

The study on factors influencing satisfaction of life of the elderly in the island area

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Abstract

In this study, based on the bottom-up spillover theory, the effects of living area satisfaction such as housing, public transportation access, access to medical institutions, access to cultural facilities and natural environments, and access to public institutions on life satisfaction were analyzed. For the analysis, raw data of the “Regional Resident Needs Survey for Establishment of the 4th Local Social Security Plan” conducted in Sinan-gun, Jeollanam-do in 2018 was used. After allocating ‘eup’ and ‘myeon’ for the survey, a researcher visited the area and conducted a direct visit. And in the final analysis, the data of 195 people were analyzed using SPSS version 23.0. Logistic regression analysis was performed to analyze factors affecting life satisfaction. Based on the research results, practical and policy suggestions were presented to improve the satisfaction of life for the elderly in the island area.

Keywords

Satisfaction with housing, satisfaction with access to public transportation, satisfaction with access to medical institutions, satisfaction with access to cultural facilities and natural environment, satisfaction with access to public institutions, life satisfaction

1. Introduction

Currently, Korea is facing a serious population aging problem. The problem of population aging is serious in island areas. 57% of Korea’s manned islands are concentrated in Jeollanam-do (Kim and Kim, 2012). Sinan-gun is a representative island region in Jeollanam-do. In the case of Shinan-gun alone, the proportion of the elderly population is 33.5%, and it has already entered the super-aged society (Kosis, 2021). In particular, because of the isolated characteristics of an island, the elderly in the island area experience unique life problems (Kim and Kim, 2012). In this context, interest in life

satisfaction has recently increased to evaluate the overall life of the elderly in island regions (Shin and Yeo, 2016; Woo, 2017).

The life satisfaction of the elderly in the island region is very important not only at the individual level but also at the community level. This is because life satisfaction becomes a major indicator for evaluating the development of a country or region. In fact, the effectiveness of life satisfaction indicators, such as the OECD's Better Life Index, has been proven internationally (Loh and Park, 2017). In addition, efforts to improve the life satisfaction of the elderly in island regions are being carried out through research in various fields such as social welfare, sociology, nursing, and public administration (Kim, 2010; Cho and Chung, 2011; Kim and Kim, 2012; Shin and Yeo, 2016; Woo, 2017). However, despite the importance of life satisfaction, studies analyzing the overall life satisfaction of the elderly in island regions are scarce. Previous studies focused on improving individual life satisfaction or understanding the current situation. Therefore, studies analyzing the effects of government-managed life areas on life satisfaction are relatively scarce (Lee, 2018).

In order to overcome the limitations of previous studies, this study analyzed the life satisfaction of the elderly in the island region using the bottom-up spillover theory. The bottom-up spillover theory implies the basic premise that satisfaction in all life areas affects overall life satisfaction (Sirgy and Cornwell, 2001; Woo, Kim and Uysal, 2014). Life satisfaction means satisfaction according to certain conditions and conditions of an individual (Voicu and Pop, 2011). Based on this background, it is appropriate to use the bottom-up spillover theory to identify the conditions and conditions that affect the life satisfaction of the elderly in island regions by life area (Lee, 2018). In addition, life domain satisfaction, which is a major factor influencing overall life satisfaction, is determined by individual life concerns (Sirgy and Cornwell, 2001; Woo, Kim and Uysal, 2014).

An important point is what life interests affect the life satisfaction of the elderly in the island area. The main concerns of the elderly in the island region revealed in previous studies are as follows; Housing (Woo, 2017; Sinan County Office, 2020), public transportation (Kim and Kim, 2012; Korea Rural Economic Institute, 2018), medical care (Cho and Chung, 2011; Sinan County Office, 2020), cultural facilities and natural environment (Sinan County Office, 2020), the actual situation and importance of public institutions (Sinan County Office, 2020). In fact, previous studies also reported that life satisfaction[Satisfaction with housing (Lim, 2012; Berköz and Yirmibesoglu, 2013; Tran and Vu, 2018), Satisfaction with access to public transport (Riddick, 1985; Senlier, Yildiz and Aktaş, 2008), Satisfaction with access to health care facilities (Senlier, Yildiz and Aktaş, 2008 ; Tang, 2012), Satisfaction with access to cultural facilities and natural environment (Senlier, Yildiz and Aktaş, 2008; Choi, 2016; Moon and Kim, 2018), Satisfaction with accessibility to public institutions (Sirgy and Cornwell, 2001; Lee and Kim, 2007; Ahn and Kim, 2014) had a significant effect on the life satisfaction.

Based on the bottom-up spillover theory, this study intends to analyze the effects of living area satisfaction, such as housing, public transportation access, access to medical institutions, access to cultural facilities and natural environments, and access to public institutions, on the satisfaction of life of the elderly in island regions. In addition, this study is meaningful in providing basic policy and practical data for improving the life satisfaction of the elderly in island regions.

2. Theoretical Background

2.1 The life of the elderly in the island area

The current purpose of local government policies is to improve the quality of life (QOL) of residents as suggested in Article 8 of the Local Autonomy Act. Therefore, it is very important to understand the living conditions that affect the perception of the quality of life of the elderly on the island (Lim, 2012). In particular, because of the geographical characteristics of the island area, the elderly in the island area experience a unique daily life in relation to transportation, medical care, convenience facilities, housing, cultural facilities, natural environment, and public institutions, unlike the elderly in urban areas. A closer look at its contents is as follows.

First, the elderly in the island area are living in the dual space of their home and senior citizens' hall. Although various social aids are provided mainly by the Senior Citizens' Party, the house still plays an important role for the elderly because the house is a space where they live as an independent entity. However, despite the importance of a house, it is indeed difficult for the elderly in the island region to live in a comfortable residential environment (Woo, 2017). According to the Sinan County Office (2020), 12.7% of the elderly in the island area answered that they were anxious about the stability of housing, etc. In the island area, building materials are supplied from the land, so housing repair costs and time are consumed. Therefore, it is practically difficult to repair a house suitable for the elderly (Woo, 2017). Therefore, in order to overcome the limitation that the existing social assistance is provided only by the Senior Citizens' Party, it is necessary to change the policy that can enhance the housing satisfaction of the elderly in the island area.

Second, in general, the most difficult thing for the elderly in Korea is the daily life issues of income and health. However, in the case of the elderly in the island area, the problem of public transportation was found to be the most serious. According to a study by Kim and Kim (2012), 28.1% of the elderly in the island region answered that transportation is the most difficult problem they face in island life. For example, in order to use social services and administrative services, the elderly in the island area must move to the location of an eup, a town, or a city. Through this, it can be understood that accessibility to public transport and the life of the elderly in the island are closely related. In the end, in order to improve the life satisfaction of the elderly in the island area, a policy to improve the inconvenient public transportation access is needed.

Third, the elderly in island regions tend to have a high demand for medical care. According to Sinan County Office (2020), 92.1% of the elderly in the island area have used medical institutions, and the average number of times a month is 3.2. And it was confirmed that the medical satisfaction of the elderly in the island area was higher than that of the younger generation (Sinan County Office, 2020). Despite this tendency, the elderly in island areas have to move to medical institutions located in cities or towns to use medical institutions. Of course, health centers were established in each township to meet the medical needs of the elderly on the island. However, elderly people on remote islands away from the islands located in towns and villages have limited access to medical services due to sea diaries and traffic conditions (Cho and Chung, 2011). As such, a government policy is needed to improve medical satisfaction in consideration of access to medical services.

Fourth, the main leisure activities of the elderly in the island region were watching TV and DVD (42.2%), resting (34.4%), and social and other activities (16.9%) in the order (Sinan County Office, 2020). In particular, in a survey by the Sinan County Office (2020), it was confirmed that 12.2% of the elderly in the island region wanted to see culture and art among leisure activities. As such, the reason that the elderly on the island have a high desire for passive leisure behavior and

viewing culture and art is due to the lack of infrastructure related to cultural facilities. In general, the elderly satisfy their cultural needs through senior welfare centers. However, it is extremely rare to operate a welfare center for the elderly in the island area. This suggests that the elderly in the island area need to expand the cultural facility infrastructure. On the other hand, the environment related to culture is indeed poor in the island area, but from the opposite point of view, it is also conceivable that there is a natural environment suitable for longevity and pleasantness. Regarding the natural environment, only 0.3% of the elderly in the island area perceived the green environment as bad (Sinan County Office, 2020). Therefore, it is necessary to make an effort at the government level to actively utilize the natural environment to improve the life satisfaction of the elderly in the island area.

Fifth, the elderly in the island area is being protected by the village community. However, protection through public institutions plays an important role. In particular, in the case of the elderly in the island area, compared to other generations, various policies are supported by the administrative agencies. Since the elderly in the island region have a great influence on the election results, the attention and policy support of politicians is inevitably concentrated. This tendency is reflected in the province's operational and administrative satisfaction. According to the Sinan County Office (2020), only 3.5% of the elderly in the island were dissatisfied with the overall operation of the province. Specifically, only 2.5% and 2.2% were reported to be dissatisfied with civil complaint administration (kindness, public relations, etc.) and health administration (treatment, prevention, health promotion project, etc.), respectively. As such, the island area has a protection system centered on the villagers. However, it can be understood that the protection system provided by the public domain is important.

2.2 Quality of life

Recently, improving the the quality of life has become a hot topic in Korean society. The concept of quality of life was first coined by the British economist Pigou. Pigou conceptualized individual satisfaction or dissatisfaction as welfare, and further classified welfare into economic welfare (income, etc.) and non-economic welfare (living environment, etc.). He recognized that such economic or non-economic satisfaction was related to quality of life (Pigou, 1920; Pigou, 1929). Afterwards, as Pigou recognized, in western society in the 1960s, in proportion to economic growth, there was a case in which the quality of life of individuals did not increase. Based on this background, economic factors and non-economic factors started to be included in order to understand the quality of life (Lee and Lee, 2002).

In fact, the concept of quality of life has spread around the world by comparing the level of quality of life among OECD member countries, which are policy research partners in advanced countries. The OECD investigated economic indicators (GDP) and non-economic indicators (life expectancy, infant mortality rate, number of hospital beds, etc.). Based on this, various policies were proposed to improve the quality of life of the residents of member countries (Ministry of Health and Welfare and Korea Institute for Health and Social Affairs, 2019). However, for objective quality of life that includes economic and non-economic indicators, national indicators are used. Therefore, there is a limit in that it is difficult to grasp an individual's quality of life (Bae, 2014). In this context, social scientists have used subjective quality of life indicators such as objective indicators such as GDP (Fernandez-Ballesteros, 2011).

Subjective quality of life indicators was developed through research in sociology and psychology in the social sciences (Diener, 1984; Ferriss, 2004). Psychologists preferred to measure the subjective quality of life as happiness or subjective well-being. Happiness and subjective well-being refer to the same psychological state as the present subjective feelings about one's life (Diener, 1984). However, happiness and subjective well-being are complex. If the present emotion or mood is affected by negative external stimuli, as a result, the present happiness and subjective well-being are distorted.

Life satisfaction refers to satisfaction with one's overall living conditions (Diener, 1984; Voicu and Pop, 2011). In particular, life satisfaction research focuses on analyzing differences in or influencing factors in life satisfaction according to demographic characteristics or various living conditions (Jan and Masood, 2008). However, early sociologists measured subjective quality of life using a single-item life satisfaction scale. This single-item life satisfaction scale has limitations in measuring individual dynamics (Brown, Oueslati and Silva, 2016). However, life satisfaction, which analyzes life satisfaction according to various living conditions, is usefully used to analyze social environment or government policies (Schuessler and Fisher, 1985; Lee, 2018). Because of these characteristics, the OECD is also using the satisfaction of life as a major indicator of the quality of life along with objective indicators (Brown, Oueslati and Silva, 2016).

The purpose of this study is to analyze the effect of island living conditions on the quality of life of the elderly in the island area. Therefore, this study aims to understand the quality of life of the elderly through life satisfaction, which is satisfied with overall living conditions.

2.3 Bottom-up spillover theory

In the 1970s, research on the relationship between work and quality of life increased. Spillover, compensation, and segmentation models have emerged as major theories to investigate the relationship between occupation and quality of life. In particular, diffusion theory explains that satisfaction in certain areas of an individual's life affects life satisfaction in other areas (Loscocco and Roschelle, 1991). Regarding the diffusion theory, Diener (1984) explained it as an upward and downward theory. According to the bottom-up theory, happiness is the sum of the joys they experience in their lives. On the other hand, in the top-down theory, happiness is influenced by individual personality characteristics. In other words, it means that a person with a positive personality has a high sense of happiness.

Later, as theories to explain life satisfaction, the top-down spillover theory and the bottom-up spillover theory were developed. As shown in Figure 1, in the top-down spillover theory, an individual's unique temperament affects satisfaction in various areas of life. This is again reported to be linked to overall life satisfaction (Lee, 2018). On the other hand, the basic premise of the bottom-up spillover theory is that overall life satisfaction is related to all living areas. According to the bottom-up spillover theory, life satisfaction is located at the last stage of the hierarchical structure (Woo, Kim and Uysal, 2014). Therefore, satisfaction in the subdomains of life leads to overall life satisfaction (Sirgy and Cornwell, 2001).

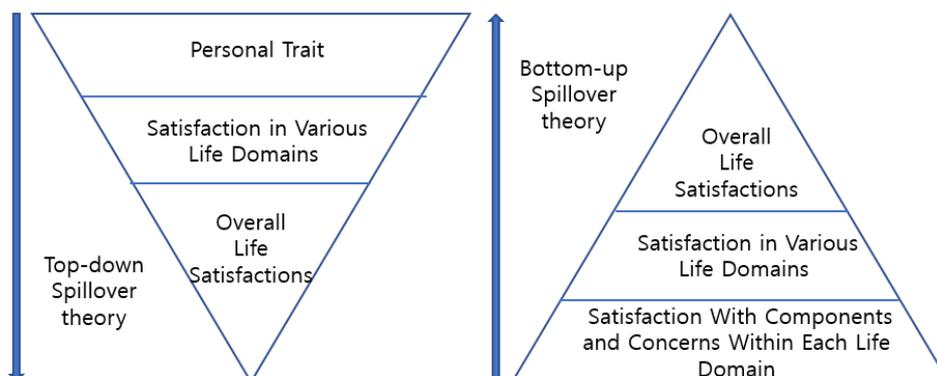


Fig 1. Top-down Spillover Theory and Bottom-up Spillover Theory

Life satisfaction is mainly determined by an individual's life concerns (Sirgy and Cornwell, 2001; Woo, Kim and Uysal, 2014). In this regard, life satisfaction means recognition according to objective conditions and states. Therefore, when it is said that life satisfaction sets the various living conditions that we experience (Voicu and Pop, 2011), in order to understand the conditions and conditions that affect the life satisfaction of the elderly in island regions by area, it can be said that the bottom-up spillover theory is more suitable for this study (Lee, 2018). Voicu and Pop (2011) also pointed out that the theory based on the bottom-up spillover theory received more significant support as a result of analyzing life satisfaction and daily life satisfaction based on the bottom-up spillover theory and the top-down spillover theory. Therefore, in this study, based on the bottom-up spillover theory, we try to identify the factors affecting the life satisfaction of the elderly in the island area.

2.4 A review of previous studies

The purpose of this study is to investigate the effect on the life satisfaction of the elderly in island regions based on the bottom-up spillover theory. Based on the bottom-up spillover theory, it is important to understand the life interests and component satisfaction of the island elders at the bottom of the hierarchical structure in order to understand the factors affecting the overall life satisfaction of the island elders. It is necessary to categorize these life interests and components into life domain satisfaction (Sirgy and Cornwell, 2001; Woo, Kim and Uysal, 2014). Under this background, the interests of the life of the elderly in the island region were set as housing, public transportation, medical institutions, cultural facilities and natural environment, and public institutions.

First, the housing that enables life as an independent entity affects the life satisfaction of the elderly in the island area (Berkoz and Yirmibesoglu, 2013). According to a study by Tran and Vu (2018), 63% of the elderly were satisfied, and it was reported that income level, health status, and housing satisfaction had a significant effect on the subjective quality of life of the elderly. According to a study by Lim (2012), among various environments, the residential environment was reported as a strong variable affecting the quality of life. In addition, in order to improve the quality of life of local residents, the improvement of the residential environment was suggested as a policy that should be considered as the top priority for families.

Second, in general, in the island area, institutions that provide social services, medical services, and administrative services are located in 'eup' and 'myeon'. Therefore, the accessibility of public transportation for convenient use of these institutions has a great influence on the lives of the elderly in the island area. A study by Senlier, Yildiz and Aktaş (2008) reported that overall satisfaction with public transport accessibility had a significant effect on the quality of life. Riddick (1985), who analyzed the elderly over 65 years of age, also found that income and health problems, as well as transportation difficulties, had a significant effect on the quality of life for elderly women, unlike men.

Third, the elderly in island regions are the main target of medical services. In the end, it can be said that medical service satisfaction has a major influence on the life satisfaction of the elderly in the island area. Senlier, Yildiz and Aktaş (2008) also reported that overall satisfaction with health service quality (physician, hospital service) had a significant effect on the quality of life. Specifically, according to Tang (2012), who analyzed the relationship between medical service-related satisfaction and life satisfaction, satisfaction with the overall medical service delivery system in public hospitals is a major factor in enhancing life satisfaction. In particular, communication with doctors, medical expenses, medical treatment process, medical facilities and hospital environment, and waiting time for medical services were suggested as medical service satisfaction factors that increase life satisfaction.

Fourth, poor infrastructure for cultural activities is a major factor that lowers the satisfaction with life of the elderly in island regions. According to a study by Moon and Kim (2018), it was reported that cultural facilities such as cultural centers, movie theaters, and museums in the area where the elderly live had a significant effect on the life satisfaction. In particular, in order to maximize the satisfaction of life for the elderly, it is important to consider the distance accessibility of cultural facilities and to create an elderly-friendly physical environment such as passageways and pedestrian paths. However, unlike the poor cultural environment of the island region, a pleasant natural environment serves as a mechanism to increase the satisfaction of the life of the elderly in the island region. A study by Senlier, Yildiz and Aktaş (2008) also reported that overall satisfaction with environmental quality, that is, noise and air, had a significant effect on the quality of life. Choi (2016) reported that overall life satisfaction improved as environmental satisfaction increased. In particular, as a pleasant green environment is created, air quality is improved. As a result, it can be inferred that it helps manage the healthy life of the elderly.

Fifth, the various supports provided by public institutions have a great impact on the lives of the elderly in the island area. According to a study by Lee and Kim (2007), it was reported that satisfaction with administrative services had a significant effect on the quality of life. In particular, it was confirmed that the satisfaction with health and welfare, which is the main administrative service, was low in the case of local residents far from the seat of city hall and province offices. Through this, it can be estimated that there is a significant relationship between the accessibility of public institutions and the life satisfaction of the elderly in the island area.

3. Study Method

3.1 Study Model

The purpose of this study is to identify the determinants that affect the life satisfaction of the elderly in the island area. Based on the results of previous studies, a research model was established as shown in Figure 2.

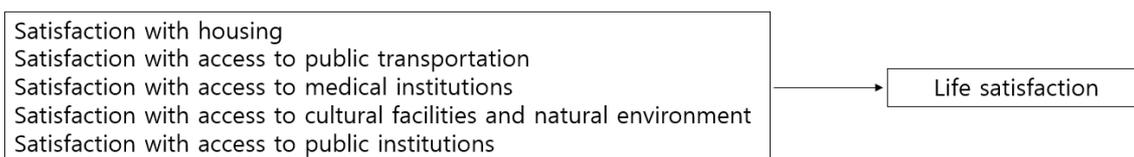


Fig 2. Research Model

3.2 Subject of Study and Study Method

In this study, raw data of “The Regional Resident Needs Survey for Establishment of the 4th Local Social Security Plan” conducted in Sinan-gun, Jeollanam-do in 2018 was used. The subjects of the survey are residents of Sinan-gun, and the survey period is April 2018. After allocating ‘eup’ and ‘myeon’ in the survey, a researcher visited the area and conducted a face-to-face survey. In the actual analysis, some data that answered insincerely among respondents over the age of 60 were deleted, and data from 195 people were used in the final analysis.

Data analysis was performed using SPSS version 23.0. First, the characteristics of major variables were examined using frequency analysis and descriptive statistical analysis. Second, in order to confirm the problem of multicollinearity

between independent variables, correlation analysis was performed. Third, logistic regression analysis was performed to analyze the factors affecting life satisfaction.

3.3 Measurement Tools

Life satisfaction refers to “the overall satisfaction with one’s life these days”. The life satisfaction scale consisted of 1 point from ‘not at all satisfied’ to 10 points for ‘very satisfied’. In this study, it was reconstructed on a two-point scale. A score of 1 to 5 was assigned a value of 0, and a score of 6 to 10 was assigned as 1 point. Therefore, the higher the score, the higher the satisfaction with life.

Housing satisfaction refers to “the overall satisfaction with the housing you currently live in”. Scores ranged from 1 point of ‘very satisfied’ to 4 points of ‘very dissatisfied’. Therefore, the higher the score, the higher the satisfaction with the house. The satisfaction scale for public transport accessibility is a question asking ‘satisfaction with accessibility to public transport such as buses’. The satisfaction scale for public transport accessibility was composed of 4 points of ‘very satisfied’ from 1 point of ‘very dissatisfied’. The higher the score, the higher the satisfaction with public transportation accessibility. The satisfaction scale for access to medical institutions is a question asking “satisfaction with access to hospitals and medical welfare facilities, etc.” Satisfaction with access to medical institutions exists in the score range of 1 to 4 points. It can be understood that the higher the score, the higher the satisfaction with access to medical institutions. And the satisfaction scale for access to cultural facilities and natural environment means satisfaction with “accessibility to cultural facilities and parks, green areas, waterfronts, etc.” The cultural facilities accessibility and natural environment satisfaction scale consisted of 1 point of ‘very dissatisfied’ to 4 points of ‘very satisfied’. The higher the score, the higher the satisfaction with access to cultural facilities and natural environment. In addition, satisfaction with accessibility to public institutions refers to ‘satisfaction with accessibility’, such as county offices and ‘eup’/‘myeon’ offices. Satisfaction with accessibility to public institutions exists in the score range of 1 to 4 points. It can be understood that the higher the score, the greater the satisfaction with access to public institutions.

Control variables in this study were gender, age, education, economic status, and physical health management variables that had an effect on the life satisfaction in previous studies. In particular, in the actual analysis, dummies were set as follows: ‘gender’ is ‘female’ 0, ‘male’ 1, ‘education’ is ‘less than high school’ 0, ‘high school or higher’ 1, and ‘physical health management’ is ‘difficult’ 0, ‘not difficult’ 1.

4. Study Result

4.1 General Characteristic of Respondents

The general characteristics of the respondents are shown in Table 1. First, the gender of the respondents was 51.3% female and 48.7% male. The average age was 72.46 years old, followed by 47.2% of the middle-aged elderly (65–74), 35.4% of the elderly (75 years old or older), and 17.4% of the young elderly (60–64 years old). As for the educational background of the respondents, 80.5% of those who were in middle school or lower accounted for a higher rate than 19.5% of those who were above high school. The economic condition was confirmed as difficult 42.6%, moderate 48.2%, and comfortable 9.2%. Physical health management was reported as difficult by 39.7% of the respondents, and not difficult by 60.3%.

Table 1. General Characteristic of Respondents

Category	Number	Percent	Remarks
Gender	Female	100	51.3%
	Male	95	48.7%
Age	The young elderly (60–64 years old)	34	17.4%
	The middle-aged elderly (65–74)	92	47.2%
	The elderly (75 years old or older)	69	35.4%
Educational background	Middle school or lower	157	80.5%
	Above high school	38	19.5%
Economic condition	Difficult	83	42.6%
	Moderate	94	48.2%
	Comfortable	18	9.2%
Physical health management	Difficult	77	39.7%
	Not difficult	117	60.3%

4.2 Descriptive Statistics of Main Variables

The descriptive statistical results of major variables are presented in Table 2. Life satisfaction was 0.61 (SD .49) in the score range of 0–1. In the range of 1 to 4 points, satisfaction with housing 2.68 points (SD .76), satisfaction with public transportation accessibility 2.16 points (SD .79), satisfaction with access to medical institutions 2.04 points (SD .87), satisfaction with access to cultural facilities and natural environment It was confirmed as 2.28 points (SD .80) and 2.42 points (SD .83) for satisfaction with access to public institutions.

Table 2. Descriptive Statistics of Main Variables

Category	Score range	Min	Max	Mean	SD
Life satisfaction	0–1	0	1.0	0.61	.49
Satisfaction with housing	1–4	1.0	4.0	2.68	.76
Satisfaction with public transportation accessibility	1–4	1.0	4.0	2.16	.79
Satisfaction with access to medical institutions	1–4	1.0	4.0	2.04	.87
Satisfaction with access to cultural facilities and natural environment	1–4	1.0	4.0	2.28	.80
Satisfaction with access to public institutions	1–4	1.0	4.0	2.42	.83

4.3 Correlations between Variables

The results of correlation analysis between independent variables are presented in Table 3. As a result of the analysis, it was confirmed that the correlation coefficient between independent variables did not exceed .700 as an absolute value. Based on these results, it can be estimated that there is no serious distortion problem in the results due to multicollinearity between independent variables.

Table 3. Correlations between Variables

Item	A	B	C	E	E	F	G	H	I	J
A	-									
B	-.136	-								
C	.194**	-.391***	-							
D	.204**	-.190**	.237***	-						
E	.015	-.203**	.135	.284***	-					
F	.084	-.058	.070	.417***	.310***	-				
G	.175*	-.092	.095	.150*	.130	.199**	-			
H	.184**	-.103	.159*	.226**	.288***	.298***	.510***	-		
I	.041	.070	.005	.244***	.281***	.274***	.455***	.501***	-	
J	.193**	-.106	.176*	.321***	.193***	.276***	.478***	.673***	.465***	-

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

Remark 1) A (gender), B (age), C (educational background), D (economic status), E (physical health management), F (satisfaction with housing), G (satisfaction with access to public transport), H (satisfaction with access to medical facilities), I (satisfaction with access to cultural facilities and natural environment), J (satisfaction with access to public institutions). Remark 2) Dummy: Gender (1 = male), education (1 = high school and above), physical health care (1 = not difficult)

4.4 Factors Affecting Life Satisfaction of Elderly in Island Areas

The results of analyzing the factors affecting the life satisfaction of the elderly in the island area are presented in Table 4. To check the fit of the regression model, the χ^2 value was checked. $\chi^2=106.020$, $p=.000$, so the null hypothesis was rejected. The alternative hypothesis that 'at least one regression coefficient is non-zero' was adopted. In addition, to examine the model explanatory power, -2LL and Nagelkerke R² were analyzed. The result was -2LL = 152.854 and Nagelkerke R² = .572. Therefore, it was confirmed that the logistic regression equation had 57.2% explanatory power for the life satisfaction of the island elderly.

The analysis of the regression coefficients of this regression model is as follows. Among the control variables, it was confirmed that there were significant changes in age and economic status. Among the satisfaction with living conditions, it was reported that access to housing, medical institutions, access to cultural facilities and natural environments, and access to public institutions had significant changes in the satisfaction of life of the elderly in the island area.

If we analyze in detail, it was found that the log odds of life satisfaction increased by .774 as the housing satisfaction increased by 1 unit. It was investigated that the log odds of life satisfaction decreased by 1.477 as the satisfaction with access to medical institutions increased by 1 unit. And it was reported that the log odds of life satisfaction increased by 1.003 as satisfaction with access to cultural facilities and natural environment increased by 1 unit. In addition, it was confirmed that the log odds of life satisfaction increased by 1.459 as the satisfaction with access to public institutions increased by 1 unit.

Table 4. Factors Affecting Life Satisfaction

Category		B	S.E.	Wald	Exp(B)
Control variable	Gender	-.833	.439	3.594	.435
	AGE	.093	.031	8.700	1.097**
	Educational background	-.008	.567	.000	.992
	Economic condition	1.535	.356	18.601	4.643***
	Physical health management	.650	.466	1.944	1.915
Satisfaction with living conditions	Housing satisfaction	.774	.329	5.533	2.169*
	Public transport accessibility	-.386	.336	1.323	.680
	Access to medical institutions	-1.477	.482	9.371	.228**
	Access to cultural facilities and natural environment	1.003	.334	9.016	2.727**
	Access to public institutions	1.459	.463	9.924	4.303**
Constant		-13.895			
Model Chi-square		Chi-square = 106.020***			
-2 log likelihood		152.854			
Nagelkerke R square		.572			

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

Remark) Dummy: Gender (1 = male), education (1 = high school and above), physical health care (1 = not difficult)

5. Conclusion and Proposal

The purpose of this study is to analyze the effect of satisfaction with housing, public transport access, access to medical institutions, access to cultural facilities and natural environments, and access to public institutions on the overall life satisfaction of the elderly in island areas using the bottom-up spillover theory. The study results are as follows.

First, it was confirmed that housing satisfaction had a significant effect on the life satisfaction of the elderly in the island area. This is consistent with the results of previous studies (Lim, 2012; Berköz and Yirmibesoglu, 2013; Tran and Vu, 2018). Since housing plays a role in allowing the elderly in the island region to live as an independent entity, housing satisfaction is linked to life satisfaction (Woo, 2017). Nevertheless, it is not easy to repair houses in island areas due to the lack of logistics and construction companies compared to urban areas. In particular, in the case of the elderly in Sinan-gun, the target area of this study, there are many conventional toilets and there are cases where there are no bathing facilities in private homes. Of course, Shinan-gun has recently opened public baths in each township, but due to lack of water, it is only operated 3 to 4 times a month. Therefore, the government should support home repairs for the elderly in island areas. In addition, it is necessary to build public housing where the elderly in the island region can live as independent entities. The construction of such public housing has a side effect of reducing administrative costs and time for visiting health and welfare services.

Second, satisfaction with access to public transportation did not have a significant effect on the life satisfaction of the elderly in the island area, and it was found to be an inappropriate relationship. This is contrary to previous studies (Riddick, 1985; Senlier, Yildiz and Aktaş, 2008). Accessibility issues for public transportation in the island area are diverse, such as sea movement and movement within the island area. Ensuring such public transport accessibility is the

goal of all island local governments. Local governments in the island area are making various efforts such as bus joint system, taxi coupon payment, nighttime passenger boat operation, and vertical line operation. As a result, it is also true that the accessibility of public transportation in the island area is improving compared to the past. However, the geographical limit of the island region still exists. Therefore, although satisfaction with access to public transportation in the island area has increased, it can be understood that there is an insufficient aspect to lead to satisfaction with life due to the geographical limitations of the island area.

Third, as satisfaction with access to medical institutions increased, satisfaction with life decreased. This is contrary to the results of previous studies (Senlier, Yildiz and Aktaş, 2008; Tang, 2012) that the satisfaction with medical services increases with satisfaction with life. The cause of these results can be understood in two main ways. Kang and Cha (2018) also found a negative relationship between satisfaction with medical services and quality of life. And with respect to these causes, Kang and Cha (2018) estimated that satisfaction with medical services means medical expenses on the one hand, and consequently, the burden of medical expenses negatively affected the quality of life. In other words, it can be understood that the elderly in the island region were satisfied with access to medical institutions, but their satisfaction with life decreased due to the burden of medical expenses. Therefore, in order to establish a positive relationship between medical service satisfaction and life satisfaction, it suggests that the government needs to intervene in policy regarding the burden of medical expenses of the elderly in island regions. In addition, recognizing that access to medical institutions is good is that they have frequently used medical institutions. In other words, satisfaction with access to medical services means that there are many diseases of the elderly in the island area. Therefore, it can be understood that the elderly in island regions have a high prevalence of chronic diseases, frequently use medical services, and are satisfied with the access to medical services in this process, but as a result, they do not lead to satisfaction with life. Jeon and Kahng (2011) also pointed out that as the number of diseases increases, the use of outpatient medical services increases, and as the use of outpatient medical services increases again, the elderly's satisfaction with life decreases. What should be noted in the results of this study is that access to medical institutions is still important in the satisfaction of life for the elderly in the island region. According to the research results of Sinan County Office (2020), 22.6% of the elderly on the island chose access to medical institutions as a factor in their dissatisfaction with medical services. Therefore, access to medical institutions and satisfaction with life should not be viewed as a linear relationship. As mentioned above, it should be noted that the elderly in the island region were satisfied with the access to medical institutions, that is, the burden of medical expenses was high and the number of diseases. Therefore, in the future, the government needs to consider more meticulous policy considerations for medical expenses and diseases as well as access to medical institutions.

Fourth, it was confirmed that satisfaction with access to cultural facilities and natural environment had a significant effect on the life satisfaction of the elderly in the island area. This is in line with the results of previous studies (Senlier, Yildiz and Aktaş, 2008; Choi, 2016; Moon and Kim, 2018) that satisfaction with access to cultural facilities and natural environment has a significant effect on the life satisfaction. Due to regional characteristics and the financial difficulties of local governments, there are very few cultural facilities available to the elderly in the island area. Urban areas meet the needs related to culture, centering on welfare centers for the elderly. However, in the island area, it is difficult to install senior welfare centers in each township. Therefore, it is necessary to set up a small elderly welfare center where 2–3 social workers are stationed to provide services. It is worth considering the Ontact cultural experience program, where you can experience cultural facilities in urban areas through images. On the other hand, it was found that access to the natural environment had a significant effect on the life satisfaction of the elderly in the island area. Therefore, it is necessary to make efforts to increase access to the natural environment of the elderly in the island area. For example,

the creation of an elderly-friendly physical environment such as parks, green spaces, and passageways near the waterfront should be considered (Moon and Kim, 2018).

Fifth, it was confirmed that satisfaction with access to public institutions had a significant effect on the life satisfaction of the elderly in island regions. This is consistent with the results of previous studies (Sirgy and Cornwell, 2001; Lee and Kim, 2007; Ahn and Kim, 2014) that satisfaction with access to public institutions has a significant effect on the life satisfaction of the elderly in island regions. Public institutions in the island area are closely related to daily life. For example, since an agricultural and fisheries department is installed in each eup and myeon office, support for fishery and agriculture, the main sources of income, is provided in the island area centered on the 'eup' and 'myeon' offices. Also, unlike urban areas, island areas provide health and welfare services centered on towns and villages. The more the elderly in the island area live near the township office, the easier it is to receive health and welfare services. The problem is that only the elderly in some island areas have high access to public institutions. Of course, it is true that the problem of access to public institutions cannot be solved in a short time. Therefore, while it is important to increase access to public institutions at the physical level, it is important to increase access to services provided by public institutions. Currently, public officials in charge of social welfare in 'eup' and 'myeon' offices have more work than urban areas and have longer travel times. Therefore, it is necessary to develop local community resources that can satisfy the needs of the elderly in the island region. For example, it is necessary to give authority to administrative services and induce participation by village-level representatives such as Women's Association. In addition, it is necessary to operate a mobile-myeon office at all times like a visiting library.

In this study, it was confirmed that accessibility to public transportation did not have a significant effect. Although satisfaction with public transportation accessibility has increased compared to the past, it can be understood that this is not a significant change to affect life satisfaction. Therefore, in future research, a more in-depth research is needed on "a plan to improve access to public transportation that can enhance the satisfaction of life for the elderly in the island area". Also, it was found that there was a negative relationship between satisfaction with access to medical institutions and satisfaction with life. In-depth research is also needed to elucidate these causes.

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