Article title: Disclosure of Indemnity-Type Private Health Insurance and Outpatient Utilization: A Cross-sectional Analysis of Differences Between Clinics and Hospitals in Korea

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Authors' information: Chang Hoon You[1]¶, Sungwook Kang[2]¶, Young Dae Kwon[3,4]*

[1]Department of Public Health Policy, Seoul Public Health Research Institute, Seoul Medical Center, Seoul, Republic of Korea.

[2]Department of Health Services Management, Daegu Haany University, Gyeongsan, Republic of Korea.

[3]Department of Humanities and Social Medicine, College of Medicine, The Catholic University of Korea, Seoul, Republic of Korea.

[4]Catholic Institute for Public Health and Healthcare Management, The Catholic University of Korea, Seoul, Republic of Korea.

***Correspondence to:** Young Dae Kwon; Email: snukyd1@naver.com

¶ Both authors contributed equally to this paper.

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Supplementary file 1

Table S1. Coding and Categories of Covariates

Domain	Variable	Coding / Categories
Sociodemographic	Sex	Male
		Female
	Age group	20–34 years
		35–64 years
		≥ 65 years
	Marital status	Married
		Separated/divorced/widowed
		Never married
	Educational attainment	Elementary school or less
		Middle school
		High school
		College or higher
	Place of residence	Metropolitan
		Other
Economic	Economic activity	Yes (currently engaged in income-generating work)

		No
	Equivalized household income	Continuous (log-transformed), calculated as total household income divided by the square root of household size
	Single-person household	Yes
		No
Health status	Disability status	Yes (congenital or acquired disability)
		No
	Number of chronic diseases	None (no chronic conditions requiring ≥ 3 months of medication or physician diagnosis)
		One
		Two or more
	Cancer	Yes (currently diagnosed and under treatment)
		No
	Cardio-cerebrovascular disease	Yes (currently diagnosed and under treatment)
		No
	Self-rated health	Good
		Fair
		Poor
	Unmet medical needs	Yes (experienced unmet medical need in the previous year)
		No
Health-related behaviors	Smoking status	Current smoker
		Non-smoker
	Alcohol consumption	Drinker (≥ 2 drinking occasions per month)
		Non-drinker (< 2 occasions per month)
	Regular exercise	Yes (≥ 3 times per week, ≥ 30 minutes per session)
		No
PHI-related	Insurance claim experience	Yes (ever filed indemnity PHI claim for medical expenses)
		No
	Monthly indemnity PHI premium	Continuous (monthly premium amount in Korean won, log-transformed in regression models)

Abbreviation: PHI, private health insurance

Table S2. Adjusted Association between Disclosure of Indemnity-Type Private Health Insurance Enrollment and Outpatient Visit Frequency (All Institutions)

Variable	IRR	95% CI	p
Disclosed insurance enrollment (ref = no)	1.157	1.077-1.244	< 0.0001
Sex (ref = female)	0.899	0.837-0.966	0.0032
Age group (ref = 20-34 years)			
35-64 years	1.060	0.957-1.174	0.2597
≥ 65 years	1.170	1.035-1.324	0.0122
Marital status (ref = married)			
Separated/divorced	1.057	0.965-1.158	0.2303
Never married	0.985	0.888-1.092	0.7801
Educational attainment (ref = elementary school)			
Middle school	0.938	0.849-1.035	0.2065
High school	0.899	0.821-0.984	0.0213
College/university	0.776	0.703-0.856	< 0.0001
Residence (ref = other)	0.991	0.941-1.043	0.7412
Economic activity (ref = no)	0.858	0.773-0.951	0.0040
Annual household income (log)	1.001	0.988-1.014	0.8630
Single-person household (ref = no)	0.995	0.905-1.094	0.9270
Disability (ref = no)	1.477	1.304-1.672	< 0.0001
Number of chronic diseases (ref = none)			
1	1.431	1.343-1.524	< 0.0001
≥ 2	2.065	1.934-2.204	< 0.0001
Cancer (ref = no)	1.136	1.021-1.265	0.0189
Cardio-cerebrovascular disease (ref = no)	0.992	0.892-1.104	0.8940
Unmet medical needs (ref = no)	0.964	0.893-1.041	0.3560
Self-rated health (ref = poor)			
Good	0.684	0.632-0.740	< 0.0001
Fair	0.740	0.687-0.796	< 0.0001
Regular exercise (ref = no)	1.042	0.994-1.092	0.0872
Smoking status (ref = no)	0.956	0.890-1.026	0.2160
Alcohol consumption (ref = no)	0.957	0.900-1.018	0.1672
Insurance claim (ref = no)	1.441	1.373-1.512	< 0.0001
Monthly insurance premium (log)	1.025	0.994-1.057	0.1111
Intercept	12.034	8.326-17.39	< 0.0001

Abbreviation: ref, reference; IRR, incidence rate ratio; CI, confidence interval

Table S3. Adjusted Association between Disclosure of Indemnity-Type Private Health Insurance Enrollment and Average Out-of-Pocket Cost Per Visit (All Institutions)

Variable	Coefficient	95% CI	p
Disclosed insurance enrollment (ref = no)	0.145	0.028 – 0.262	0.0149
Sex (ref = female)	-0.148	-0.262 – -0.033	0.0112
Age group (ref = 20-34 years)			
35-64 years	0.012	-0.155 – 0.177	0.8954
≥ 65 years	-0.177	-0.376 – 0.022	0.0822
Marital status (ref = married)			
Separated/divorced	-0.254	-0.403 – -0.105	0.0008
Never married	-0.303	-0.472 – -0.133	0.0005
Educational attainment (ref = elementary school)			
Middle school	0.069	-0.093 – 0.231	0.4038
High school	-0.022	-0.170 – 0.126	0.7752
College/university	0.019	-0.141 – 0.180	0.8127
Residence (ref = other)	0.169	0.086 – -0.251	< 0.0001
Economic activity (ref = no)	-0.158	-0.322 – -0.007	0.0613
Annual household income (log)	0.033	0.115 – 0.053	0.0023
Single-person household (ref = no)	0.034	-0.117 – 0.186	0.6600
Disability (ref = no)	-0.322	-0.525 – -0.119	0.0019
Number of chronic diseases (ref = none)			
1	0.023	-0.077 – 0.123	0.6485
≥ 2	-0.041	-0.145 – 0.063	0.4446
Cancer (ref = no)	0.220	0.043 – 0.396	0.0145
Cardio-cerebrovascular disease (ref = no)	0.101	-0.073 – 0.276	0.2572
Unmet medical needs (ref = no)	0.112	-0.009 – 0.233	0.0717
Self-rated health (ref = poor)			
Good	0.073	-0.056 – 0.201	0.2698
Fair	0.012	-0.109 – 0.133	0.8484
Regular exercise (ref = no)	0.062	-0.013 – 0.137	0.1057
Smoking status (ref = no)	-0.056	-0.168 – 0.057	0.3345
Alcohol consumption (ref = no)	0.044	-0.055 – 0.143	0.3896
Insurance claim (ref = no)	0.575	0.497 – 0.652	< 0.0001
Monthly insurance premium (log)	-0.001	-0.049 – 0.047	0.9588
Intercept	9.573	8.984 – 10.160	< 0.0001

Abbreviation: ref, reference; IRR, incidence rate ratio; CI, confidence interval

Table S4. Outpatient Visit Frequency and Out-of-Pocket Cost by Institution Type

	Hospital level		Clinic level	
	Mean	SD	Mean	SD
Annual outpatient visits per capita (number)	7.16	10.22	13.51	17.89
Annual out-of-pocket outpatient expenditure per capita (KRW)	350,920	597,318	282,603	456,850
Average out-of-pocket cost per visit (KRW)	58,406	105,324	23,345	34,015
Total number of outpatient visits, n (%)	54,849 (25.1)		164,107 (74.9)	

Abbreviation: SD, standard deviation; KRW, Korean won

Table S5. Adjusted Association between Disclosure of Indemnity-Type Private Health Insurance Enrollment and Outpatient Services Utilization at Hospitals

Variable	Number of outpatient visits			Average out-of-pocket cost per visit		
	IRR	95% CI	p	Coefficient	95% CI	p
Disclosed insurance enrollment (ref = no)	1.010	0.903-1.130	0.8544	0.007	-0.187 – 0.202	0.9422
Sex (ref = female)	0.931	0.827-1.048	0.2411	-0.068	-0.271 – 0.135	0.5117
Age group (ref = 20-34 years)						
35-64 years	1.159	0.980-1.370	0.0833	0.016	-0.279 – 0.310	0.9171
≥ 65 years	1.153	0.944-1.407	0.1622	0.024	-0.526 – 0.001	0.8907
Marital status (ref = married)						
Separated/divorced	1.261	1.083-1.468	0.0031	-0.264	-0.526 – -0.001	0.0494
Never married	1.265	1.071-1.495	0.0061	-0.346	-0.652 – -0.040	0.0266
Educational attainment (ref = elementary school)						
Middle school	1.196	1.034-1.383	0.0151	-0.023	-0.279 – -0.232	0.8587
High school	1.207	1.055-1.382	0.0060	-0.111	-0.347 – -0.125	0.3582
College or higher	1.000	0.863-1.160	0.9911	-0.125	-0.384 – 0.134	0.3448
Residence (ref = other)	0.933	0.858-1.015	0.1088	0.340	0.194 – 0.484	< 0.0001
Economic activity (ref = no)	0.845	0.724-0.987	0.0344	-0.080	-0.347– 0.188	0.5609
Annual household income (log)	0.998	0.979-1.018	0.9133	0.002	-0.032 – 0.035	0.9191
Single-person household (ref = no)	0.788	.6726-0.923	0.0033	-0.204	-0.476 – 0.068	0.1416
Disability (ref = no)	1.396	1.172-1.662	< 0.0001	-0.541	-0.849 – -0.232	0.0006
Number of chronic diseases (ref = none)						
1	1.259	1.134-1.397	< 0.0001	0.015	-0.163 – 0.194	0.8661
≥ 2	1.542	1.388-1.712	< 0.0001	-0.052	-0.233 – 0.130	0.5762
Cancer (ref = no)	1.606	1.401-1.842	< 0.0001	0.042	-0.206 – 0.291	0.7379
Cardio-cerebrovascular disease (ref = no)	1.151	1.003-1.320	0.0444	-0.050	-0.296 – 0.196	0.6921
Unmet medical need (ref = no)	1.008	0.897-1.133	0.8851	0.191	-0.011 – 0.392	0.0645
Self-rated health (ref = poor)						
Good	0.724	0.646-0.812	< 0.0001	0.089	-0.113 – 0.291	0.3881
Fair	0.684	0.615-0.760	< 0.0001	0.104	-0.082 – 0.292	0.2747
Regular exercise (ref = no)	1.090	1.012-1.175	0.0231	0.108	-0.021 – 0.237	0.1020
Smoking status (ref = no)	1.019	0.906-1.145	0.7477	-0.048	-0.248 – 0.152	0.6399
Alcohol consumption (ref = no)	0.969	0.883-1.063	0.5077	0.134	-0.029 – 0.297	0.1080
Insurance claim (ref = no)	1.387	1.289-1.492	< 0.0001	0.356	0.228 – 0.483	< 0.0001
Monthly insurance premium (log)	1.015	0.967-1.066	0.5331	0.045	-0.039 – 0.1267	0.3019
Intercept	4.300	2.380-7.770	< 0.0001	9.631	8.621 – 10.639	< 0.0001

Abbreviation: ref, reference; IRR, incidence rate ratio; CI, confidence interval

Table S6. Adjusted Association between Disclosure of Indemnity-Type Private Health Insurance Enrollment and Outpatient Services Utilization at Clinics

	Number of outpatient visits			Average out-of-pocket cost per visit		
	IRR	95% CI	p	Coefficient	95% CI	p
Disclosed insurance enrollment (ref = no)	1.188	1.096-1.287	< 0.0001	0.189	0.062 – 0.314	0.0033
Sex (ref = female)	0.928	0.857-1.005	0.0696	-0.141	-0.264 – -0.018	0.0238
Age group (ref = 20-34 years)						
35-64 years	1.079	0.961-1.212	0.1941	0.011	-0.168 – 0.190	0.9046
≥ 65 years	1.219	1.061-1.400	0.0050	-0.325	-0.540 – -0.109	0.0031
Marital status (ref = married)						
Separated/divorced	1.039	0.939-1.149	0.4530	-0.124	-0.283 – 0.036	0.1288
Never married	0.987	0.877-1.112	0.8400	-0.192	-0.375 – -0.008	0.0401
Educational attainment (ref = elementary school)						
Middle school	0.872	0.781-0.974	0.0161	0.092	-0.083 – 0.267	0.3021
High school	0.824	0.745-0.911	< 0.0001	0.028	-0.132 – 0.188	0.7316
College or higher	0.733	0.656-0.818	< 0.0001	0.106	-0.068 – 0.279	0.2349
Residence (ref = other)	1.012	0.956-1.072	0.6620	0.196	0.108 – 0.285	< 0.0001
Economic activity (ref = no)	0.861	0.767-0.966	0.0111	0.011	-0.339 – 0.016	0.0759
Annual household income (log)	1.000	0.985-1.015	0.9577	0.957	0.018 – 0.064	0.0003
Single-person household (ref = no)	1.039	0.936-1.153	0.4711	0.471	-0.142 – 0.184	0.8045
Disability (ref = no)	1.478	1.284-1.702	< 0.0001	0.000	-0.659 – -0.212	0.0001
Number of chronic diseases (ref = none)						
1	1.390	1.294-1.492	< 0.0001	0.055	-0.156 – 0.060	0.3743
≥ 2	2.043	1.899-2.198	< 0.0001	0.057	-0.149 – 0.076	0.5265
Cancer (ref=no)	0.860	0.761-0.972	0.0166	0.016	-0.179 – 0.205	0.8942
Cardio-cerebrovascular disease (ref = no)	0.899	0.795-1.017	0.0933	0.093	-0.346 – 0.042	0.1260
Unmet medical need (ref = no)	0.945	0.867-1.030	0.2000	0.200	-0.093 – 0.170	0.5718
Self-rated health (ref = poor)						
Good	0.710	0.649-0.775	< 0.0001	0.071	-0.001 – 0.277	0.0533
Fair	0.796	0.732-0.864	< 0.0001	0.067	-0.029 – 0.233	0.1283
Regular exercise (ref = no)	1.024	0.972-1.080	0.3633	0.363	-0.058 – 0.104	0.5771
Smoking status (ref = no)	0.932	0.861-1.008	0.0811	0.081	-0.222 – 0.019	0.1006
Alcohol consumption (ref = no)	0.963	0.899-1.031	0.2822	0.282	-0.062 – 0.153	0.4103
Insurance claim (ref = no)	1.288	1.221-1.359	< 0.0001	0.000	0.359 – 0.526	< 0.0001
Monthly insurance premium (log)	1.028	0.993-1.064	0.1077	0.107	-0.048 – 0.056	0.8755
Intercept	9.688	6.434-14.587	< 0.0001	0.000	8.466 – 9.737	< 0.0001

Abbreviation: ref, reference; IRR, incidence rate ratio; CI, confidence interval