

Factors Affecting Medical Expenditure in Older Adults With and Without Disabilities: Results from the 2015 Korea Health Panel

Jong-Hoon Moon¹, Hee-Su Park^{*2}

^{1,2*}Department of Occupational Therapy, Kyungdong University, 815, Gyeonhwon-ro, Munmak-eup, Wonju-si, Gangwon-do, 26495, Republic of Korea

garnett231@naver.com¹, hspark@kduniv.ac.kr^{*2}

Corresponding author : Hee-Su Park, hspark@kduniv.ac.kr

Abstract

Background/Objectives: The aim of this study was to compare the factors affecting medical expenditure in older adults with and without disabilities.

Methods/Statistical analysis: Present study used raw data from the 2015 Korea Health Panel. we analyzed the general characteristics, information on chronic disease, taking drug medicine, medical use, and medical expenditure of 4,044 elderly people. Statistical analysis was performed using stepwise multiple regression analysis.

Findings: The factors affecting the medical expenditure of elderly people with disabilities were hospitalization use, hospital outpatient use, family income, and education level ($R^2 = .223$, $p < .05$). The factors affecting the medical expenditure of elderly people without disabilities were hospitalization use, emergency use, age, hospital outpatient use, and family income ($R^2 = .246$, $p < .05$).

Improvements/Applications: The results of this study found differences in the medical expenditures of elderly people with and without disabilities.

Keywords: Medical expenditure, Medical use, Disability, Elderly, Aging

1. Introduction

The term "aging" refers to an increase in the proportion of older adults in a country's population [1]. The Korea is experiencing an aging population that is unprecedented in many countries around the world [2]. The aging of a country creates risks socio-economically, affecting the GDP (Gross Domestic Product) by changing labor productivity and the labor market. This impact drives changes in policies in many welfare areas, including education, health care, and annuity [3].

The World Health Organization has defined health as 'a state of mental, physical, and social well-being in which disease and infirmity are absent' [4]. This means that everyone has the right to health, regardless of race, society, disability, or economic condition. However, people with disabilities experience the risks of aging with disability, so special attention and efforts are required to solve their health problems [5].

Elderly people with disabilities are exposed to various physical, psychological, and socioeconomic risks, including early aging, chronic diseases, depression and anxiety, low education and low income, and high medical expenditure [6]. There are various solutions to these problems, such as creating job projects for the elderly or disabled, expanding social services, and providing social interaction opportunities [7].

Healthcare services are comprehensive health care services, including the maintenance and promotion of health care, which focus on the treatment, nursing, prevention, management, and rehabilitation of diseases [8]. These services are often used as the concept of a more comprehensive welfare called social services, which encompass public administration, social welfare, education, and culture [9]. These social services are the right of all people.

Research has indicated that medical expenditures and medical use occur more favorably in people with good socioeconomic status [10, 11]. There have also been reports of differences in medical use or medical expenses according to the disability or chronic disease of the elderly [12]. Since the elderly and people with disabilities are characterized by low socioeconomic levels [10-12], there should be no inequalities in medical use or expenditure.

Recent studies on the use or expenditure of the elderly and people with disabilities have shown that medical expenditure and unmet medical needs [13], factors influencing medical expenditure [3, 14, 15], influencing factors on medical use [16, 17], and research on the actual state of medical expenses for the disabled [11]. However, research on the medical expenditure of the disabled elderly was insufficient. Research on medical use and medical expenditure is important because it provides important information for social welfare policies, prevents excessive medical expenditures [18, 22-32], and systems for people who need health care. This can be the basis for construction.

Thus, the aim of present study was to compare the factors affecting medical expenditure in older adults with and without disabilities.

2. Materials and Methods

2.1. Subjects

This study used data from the Korea Health Panel of 2015. The Korea Health Panel survey was conducted for about six months by a trained investigator using a computer. The survey area was the whole of Korea. The author obtained the data from the website to get raw data from the Korea Health Panel. Data of 4,044 adults aged ≥ 65 years were extracted. Among them, 618 elderly people with disabilities and 3,426 elderly people without disabilities were analyzed.

2.2. Variable definitions

2.2.1. General characteristics

The variables used in this study were age, sex, education level, and family income. Gender was coded as male = 1, female = 2, and education level was illiteracy = 0, elementary school = 1, middle school = 2, high school = 3, university = 4, master degree and above = 5. Family income is expressed as decile (the higher the value, the higher the income). Chronic disease, taking drug medicine, medical use, and medical expenditure are described below.

2.2.2. Chronic disease and taking drug medicine

The question about chronic disease is, 'Do you have or are you sick with the following disease?' The types of diseases are listed in the table for chronic diseases such as hypertension, diabetes, hyperlipidemia, arthrosis, and tuberculosis. The response was coded with 1 for yes and 0 for no.

The question about taking drug medicine is "(over the past year) have you taken (used) or planned to take over-the-counter drugs without prescription, such as nutrition and vitamins? (Including the medicine you are taking with your gift) (except dietary supplements)". The response was coded with 1 for yes and 0 for no

2.2.3. Medical use

Medical use refers to hospitalization use, emergency room use, and hospital outpatient use for one year. In the case of hospitalization, it includes the day of hospitalization, intensive care unit, oriental medicine, dental hospitalization, and in the outpatient case, it also includes the outpatient use of oriental medicine and dental clinic. Variables for emergency room use, hospitalization, and outpatient use were coded with 'yes' as 1 and 'no' as 0.

2.2.4. Medical expenditure

Medical expenditure is divided into medical expenditure 1 and medical expenditure 2. Medical expenditure 1 is expenditure including emergency, hospitalization, outpatient, and emergency prescriptions, inpatient prescriptions, and outpatient prescriptions. Medical expenditure 2 includes expenditure 1 and inpatient, emergency (ambulance), outpatient, and inpatient care. The unit of medical expenses is 'won'.

2.3. Statistical analysis

Statistical analysis program used the SPSS 22 version. The general characteristics and chronic disease, taking drug medicine, medical use, and medical expenditure of older adults with and without disabilities were confirmed by frequency analysis. Stepwise multiple regression model was used to analyze the medical expenditure influencing factors of older adults with and without disabilities. In the regression analysis, models 1 and 2 were presented. Model 1 selected medical expenditure 1 as the dependent variable and model 2 selected medical expenditure 2 as the dependent variable. The independent variables were age, sex, income, education level, and chronic disease, taking drug medicine, hospitalization use, emergency room use, and hospital outpatient use. The significance level was set at .05.

3. Results and Discussion

The age of 618 elderly with disabilities was 74.92 ± 5.97 years, and 50.6% were female. The family income presented by the 10th quartile was 3.72 ± 2.56 , and the highest level of education was elementary school in 42.6% of patients. Chronic disease was found in 98.1% of patients and taking drug medicine in 17.6% of patients. In the past year, the incidence of emergency room use was 14.9%, hospitalization was 28.2%, and hospital outpatient use was 96.4%. Medical expenditure 1 was $1,208,083 \pm 2,058,400$ won, and medical expenditure 2 was $1,315,178 \pm 2,469,279$ won.

The age of 3,426 elderly people without disabilities was 73.82 ± 6.34 years and 58.7% of the patients were females. The family income in the 10th quartile was 3.92 ± 2.58 , and the highest level of education was elementary school in 40.7% of patients. Chronic disease was found in 95.1% of patients and taking drug medicine in 15.3% of patients. Over the past year, the incidence of emergency room use was 12.0%, hospitalization use was 21.5%, and hospital outpatient use was 97.3%. Medical expenditure 1 was $1,068,259 \pm 1,762,022$ won, and medical expenditure 2 was $1,122,147 \pm 1,897,347$ won (Table 1).

The factors affecting medical expenditure 1 of elderly people with disabilities were hospitalization use, hospital outpatient use, family income, and education level ($R^2 = .223$, $p < .05$). The results of medical expenditure 2 were also the same (Table 2).

The factors affecting medical expenditure 1 of the elderly were hospitalization use, emergency use, age, hospital outpatient use, and family income ($R^2 = .246$, $p < .05$). The results of medical expenditure 2 were also the same (Table 3).

Table 1. General characteristics and chronic disease, taking drug medicine, medical use, medical expenditure in older adults with and without disabilities (n=4,044)

		Older adults with disabilities (n=618)		Older adults without disabilities (n=3,426)	
		N	%		
Age (years), mean±SD		74.92±5.97		73.82±6.34	
Sex	Male	305	49.4	1,415	41.3
	Female	313	50.6	2,011	58.7
Family income (decile), mean±SD		3.72±2.56		3.92±2.58	
Education level	Illiteracy	111	18.0	480	14.0
	Elementary school	263	42.6	1,394	40.7
	Middle school	103	16.7	612	17.9
	High school	93	15.0	656	19.1
	University	39	6.3	244	7.1
	≥ Graduate school	9	1.5	40	1.2
Chronic disease	No	12	1.9	167	4.9
	Yes	606	98.1	3,259	95.1
Taking drug medicine	No	509	82.4	2,903	84.7
	Yes	109	17.6	523	15.3
Emergency room use	No	526	85.1	3,015	88.0
	Yes	92	14.9	411	12.0
Hospitalization use	No	444	71.8	2,689	78.5
	Yes	174	28.2	737	21.5
Hospital outpatient use	No	22	3.6	94	2.7
	Yes	596	96.4	3,332	97.3
Medical expenditure 1st(won), mean±SD		1,208,083±2,058,400		1,068,259±1,762,022	
Medical expenditure 2nd(won), mean±SD		1,315,178±2,469,279		1,122,147±1,897,347	

Table 2. Factors affecting medical expenditure in older adults with disabilities (n=618)

	Model 1			Model 2		
	β	t	p	β	t	p
(Constant)		-3.124	.002**		-2.963	.003**
Hospitalization use	.448	12.637	<.001***	.426	11.859	<.001***
Hospital outpatient use	.123	3.480	.001**	.108	3.008	.003**
Family income	.100	2.784	.006**	.103	2.815	.005**
Education level	.077	2.131	.034*	.081	2.223	.027*
Durbin-Watson	2.026			1.998		
R ²	.233			.212		

Footnotes. $p < .05^*$, $p < .01^{**}$, $p < .001^{***}$

Table 3. Factors affecting medical expenditure in older adults without disabilities (n=3,426)

	Model 1			Model 2		
	β	t	p	β	t	p
(Constant)		2.808	.005**		1.759	.079
Hospitalization use	.444	27.331	<.001***	.442	27.200	<.001***
Emergency room use	.094	5.835	<.001***	.095	5.884	<.001***
Age	-.071	-4.604	<.001***	-.053	-3.464	.001**
Hospital outpatient use	.081	5.469	<.001***	.081	5.425	<.001***
Family income	.057	3.748	<.001***	.061	4.010	<.001***
Durbin-Watson	1.927			1.925		
R ²	.246			.244		

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

The study of medical use and expenditure of elderly people with disabilities is the basic data for implementing social policy considering their characteristics and solving the problem of inequality of health benefits [18]. The aim of our study was to compare the effects of elderly people with and without disabilities on medical expenditure. In the analysis of the factors influencing medical expenditure, expenditure on medical expenditure 1 and medical expenditure 2 were the same, so medical expenditure 1 was described.

In the case of elderly people without disabilities, the younger the patient was, the higher was the medical expenditure. According to the OECD (2006) analysis [19], medical expenditure analysis for 30 years showed that the medical use of the whole population showed a positive correlation with age, but in older age, medical use decreased with age. Since medical use and medical expenditure are closely related to each other, our study shows that in elderly people without disabilities, medical expenditure decreases with increasing age. In the elderly group with disabilities, disability characteristics can have a major impact on medical expenditure [12, 17].

Education levels were included in the model of health expenditure influencing factors only in elderly people with disabilities. The results indicate that groups with low education levels and family incomes have low medical expenditures, which may be insufficient for medical use. A study by Kim and Huh [13] included low education levels as a determinant in overburdened medical expenditures in Korean households. In addition, among those who have unmet need experience for medical use, education level is reported to experience 1.75-2.25 times more unmet need than those who have high school or less than college or higher. Those with low economic ability had higher unmet medical experience and overburdened medical expenses than those with high economic ability.

The answer to whether education levels could be an influencing factor for unmet medical needs was inconsistent in previous studies. Shin [20] reported no effect on education level as a factor influencing unmet medical need, but in Moon and Kang [21], low education level and low family income were factors influencing unmet medical needs. The reason for the difference in previous studies was that Shin [20] had a 41.1% rate of education level for those who graduated from high school and family income (month) was about 2,070,000 won, whereas Moon and Kang [21] had subjects who were 21.4% of those who graduated from middle school or above, and family income was less than 12,080,000 won per year. In other words, the study subjects of Shin [19] were higher in socioeconomic level than those of Moon and Kang [21]. In this study, 39.5% of the elderly and those with an average education level of middle school and higher had a family income of 3.72 ± 2.56 , which was closer to the socioeconomic level of subjects of Moon and Kang [21].

The limitation of this study is that there is a difference in the number of samples between the two groups. Comparing the analysis results of the two groups with different sample sizes may have gaps in comparing the populations.

4. Conclusion

The factors affecting the medical expenditure of elderly people with disabilities were hospitalization use, hospital outpatient use, family income, and education level. The factors affecting the medical expenditure of elderly people without disabilities were hospitalization use, emergency use, age, hospital outpatient use, and family income. In conclusion, it was confirmed that there are differences in the factors affecting the medical expenditure of disabled and non-disabled elderly people, and this suggests that socioeconomic level should be considered to expand the support of social support services for the disabled.

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6. References

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