one million won or less)	Two million won or more	-0.111	0.205	-0.111	0.205

Economic activity	-0.064	0.094	-0.064	0.094
Residence owned	0.071	0.081	0.071	0.081
Farmhouse	0.089	0.140	0.090	0.140
Subjective health	1.518***	0.057	1.518***	0.057
Needs care	-0.063	0.106	-0.066	0.109
R2	0.1147		0.1147	
N				3094

*p<0.05 **p<0.01 ***p<0.001

Table 28

Logistic regression of daily mood for women (using leisure as independent variables)

Daily mood		Women			
		Model 6		Model 7	
		Coef.	S.E.	Coef.	S.E.
Leisure(overall)		0.025	0.015		
Socializing				0.127***	0.022
Active leisure				0.008	0.042
Passive leisure				-0.016	0.016
Age		0.036	0.036	0.034	0.036
Spouse		-0.104	0.101	-0.106	0.101
Education level	Elementary school graduate	0.176	0.093	0.164	0.093
(ref.= no education)	Middle school graduate	0.190	0.121	0.156	0.122
	High school graduate	0.235	0.140	0.218	0.140
	College graduated or higher	0.654***	0.196	0.613**	0.197
Personal monthly average income	One to two million won	0.151	0.120	0.142	0.121
ref. = one million won or less)	Two million won or more	-0.091	0.205	-0.111	0.206

Economic activity	-0.033	0.097	-0.063	0.097
Residence owned	0.079	0.080	0.060	0.081
Farmhouse	0.109	0.140	0.097	0.140
Subjective health	1.520***	0.057	1.498***	0.057
Needs care	-0.059	0.106	-0.052	0.106
R2	0.1150		0.1200	
N				3094

*p<0.05 **p<0.01 ***p<0.001

VI Conclusion

This study aims to analyze the time use of Korean elderly people aged 65 and older, examine their characteristics, and investigate how their time use affects their life satisfaction. By doing so, I hope to provide useful data for developing policy measures related to time use that can improve the quality of life for the elderly. Below, I briefly summarize the results of this study and offer suggestions for further research.

First, this study utilizes original data from the 2019 Time Use Survey released by Statistics Korea. I have analyzed a sample of 11,380 time diaries written over two days by 5,960 people aged 65 and older.

Second, I have categorized the primary time use of elderly males and females into sleep, work, housework, and leisure. With the exception of sleep, there is a clear gender gap in employment, housework, and leisure activities. Looking at the overall average time, men spend 121 minutes working, nearly twice as much as women (64 minutes), while women spend 189 minutes on household chores, more than twice as much as men (73 minutes). Leisure time is 440 minutes for men and 292 minutes for women. When comparing by activity type (overall average time), men spend more time sleeping (510 minutes) > leisure (440 minutes) > working (121 minutes) > housework (73 minutes), while women spend more time sleeping (511 minutes) > leisure (392 minutes) > housework (189 minutes) > working (64 minutes).

Third, I have identified a number of gender differences in time use. First of all, I have analyzed employment by dividing it into paid and unpaid work and found that paid work time is significantly different for men (105 minutes) and women (50 minutes), but unpaid work time is similar for men (16 minutes) and women (14 minutes). When I have separated the participants, women spend 262 minutes in paid work, which is still less than that of men (319 minutes), but 76 minutes in unpaid work, which is more than men (68 minutes). When breaking down leisure time into socializing, active leisure, and passive leisure activities, women (102

minutes) spend more time socializing than men (73 minutes) and men (64 minutes) spend more time in active leisure than women (33.8 minutes). Passive leisure time, at 303 minutes for men and 256 minutes for women, accounted for the majority of leisure activities for both men and women.

Fourth, the time use of the elderly is influenced by demographic characteristics such as age, education, average monthly income, and subjective health status. Older, less educated, lower-income, and poorer health individuals are more likely to be classified as "sleepers"; younger, less educated, higher-income, and healthier men are more likely to be "laborers"; younger, less educated, lower-income, and healthier women who have spouses are more likely to be "homemakers"; and older, more educated, economically inactive individuals without family members to care for are more likely to be "leisureers."

Fifth, demographic characteristics such as age, education, personal average monthly income, subjective health status, and care needs influence the elderly's life satisfaction. Older age, higher education, higher average monthly income, better health, and no family members needing care are associated with greater life satisfaction.

Sixth, having a spouse have a different impact on time use and life satisfaction for male and female seniors. Having a spouse leads to more sleep, less housework, and more leisure time for men. However, for women, having a spouse decreases sleep time, increases housework time, and reduces leisure time. Furthermore, the association between having a spouse and life satisfaction is statistically significant only for men. Married men tend to be significantly more satisfied with their lives than single men, but this trend is not evident among women. This study is consistent with the findings of some previous studies (Park et al., 2012; Chung and Kim, 2010). Park et al. (2012) found that the absence of a spouse significantly decreases the life satisfaction of male older adults, and Chung and Kim (2010) showed that female older adults are less satisfied if they spend too much time with their spouse. Seventh, both men and women

who are dissatisfied with their lives slept longer. This seems to have a negative impact on life satisfaction because sleeping longer leaves less time for other activities and disrupts daily routines. The negative correlation between sleep duration and life satisfaction and mood is stronger for women.

Eighth, for men, the more hours they work, the greater the negative impact on their life satisfaction. The negative impact on life satisfaction is even stronger for men in paid labor.

Ninth, although women spend significantly more time doing housework than men, the correlation between housework and life satisfaction is positive only for men. Contrary to patriarchal gender role stereotypes, caring for minors significantly increases life satisfaction, especially for men.

Finally, socializing and engaging in active leisure have a positive impact on men's life satisfaction. Men's mood also improves when they engage in socializing and active leisure. For women, however, socializing improves their mood but does not increase their life satisfaction.

Taken together, the way the elderly use their time that affects life satisfaction includes labor, caring for minors, and socializing for men and sleep for women. Working and sleeping have a negative impact, while caring for minors and socializing have a positive impact.

The threshold between positive and negative effects seems to be voluntariness (Kim, 2007; Choi et al., 2012). Self-chosen time use increases life satisfaction, while unavoidable time use decreases life satisfaction. In a society with high levels of elderly poverty, it is likely that elderly men's participation in paid work is a forced activity to escape their difficult economic situation. For older women, sleep is often the last thing on their minds as they face declining energy and social disconnection. Men, on the other hand, are more likely to choose to care for minors and socialize. Due to traditional patriarchal gender roles, the care of minors by female elders is perceived as something they 'have to do' (Choi et al., 2012), while male

elders only take on care of minors when they actively seek it out. Socializing, such as volunteering and religious activities, is also a matter of choice.

This study has found that self-chosen time can increase life satisfaction, while forced time can decrease life satisfaction. This is true for work time, caregiving time, and leisure time. It seems that the elderly who have more time in their day that is actively chosen by them tend to be more satisfied with their lives. My findings suggest that the key to life satisfaction among older adults is how they use their time, both voluntarily and actively. While previous studies have individually found that employment increases life satisfaction when it is a choice for fulfillment rather than financial need, caregiving increases life satisfaction when it is socially supported. Additionally, social activities such as volunteering also increase life satisfaction. My research has shown that spontaneity and proactivity are common traits that can enhance life satisfaction across work, care, and leisure time.

Based on these findings, I would like to discuss and make some suggestions.

First, most studies (Kwon & Cho, 2000; Shin, 2010) have analyzed that the life satisfaction of the elderly who are not economically active tends to be relatively low, while the life satisfaction of the elderly who are working is generally high. Kim (2007) also pointed out that the impact of paid work on life satisfaction varies depending on the economic status of the elderly and their motivation to work. In this study, men's paid work has a negative effect on life satisfaction, while unpaid work has a positive effect. The difference is that paid work is more likely to be a necessary choice to address poverty, while unpaid work is less likely to be so. Therefore, it is important to keep in mind that it is not the act of working itself that affects life satisfaction, but rather how and for what reasons the elderly choose to work that may influence their life satisfaction.

Second, most studies (Park, 2007; Park & Byun, 2013; Jeon, 2010) have pointed out that male elders spend more time working and female elders spend more time doing housework.

This use of time by the elderly is consistent with patriarchal gender role stereotypes. However, in this study, the correlation between time use and life satisfaction among the elderly is completely contrary to gender role stereotypes. Men who are actively involved in household chores and caregiving are more satisfied with their lives, while women are not. In fact, women who are overburdened with domestic work are more likely to experience poorer health and lower life satisfaction in old age (Jo, 2010).

Third, in order to understand the lives of the elderly, an integrated analysis of both labor and leisure, including sleep time, is needed. In addition, the lives of elderly men and women are distinctly different, so it is necessary to examine them separately by gender. In this study, I have used an integrative and categorical analysis to depict the lives of the elderly and analyze their impact on life satisfaction. The results show similarities with previous studies, but also differences. This study is consistent with the findings of many previous studies (Kim & Nam, 2017; Park, Lee & Yeum, 2024) that the better the subjective health status of the elderly, the higher their life satisfaction tends to be. On the other hand, previous research (Kwon et. al., 2006) have found that older age is associated with lower life satisfaction, but in this study, older age is associated with higher life satisfaction for both men and women.

An important aspect is to make policy recommendations to improve life satisfaction. When we understand the circumstances under which the elderly feel satisfied with their lives, we can provide policies that meet their needs. This study provides policy suggestions to improve the quality of life of the elderly, as well as suggestions for further research. The results of this study show that life satisfaction increases when the elderly have more self-selected time in their daily lives. Life satisfaction increases when the act of labor or caregiving is voluntarily chosen, not the act itself.

Therefore, to improve the quality of life of the elderly, it is necessary to ensure that low-income elderly people are not forced to work due to financial constraints. To do this, it is

necessary to strengthen social welfare systems such as old-age pensions. When the Korean government designs public jobs for the elderly as a policy, it is also necessary to consider whether these jobs will lead to a sense of fulfillment for them. If they can make a positive impact on the next generation through their work, they may choose to work even if it is unpaid, which can positively affect their life satisfaction. Therefore, it is essential for the government to design attractive jobs that the elderly can voluntarily and actively choose.

In addition, male elders should be allowed to actively participate in the care of minors. Gender-equal family culture should be expanded so that men's domestic work is socially supported. It is also a good policy to organize various volunteer activities and cultural events for the elderly in the community so that they can spend more time socializing.

There are some limitations to this study. Firstly, to understand the time use of the elderly, this study analyzed cross-sectional data at a specific point in time, which does not account for the changing nature of time use and life satisfaction. This study has analyzed data from the Time Use Survey collected in 2019 from elderly individuals aged 65 and older across the country. The demographic characteristics of the elderly have changed significantly over the past five years due to the retirement of the Korean baby-boomer generation, and this study cannot reflect that change.

South Korea's baby boomers were born between 1955 and 1963 after the Korean War and have experienced rapid economic growth and social change in the country. They have higher educational and economic levels than previous generations and have played an important role in many areas of South Korean society. The impact on the elderly's time use and life satisfaction may have changed since this generation entered the elderly phase, which is not captured in this study. If the 2024 Time Use Survey is released by Statistics Korea and a subsequent empirical study is conducted to compare it to this study, it may reveal meaningful differences.

Secondly, the reasons for the time spent on labor, caregiving, and social activities are not clear from the original data. The Time Use Surveys conducted by Statistics Korea every five years only record how people use their time, but not why they choose to do so. Therefore, it is unclear whether a particular activity is a voluntary choice or an obligation. Consequently, it is not possible to conduct this study to understand the various meanings of time use, not only quantitatively but also qualitatively. In the future, research should be conducted to analyze more closely not only the use of time but also the reasons for choosing that time.

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