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Factors Associated with Health Status and Health Care Utilization among Korean Older Adults

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Abstract

This study described the individual characteristics of physician and inpatient service users that affected health status and health care utilization and examined the factors that are associated with health status and health services utilization among Korean older adults. Based on the 2010 Korea National Health and Nutrition Examination Survey which was conducted by the Korea Centers for Disease Control and Prevention, descriptive and logistic regression analysis was performed. The sample for this study was 1,478 individuals who indicated older than 65 years and older. Self-rated health status was ranked lower among lower-income families, married persons, and those with chronic diseases. The presence of chronic diseases was significant in predicting the likelihood of poor health status, with socio-economic and health-related need factors having predictive power of the use of inpatient hospital services. The study findings show that elderly Koreans who were in poor health status were married, poorer, and had chronic diseases. The implications of these results are discussed in terms of more effectively targeting interventions to older Koreans in poor health and the factors having predictive power of physician and inpatient utilization.

Keywords

physician utilization, health status, need factors, hospital services, older Koreans

1. Introduction

The Republic of Korea (here after Korea) faces rapidly aging population. People aged 65 or older make up 13.1 percent of the population in 2016, but the ratio is expected to reach 15.7% by 2020 and 37.4% in 2050 (Korean Statistical Office, 2011). In a previous study we found that with the rapid aging the population's health burden is likely to worsen, as older people tend to spend a greater proportion on health care than other sectors of the population, and will continue to require such a high level of spending for their health care needs in the future (Park, 2014). Research (Song et al., 1991; Lim et al., 2001; Park, 1994, 2008, 2012) has shown that health-related factors are important determinants of older

Koreans using health services utilization and health-related factors, rather than socioeconomic factors, are the better predictors of the use of medical services. It is important to consider the health status of the elderly because of their susceptibility to chronic conditions, such as arthritis, hypertension and diabetes.

Even though many different health status indicators have been developed (Brook et al., 1979), choosing an appropriate health status variable is, in particular, crucial to obtaining meaningful results (Ware et al., 1981). The variable used to measure health status should sensitively reflect those dimensions of health (or morbidity) of special concern for the purposes of the analysis (Gregory, 1988). For this study, I will select one of the most widely used health status variables, the self-rated health status. Health care utilization also is of interest, because of its relation to health status. Health status and health care utilization are important determinants of health, and have a particular relevance for public health (Park, 2014; Ware et al., 1981).

The objectives of this study are to describe the individual characteristics of physician and inpatient service users that affected health status and health care utilization and examine the factors that are associated with health status and health services utilization among Korean older adults by applying the Aday-Andersen behavioral model. The findings are based on data from the Korea National Health and Nutrition Examination Survey (KNHANES) conducted by the Korea Centers for Disease Control and Prevention. The A day-Andersen model which explains that the services utilization is determined by predisposing, enabling, and need factors, is used broadly as a theoretical framework that analyzes the predictors of health services utilization. This may also be a suitable model when exploratory research is needed due to lack of previous studies on physician and inpatient utilization, as in this study (Park, 2012; Aday et al., 1980).

2. Methods

2.1 Sample

Data comes from the KNHANES, which was conducted in 2010. The survey collected data via household interviews and by direct standardized physical examinations conducted in specially equipped mobile examination centers. A stratified, multistage probability sampling design was used for the selection of nationwide subjects. The sample for this study was 1,478 individuals aged 65 years and older. The KNHANES was approved by the Research Ethics Committee of the Korean Centers for Disease Control and Prevention.

For the analysis, the sample was weighted to reflect the population of the nation. To account for design effects created by stratified multistage sampling, weights and strata were used in the estimation.

2.2 Measures

The demographic and socioeconomic measures included age, gender, residence, marital status, education, income and working status. The measures of health status included questions on whether the subject considered his or her health to be very good, good, fair, poor or very poor, and whether the a

chronic condition (hypertension, stroke, heart disease, arthritis, tuberculosis, asthma, thyroid/other glad problems, diabetes, liver disease, skin problems, melancholy and cancer) had been a problem during the last 12 months. The measures of health services utilization were based on whether the sample person had been to see a physician during the past 14 days preceding the interview and whether the respondents had been a patient in the hospital within the preceding 12 months. The responses of services utilized were coded as either "yes" or "no", i.e., 1 or 0. It was shown that 14.9% of the respondents used inpatient hospital services and 50.3% physician services.

There was no information missing for any of the demographic, socioeconomic and need variables, except for the following variables (for which the number of cases is noted in parentheses): education (1,431), marital status (1,477), family income (1,460), working status (1,429), and health status (1,374). For the logistic regression analysis, the study variables were recoded so as to indicate dichotomies. The first category for a variable was coded 1 and the reference category for it (after "vs") was coded 0.

2.3 Analysis

Descriptive statistics such as mean, Standard Deviation (SD), frequency and percentage were used to analyze the demographic and socio-economic characteristics of the sample. Bivariate analyses (Chi-square tests) were used to examine the relationship between the independent variables and physician and inpatient utilization. Logistic regression analysis was then used to determine the factors significantly associated with physician and inpatient utilization. The independent variables were age, gender, residence, marital status, income, and working status. All tests were conducted at the 5% level of significance. The percentage and the Odds Ratio (OR) were reported with a 95% Confidence Interval (CI).

3. Results

3.1 General Characteristics

Survey respondents had a higher percentage of rural residence, a higher percentage with had no formal or a primary education, a higher percentage with an income of 4 million won (USD=3,500) or less and a higher percentage of those over 70 years, female, married, and employed (Table 1). The average age of the respondents was 72.4±5.5 years old. About fifty six percent of the respondents were female.

Table 1. Demographic and Other Characteristics of the Sample (N=1,478)

Characteristics	Categories	N (%)	Mean(±SD)
Age	65-69	540 (36.5)	72.4 (±5.5)
(years)	70-79	173 (11.7)	
	80+	173 (11.7)	
Sex	Male	651 (44.0)	
	Female	827 (55.9)	

Marital status	Married	459 (68.9)	
	Others	1,018 (31.1)	
Residence	Urban	508 (34.3)	
	Rural	970 (65.6)	
Family income#	0-4,000,000 won	974 (66.7)	4,167,000(±8,346,000)
	>4,000,000 won	486 (33.3)	
Working status	Unemployed	477 (33.4)	
	Employed	952 (66.6)	
Chronic diseases	Yes	580 (39.3)	
	No	898 (60.7)	
Health status	Poor/very poor	599 (43.6)	
	Fair	530 (38.5)	
	Good/very good	245 (17.8)	

Income in Korean monetary unit.

About sixty nine percent of the respondents were married. Approximately sixty six percent of the respondents resided in rural area. Roughly sixty seven percent of the respondents had a monthly family income of ≤4 million won and 33.3% earned >4 million won. The monthly average income respondents or their family members earned was 4,167,000±8,346,000 won. About sixty seven percent of the respondents were employed.

3.2 Health Status

The results derived from the bivariate and logistic regression analysis was provided to identify the predictors of the residents' health status. The independent variables such as marital status, residence, income, and the presence of chronic diseases are significantly associated with the respondent's health status. As can be seen in Tables 2 and 3, those who were more likely to have poor health were married people, those who had income lower than 4,000,000 won, and those who had chronic diseases.

3.3 Health Services Utilization

As shown in Tables 2 and 3, the demo-economic variables were important determinants of physician utilization among Korean older adults. Sex and income were significantly associated with physician utilization among Korean older adults (Table 3). Those who were less likely to have used physician services included men, and those who had a monthly family income higher than 4,000,000 won.

Table 2. Health Status and Health Service Utilization by Various Characteristics (N=1,478)

Characteristics	Physician use			Inpatient use			Poor health		
	N	%	p	N	%	p	N	%	p
Age			0.99			0.37			0.33

(years) 65-69	247	17.5		66	4.2		91	6.6	
70-79	377	26.5		123	8.6		132	906	
80+	70	70.1		16	1.9		22	8.9	
Sex			<0.01			0.3			0.3
Male	283	18.7		117	9.3		144	10.5	
Female	411	32.4		89	5.5		101	7.3	
Marital status			0.61			0.71			<0.01
Married	497	34.7		137	9.8		222	16.2	
Others	214	16.4		69	5.1		22	1.6	
Residence			0.25			0.07			<0.01
Urban	235	19.4		79	63		131	9.5	
Rural	459	31.8		127	8.5		114	8.3	
Family Income#			<0.05			0.52			<0.01
0-4,000,000 won	441	33.1		128	9.7		200	14.7	
>4,000,000 won	246	18.2		77	5.2		43	3.2	
Working status			0.12			<0.05			0.91
Unemployed	20.5	15.7		53	13.6		83	6.2	
Employed	485	35.9		153	11.3		156	11.7	
Chronic diseases			0.71			0.14			< 0.01
Yes	268	19.7		70	4.8		181	13.2	
No	426	31.4		136	10.1		64	4.6	
Health status			0.51			0.52			
Poor/very poor	529	41.7		163	12.3				
Fair+	115	9.1		33	2.7				

1$=1,140 Korean won.

Table 3. Multivariate Logistic Regression Analysis of Predictors of Health Care Utilization for Older Koreans, Weighted

Determinants	Poor health		Physician use		Inpatient use	
	OR	95% CI	OR	95% CI	OR	95% CI

Age (years)						
80+vs. 65-79						
Sex			0.72*	.54-0.95		
Male vs. Female						
Marital status	2.52**	1.81-3.51				
Married						
vs.						
Unmarried/divorced						
Residence					0.61*	0.41-0.91
Rural vs. Urban						
Family income	2.12**	1.52-2.96	1.38*	1.03-1.86		
Less than 4,000,000 won						
vs. 4,000,000 won+						
Working status					1.79**	1.19-2.69
Employ vs. Unemployed						
Chronic diseases						
Yes vs. No						
Health status						
Poor vs. Fair+						
Model chi-square	**602,725.40**		**83,954.60**		**90,064.20**	
Degree of freedom	**8**		**9**		**9**	
Significance	**<0.0001**		**<0.0001**		**<0.0001**	

*P<0.1 ** p<0.05 ***p<0.01;

Note. All other statistics not significant at p<0.05.

Those who were less likely to have used inpatient hospital services included rural residents, unemployed persons, and those who had no chronic diseases. Working status, residence, and chronic disease were important determinant of inpatient hospital utilization among Korean older adults.

The odds ratio for physician and inpatient hospital utilization, simultaneously adjusted for multiple independent variables, are presented in Table 3. As presented in Table 3, all of the regression models were significant (p<0.0001) in predicting the use of physician and inpatient hospital services by elderly Koreans.

4. Discussion

This study describes the individual characteristics of physician and inpatient service users that affected health status and health care utilization and examines the factors that are associated with health status and health services utilization among Korean older adults. Self-rated health status was ranked lower among lower-income families, married persons, and those with chronic diseases. Chronic conditions are associated with worsening health status of Korean elders. This result is consistent with the study that found a relationship between self-rated poor health and chronic conditions (Park, 2014; George et al., 2012). Health status was lower among those who had lower income. This finding supports other research (Park, 2014; Lim et al., 2006) that demonstrates the importance of socio-economic status in self-reported poor health. The study by Park (2014), shows that self-rated poor health was higher among respondents with a personal income less than 5 million won, i.e., lower-income families. Income significantly predicted the residents' self-rated poor health. The study by Lim et al. (2006) indicates that lower incomes were linked to bad health. Being married indicates worse self-reported health status than a single or divorced/widowed person. The result of this study supports other research (Park, 2014; Lim et al., 2006).

This study shows that health-related and enabling factors determine inpatient hospital utilization. Chronic conditions, residence, and working status predicted the use of inpatient hospital services. Older Koreans with chronic diseases were more likely to be hospitalized compared to their counterparts. The prevalence of chronic diseases is an important predictor of health care utilization (Park, 2014; Park, 1994). Individuals who are participating in the labor force tend to be more inclined to contact a specialist than their counter parts. Similar results were found in 2004 OECD working paper using the 2000 wave of the ECHP and other country-specific household surveys (Doorslaer et al., 2004; Jessen, 2006). Older people living in urban areas had significant higher utilization of specialist services than older people living in rural areas. This may be related to the geographic mal-distribution of providers that may be reflected in the lower utilization of specialists in rural areas (Park, 2012). In Korea, with the government's "laissez-faire" policy for the private medical sector, more than 90% of physicians and hospital beds are concentrated in urban areas. Meanwhile, the provision of private medical facilities has not been subject to stringent legislation. Unlike previous studies (Park, 1994, 2012), however, income is a significant predictor of physician utilization. Korean elders with lower incomes were more likely to consult a doctor than those with higher incomes. Income had significantly impact on the subgroup differences in the use of physician services. Possible reasons for the different results may be that the study population is older or older people of lower income are simply in worse health than those of higher income. This is particularly an issue in the older population (especially those over 80). Similar concerns about higher service utilization have been born out in the medical aid program, which subsidizes health insurance co-payments for the low-income population in Korea (Park, 2014; Shin et al, 2010). Moreover, such higher use of service by the subsidized older adults is possible as the Korean health care system has no gate-keeping or care management system (Kim et al., 2013). The government

recently introduced a care management program to monitor and guide medical aid beneficiaries with a high utilization of health care (Park, 2014; Kim et al., 2016), but its effectiveness is still under evaluation. Like in most studies (Park, 1994; Kanzanjian et al., 2004), this study has found that older Korean women were more likely than their counterparts to have used physician services.

These findings are subject to the limitations of secondary data. The analysis model, as used in this study, was limited to the data collected by the Korea National Health and Nutrition Examination Survey in 2010. There is the difficulty that arises as the result of using the model with the secondary data, e.g., as for the study design, none of the established association can be inferred as a cause-effect relation. The data relies on subjective measures of health status and does not include objective measures of chronic diseases. Lastly, this survey does not provide information on subject refusals and/or non-contacted subjects, and thus, even though the participant rate was 77.5%, the response rate could not be calculated. Nevertheless, this study does provide the most reliable up-to-date information on the prevalence of chronic diseases and on their relationships with health status in the Korean population. Despite the limitations, this study has significance in that it empirically analyzed the predictors for Korean health services utilization by applying the A day-Andersen model (Park, 2012; Aday, 1980). In other words, considering the fact that previous studies applying the A day-Andersen model in Korea were biased to the use of dental and social-welfare services and the equity of the health care system (Park, 2012, 2014; Kim et al., 2016), this study examined the predictors by focusing on health services utilization. Moreover, verifying the general characteristics of physician and hospital service users that affected health status and health care utilization provides the baseline data for establishing health service policies and programs with regard to the recently increasing interest in health.

5. Conclusions

This study provides an important contribution to the knowledge base of Korean elders. First, it is important to assess the needs in the process of providing services for inpatient services users. This study proved that the need factors of inpatient service users were powerful factors explaining health service utilization. Second, it is necessary to consider the general characteristics when developing health service policies and programs for health service users, and providing services in the field. The level of health services utilization may vary based on income or working status; thus, it is necessary to ensure that information on services utilization can be obtained easily and sufficiently. Furthermore, social discrimination may be greater, depending on chronic illness; thus, there must be careful interventions so that the patients do not receive limited services. Lastly, the study findings that higher numbers of married elderly Koreans report poor health, point to the importance of providing culturally-appropriate health programs that are tailored to the needs of older Koreans who were poor. Also, programs are needed that emphasize the importance of self-care and seeking early treatment for lower income elderly Koreans.

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