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Impact of health insurance status changes on healthcare utilisation patterns: a longitudinal cohort study in South Korea

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ABSTRACT

Objectives: The study examined medical care utilisation by health insurance status changes.

Setting: The Korean Welfare Panel Study (KoWePs) was used.

Participants: This study analysed 14 267 participants at baseline (2006).

Interventions: The individuals were categorised into four health insurance status groups: continuous health insurance, change from health insurance to Medical Aid, change from Medical Aid to health insurance, or continuous Medical Aid.

Primary and secondary outcome measures: Three dependent variables were also analysed: days spent in hospital; number of outpatient visits; and hospitalisations per year. Longitudinal data analysis was used to determine whether changes in health insurance status were associated with healthcare utilisation.

Results: The number of outpatient visits per year was 0.1.363 times higher (p<0.0001) in the continuous Medical Aid than in the continuous health insurance group. The number of hospitalisations per year was 1.560 times higher (p<0.001) in new Medical Aid and −0.636 times lower (p<0.001) in new health insurance than in continuous health insurance group. The number of days spent in hospital per year was −0.567 times lower (p=0.021) in the new health insurance than in the continuous health insurance group.

Conclusions: Health insurance beneficiaries with a coverage level lower than Medical Aid showed lower healthcare utilisation, as measured by the number of hospitalisations and days spent in hospital per year.

Strengths and limitations of this study

- The study used nationwide longitudinal survey data of a community-dwelling population. The large population sample size was representative of the overall population, so these results can be generalised to the population in South Korea.
- Respondent reports are subjective and imperfect measures, potentially affected by perception bias and adaptation of resources.
- Because data from an existing national survey were used, this study was limited to questions that were already in the survey and could not alter or add additional questions.
- There is no indication of the point in time for such changes in insurance status, and the possibility of multiple changes over 7 years was not properly addressed.

INTRODUCTION

National Health Insurance (NHI) was instituted in South Korea in 1977, and universal coverage was achieved in 1989. Korea has a unique healthcare system, in which the private sector comprises most of the country's health resources—88% of beds and 91% of specialists in Korea—but they are generally funded by public financing, such as NHI and the national aid programme,[1] although the patient's co-payment is high. Healthcare organisations in Korea are categorised into four types: tertiary care hospitals, general hospitals, hospitals and clinics, according to the scale of the operator: number of beds. The entire Korean population has access to both, the public and private hospital sectors.[1]

One problem facing the NHI programme is the low-benefit coverage. Although all Korean citizens are covered either through the NHI (∼96%) or Medical Aid (∼4%), the proportion of government expenditures out of total health expenditures is only 55.3%, compared to the average of 72.5% among other Organization for Economic Co-operation and Development (OECD) member countries.[2] One reason for this phenomenon is the low contribution rate to the NHI (5.89% of payroll income in 2013),[3] which reflects the low economic development level of South Korea in 1977, when the

NHI programme was started. The low contribution rate results in non-covered medical services.[4] Out-of-pocket expenses have increased despite the government's efforts to expand the benefit coverage, and the medical practice patterns are distorted because of the disproportionate expansion of non-covered services.[3]

In South Korea, health insurance costs have increased from 5.5% in 2007 to 14.3% in 2009, and the hospital visit lengths of stay (LOS) have also increased gradually.[5] The healthcare budgets of Korea[6] and the USA[7] have also increased dramatically. Despite this, the government supports low-income groups that occupy a health insurance blind spot. To strengthen the protection of such groups, the government created Medical Aid, a social safety net similar to Medicaid or Medicare in the USA. Types 1 and 2 Medical Aid beneficiaries are compensated by the government for their medical expenses, excluding co-payments, as established by law. Types 1 and 2 Medical Aid beneficiaries differ in their capacity to work, which is reflected in the amount of their co-payments specified by law.[8]

In South Korea, the total medical expenditures for types 1 and 2 Medical Aid beneficiaries increased dramatically from 3.9 trillion won in 2006 to 5.1 trillion in 2011.[9] To address the growing cost of Medical Aid beneficiaries,[8] the Korean government implemented a co-payment scheme in July 2007, whereby type 1 beneficiaries were required to pay outpatient fees of $1 (approximately 1000 KRW) to primary medical institutions (co-payment of health insurance beneficiaries: 30%), $1.50 to secondary medical institutions (co-payment of health insurance beneficiaries: 35–40%) and $2 to tertiary medical institutions (co-payment of health insurance beneficiaries: 50%).[10] Despite this, medical expenditures have continued to increase in accordance with the proliferation of low-income households receiving government support.[11] In addition, to prevent unmet healthcare needs, the government also implemented the Healthy Life Maintenance Aid Program, which provides $6/month to each type 1 beneficiary via a virtual account. This programme is effectively a health savings account: whenever beneficiaries receive a medical service as an outpatient, they make a co-payment via the virtual account. If the beneficiaries spend the total amount available in the virtual account, they must pay the additional costs themselves. Any money remaining in the virtual account cannot be converted to cash.[10]

Despite this, medical expenditures have continued to increase in accordance with the proliferation of low-income households receiving government support.[11] One reason for the proliferation of low-income households is the economic recession.[12 13] Health insurance status changes (from health insurance to Medical Aid) have resulted from the economic recession, which brought higher rates of unemployment and transient employment, along with entitlement programme cutbacks.[14]

A previous study indicated that changes in the health insurance status may cause a paradoxical increase in healthcare utilisation by creating a 'moral hazard' or by increasing use of services that had previously been deferred.[15 16] This type of health insurance 'churning' results in populations of newly insured and newly uninsured individuals who, for various reasons, can struggle with access to healthcare utilisation.[17 18]

In this study, based on the findings of prior investigations, which suggested changes in the overall healthcare use after the gain[14] or loss[15] of insurance, it was hypothesised that any changes in the health insurance status (from health insurance to Medical Aid or from Medical Aid to health insurance) would be associated with healthcare utilisation. Therefore, this study examined the medical care utilisation patterns of health insurance beneficiaries according to their health insurance status changes.

MATERIALS AND METHODS
Study sample
The data from the ongoing Korean Welfare Panel Study (KoWePS), which was conducted by the Korean Institute of Social and Health Affairs in conjunction with the Social Welfare Research Institute of Seoul National University, were employed. The study was designed to obtain nationally representative information on the household financial status, housing, pension funds, employment histories, use of welfare services, health conditions and more. The panel consisted of 18 856 individuals from a national probability sample of 7072 households residing in South Korea who have been surveyed annually since 2006 and it lasted for 7 years. The sample was selected using systematic two-stage stratified cluster sampling on the 2005 census data. KoWePS includes the post-stratification weights based on 2005 census data; it is weighted by (1) a primary sampling unit and (2) for the intentional oversampling of low-income households. All results were estimated using the sample weights. To date, data from the first seven waves of the KoWePS have been released publicly, and the follow-up rate (original sample retention) for the 1st to 7th wave was 100.0%, 92.1%, 86.7%, 83.9%, 80.3%, 75.4% and 74.5%. This study did not require protocol approval or informed consent.

Among the 2006 baseline data, we excluded 4587 individuals aged 20 years or more and 2 individuals without information on number of outpatient visits and number of hospitalisations. Thus, the 2006 baseline data included a total of 14 267 individuals.

Study variables
To analyse the association between the health insurance status changes and healthcare utilisation, the health insurance status in the previous year was compared with the health insurance status in the following year, over 7 years. Types 1 and 2 Medical Aid beneficiaries were

both classified as Medical Aid recipients. Health insurance status was categorised into four groups: continuous health insurance beneficiaries (reference group), new Medical Aid beneficiaries (ie, a change from health insurance to Medical Aid), new health insurance beneficiaries (ie, a change from Medical Aid to health insurance) and continuous Medical Aid beneficiaries.

This study analysed three dependent variables: days spent in the hospital, number of outpatient visits, and hospitalisations per year. Age, education level, residential region, occupation, marital status, economic activity status, disability, number of chronic disease, perceived health status and year, were included in the analyses as covariates. The education level was categorised into four groups: elementary school or lower, middle school, high school and college or higher. The residential regions were categorised as urban (Seoul, Daejeon, Daegu, Busan, Incheon, Kwangju or Ulsan) or rural (not classified as a city). The occupation status was divided into two categories: employed and unemployed (including housewives and students). Individuals were classified as currently married or single, the latter group included the previously married, widowed and divorced. Number of chronic diseases and perceived health status were also included in these models. Number of chronic diseases was operationalised into three different categories: 0, 1 and 2 or more. The perceived health status was categorised as good, average, or bad, in response to the question 'How do you usually perceive your health?'.

Statistical analysis

A Wilcoxon rank-sum test and longitudinal data analysis were used to determine if the health insurance status changes were associated with the healthcare utilisation patterns (ie, number of days spent in the hospital, outpatient visits and hospitalisations per year). In the models presented, only the intercept was allowed to vary between the participants, and the regression slopes were assumed to be fixed effects; random intercept models were applied to the data. The random intercept variance was reported to be σ^2.[19] To determine if the probability of healthcare utilisation had changed with time, time (year) was included in the model as a categorical covariate.

A generalised estimating equation model with zero-inflated function was run to investigate the number of outpatient visits and hospitalisations per year, and days spent in hospital per year. For all analyses, the criterion for significance was $p \leq 0.05$, two tailed. All analyses were conducted using the SAS statistical software package V.9.2 (SAS Institute Inc, Cary, North Carolina, USA).

RESULTS

Of the 14 267 research subjects at the baseline (2006), tables 1 and 2 show the general characteristics of the participants. The weighted mean of the number of

Table 1 General characteristics of the dependent variables at the baseline (2006)

	Mean	Mean*	SD†
Number of outpatient visits	14.21	10.41	23.94
Number of hospitalisations	0.16	0.13	0.59
Hospital days	3.21	2.58	16.93

*Weighted mean.
†Weighted SD.

Table 2 General characteristics of the study subjects at baseline (2006)

	N	Per cent	Per cent*
Type of insurance			
Health insurance	13 349	93.57	96.38
Medical aid	918	6.43	3.62
Gender			
Male	6502	45.57	46.96
Female	7765	54.43	53.04
Age, years			
20–29	1859	13.03	15.07
30–39	2919	20.46	25.74
40–49	2583	18.10	21.11
50–59	2063	14.46	14.30
60–69	2492	17.47	13.35
≥70	2351	16.48	10.42
Residential region			
Urban	6523	45.72	47.63
Rural	7744	54.28	52.37
Marital status			
Married	9586	67.19	70.03
Single (including divorced, widowed, separation)	4681	32.81	29.97
Education level			
≤Elementary	4475	31.37	35.26
Middle school	1638	11.48	33.73
High school	4304	30.17	10.42
≥College	3850	26.99	20.59
Number of household members			
1–2	5500	38.55	29.16
3–4	7062	49.50	57.94
≥5	1705	11.95	12.90
Number of chronic diseases			
0	9196	64.46	73.09
1	116	0.81	0.71
≥2	4955	34.73	26.21
Perceived health status			
Good	8080	56.63	65.82
Average	1905	13.35	12.94
Bad	4282	30.01	21.24
economic activity status			
Yes	6842	47.96	47.52
No (including housewife and students)	7425	52.04	52.48
Disability			
Yes	1190	8.34	6.45
No	13 077	91.66	93.55
Total	14 267	100.00	100.00

*Weighted per cent.

outpatient visits was 10.41 (SD 23.94) per year, the weighted mean of the number of hospitalisations was 0.13 (SD 0.59) per year and the weighted mean of the number of days spent in hospital was 2.58 (SD 16.93) per year (table 1). Of the 14 267 research subjects at the baseline (2006), 13 349 (96.38%) had health insurance and 918 (3.62%) received Medical Aid (table 2).

Table 3 lists the general characteristics of the health insurance status change over time. In 2012, of the 11 356 research subjects, those with continuous health insurance and continuous Medical Aid were 10 061 (93.35%) and 587 (5.17%), respectively, and newly Medical Aid and newly health insurance were 60 (0.53%) and 108 (0.95%), respectively.

Table 4 lists the association between all variables and the health insurance status. The weighted mean number of outpatient visits for the continuous health insurance beneficiaries was 15.04 (SD 27.09). The weighted mean number of outpatient visits for the new Medical Aid beneficiaries was 29.08 (SD 44.57). The weighted mean number of outpatient visits for the new health insurance beneficiaries was 23.54 (SD 38.26). The weighted mean number of outpatient visits for the continuous Medical Aid beneficiaries was 32.45 (SD 45.00). The weighted mean number of hospitalisations for the continuous and new health insurance beneficiaries was 0.16 and 0.21, respectively. The weighted mean number of hospitalisations for the new and continuous Medical Aid beneficiaries was 0.42 and 0.35, respectively. The weighted mean number of days spent in hospital per year was 2.82 for continuous health insurance beneficiaries, 9.59 for the new Medical Aid beneficiaries, 6.14 for the new health insurance beneficiaries and 8.21 for the continuous Medical Aid beneficiaries (table 4).

An analysis of the research sample in each year is presented in table 4 (2007: 12 992, 2008: 12 487, 2009: 12 241, 2010: 11 867, 2011: 11 350, 2012: 11 356). Table 5 shows the association between the health insurance status changes and healthcare utilisation patterns.

The number of outpatient visits per year was 1.363 times higher (p <0.0001) in the continuous Medical Aid beneficiaries than in the individuals with continuous Health Insurance. The number of hospitalisations per year was 1.560 and 1.144 times higher (p 0.001, 0.159) in the new Medical Aid and continuous Medical Aid, respectively, and 0.636 times lower (p value 0.001) in the continuous Medical Aid beneficiaries than in the individuals with continuous health insurance.

The number of days spent in hospital per year was 0.567 times lower (p=0.021) in the individuals with new Health Insurance than in the individuals with continuous health insurance and 1.152 times higher (p value: 0.329) in the continuous Medical Aid beneficiaries than in the individuals with continuous Health Insurance (table 5).

DISCUSSION

This study examined whether the health insurance status changes (from health insurance to Medical Aid or from Medical Aid to health insurance) affect the healthcare utilisation patterns using the KoWePS data (2006–2012). In this longitudinal cohort study, compared to those with continuous health insurance, (1) continuous Medical Aid beneficiaries were more likely to make outpatient visits and (2) new Medical Aid beneficiaries were more likely to be hospitalised and new health insurance beneficiaries was less likely to be hospitalised. New health insurance recipients also spent fewer days in the hospital than the individuals with continuous health insurance.

In theory,[20] newly insured adults should have new access to primary care services for acute and preventive care needs, resulting in a decrease in the unmet need for healthcare services; however, the results indicate that Medical Aid beneficiaries with relatively high benefits and low co-payments have a high likelihood of healthcare utilisation and, inversely, health insurance beneficiaries with relatively low medical service coverage level tended to decrease their healthcare utilisation.

A US study[20] comparing healthcare utilisation by health insurance type showed that, as the coverage level increased, the utilisation of healthcare services increased significantly, which is consistent with the present results.

Table 3	Changes in health insurance status over time											
Health insurance status change	**2007**		**2008**		**2009**		**2010**		**2011**		**2012**	
	N	**Per cent**	**N**	**Per cent**	**N**	**Per cent**	**N**	**Per cent**	**N**	**Per cent**	**N**	**Per cent**
Continuous health insurance	11 985	93.35	11 466	91.82	11 233	91.77	10 907	91.91	10 558	93.02	10 601	93.35
Newly Medical Aid	105	0.53	89	0.71	78	0.64	109	0.92	44	0.39	60	0.53
Newly health insurance	89	0.95	74	0.59	129	1.05	159	1.34	91	0.80	108	0.95
Continuous Medical Aid	813	5.17	858	6.87	801	6.54	692	5.83	657	5.79	587	5.17
Total	12 992	100.00	12 487	100.00	12 241	100.0	11 867	100.0	11 350	100.0	11 356	100.0

Table 4 Association between the variables and health insurance status

	N	Number of outpatient visits			Number of hospitalisations			Hospital days		
		Mean*	SD†	p Value	Mean*	SD†	p Value	Mean*	SD†	p Value
Health insurance status change				<0.0001			<0.0001			<0.0001
Continuous health insurance	66 750	15.04	27.09		0.16	0.61		2.82	16.65	
Newly Medical Aid	485	29.08	44.57		0.42	1.18		9.59	32.53	
Newly health insurance	650	23.54	38.26		0.21	0.69		6.14	26.32	
Continuous Medical Aid	4408	32.45	45.00		0.35	1.04		8.21	34.07	
Gender				<0.0001			<0.0001			<0.0001
Male	32 616	11.70	22.77		0.17	0.66		3.57	21.00	
Female	39 677	20.04	32.93		0.18	0.65		2.94	16.14	
Age, years				<0.0001			<0.0001			<0.0001
20–29	8191	4.42	9.27		0.09	0.48		0.87	7.00	
30–39	12 649	5.95	12.90		0.12	0.50		1.29	12.23	
40–49	12 945	8.09	17.34		0.11	0.52		1.89	15.59	
50–59	10 574	14.43	23.97		0.16	0.64		2.85	16.35	
60–69	11 745	24.60	34.21		0.21	0.73		4.56	22.26	
≥70	16 189	32.05	40.40		0.30	0.84		6.28	25.28	
Residential region				<0.0001			<0.0001			<0.0001
Urban	31 389	14.24	26.51		0.16	0.61		2.92	19.51	
Rural	40 904	17.84	30.84		0.19	0.69		3.46	17.67	
Marital status				0.0266			<0.0001			0.0001
Married	47 013	14.96	26.28		0.18	0.65		3.04	17.73	
Single (including divorced, widowed, separation)	25 280	18.72	33.57		0.17	0.66		3.57	19.82	
Education level				<0.0001			<0.0001			<0.0001
≤Elementary	22 862	30.29	39.57		0.27	0.83		5.81	25.04	
Middle school	8244	17.50	27.89		0.18	0.65		3.24	18.17	
High school	20 804	9.98	19.88		0.14	0.51		2.27	14.73	
≥College	20 383	6.48	13.05		0.11	0.54		1.30	11.92	
Number of household members				<0.0001			<0.0001			<0.0001
1–2	29 161	25.27	36.38		0.25	0.80		5.03	23.58	
3–4	34 413	9.92	20.19		0.12	0.51		2.00	14.00	
≥5	8719	11.28	22.94		0.12	0.56		2.01	13.51	
Scale of chronic disease				<0.0001			<0.0001			<0.0001
Increase	8657	18.75	25.91		0.23	0.65		3.99	18.07	
Decrease	6261	10.06	19.25		0.14	0.50		2.66	18.32	
Constant	57 375	16.58	30.32		0.17	0.67		3.17	18.56	
Perceived health status				<0.0001			<0.0001			<0.0001
Good	40 272	6.70	12.91		0.08	0.33		0.83	7.15	
Average	14 388	19.01	26.23		0.14	0.44		2.05	11.29	
Bad	17 633	35.92	43.89		0.43	1.12		9.65	33.55	
Economic activity status				<0.0001			<0.0001			<0.0001
Yes	35 127	21.80	34.38		0.25	0.84		5.20	24.71	
No (including housewife and students)	37 166	11.06	21.76		0.10	0.39		1.36	8.99	
Disability				<0.0001			<0.0001			<0.0001
Yes	7582	27.63	39.73		0.37	0.97		10.11	37.34	
No	64 711	14.95	27.27		0.15	0.60		2.42	14.57	
Year				<0.0001			<0.0001			<0.0001
2007	12 992	16.52	30.20		0.16	0.69		2.96	18.80	
2008	12 487	15.41	27.10		0.18	0.68		3.40	21.18	
2009	12 241	15.48	28.31		0.19	0.69		3.74	20.81	
2010	11 867	16.32	29.41		0.17	0.61		3.45	18.40	
2011	11 350	16.87	29.74		0.17	0.63		2.75	14.75	
2012	11 356	17.17	29.71		0.18	0.61		3.03	15.51	

*Weighted mean.
†Weighted SD.

Table 5 Adjusted effect of study variables on healthcare utilisation pattern

	Number of outpatient visits				Number of hospitalisations				Hospital days			
	OR	95% CI		p Value	OR	95% CI		p Value	OR	95% CI		p Value
Health insurance status change												
Continuous health insurance	1.000				1.000				1.000			
Newly Medical Aid	1.245	0.926	1.675	0.147	1.560	1.190	2.043	0.001	1.287	0.665	2.490	0.454
Newly health insurance	1.005	0.857	1.179	0.948	0.636	0.489	0.828	0.001	0.567	0.350	0.916	0.021
Continuous Medical Aid	1.363	1.217	1.527	<0.0001	1.144	0.949	1.380	0.159	1.152	0.867	1.532	0.329
Gender												
Male	1.000				1.000				1.000			
Female	1.457	1.384	1.535	<0.0001	1.033	0.946	1.128	0.467	0.809	0.666	0.982	0.032
Age, years												
20–29	1.000				1.000				1.000			
30–39	1.096	1.009	1.192	0.030	1.187	1.002	1.407	0.048	1.281	0.858	1.914	0.227
40–49	1.050	0.957	1.152	0.303	0.773	0.640	0.933	0.007	0.849	0.506	1.426	0.537
50–59	1.177	1.057	1.310	0.003	0.687	0.556	0.850	0.001	0.765	0.462	1.266	0.297
60–69	1.293	1.145	1.461	<0.0001	0.559	0.442	0.706	<0.0001	0.638	0.374	1.088	0.099
≥70	1.430	1.243	1.644	<0.0001	0.587	0.470	0.734	<0.0001	0.834	0.512	1.358	0.466
Residential region												
Urban	1.007	0.960	1.057	0.763	0.868	0.801	0.940	0.001	0.775	0.659	0.911	0.002
Rural	1.000				1.000				1.000			
Marital status												
Married	1.265	1.192	1.341	<0.0001	1.552	1.394	1.728	<0.0001	1.578	1.162	2.143	0.004
Single (including divorced, widowed, separation)	1.000				1.000				1.000			
Education level												
≤Elementary	1.151	1.047	1.266	0.004	0.998	0.848	1.173	0.978	1.774	1.313	2.397	0.000
Middle school	1.003	0.923	1.091	0.940	0.932	0.795	1.093	0.388	1.825	1.308	2.546	0.000
High school	0.972	0.917	1.029	0.329	1.026	0.916	1.150	0.654	1.665	1.315	2.107	<0.0001
≥College	1.000				1.000				1.000			
Number of household members												
1–2	1.097	1.017	1.184	0.016	1.495	1.292	1.729	<0.0001	1.324	0.981	1.787	0.067
3–4	0.967	0.903	1.036	0.342	1.031	0.903	1.177	0.649	0.849	0.633	1.138	0.273
≥5	1.000				1.000				1.000			
Number of chronic diseases												
0	0.307	0.291	0.325	<0.0001	0.536	0.485	0.593	<0.0001	0.504	0.407	0.624	<0.0001
1	0.697	0.648	0.749	<0.0001	1.292	1.116	1.495	0.001	1.297	0.949	1.773	0.103
≥2	1.000				1.000				1.000			
Perceived health status												
Good	1.000				1.000				1.000			
Average	1.523	1.447	1.603	<0.0001	1.435	1.300	1.584	<0.0001	1.651	1.364	1.997	<0.0001
Bad	2.170	1.997	2.359	<0.0001	3.782	3.362	4.253	<0.0001	5.655	4.717	6.782	<0.0001
Economic activity status												
Yes	1.000				1.000				1.000			
No (including housewife and students)	0.955	0.910	1.002	0.061	1.437	1.316	1.570	<0.0001	1.331	1.091	1.623	0.005
Disability												
Yes	1.154	1.047	1.273	0.004	1.203	1.053	1.375	0.007	1.487	1.188	1.860	0.001
No	1.000				1.000				1.000			
Year												
2007	1.000				1.000				1.000			
2008	0.946	0.900	0.994	0.029	1.115	1.006	1.235	0.039	1.151	0.915	1.448	0.228
2009	0.897	0.846	0.952	0.000	1.245	1.118	1.387	<0.0001	1.243	0.949	1.628	0.115
2010	0.992	0.938	1.048	0.766	1.116	1.000	1.245	0.050	1.262	0.951	1.674	0.107
2011	0.995	0.939	1.053	0.856	1.085	0.966	1.219	0.167	1.132	0.863	1.486	0.369
2012	1.055	0.991	1.123	0.096	1.251	1.119	1.399	<0.0001	1.188	0.930	1.517	0.167

One possible explanation for these results based on a previous study is that individuals may defer care prior to obtaining Medical Aid, which reduces the financial barrier to the healthcare services, leading to a period of increased use.[15] Another potential explanation is that individuals with Medical Aid have health problems that caused their loss of employment[8] and that also result in a high probability of requiring medical care. The lower number of hospitalisations and hospital days observed for the new health insurance beneficiaries having financial barrier to use of the healthcare services can be explained by the relatively low income of these individuals (having previously qualified for Medical Aid), who may have pre-existing health problems.[3]

An economic recession can affect medical care utilisation patterns by contributing to the loss of employment and the instability of associated health insurance coverage.[20] Generally, in choosing to seek medical care, individuals weigh the financial cost of treatment against their perceived health benefits.[21]

Prior evidence supports the idea that, in addition to possessing health insurance coverage, the consistency of insurance provision is important for improving the health outcomes and reducing the need for hospitalisation through better access to outpatient services.[22] Previous research in the USA also suggested that newly enrolled Medicaid recipients use more medical care than new enrolees in other forms of health insurance.[20] Finally, previous studies show that increased co-payments lead to a decrease in the utilisation of medical services.[23 24]

Therefore, implementing the medical savings account and deductible programmes may help control the demand for medical care.[6] In terms of supply, pay for performance (P4P) may also be a potential solution.[6] Because medical savings accounts and P4P programmes are both available to reveal medical care costs, they may be considered effective for improvement of healthcare quality and reduction of unnecessary healthcare services that result from health insurance coverage change.[25–27]

The theory behind medical saving accounts is that giving individuals more control over the funds allocated for healthcare services will cause them to spend the money more responsibly, particularly once they become more educated about the actual cost of health services. Furthermore, these accounts can be used as tax-advantaged vehicles to save for healthcare expenses in retirement. A previous study indicated that the number of individuals with medical saving accounts increased from 6.6 million to 7.2 million between 2012 and 2013. Between 2012 and 2013, the assets in medical saving accounts increased from $11.3 billion to $16.6 billion.

In addition, the P4P programme has become an increasingly popular reimbursement mechanism to improve the quality of care and healthcare reform.[28–30] The P4P programmes provide incentives to healthcare providers for achieving selected performance targets, such as improving preventive and chronic care, patient experience and the use of information technology.[28–30]

The broad goal of these programmes is to enhance healthcare quality, which is expected to improve patients' long-term health and reduce healthcare costs.[28–30] Such promising goals have placed the P4P programmes at the forefront of many recent healthcare reforms. Hospital finances could change under P4P in indirect ways, such as reputational effects that could increase the hospital volume and thus revenues.[28–30] On the contrary, payers and policymakers have increasingly realised that, for P4P to be successful and sustainable, it must, at worst, be cost neutral and, at best, cost saving. Therefore, it is important to evaluate the effects of P4P on the costs of care.[28–30]

The number of Medical Aid beneficiaries with a high level of coverage, in South Korea, fluctuates annually—it was 1.5 million in 2004 and 1.7 million in 2008. However, the cost of Medical Aid payments accounts for 16.9% of the total NHI expenditures,[31] and has increased, on average, by 15.9% annually from 2002 to 2006.[8] In addition, the total health expenditures on Medical Aid have increased dramatically, from 3.2 trillion won in 2005 to 5.1 trillion in 2011.[9] Despite this, policymakers have attempted to reduce the burden of co-payments for low-income patients and patients with serious diseases, such as cancer and heart disease.[9]

Owing to the rise in income in South Korea over the past 30 years, the health status has improved dramatically, with life expectancy at birth rising from 64.4 years in 1976 to 79.1 years in 2006. Accordingly, the total health expenditures and medical care utilisation rates have increased sharply.[3 32] Unlike the USA, South Korea has no mechanisms such as co-payments in long LOS or days spent in hospital in place to control costs,[27] resulting in a large number of outpatient visits, long LOS and increasing total health expenditures.

South Korea's level of benefit coverage is low compared to the OECD average.[2 33] On the contrary, 85% or more of medical costs are covered by patients with Medical Aid.[3 4] The risk of moral hazard in the insurance system can be reduced by increasing the co-payment amounts.[34] Consequently, a moral hazard is more likely to occur in Medical Aid patients than in patients with health insurance.

With the health expenditure per person of US$7212 in 2011,[35] the USA outspends all other countries by a wide margin. The USA ranks first in the OECD for healthcare expenditure, but last for coverage.[36] At the same time, health expenditure growth was kept in line with other high-spending OECD countries, which is partly an effect of government policies, and partly that of market forces. A retrenchment of coverage was on other high-spending countries' policy agendas, as they faced the grim consequences of a severe economic recession and fiscal crises, with accumulating public debt.[35] Many countries cut their healthcare budgets, applied strict cost–control measures, froze salaries and drug prices, cut any possible fringes off their benefit packages and increased co-payments.[35]

Medical Aid beneficiaries with high levels of benefit coverage may increase their healthcare use, and can maximise benefits without incurring out-of-pocket costs.[37] Given the original goal of the Korean medical care system, that is, to provide a minimum safety net to ensure the medical security of low-income citizens, policymakers must determine if the health insurance status changes affect the healthcare utilisation patterns among Medical Aid beneficiaries. In addition, because health policy changes and economic recession are expected to create change in health insurance status resulting in increasing healthcare utilisation, policymakers and healthcare administrators should anticipate new surges in healthcare use. Consistency in provision and health insurance type may improve access to healthcare services and reduce patient reliance on healthcare services.[20 38]

This study had some limitations. First, the analysis failed to consider medical care providers, focusing instead on beneficiary-related factors that influence medical care usage. Second, because data from an existing national survey were used, this study was limited to questions that were already in the survey and could not alter or add additional questions. Third, because the KoWePS is based on self-reported data, the answers are subject to recall bias. Fourth, there is neither indication of the point in time for such changes in insurance status nor was the possibility of multiple changes over 7 years properly addressed. Therefore, the four insurance categories are rather arbitrary, particularly for those people whose status has changed.

CONCLUSION

Health insurance beneficiaries with a coverage level lower than that of Medical Aid beneficiaries showed lower healthcare utilisation, as measured by the number of hospitalisations and days spent in the hospital per year. Policymakers should anticipate an increase in medical care utilisation because the current changes in health policy or economic circumstances are expected to create health insurance status changes.

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