

## **Influence Factors on Health and Medical Expense of Public Pension Recipients in South Korea**

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### **Abstract**

*This study aims to identify the monthly average medical expenses of public pension recipients, and analyze the determinants of total medical expenses and Western and Oriental medicine expenses/expenditure, along with the determinants of health supplement expenses, medical service expenses, and medical supplies expenses. This study used the fifth year data of 2013 out of the raw data of the Korean Retirement and Income Study collected by the National Pension Research Institute. To compare with the determinants of health and medical expenses of public pension recipients, this study analyzed 1,136 respondents receiving public pension, while they were in the state of retirement, excluding no-responding persons and error responses, as the final subject of the analysis. According to the recipients' monthly average household expenditure was about KRW 1.75 million. Total medical expenses were about KRW 131,000, Western and Oriental medicine expenses were about KRW 50,000, and health supplement expenses were about KRW 24,000. Medical service expenses were approximately KRW 42,000 and health and medical supplies and devices expenses were analyzed to be KRW 7,000. Multi-regression analysis results, all item expenses rose as expenditure size, which is income's surrogate variable, increased. More family members living together had a significant influence on total health and medical expenses, as the number of chronic diseases increased, it became a factor in the increase of total health and medical expenses and Western and Oriental medicine expenses. The findings in this study have significance in that the health and medical expenses factors of Korean public pension recipients have been analyzed.*

**Keywords:** *Health and Medical Expense, Public Pension System, Expenditure Size, Income Class*

### **1. Introduction**

Old age is the period when people gradually withdraw from various roles and reduce their activity level in daily life. When one reaches old age together with retirement, he/she experiences the loss of roles and adapts to old age by looking for proper alternative roles. Otherwise, one may encounter a psychological sense of crisis, such as the loss of self-identity, which he/she has pursued as occupational position [1]. Old age is the period when medical service is needed more for various changes in the physical aspect and for a healthy aged life resisting chronic diseases. According to the National Health Insurance Statistical Yearbook [2] the population aged 65 and over was 5.740 million (11.5%) among

the total population of 49.999 million. Medical expenses for the elderly were KRW 18.0852 trillion in 2013, rising 2.5 times more than those in 2006. The annual average medical expenses per elderly person stood at KRW 3.219 million, which was analyzed to be more than 3 times higher than the annual average medical expenses per person in Korea, which stood at KRW 1.022 million. The increase in the number of the elderly population is connected to the increase in the medical expenses of the elderly.

While the medical expenses in old age increase, economic participation after middle and old ages becomes highly limited. Although retirees enter the society through re-employment before the age of 65, the elderly aged 65 and over suffer from difficulties, such as maintaining livelihood and no preparation for aged life[3]. In particular, medical expenses are the major expenditure item in old age, after retirement, and sustained income guarantee in old age is a critical factor for a stable aged life. A typical system to guarantee a certain level of income and living of retirees is the pension system. Continuous resources exchange aspects, carried out according to redistribution between generations at a social level through public pension, which is the core of an aged life guarantee system, are classified into the level of generation relations and also the factors influencing those aspects which are truly necessary for a prepared aged life for retiree candidates, not to mention retirees embracing old age[4].

Korea's public pension system can be divided into national pension targeting general public and special occupational pension targeting those who are engaged in special occupations, such as government employees' pension, military pension, and teacher's pension. National pension is a representative public pension system, and it gradually expanded its application scope from businesses having ten and more employees in 1988 to small scale petty businesses and then to all businesses in 2006. Owner-operators in agricultural and fishing villages, and those in urban areas were included in 1995 and 1999, respectively. Concerning special occupational pension, government employees' pension was introduced targeting professional civil servants in 1960. Military pension became independent from the government employees pension system in 1963, and teacher's pension was adopted in 1975. The pension is paid upon the to-be recipients' retirement and death. If one serves in his/her occupation for 20 years and more, the retirement pension is paid[5].

This study aims to identify the monthly average medical expenses of public pension recipients, and analyze the determinants of total medical expenses and Western and Oriental medicine expenses/expenditure, along with the determinants of health supplement expenses, medical service expenses, and medical supplies expenses.

## **2. Study object**

This study used the fifth year data of 2013 out of the raw data of the Korean Retirement and Income Study collected by the National Pension Research Institute. To compare with the determinants of health and medical expenses of public pension recipients, this study analyzed 1,136 respondents receiving public pension, while they were in the state of retirement, excluding no-responding persons and error responses, as the final subject of the analysis.

### **3. Variables**

#### **3.1. Health and Medical Expenses**

Health and medical expenses are divided and described into expenses for Western and Oriental medicine (medicines or herbal medicines/herbal medicine materials bought through the diagnosis of hospitals, clinics and oriental clinics, and oriental medicine shops), health supplements (food purchasing expenses to maintain and consolidate health, not for treatment), medical service (operative medical expenses, outpatient medical expenses), and health and medical supplies and devices (purchasing and rental expenses including consumables for health and medical care).

#### **3.2. Expenditure Size**

In the case of medical care use, many studies have pointed out that there is a gap in health level, according to the social and economic level and especially the income level[6][7][8]. Retirees will have far smaller income, compared to expenditure, although they have income earned from economic activities and will spend cost to maintain minimum livelihood despite the absence of wage income generated from current jobs. Yun H.H. et al. [9] said that the living expenses of the elderly are decided by Friedman's (1956) permanent income or Modigliani's (1986) life-cycle income, rather than current income. According to the theory, consumers calculate permanent income in consideration of an asset's disposal value, excluding cash coming from all sources and assets to be bequeathed to descendants, whereas the permanent income is equal to the current expenditure. In this regard, it can be reasonable to use household expenditure affected by permanent income, rather than by income having limited information as an explanatory variable, when medical expenses are estimated. Income expenditure size classification consists of lowest (bottom 20%), low, middle, upper, and highest (top 20%) percentile.

### **4. Data Analysis**

This study conducted t-test and ANNOVA to verify publicly the relevance between pension recipients' general characteristics and health and medical expenses status using SPSS 21.0 for data analysis. Also, this study carried out a linear regression analysis to identify the determinants of health and medical expenses.

### **5. Results**

The recipients' monthly average household expenditure was about KRW 1.75 million. Total medical expenses were about KRW 131,000, Western and Oriental medicine expenses were about KRW 50,000, and health supplement expenses were about KRW 24,000. Medical service expenses were approximately KRW 42,000 and health and medical supplies and devices expenses were analyzed to be KRW 7,000

**Table 1. Household Expenditure and Health and Medical Expenses of Public Pension Recipients**

Unit: KRW		
Division	Average	Standard Deviation
Expenditure Size	1,753,781	1,556,458
Total Health and Medical Expenses	131,757	13,072
Western and Oriental Medicine Expenses	50,017	75,389
Health Supplement Expenses	24,838	46,538
Medical Expenses	42,280	72,293
Health and Medical Supplies Expenses	7,020	25,450

As a result of analyzing the status of total health and medical expenses, expenditure size, gender, educational level, number of family members living together, residential area, status of spouse, number of chronic diseases, economic activity status, status of limitation in daily life, social activity, and psychological health status were statistically significant.

**Table 2. Status of Total Health and Medical Expenses According to Recipients' Characteristics**

Unit: KRW				
Division		Average	Standard Deviation	F(p)
Expenditure Size	Consists of lowest	60,255	52,891	37.438***
	Low	103,248	81,794	
	Middle	141,634	144,877	
	Uupper	167,526	140,511	
	Highest	184,177	160,459	
Gender	Male	138,696	133,250	17.197***
	Female	97,323	11,994	
Education Level	≤Middle School	114,286	114,098	14.868***
	High School	151,814	155,506	
	College≤	164,913	133,857	
Family Members Living Together	1	88,782	126,360	8.804***
	2	135,720	128,136	
	3	132,528	106,037	
	4	189,772	192,661	
	5≤	156,363	106,795	
Residential Area	Seoul	157,951	154,769	4.687**
	Metropolitan Cities	127,857	126,360	
	Provinces	125,110	124,432	
Status of Spouse	Yes	144,203	132,202	26.291***
	No	92,642	117,447	
Civil Pension	Yes	117,250	72,072	.230
	No	131,106	131,546	
number of Chronic Illness	No	114,345	122,394	11.728***
	1	127,383	125,822	
	2	149,494	127,208	

	3	177,686	164,894	
	4≤	272,000	178,642	
status of limitation in Daily Life, Social Activity	Limits	201,551	196,748	24.793***
	Not Limits	125,937	123,038	
Psychological Health status	Very Bad	146,133	141,787	2.994*
	Bad	167,631	180,866	
	Normal	131,627	124,082	
	Good	122,229	122,383	
	Very Good	138,929	123,493	

\*P<.05, \*\*P<.01, \*\*\*P<.001

As a result of analyzing the status of medical service expenses, the expenditure size, gender, educational level, residential area, number of chronic diseases, status of limitation in daily life, social activity, and psychological health status were statistically significant.

**Table 3. Status of Medical Service Expenses According to Recipients' Characteristics**

		Unit: KRW		
Division		Average	Standard Deviation	F(p)
Expenditure Size	Consists of lowest	20057	23086	10.061***
	Low	33928	46141	
	Middle	51356	102105	
	Uupper	50818	73130	
	Highest	55841	83439	
Gender	Male	45449	76680	9.874***
	Female	28085	45373	
Education Level	≤Middle School	36067	58367	6.371**
	High School	52544	95780	
	College≤	49311	70818	
Family Members Living Together	1	30429	79984	2.072
	2	44740	72503	
	3	39707	61105	
	4	50560	78728	
	5≤	60381	50362	
Residential Area	Seoul	62304	102885	8.670***
	Metropolitan Cities	40182	66065	
	Provinces	37591	63190	
Status of Spouse	Yes	46230	76668	13.142***
	No	27136	49504	
Civil Pension	Yes	49000	51210	.176
	No	42160	72626	
number of Chronic Illness	No	35567	67282	3.540**
	1	43411	76830	
	2	47622	71076	
	3	59268	76676	
	4≤	77238	85940	

status of limitation in Daily Life, Social Activity	Limits	78397	120478	21.276***
	Not Limits	39618	66717	
Psychological Health status	Very Bad	58200	82093	3.787**
	Bad	63929	115466	
	Normal	38655	60455	
	Good	38702	64231	
	Very Good	54754	96738	

\*P<.05, \*\*P<.01, \*\*\*P<.001

As a result of analyzing the determinants of health and medical expenses, all health and medical expenses rose as expenditure size increased. Expenditure size was statistically significant with total health and medical expenses, Western and Oriental medicine expenses, health supplement expenses, and health and medical supplies expenses.

As for educational level, individuals at college and higher levels were significantly higher than those at middle school and lower levels in terms of health supplement expenses.

In the case of number of family members living together, health supplement expenses were significantly higher with one person than five and more family members since the total health and medical expenses were smaller. As medical service expenses were smaller, health and medical supplies expenses were significantly higher in one family member than four family members.

Concerning residential area, metropolitan cities and provinces were significantly higher than Seoul in terms of health supplement expenses and medical service expenses, and metropolitan cities were significantly higher than Seoul in health and medical supplies expenses.

Regarding the status of spouse, the total health and medical expenses and medical service expenses were significantly higher when a spouse existed. In the case of the status of economic activity, the Western and Oriental medicine expenses were significantly higher when a spouse was unemployed.

When it came to the number of chronic diseases, the total health and medical expenses and Western and Oriental medicine expenses were significantly higher as the number rose. Health supplement expenses were significantly higher in the case of none than in one and two. Medical service expenses were significantly higher in the case of three compared with none. Health and medical supplies expenses were significantly higher in the case of two compared with none. Regarding the status of limitation in daily life and social activity, the total health and medical expenses, Western and Oriental medicine expenses, and medical service expenses were significantly higher in the case of limitation than non-limitation

**Table 4. Influence Factors of Recipient's Health and Medical Expenses**

Division	Total Health and Medical Expenses	Western and Oriental Medicine Expenses	Health Supplement Expenses	Medical Service Expenses	Health and Medical Supplies Expenses
Expenditure Size	.440***	.236***	.377***	.246***	.170***
Gender	Male(ref)				
	Female	-.021	-.007	.015	-.027

Education Level	≤Middle school(ref)					
	High School	.005	-.002	.003	.022	-.038
	College≤	-.031	-.032	.080*	-.052	-.067
Family Members Living Together	1 (ref)					
	2	-.190**	-.046	-.112	-.220**	-.009
	3	-.222***	-.098	-.101	-.239***	.011
	4	-.097*	-.033	-.052	-.145**	.109*
	5≤	-.101**	-.042	-.096**	-.079*	.008
Residential Area	Seoul (ref)					
	Metropolitan Cities	-.013	.065	.162***	-.098*	.083*
	Provinces	-.029	-.030	.157***	-.133**	.734
Status of Spouse	Yes (ref)					
	No	-.147*	-.093	-.042	-.171*	.080
Civil Pension	Yes (ref)					
	No	.041	.053	.021	.004	.006
number of Chronic Illness	No(ref)					
	1	.008	.038	-.067*	.014	.012
	2	.091**	.123***	-.064*	.047	.087**
	3	.105***	.154***	-.056	.068*	-.009
	4≤	.117***	.151***	.046	.033	-.025
status of limitation in Daily Life, Social Activity	Limits(ref)					
	Not Limits	-.118***	-.097**	.029	-.115***	-.047
Psychological Health status	Very Bad(ref)					
	Bad	.078	.020	.086	.061	.016
	Normal	.057	.023	.130	-.027	.063
	Good	-.019	-.027	.030	-.058	.090
	Very Good	-.006	-.352	.002	.011	.000
		Adj <sup>2</sup> =.201	Adj <sup>2</sup> =.116	Adj <sup>2</sup> =.130	AdjR <sup>2</sup> =.084	AdjR <sup>2</sup> =.040
		F=13.999***	F=7.753***	F=8.741***	F=5.728***	F=3.133***

\*P<.05, \*\*P<.01, \*\*\*P<.001

## 6. Investigation and Conclusion

Each country devises and implements systematic instruments through which social members can use proper medical services, irrelevant of income, in line with circumstances[10]. The Korean people's health status has actually improved a lot. Korea actually needs to present clear evidence on cost-effectiveness to achieve its final goal of national health improvement with limited resources. To this end, an investigation on the reality of medical care use or an analysis on the status of medical expenses is essential. It is especially important to identify the patient who is burdened with medical expenses in linkage with guarantee issue[11].

This study examined the determinants of public pension recipients' total health and medical expenses, Western and Oriental medicine expenses, health supplement expenses, medical service expenses, and health and medical supplies expenses. According to the multi-regression analysis results, all item expenses rose as expenditure size, which is income's surrogate variable, increased. Such a result was consistent with the study result of Yun H.H. et al. [9] and Choi R. et al. [12] asserting that the medical expenses of the net aged households and the aged households increase, as monthly average household expenditure ascends, and the study result of Shin J.W. et al. [11] saying that total health and medical expenses, health and medical service expenses, medical supplies expenses, and health and

medical supplies and devices expenses rise as consumption expenditure size goes up. In addition, the following was analyzed: More family members living together had a significant influence on total health and medical expenses; provinces and metropolitan cities had a significant influence on health supplement expenses and medical service expenses than Seoul in terms of residential area; having a spouse had a significant influence on total health and medical expenses and medical service expenses than having no spouse; as the number of chronic diseases increased, it became a factor in the increase of total health and medical expenses and Western and Oriental medicine expenses.

There has been no study on public pension recipients after retirement so far, especially on health and medical expenses. The findings in this study have significance in that the health and medical expenses factors of Korean public pension recipients have been analyzed. Therefore, there is a need for the government to actively intervene in the health policy and financial support for retirees, so that unfairness cannot be caused in medical care use of the elderly after retirement when economic activity is difficult.

The limitation of this study is that the characteristics of Korean Retirement and Income Study data have not been reflected since only the fifth year data of 2013 was used. In this regard, a further study to identify the change pattern of health and medical expenses, according to retirees' public pension types using a time series analysis, is proposed.

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