

Health Status and Health Service Utilization: Barriers and Facilitators for Korea Medicaid Beneficiaries

Sung-Heui Bae¹, Eun-Ok Choi², In sook Lee³, In Young Lee⁴, Chae min Chun⁵

¹Ewha Womans University, College of Nursing; ²Inje University College of Medicine; Department of Nursing; ³Seoul National University, College of Nursing; ⁴Gangbukgu Public health center; ⁵Korea Centers for Disease Control & Prevention, Division of Chronic Disease Surveillance, Korea

Purpose: This study compares beneficiaries of Korean Medicaid with those under the National Health Insurance program, seeking to understand how each group utilizes their healthcare. **Methods:** Data were obtained from a Health Promotion Survey in 2005. Health status was measured by the respondents' perception of health. Health service utilization included the availability of healthcare services, the type of healthcare institution, and intent to revisit. Predisposing and enabling factors, as well as health care needs were used for this study. **Results:** Compared to National Health Insurance beneficiaries, Medicaid beneficiaries reported lower levels of health status and fewer enabling factors. They had more chronic diseases and disabilities. Education level, existence of chronic diseases, exercise patterns, and disabilities were associated with health status. **Conclusion:** We found that Medicaid beneficiaries had fewer resources and higher levels of health needs. As Medicaid is reformed, policy makers and administrators should understand healthcare utilization behaviors of Medicaid beneficiaries and the factors hindering access to care.

Key Words: *Healthcare utilization, Health policy, Self-rated health, Health disparity*

INTRODUCTION

Self-rated health status and healthcare service utilization are valuable determinants for assessing the performance of the health system [1]. They are the most important outcome indicators for patients who use primary care services, and even self-rated health status alone is considered to be a sensitive indicator [2].

The Medicaid program provides medical assistance for low income people. According to the Korea National Health Institute [3], the estimated percentage of Medicaid beneficiaries was 3.2% of the total Korean population in 2011. The quantity and quality of Medicaid program benefits have increased over time, leading to concerns over increases in health care utilization and expenditures [4, 5]. Researchers suggest that the moral hazard of both beneficiaries and providers lead to a higher utilization of health care services [6]. Moral hazard refers to consumer behavior that leads to higher utilization when services are covered by in-

surance [7]. In order to control healthcare utilization, the Medicaid program limits the coverage period to 356 days per year, which was the only incentive for beneficiaries to reduce their utilization prior to 2007. In 2007, the Medicaid program adopted cost sharing for Medicaid Type 1 beneficiaries [8, 9]. In April 2009, a few Medicaid beneficiaries with chronic illnesses and those under 18 years among the group just above the poverty line were categorized as National Health Insurance beneficiaries with support from the government for their healthcare expenditures [10].

Previous studies have examined the levels of health services utilization among Medicaid beneficiaries and those of National Healthcare Insurance (NHI) beneficiaries, but did not account for the need aspects of these two populations [11]. It is unclear why health services utilization by Medicaid beneficiaries is greater than that of those who fall under the NHI program. In 2004, Lee and Kim [6] studied the behavior and extent of health care utilization by Medicaid beneficiaries using the behavioral

Corresponding author: Eun-Ok Choi

Inje University College of Medicine, Department of Nursing, Gaegeum-Dong Busanjin-Gu, Busan 47392, Korea
Tel: +82-51-890-6822, Fax: +82-51-896-9840, E-mail: nurceo@inje.ac.kr

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model [12] and discovered several factors affecting the behavior of Medicaid beneficiaries regarding healthcare utilization, including issues such as perceived health status, age, and gender. However, there is limited understanding of the barriers and facilitators of health service utilization by Medicaid beneficiaries and whether these lead to an increase of healthcare utilization by the Medicaid beneficiaries.

Therefore, this study examined the behavior of healthcare utilization in Medicaid beneficiaries and factors associated with health status and utilization in Medicaid program beneficiaries by adapting the Anderson behavioral model [12]. Medicaid does not provide medical assistance for all poor people. Certain categories of individuals can apply for eligibility. The Medicaid program serviced approximately 1.8 million low-income Koreans in 2008 and 1.61 million low-income Koreans in 2011 [3,4]. The healthcare utilization and expenditure of the Medicaid program has been increasing. Compared to 2002, the number of visits per person and the total expenditure of the program increased by 25.9% and 60% in 2005, respectively [4]. Interestingly, the days of care for Medicaid beneficiaries were 80.0% greater than those for the NHI beneficiaries [4]. In order to reduce healthcare utilization and expenditure of the Medicaid program, the Korean government adapted a new system to assess the healthcare utilization of Medicaid beneficiaries and offered financial incentives to reduce moral hazard, such as cost sharing in 2007. According to Choi et al. [4], the new Medicaid program decreased healthcare utilization and expenditure in 2008. However, due to limited understanding of how Medicaid beneficiaries utilize their healthcare, the new system may hinder access to care for Medicaid beneficiaries.

The behavioral health service model [12] has been widely used as a guideline for predicting healthcare utilization. The model categorizes influential factors for service utilization into three components: predisposing, enabling, and need factors. Predisposing factors include demographic characteristics such as age, sex, and education which may influence the status of health and the use of healthcare services. Enabling variables encompass a variety of resources that provide means to healthcare services, including income, health insurance, living arrangement, and the existence of a spouse or social network. Physical health conditions, such as chronic diseases, and smoking and drinking behavior, represent the need for healthcare services. Although the Medicaid program might increase enabling factors for beneficiaries to use healthcare services, Medicaid beneficiaries still have barriers to access healthcare services, such as the lack of information (lower education levels), poor

health status, chronic diseases, and lack of people who can help with access to healthcare services [6,13].

Therefore, the purpose of this study is to understand how predisposing, enabling, and need factors influence the health status and the healthcare service utilization of Medicaid beneficiaries. Additionally, healthcare service utilization amongst a low income population that share resident environments with Medicaid beneficiaries was examined, as this population is likely to be Medicaid beneficiaries.

METHODS

Design and Sample

The current study used data from the Health Promotion Survey collected by the Gangbukgu Community Health Center in South Korea in 2005 [14], initially collected to investigate the health care needs of a low income population. This survey collected basic demographic data, health promotion behavior, health status, health service needs, and healthcare environment. This study performs secondary data analysis using a cross-sectional study design. The survey was targeted to a resident from each household living in a lower income bracket, located in a special government-housing complex in Seoul. In order to reside in the special government-housing complex, applicants needed to meet certain criteria for eligibility, which are a combination of income level, disability, and veteran status. According to the eligibility criteria for the Medicaid program, residents are categorized under the Medicaid program or the NHI program. For those under the NHI program, although they are NHI beneficiaries, they can be considered potential Medicaid beneficiaries based on the Medicaid eligibility criteria.

The survey questionnaire was completed through a face-to-face interview. The data consisted of 365 responses collected from July 2005 through September 2005. In this study, we used data collected from residents aged 50 or older who were Medicaid beneficiaries or NHI beneficiaries because of similar levels of healthcare services needs in the low income population at this age level (aged 50 or older). The total number of eligible participants was 211 out of 365 (57.8%) respondents. Due to missing data within select variables, the final dataset for the current study consisted of 207 people.

Measures

Table 1 presents the study variables. In general, measurement of these

Table 1. Summary Statistics on the Sample of Survey Respondents

(N = 207)

Variables	Categories	Total (n = 207)	Medicaid (n = 75)	National Health Insurance (n = 132)	t/ χ^2	p value
		n (%) or Mean \pm SD	n (%) or Mean \pm SD	n (%) or Mean \pm SD		
Outcome Variables						
Health Status	Subjective perception of Health	5.95 \pm 1.80	5.40 \pm 1.83	6.27 \pm 1.72	-3.40	< .001
Healthcare Utilization						
Having healthcare facilities	Using healthcare service when sick (yes)	193 (93.2)	73 (97.3)	120 (90.9)	3.13	.077
Type of healthcare facilities (able to answer more than one)	Hospitals	56 (27.1)	22 (29.3)	34 (25.8)	3.20	.202
	Clinics	150 (72.5)	59 (78.7)	91 (68.9)	3.79	.150
	Not applicable	14 (6.8)	2 (2.7)	12 (9.0)		
Revisiting healthcare services	Will revisit healthcare facilities (yes)	182 (87.9)	72 (96.0)	110 (83.3)	7.28	.026
Explanatory Variables						
Predisposing Factors						
Age	Age	66.43 \pm 10.34	69.86 \pm 10.15	64.48 \pm 9.97	-3.40	< .001
	65 yrs or older	113 (54.6)	53 (70.7)	60 (45.5)	12.26	< .001
Sex	Male (yes)	63 (30.4)	19 (25.3)	44 (33.3)	1.45	.229
Education level	No formal education	26 (12.6)	11 (14.7)	15 (11.4)	10.65	.014
	Elementary school	89 (43.0)	30 (40.0)	59 (44.7)		
	Middle school	40 (19.3)	22 (29.3)	18 (13.6)		
	High school and above	52 (25.1)	12 (16.0)	40 (30.3)		
Marital status	Single or divorced/separated/widow	115 (55.6)	58 (77.3)	57 (43.2)	22.59	< .001
	Married	92 (44.4)	17 (22.7)	75 (56.8)		
Enabling Factors						
Occupation	Unemployed	158 (76.3)	64 (85.3)	94 (71.2)	5.28	.022
Social support	Living alone (yes)	57 (27.5)	38 (50.7)	19 (14.4)	31.54	< .001
	Having relatives you contact at least once a month (yes)	183 (88.4)	60 (80.0)	123 (93.2)	8.11	.004
	Having close relatives you can ask for help (yes)	152 (73.4)	47 (62.7)	105 (79.6)	6.98	.008
	Having close friends you can ask for help (yes)	164 (79.2)	55 (73.3)	109 (82.6)	2.48	.115
	Having close friends you contact at least once a month (yes)	161 (77.8)	53 (70.7)	108 (81.8)	3.44	.064
Health Needs						
Number of Chronic diseases	1 chronic disease	87 (42.0)	23 (30.7)	64 (48.5)	6.76	.034
	2-3 chronic diseases	87 (42.0)	36 (48.0)	51 (38.6)		
	More than 3 chronic diseases	33 (16.0)	16 (21.3)	17 (12.9)		
Alcohol drinking	Yes	65 (31.4)	18 (24.0)	47 (35.6)	2.99	.084
Smoking	Yes	45 (21.7)	17 (22.7)	28 (21.2)	0.06	.807
Exercise	None	110 (53.1)	47 (62.7)	63 (47.7)	5.48	.065
	1~3 time/week	40 (19.3)	9 (12.0)	31 (23.5)		
	> 3 time/ week	57 (27.5)	19 (25.3)	38 (28.8)		
Dietary pattern	Eating 3 times per day?	132 (63.8)	43 (57.3)	89 (67.4)	2.11	.147
Disability	Having any disabilities	14 (6.8)	10 (13.3)	4 (3.0)	8.05	.005
	Use of any assisting device	28 (13.5)	16 (21.3)	12 (9.1)	6.13	.013
Blood pressure	Normal	25 (12.1)	6 (8.0)	19 (14.4)	2.33	.312
	Pre-hypertension	93 (44.9)	33 (44.0)	60 (45.4)		
	1 st or 2 nd degree hypertension	89 (43.0)	36 (48.0)	53 (40.2)		

variables was straightforward. However, our approach to several of the outcome and explanatory variables (e.g., predisposing factors, enabling factors, health needs) requires additional explanation.

Outcome variables

In this study, there were two outcome variables, including health status and health service utilization. Health status was measured by subjective perception of health. The item asked "How would you rate your overall

health at the present time?" The total scores ranged from 0 (negative health perception: feel ready to die) to 10 (positive health perception: very healthy). Health service utilization included the following three categories: (a) whether respondents use healthcare services when they are sick (yes/no), (b) what kind of healthcare institution was accessed most often (respondents selected one or two out of five options including hospitals, clinics, oriental medicine clinics, community health centers, and other), and (c) would they revisit the healthcare institution, using a yes/no format.

Predisposing Factors

Age, sex, and educational level were selected as predisposing variables.

Enabling Factors

Occupation and social support were included as enabling factors. Occupation was measured by whether the participant had, or did not have, a job. Five items were used to measure social support (Table 1). These items included living alone, contact with relatives, relatives that respondents can ask for help, contact with friends, and friends that respondents can ask for help.

Health Needs

Respondents reported any chronic disease diagnoses. Responses were categorized based on the number of chronic diseases they reported (1 chronic disease, 2 to 3 chronic diseases, and more than 3 chronic diseases). Alcohol and smoking behaviors were measured by a dichotomous yes/no variable. Exercise pattern was also measured by a categorical variable; the number of days per week that respondents worked out (none, 1 to 3 days, and more than 3 days). Dietary pattern was measured by whether or not respondents eat 3 times per day, and disability was measured by using two variables; presence of disability diagnosis and the use of any assisting devices. We also used blood pressure (BP) information. As can be seen in Table 1, the variable of BP was measured by three categorical variables including normal, pre-hypertension, and 1st or 2nd degree hypertension [15].

Data Analysis

Multiple linear regression analysis was conducted to assess the models of subjective perception of health, and a logit model was used to estimate the odds for the binary variable for the level of healthcare service utilization. To examine how the predisposing, enabling, and need factors are related to outcome variables, we used stepwise regression. The binary relationship between study variables and the main outcome variables (subjective perception of health and healthcare utilization) were examined with ANOVA, t-test, and Chi-squared test. For each type of model, sets of predictors were entered in the following order: predisposing factors, enabling factors, and health needs.

variables are presented in Table 1. Results of the chi-squared test, t-test, and ANOVA are presented in Table 2. The results of a multiple linear regression with explanatory variables are presented in Table 3. The results of logistic regression are shown in Table 4.

Across the 207 respondents, 132 (63.8%) were NHI beneficiaries, and 75 (36.2%) were Medicaid beneficiaries. NHI program beneficiaries reported significantly higher levels of perceived health status (6.27 vs. 5.40). More than 90.0% of both Medicaid beneficiaries and NHI beneficiaries accessed healthcare services when they were sick. Physician clinics were the healthcare institution that respondents accessed most. While 96% of Medicaid beneficiaries would like to revisit health care facilities, only 83.3% of NHI beneficiaries responded that they wanted to revisit the health care facilities, which was significantly different (Table 1).

Among the predisposing factors, we found significant differences in age, education level, and marital status between the two groups. Medicaid beneficiaries were older and overall less educated than NHI beneficiaries. More of the NHI beneficiaries were married (56.8% vs. 22.7%) (Table 1).

Regarding enabling factors, Medicaid beneficiaries (85.3%) were more likely to be unemployed than NHI beneficiaries (71.2%). 50.7% of Medicaid beneficiaries were living alone while only 14.4% of the NHI beneficiaries lived alone. A lower proportion of Medicaid beneficiaries had relatives that they could contact at least once a month (80.0%) and ask for help (62.7%); NHI beneficiaries had a much higher level (93.2% and 79.6%, respectively), which was significant. In terms of having close friends, NHI beneficiaries reported a higher proportion of having close friends that they could ask for help and contact at least once a month. Medicaid beneficiaries had a lower number of friends, but this difference was not significant (Table 1).

We found several significant differences in health needs between Medicaid beneficiaries and NHI beneficiaries. Medicaid beneficiaries were diagnosed with more chronic diseases than NHI beneficiaries - 21.3% of Medicaid beneficiaries reported having more than 3 chronic diseases, compared to 12.9% for the NHI beneficiaries. There were no significant differences between the types of beneficiaries regarding alcohol and smoking. On average, 31.4% reported drinking alcohol and 21.7% answered yes to smoking. 62.7% of Medicaid beneficiaries answered that they did not work out, while 12.0% worked out 1 to 3 days per week. This was compared to 47.7% of NHI program beneficiaries who reporting not working out and 23.5% who worked out 1 to 3 days

RESULTS

The means, or percentages, and standard deviations for the study

Table 2. Health Status and Healthcare Utilization by Explanatory Variables

(N = 207)

Variables	Categories	Health Status (Mean ± SD)	t/F	p	Healthcare Utilization (n (%))		χ^2	p				
					No (n = 14)	Yes (n = 193)						
Explanatory Variables												
Predisposing Factors												
Age	< 65	6.33 ± 1.65	2.797	.006	7 (50%)	87 (45%)	0.128	.721				
	≥ 65	5.64 ± 1.87			7 (50%)	106 (55%)						
Sex	Male	6.37 ± 1.46	-2.203	.029	9 (64%)	54 (28%)	8.127	.004				
	Female	5.77 ± 1.91			5 (36%)	139 (72%)						
Education level	No formal education	5.42 ± 2.08	5.96	< .001	1 (7%)	25 (13%)	2.992	.393				
	Elementary school	5.64 ± 1.81			4 (29%)	85 (44%)						
	Middle school	5.88 ± 1.64			3 (21%)	37 (19%)						
Marital status	High school and above	6.81 ± 1.50	-2.389	.018	6 (43%)	46 (24%)	0.981	.322				
	Single/ divorced/separated/widowed	5.69 ± 1.78			6 (43%)	109 (56%)						
	Married	6.28 ± 1.79			8 (57%)	84 (44%)						
Enabling Factors												
Occupation	Unemployed	5.84 ± 1.80	1.673	.096	7 (50%)	42 (22%)	5.761	.016				
	Employed	6.33 ± 1.78			7 (50%)	151 (78%)						
Social support	Living alone (yes)	5.79 ± 1.67	0.797	.426	4 (29%)	53 (27%)	0.008	.928				
	Living alone (no)	6.01 ± 1.85			10 (71%)	140 (73%)						
	Having relatives you contact at least once a month (yes)	6.07 ± 1.75			-2.543	.012			12 (86%)	171 (89%)	0.106	.745
	Having relatives you contact at least once a month (no)	5.08 ± 1.98							2 (14%)	22 (11%)		
	Having close relatives you can ask for help (yes)	6.12 ± 1.79			-2.233	.027			10 (71%)	142 (74%)	0.031	.861
	Having close relatives you can ask for help (no)	5.49 ± 1.78							4 (29%)	51 (26%)		
	Having close friends you can ask for help (yes)	6.07 ± 1.70			-1.905	.058			12 (86%)	152 (79%)	0.384	.535
	Having close friends you can ask for help (no)	5.49 ± 2.11							2 (14%)	41 (21%)		
	Having close friends you contact at least once a month (yes)	6.10 ± 1.67			-2.226	.027			12 (86%)	149 (77%)	0.547	.459
Having close friends you contact at least once a month (no)	5.43 ± 2.16			2 (14%)	44 (23%)							
Health Needs												
Number of Chronic diseases	1 chronic disease	6.52 ± 1.62	8.76	< .001	9 (64%)	78 (40%)	4.306	.116				
	2-3 chronic diseases	5.67 ± 1.81			5 (36%)	82 (43%)						
	More than 3 chronic diseases	5.21 ± 1.85			0 (0%)	33 (17%)						
Alcohol drinking	Yes	6.37 ± 1.50	-2.277	.024	8 (57%)	54 (30%)	4.619	.032				
	No	5.76 ± 1.90			6 (43%)	136 (70%)						
Smoking	Yes	6.09 ± 1.78	-0.576	.565	7 (50%)	38 (20%)	7.049	.008				
	No	5.91 ± 1.81			7 (50%)	155 (80%)						
Exercise	None	5.53 ± 1.81	7.01	.001	9 (64%)	101 (52%)	1.343	.511				
	1~3 time/week	6.33 ± 1.72			3 (21%)	37 (19%)						
	> 3 time/ week	6.51 ± 1.66			2 (14%)	55 (29%)						
Dietary pattern	Eating 3 times per day? (yes)	5.96 ± 1.82	-0.11	.912	7 (50%)	125 (65%)	1.232	.267				
	Eating 3 times per day? (no)	5.93 ± 1.79			7 (50%)	68 (35%)						
Disability	Yes	6.36 ± 2.02	-0.871	.385	2 (14%)	12 (6%)	1.347	.246				
	No	5.92 ± 1.79			12 (86%)	181 (94%)						
Use of any assisting device	Yes	4.96 ± 1.99	3.185	.002	1 (7%)	27 (14%)	0.523	.47				
	No	6.11 ± 1.73			13 (93%)	166 (86%)						
Blood pressure	Normal	5.96 ± 1.67	< .001	.999	2 (14%)	23 (12%)	0.332	.847				
	Pre-hypertension	5.95 ± 1.90			7 (50%)	86 (44%)						
	1 st or 2 nd degree hypertension	5.96 ± 1.76			5 (36%)	84 (44%)						

per week although this relationship was not statistically significant. On average, 63.8% of respondents responded that they eat 3 times a day and there was no difference in dietary pattern between the two groups. A higher proportion of Medicaid beneficiaries had disabilities (13.3% vs 3.0%) and a higher proportion also used assisting devices (21.3% vs 9.1%). This is an expected finding because disability status is an eligibility criterion for Medicaid. We did not find any differences in blood pressure

and hypertension between the two groups (Table 1).

Table 3 presents the models used to examine factors associated with health status. The model using all samples, including health needs, showed the greatest significant increase in R squared (from .16 to .28). After including all factors in the model, we found that factors associated with health status were as follows; education, chronic disease diagnoses, exercise, and disability. Compared to those with a high school education

Table 3. Factors Associated with Health Status Using Robust Standard Errors (OLS)

Variables	Health Status (Coef. (SE))								
	Total (n = 207)			National Health Insurance (n = 132)			Medicaid (n = 75)		
Predisposing Factors									
Age	-.009 (.012)	-.001 (.014)	.010 (.013)	.001 (.017)	.009 (.021)	.009 (.019)	-.006 (.021)	-.014 (.020)	-.003 (.023)
Sex (Ref: female)	.196 (.236)	.311 (.247)	.211 (.306)	-.089 (.291)	-.156 (.299)	-.244 (.397)	.854 (.460)	1.095 (.499)*	.907 (.451)*
Education level (Ref: high school and above)									
No official education	-1.082 (.482)*	-.901 (.497)	-.668 (.494)	-1.352 (.629)*	-1.604 (.631)*	-1.149 (.663)	-1.066 (.788)	-.374 (.854)	-.231 (.810)
Elementary school	-1.033 (.289)**	-.849 (.312)*	-.878 (.300)**	-.780 (.353)*	-.952 (.395)*	-.930 (.374)*	-1.850 (.567)*	-1.434 (.715)*	-1.378 (.728)
Middle school	-.806 (.329)*	-.562 (.359)	-.465 (.348)	-.722 (.445)	-.713 (.459)	-.521 (.473)	-1.016 (.569)	-.767 (.709)	-.488 (.768)
Marital status (Ref: Single or divorced/separated/ widowed)	.440 (.241)	.433 (.290)	.311 (.284)	.288 (.269)	.090 (.340)	-.013 (.340)	.124 (.620)	1.195 (.601)*	.914 (.653)
Enabling Factors									
Insurances (Ref: Medicaid)		.561 (.294)	.528 (.284)						
Unemployment		-.058 (.317)	-.007 (.327)		-.498 (.389)	-.361 (.448)		.373 (.537)	.190 (.592)
Social support									
Living alone		.339 (.350)	.321 (.348)		-.403 (.535)	-.400 (.567)		1.058 (.450)*	.916 (.480)
Having relatives you contact at least once a month		.695 (.459)	.683 (.422)		-.596 (.583)	.213 (.607)		.643 (.681)	.622 (.623)
Having close relatives you can ask for help		.177 (.327)	.069 (.318)		.108 (.407)	.239 (.435)		.471 (.534)	.266 (.518)
Having close friends you can ask for help		-.474 (1.298)	-.976 (1.083)		.792 (.531)	.418 (.699)		-1.532 (1.794)	-1.515 (1.579)
Having close friends you contact at least once a month		.768 (1.262)	.864 (1.028)		-1.107 (.458)*	-1.167 (.600)		2.385 (1.769)	2.170 (1.405)
Health Needs									
Chronic diseases (Ref: 1 chronic disease)									
2-3 chronic diseases			-.624 (.264)*			-.487 (.357)			-.780 (.447)
More than 3 chronic diseases			-.944 (.341)**			-.538 (.466)			-1.428 (.502)**
Alcohol drinking			.264 (.281)			.305 (.405)			.121 (.609)
Smoking			-.325 (.342)			-.190 (.482)			-.247 (.520)
Exercise (Ref: none)									
1 to 3 days			.504 (.316)			.514 (.416)			.437 (.494)
More than 3 days			.907 (.251)**			1.060 (.344)**			.739 (.416)
Dietary pattern (Re: irregular)			.071 (.278)			-.042 (.398)			.344 (.437)
Disability									
Having any disabilities			1.261 (.394)**			1.336 (.551)**			.889 (.585)
Using any assisting devices			-.741 (.382)			-.780 (.529)			-.571 (.600)
Blood pressure (Ref: 1st or 2nd degree hypertension)									
Normal			-.118 (.414)			.243 (.571)			-.002 (.864)
Pre-hypertension			-.012 (.251)			-.228 (.331)			.494 (.380)
Constant	7.030 (.779)**	4.940 (1.171)**	4.684 (1.074)**	6.715 (.975)**	6.402 (1.464)**	6.878 (1.335)**	6.768 (1.610)**	4.476 (1.858)*	4.257 (1.793)*
R ²	0.104**	0.162**	0.280**	0.072	0.102	0.226	0.183*	0.373**	0.509**

*p < .05; **p < .01; Coefficient (standard errors) presented.

or greater, respondents with elementary education reported lower levels of perceived health status ($\beta = -0.88, p = .004$). On average, those with 2 to 3 chronic diseases ($\beta = -0.62, p = .019$) or more than 3 chronic diseases

($\beta = -0.94, p = .006$) reported lower levels of perceived health status than those with one chronic disease, all other things being equal. Those who worked out more than 3 days per week reported higher levels of

Table 4. Factors Associated with Healthcare Utilization (Logit model)

Variables	Healthcare Utilization (OR (95% CI))					
	Total (n = 207)			National Health Insurance (n = 132)		
Predisposing Factors						
Age	0.995 (.938-1.055)	0.943 (.870-1.023)	0.918 (.838-1.006)	1.02 (.950-1.096)	0.962 (.877-1.056)	0.964 (.858-1.084)
Sex (Ref: female)	0.269 (.079-.917)*	0.346 (.090-1.331)	0.49 (.077-3.114)	0.314 (.082-1.206)	0.529 (.118-2.374)	3.548 (.239-52.592)
Education level (Ref: high school and above)						
No official education	1.718 (.161-18.353)	1.416 (.123-16.245)	1.223 (.080-18.738)	1.066 (.086-13.164)	0.846 (.064-11.222)	0.71 (.026-19.469)
Elementary school	1.794 (.429-7.500)	1.429 (.296-6.910)	1.535 (.265-8.883)	1.058 (.213-5.255)	0.952 (.167-5.418)	1.212 (.122-12.002)*
Middle school	1.255 (.278-5.676)	0.818 (.156-4.298)	0.845 (.135-5.306)	0.808 (.130-5.010)	0.873 (.121-6.305)	0.904 (.064-12.821)
Marital status (Ref: Single or divorced/separated/widowed)	0.735 (.232--2.326)	0.5 (.089-2.805)	0.282 (.034-2.335)	1.675 (.478-5.869)	0.688 (.109-4.326)	0.652 (.057-7.463)
Enabling Factors						
Insurances (Ref: Medicaid)						
Unemployment		0.246 (.042-1.453)	0.178 (.027-1.161)		4.49 (.817-24.664)	8.617 (.844-88.005)
Social support						
Living alone		0.363 (.053-2.494)	0.422 (.048-3.732)		0.261 (.033-2.040)	0.522 (.041-6.723)
Having relatives you contact at least once a month		0.947 (.098-9.231)	1.81 (.233-14.087)		1.211 (.105-14.035)	1.82 (.058-56.725)
Having close friends you contact at least once a month		1.225 (.220-6.813)	1.81 (.233-14.087)		1.82 (.300-11.046)	4.756 (.416-54.345)
Health Needs						
Chronic diseases (Ref: 1-3 chronic disease)						
More than 3 chronic diseases			1.108 (.252-4.893)			0.601 (.094-3.842)
Alcohol			0.649 (.119-3.542)			0.379 (.039-3.731)
Smoking			0.651 (.113-3.741)			0.159 (.014-1.842)
Exercise (Ref: none)						
1 to 3 days			1.249 (.254-6.142)			0.745 (.117-4.760)
More than 3 days			3.05 (.447-20.790)			9.042 (.358-228.442)
Dietary pattern (Re: irregular)			3.329 (.722-15.357)			1.895 (.296-12.112)
Disability						
Having any disabilities			0.226 (.028-1.808)			0.031 (.002-.592)*
Using any assisting devices			1.361 (.110-16.783)			1.191 (.032-44.621)
Blood pressure (Ref: 1st or 2nd degree hypertension)						
Normal			0.503 (.053-4.759)			0.326 (.018-5.798)
Pre-hypertension			0.764 (.183-3.191)			0.712 (.122-4.152)

* $p < .05$; ** $p < .01$; Odds ratio (95% confidence interval) presented
Because of perfect predictors, Medicaid models could not analyzed.

health status than those who did not work out ($\beta = -0.91$, $p = .001$). Interestingly, respondents who had any disability had higher levels of perceived health status than those who did not have disabilities ($\beta = 1.26$, $p = .002$). The model of health status using NHI beneficiaries have several factors related to health status including having elementary education (β

$= -.93$, $p = .014$), exercising more than 3 days a week ($\beta = 1.06$, $p = .003$), and having disability ($\beta = 1.34$, $p = .017$). In the model using Medicaid beneficiaries, factors associated with health status were as follows; sex and chronic diseases. In this model, male beneficiaries reported higher levels of health status than females ($\beta = 0.91$, $p = .049$). As expected,

those who had more than 3 chronic diseases reported lower levels of health status than those who did not have any ($\beta = -1.43, p = .006$).

Table 4 presents the results of logistic regression analysis for healthcare utilization. In the model using all samples, after including all factors in the model, we did not find any factors significantly related to healthcare utilization. The model of healthcare utilization using the National Health Insurance program indicated that the likelihood of healthcare utilization was higher for those with elementary school education and lower among those with any disabilities.

DISCUSSION

Although the Medicaid program provides medical assistance for the low income population, there are challenges and barriers to accessing care. This study examined potential barriers to accessing healthcare services, and compared Medicaid beneficiaries with NHI beneficiaries using a sample from all residents of the housing complex categorized under the low income population. Using a cross sectional design, this study found that Medicaid beneficiaries reported lower levels of perceived health status than NHI beneficiaries (Table 1). However, when we controlled all other factors, we did not find this difference in health status between Medicaid and NHI beneficiaries (Table 3). Medicaid beneficiaries had lower resources and higher levels of health needs than NHI beneficiaries.

One important finding is that Medicaid beneficiaries had lower levels of enabling factors: more likely to live alone, not married, and not having relatives to ask for help. In order to access healthcare, it is important to not only have healthcare services and facilities, but also social support which can help with access to care [16]. Also Medicaid beneficiaries reported significantly higher levels of health needs, including chronic diseases and disabilities. Medicaid beneficiaries had less social support and higher health needs than NHI beneficiaries. Similarly, they reported lower levels of health status and male patients reported higher levels of health status than female Medicaid beneficiaries. This result was consistent with Lee and Kim's research [5]. Additionally, more than 3 chronic disease factors influenced health status. This result was consistent with Knesebeck et al.'s research [17]. Because Medicaid beneficiaries do not need to pay out of pocket to utilize healthcare service, they had equal or better levels of healthcare utilization including having healthcare facilities and revisiting healthcare services. This result was consistent with

Lee and Kim's research [5]. These results are valuable because they provide information on the trends of health status, and healthcare utilization when compared with recent and future research results.

One practical implication of this finding is that providing healthcare service assistance to Medicaid beneficiaries might not be enough to improve their health status. Medicaid beneficiaries indicated a weak social support network. The new system of Medicaid now supports a health maintenance fund to beneficiaries of about \$70 per month, in addition to the healthcare services [4]. Although this can help the utilization of care for Medicaid beneficiaries, they need social support to access this care such as transportation and other people for advice and support. Therefore, the new Medicaid system might need to consider including a social support system to increase access to care.

Another practical implication is related to health maintenance activity for Medicaid beneficiaries. Compared to NHI beneficiaries, Medicaid beneficiaries reported lower levels of health maintenance activities such as exercise and dietary pattern. In addition to the healthcare services that Medicaid beneficiaries currently receive, health maintenance activities can be provided by community health centers to improve the health status of Medicaid beneficiaries. When we consider that Medicaid beneficiaries had lower levels of social support and higher levels of health needs, such health maintenance activities might be a tool to provide health services to prevent diseases and promote the health status of Medicaid beneficiaries.

Much like other studies, this study has limitations, which are related to using a cross-sectional study design with a local population to access data. In order to compare Medicaid and NHI beneficiaries, we used data from a low income population residing in a special government-housing complex. Although differences in health needs and social support between Medicaid and NHI beneficiaries were examined, this sample cannot represent all Medicaid and NHI beneficiaries, nor can the findings be applied to other populations. Furthermore, the relationships we found cannot be interpreted as a causal relationship. Therefore, future research needs to use a larger population and longitudinal data to examine factors related to health status and health care utilization. Additionally, another limitation of this study is related to healthcare utilization variables. Because secondary data analysis was used, this study could not introduce more detailed variables to examine health service utilization. The variables we used in this study were simple and cannot completely capture health service utilization among Medicaid and NHI beneficia-

ries. Thus, future studies need to include quantitative data to measure health service utilization.

Currently, the new Medicaid policy includes a health care maintenance fund for beneficiaries, and is working to strengthen the evaluation system of Medicaid to screen for wasted healthcare resources. Therefore, further research needs to examine whether such policy changes will lead to better health status and a decrease in health care utilization by Medicaid beneficiaries, without creating other barriers to access healthcare services. Continued efforts to increase access to care for Medicaid beneficiaries need to be a focus of the current Medicaid system, and researchers need to continue to study policy changes and their impact on access to care by Medicaid beneficiaries.

CONCLUSIONS

This study found that compared to National Health Insurance beneficiaries, Medicaid beneficiaries reported lower levels of health status and fewer enabling factors. They also had more chronic diseases and disabilities. Health status was associated with education level, chronic disease, exercise pattern, and disability. We found that Medicaid beneficiaries had fewer resources and higher levels of health needs. As the new Medicaid policy includes a health care maintenance fund for Medicaid beneficiaries to strengthen the evaluation system of Medicaid to screen for wasted healthcare resources, it is important to understand the healthcare utilization behaviors of Medicaid beneficiaries and factors hindering their access to care.

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