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Gender Differences in Outpatient Utilization: A Pooled Analysis of Data from the Korea Health Panel

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Abstract

Background: This study aims to set itself apart from prior research by elucidating gender differences in outpatient service utilization among adults aged 20 years or older, using nationally representative survey data.

Methods: Data from the Korea Health Panel (KHP) collected between 2010 and 2011 were used. In this study, all KHP participants who accessed outpatient service between 2010 and 2011 were included; 13,525 participants used outpatient services in 2010 and 12,991 in 2011. To analyze factors related to outpatient utilization, regression analysis was performed using generalized estimating equations.

Results: The use frequency of outpatient service was significantly associated with age, education level, marital status, economic activity, health insurance status, drinking, presence of chronic disease, and self-rated health status in both sexes ($p < 0.05$). Annual household income significantly affected outpatient utilization only among women.

Conclusions: Unlike males, females with higher household incomes used outpatient services more. This suggests that females are at greater risk of medical inequality based on economic circumstances.

Keywords: gender differences, medical service utilization, outpatient, Korea, unmet medical needs

Introduction

WOMEN NOT ONLY HAVE DIFFERENT anatomic functions from men but also different health behaviors, social characteristics, and psychological traits. These distinctions lead to differences in health status and collectively affect the quality of life of women over time.^{1,2} Recently, there has been strong research interest in exploring these gender differences, and in over recent years, numerous studies have compared the effect of gender differences on various topics, including chronic disease incidence rates,^{3–8} health status,^{9–12} and use of medical services.^{9–14}

For medical service use, most prior research has found that women rely on medical services more than men, which can be attributed to issues in both health status and social structures.^{15,16} In regard to social structures, women attempt to use medical services more to fulfill the void of social components in their lives, including lack of social relationships.^{17–19} Furthermore, as women have stronger

relationships with their physicians and greater needs, it is thought that these factors contribute to women's greater use of medical services.¹

Because factors that affected use of medical services include age and stage of life, most studies that explore gender differences in medical service access have been carried out within specific age groups. For example, one study assessed gender differences in medical use among childbearing-aged individuals in their 30 s and 40 s, and another assessed these differences only among older adults;^{20–24} however, these studies are limited by the age of their population, and cannot speak to gender differences in a wider age range. Furthermore, these studies are also limited in that they explored gender differences in medical service utilization in both outpatient and inpatient settings, without controlling for the substantial differences between the two settings.

Thus, this study aims to set itself apart from prior research by elucidating gender differences in outpatient service utilization. We also attempt to explore comprehensively the

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contribution of previously studied factors, including health status, sociodemographic characteristics, and economic traits.

Materials and Methods

Data and subjects

In this study, data from the Korea Health Panel (KHP), co-operated by the Korea Institute for Health and Social Affairs and National Health Insurance Service, collected between 2010 and 2011 were used. The KHP commenced data collection in 2008 with the purpose of gathering comprehensive data about factors that affect medical service usage patterns, payment status, and expenditures. The KHP used the “90%-Complete Household Statistics” of the 2005 Population and Housing Census as its sampling frame, to ensure it is representative of the Korean population, then, a two-stage cluster-stratified sampling method to select a representative household, and then investigated all members of selected households.

In addition to the interviews conducted by researchers who directly visited the site to ask questions and record the answers, which formed the basis of the findings, the KHP also asked participants to maintain a record of their medical uses and expenditures to minimize recall errors and enhance the validity of the data. The KHP contains questions regarding members of the household, the number of individuals in each household, socioeconomic traits, and details about medical service utilization, healthcare expenditures, and health insurance status. From these, factors that directly and indirectly affect healthcare use can be examined, making KHP an appropriate source of data for this study.

KHP started collecting data in 2008, with 7866 households selected as representative households. In the first and second half of the year 2010, 6433 (81.8% of the original representative households) and 6284 (79.9% of the original representative households) households responded, respectively, comprising a total of 18,129 individuals. In 2011, 6044 households comprising 18,071 individuals responded, a response rate of 76.8% of the original representative households and 96.2% from the previous year. In this study, all participants were adults aged 20 years or older, 13,525 from 2010 and 12,991 from 2011.

This study was reviewed and approved by the Institutional Review Board of the Catholic University of Korea with a waiver for informed consent (MC15EISI0009). Study subjects had no identified risks because the survey data were obtained from a public database (www.khp.re.kr:444) and analyzed anonymously.

Variables

In this study, variables likely relevant to our interests, as indicated by prior literature, were selected. Because many previous studies that focused on medical service utilization analyzed the frequency of outpatient service visits,^{25–28} it was assigned as a dependent variable in our study as well. The frequency of outpatient service use was defined as the frequency of visiting common outpatient facilities, including general hospitals, clinics, dental clinics, traditional Korean medicine hospitals and clinics, and public health centers, for reasons such as treatment for diseases and/or accidental injuries and preventative medicine. Medical service utilization data are usually known as right-skewed distribution, so data were an-

alyzed on a log-transformed scale. To fit a logarithmic scale, 1 was added to the frequency of reported outpatient service use.²⁹

To better understand the factors that affect medical service use, we broadly categorized independent variables as socio-demographic factors, economic factors, and health-related factors. For sociodemographic factors, sex, age, residency region, education level, and marital status were considered. All subjects were adults except younger than 20 years, who have a different pattern of medical service utilization and difficult to reflect one's will. Age was divided into 20–34, 35–49, 50–64, and 65 and above. Marital status was categorized as “currently married,” “separated, widowed, or divorced,” or “unmarried.” Education level was divided into “less than elementary school,” “(junior) high school graduate,” or “beyond college graduate.” Residency regions were categorized into capital (Seoul), urban (administrative divisions of a metropolitan city: Incheon, Busan, Daejeon, Daegu, Kwangju, or Ulsan), and rural (outside of the administrative divisions of a metropolitan city).

For economic factors, annual household income, participation in economic activities, and health insurance status were assessed. To account for the fact that absolute annual household income increases with the number of household members, household production was measured using the square root equivalence scale.³⁰ Participants were asked to endorse whether they participated in economic activities, with a yes or no response. Someone who is economically active, can be an employee (in a full or part time job,) an employer or a self-employed (for example, private business owners, freelancers, owners of shops and restaurants), an unpaid family worker (helping out a family member or relative's business for an average of 18 hours a week without getting paid,) or someone who used to work, but is currently out of work temporarily. Health insurance status was categorized into three groups, Medical Aid group, regional National Health Insurance (NHI) group, or NHI provided by an employer or government group.

For health-related factors, smoking status, drinking status, chronic disease, and self-rated health status were considered. Smoking status was defined as “never smoked,” “quit smoking (former smoker),” and “currently smoking.” Drinking status was divided into “nondrinker,” “drink less than once a month,” “drink twice or thrice monthly,” and “drink twice or thrice weekly.” Chronic disease was defined as the presence of specific symptoms for more than 3 months, and required a physician's diagnosis. For the self-rated health status, a visual analogue scale (VAS) under the EuroQol-5 Dimension (EQ-5D), which assesses health-related quality of life, was used. The EQ-VAS asks subjects to rate their health status, with zero as the worst and 100 as the best health status.

Statistical analysis

To understand the general characteristics and distribution of subjects, descriptive statistics were reported for groups divided by the year data were collected. The frequency, percentage, and mean and standard deviation of the sample were calculated. A series of regression analysis was conducted. In the first step, we analyzed a model with various factors, including sex, and then, analysis was conducted by each sex separately to find the factors related to outpatient utilization. Regression analyses were performed using generalized estimating equations to assess the relationship

between the dependent and independent variables. All statistics were performed using Stata 14.1 (Statacorp., College Station, TX) and degree of significance was defined as $<5\%$.

Results

Table 1 reports the major traits of the study subjects based on the KHP year. In 2010, 6466 respondents were males and 7059 were females, with an average outpatient service use of 11.2 and 17.5 visits for the male and female, respectively. In 2011, 6199 and 6792 respondents were males and females, respectively, with an average outpatient service use of male as 22.6 visits and female as 25.8 visits. Based on our analyses assessing the differences between the variables in 2010 and 2011, there were significant differences ($p < 0.05$) in age, health insurance status, drinking status, presence of chronic disease, EQ-VAS, and frequency of outpatient service use between the 2 years (Table 1).

When factors related to outpatient utilization, including sex, were examined, it significantly varied based on survey

year, sex, age, education level, residency regions, marital status, annual household income, economic activity, health insurance status, smoking, drinking, presence of chronic disease, and self-rated health status ($p < 0.05$). Outpatient service in 2011 was more than 2010. Women used outpatient services more often than men. Compared to those aged 20–34, those aged 35–49 used outpatient services less frequently, while those aged 50–64 and those aged 65 or older used them more often than those aged 20–34. When compared to less than elementary school, subjects with higher education levels used outpatient services less frequently. Compared to those living in Seoul, participants living in rural areas accessed outpatient services more frequently. Unmarried and separated, widowed, or divorced subjects were found to use outpatient services less than those who were married.

Utilization of outpatient service increased with higher annual household income, and those with no economic activity accessed outpatient services more than economically active participants. Regarding health insurance status, those with NHI provided by their employers or the government and

TABLE 1. CHARACTERISTICS OF THE STUDY POPULATION

		2010 (n=13,525)				2011 (n=12,991)				
		Male		Female		Male		Female		
Variable	Subcategory	N	%	N	%	N	%	N	%	p-value
Sex		6466	47.8	7059	52.2	6199	47.7	6792	52.3	0.883
Age	20–34	1384	21.4	1481	21.0	1309	21.1	1379	20.3	0.009
	35–49	2228	34.5	2169	30.7	2041	32.9	2009	29.6	
	50–64	1587	24.5	1793	25.4	1544	24.9	1742	25.7	
	65+	1267	19.6	1616	22.9	1305	21.1	1662	24.5	
Education level	Less than elementary	888	13.7	2002	28.4	836	13.5	1941	28.6	0.807
	(junior) High school	2790	43.2	2941	41.7	2656	42.9	2802	41.3	
	College or higher	2788	43.1	2116	30.0	2707	43.7	2049	30.2	
Residency region	Capital	977	15.1	1054	14.9	919	14.8	1006	14.8	0.898
	Urban	1907	29.5	2056	29.1	1825	29.4	1984	29.2	
	Rural	3582	55.4	3949	55.9	3455	55.7	3802	56.0	
Marital status	Married	4737	73.3	4733	67.1	4516	72.9	4511	66.4	0.487
	Separated/ widowed/ divorced	304	4.7	1259	17.8	308	5.0	1252	18.4	
	Unmarried	1425	22.0	1067	15.1	1375	22.2	1029	15.2	
Household income (USD) ^a	(mean, SD)	19,988	14,731	19,291	15,160	20,402	12,698	19,454	12,812	0.100
Economic activities	Yes	4654	72.0	3336	47.3	4432	71.5	3228	47.5	0.853
	No	1812	28.0	3723	52.7	1767	28.5	3564	52.5	
Medical insurance	NHI (labor)	4112	63.6	4525	64.1	4047	65.3	4501	66.3	0.000
	NHI (regional)	2037	31.5	2148	30.4	1872	30.2	1923	28.3	
	Medical Aid	247	3.8	342	4.8	236	3.8	344	5.1	
Smoking status	Current smoker	2798	43.3	195	2.8	2608	42.1	178	2.6	0.417
	Former smoker	1922	29.7	133	1.9	1897	30.6	127	1.9	
	Never smoked	1278	19.8	6536	92.6	1275	20.6	6294	92.7	
Drinking status	Never drink	1554	24.0	4102	58.1	1540	24.8	4025	59.3	0.007
	Once per month	519	8.0	902	12.8	524	8.5	883	13.0	
	2–3 times per month	915	14.2	873	12.4	815	13.2	713	10.5	
	2–3 times per week	3011	46.6	988	14.0	2901	46.8	978	14.4	
Chronic diseases	Yes	3249	50.3	4441	62.9	3355	54.1	4486	66.1	0.000
	No	3217	49.8	2618	37.1	2844	45.9	2306	34.0	
EQ-VAS	(mean, SD)	73.9	14.7	71.1	15.5	71.8	15.3	69.0	16.1	0.000
Outpatient medical utilization	(mean, SD)	11.2	20.7	17.5	23.9	12.4	22.6	19.2	25.8	0.000

Values are presented as n (%), unless otherwise indicated.

^aHousehold production measured using the square root equivalence scale: gross household income/ $(\sqrt{\text{number of family members}})$. EQ-VAS, EuroQol-visual analogue scale; NHI, National Health Insurance; SD, standard deviation.

TABLE 2. FACTORS ASSOCIATED WITH FREQUENCY OF OUTPATIENT MEDICAL SERVICE UTILIZATION

<i>Variable</i>	<i>Subcategory</i>	<i>Coefficient^a</i>	<i>Robust SE</i>	<i>p-value</i>
Survey year	2010		ref	
	2011	0.019	0.009	0.030
Gender	Male		ref	
	Female	0.313	0.024	0.000
Age	20–34		ref	
	35–49	–0.124	0.027	0.000
	50–64	0.234	0.032	0.000
	65+	0.584	0.037	0.000
Education level	Less than elementary		ref	
	(junior) High school	–0.129	0.025	0.000
	College or higher	–0.229	0.030	0.000
Residency region	Capital		ref	
	Urban	0.006	0.024	0.818
	Rural	0.057	0.022	0.010
Marital status	Married		ref	
	Separated/widowed/divorced	–0.074	0.027	0.006
	Unmarried	–0.508	0.030	0.000
Household income (USD)	(min = 0; max = 265,497)	1.18E-06	5.17E-07	0.022
Economic activities	Yes		ref	
	No	0.090	0.015	0.000
Medical insurance	NHI (labor)		ref	
	NHI (regional)	–0.072	0.015	0.000
	Medical Aid	0.416	0.040	0.000
Smoking status	Current smoker		ref	
	Former smoker	0.257	0.024	0.000
	Never smoked	0.161	0.025	0.000
Drinking status	Never drink		ref	
	Once per month	–0.026	0.020	0.199
	2–3 times per month	–0.036	0.020	0.076
	2–3 times per week	–0.084	0.018	0.000
Chronic diseases	Yes		ref	
	No	–0.913	0.019	0.000
EQ-VAS	(min = 0; max = 100)	–0.004	0.000	0.000

^aThe coefficient was determined by the generalized estimating equation method using the log-transformed values as appropriate. SE, standard error; ref, reference.

those with Medical Aid visited the outpatient services more frequently than those with regional NHI. In comparison to current smokers, nonsmokers and prior smokers used the outpatient services more frequently, in that order; furthermore, there was a reduction in outpatient utilization with subjects who drink twice to thrice per week compared to nondrinkers. Those with chronic diseases and those who subjectively rated their health as worse used the outpatient services more frequently (Table 2).

When the factors contributing to outpatient utilization were further analyzed based on sex, it was significantly associated with age, education level, marital status, economic activity, health insurance status, drinking, presence of chronic disease, and self-rated health status in both sexes ($p < 0.05$). Annual household income significantly affected outpatient utilization only among women, and smoking status only among men. In the case of age, for females, those 35–49 years of age accessed outpatient services less frequently compared to those 20–34 years of age, although women 50–64 years of age and older than 65 years of age accessed outpatient medical services more often. For men, there was a significantly greater use of outpatient services among those 50–64 years of age and those 65

and above. While less frequent outpatient service use was seen among those with higher education level in both sexes, the degree to which education level affected outpatient utilization was more pronounced among females. For both sexes, unmarried subjects accessed outpatient services less frequently than married subjects, and this difference was greater among females.

As stated above, annual household income was found to affect outpatient utilization only among females, with higher income associated with more frequent visits. Among both sexes, those not participating in economic activities used outpatient services more frequently than did active participants. Compared to those with regional NHI, both males and females with Medical Aid used outpatient services more often; subjects with NHI provided by their employers or government showed a similar pattern, but to a lesser degree. In both sex groups, greater frequency of drinking was found to be related to reduced use of outpatient services. Smoking status was found to affect outpatient utilization only among males, with nonsmokers and former smokers using outpatient services more often than current smokers. Regardless of sex, the presence of chronic disease and a poorer self-rated health

TABLE 3. FACTORS ASSOCIATED WITH OUTPATIENT MEDICAL UTILIZATION BY GENDER

Variable	Subcategory	Female			Male		
		Coefficient ^a	Robust SE	p-value	Coefficient ^a	Robust SE	p-value
Survey year	2010		ref			ref	
	2011	0.021	0.011	0.071	0.017	0.014	0.221
Age	20–34		ref			ref	
	35–49	–0.181	0.037	0.000	–0.031	0.039	0.428
	50–64	0.145	0.043	0.001	0.361	0.047	0.000
	65+	0.423	0.051	0.000	0.754	0.054	0.000
Education level	Less than elementary		ref			ref	
	(junior) High school	–0.185	0.032	0.000	–0.120	0.039	0.002
	College or higher	–0.256	0.042	0.000	–0.229	0.044	0.000
Residency region	Capital		ref			ref	
	Urban	0.003	0.032	0.935	0.004	0.036	0.917
	Rural	0.040	0.029	0.174	0.068	0.033	0.041
Marital status	Married		ref			ref	
	Separated/widowed/divorced	–0.008	0.031	0.789	–0.129	0.060	0.033
	Unmarried	–0.649	0.044	0.000	–0.364	0.040	0.000
Household income (USD)	(min = 0; max = 265,497)	1.59E-06	6.91E-07	0.021	8.69E-07	7.67E-07	0.257
Economic activities	Yes		ref			ref	
	No	0.062	0.019	0.001	0.114	0.028	0.000
Medical insurance	NHI (labor)		ref			ref	
	NHI (regional)	–0.081	0.020	0.000	–0.066	0.023	0.004
	Medical Aid	0.389	0.050	0.000	0.427	0.066	0.000
Smoking status	Current smoker		ref			ref	
	Former smoker	0.148	0.091	0.102	0.233	0.026	0.000
	Never smoked	0.107	0.062	0.087	0.155	0.028	0.000
Drinking status	Never drink		ref			ref	
	Once per month	–0.025	0.024	0.307	–0.037	0.036	0.310
	2–3 times per month	–0.052	0.026	0.048	–0.023	0.032	0.463
	2–3 times per week	–0.071	0.026	0.006	–0.090	0.027	0.001
Chronic diseases	Yes		ref			ref	
	No	–0.809	0.026	0.000	–1.027	0.028	0.000
EQ-VAS	(min = 0; max = 100)	–0.004	0.000	0.000	–0.004	0.001	0.000

^aThe coefficient was determined by the estimating equation method using the log-transformed values as appropriate.

status were found to be associated with increased outpatient utilization (Table 3).

Discussion

In this study, we analyzed KHP data from 2010 and 2011 to explore the sociodemographic, economic, and health-related factors associated with frequency of outpatient utilization, depending on sex. We found that women used outpatient services more frequently than men, which is consistent with prior findings.^{24,31} This finding has been explained by the fact that women use health services for pregnancies and childbirth, need regular gynecologic health checks,^{1,32} and overall have worse health status relative to men, as women experience greater incidence rates of diseases.³³ It is generally known that women are more likely to be attentive to their health conditions and to seek medical care for their conditions.^{22,34,35} In contrast, men tend to be less likely than women to take care of their condition and see physicians because of their behavioral differences such as risk-taking behavior, underreporting of health-related problems, and delayed find of treatment solution.^{36–38}

However, studies by Daniel found that although women report a greater desire for medical service use, their actual use

is less, suggesting that there are limiting factors beyond biological aspects, such as services being less accessible due to distance and insufficient time, as well as social and educational status affecting use of medical services.³⁹ The fact that these socioeconomic factors are significant influences on medical service use has been shown by many prior studies.^{15,40} In this study, we also found that various socioeconomic factors, including education level, marital status, and household income, are related to outpatient service use.

For both sexes, variables that affect outpatient utilization included age, education level, marital status, economic activity, health insurance status, drinking, presence of chronic disease, and self-rated health status, with similar patterns observed in both males and females. Most of these individual factors that were found to affect outpatient utilization were consistent with those found in prior studies.^{15,41–44}

In this study, one factor that showed gender differences in its effect on outpatient utilization was annual household income. The previous studies showed that income level influenced healthcare utilization inconsistently.^{45–49} It is common for high-income countries that, lower-income group consume health services more often as a benefit of their social security system. It means lower health status and so a greater need for

healthcare. On the other hand, in low-income countries, lower income groups suffer the lack of health insurance and purchasing ability that their utilization of health services is less than the need for healthcare.⁵⁰ In this study, annual household income was a significant variable only among females, with higher income associated with greater outpatient utilization. With a higher income, not only are women found to manage their health more successfully but they also use health services to gain better health.⁵¹ In contrast, women in poverty face greater restrictions to medical service use than males; in many countries, females with lower socioeconomic status have greater restrictions to accessing medical care.^{51–53} This demonstrates that there is a greater disparity in the extent to which economic factors affect health service access among females relative to males.⁵⁴

Generally, women spend more time with childrearing and housework, which may act as a hindrance to seeking medical services and are greatly affected by economic factors, including income.⁵⁵ In contrast, income levels among men did not affect access to outpatient services, similar to findings by Daniel, which found that the effect of income level on access to medical care was greater among females than males.³⁹ We attribute these findings to the fact that males require less medical expenditure than females, and that males have higher average income than females.⁵⁶

In addition to annual household income, similar differences were shown depending on one's health insurance type. In fact, the differences from health insurance types were starker than those shown between sexes. Medical Aid recipients clearly showed higher outpatient utilization than (labor or regional) NHI beneficiaries. Medical Aid recipients are of low socioeconomic status, a status in which highest prevalence and incidence of acute and chronic diseases are witnessed in every society. In Korea, the bottom three to five percentage of the income bracket receives Medical Aid, while the rest of the population is covered by the NHI.⁵⁷ There are two reasons for the higher outpatient utilization among Medical Aid recipients. First is an overuse of healthcare services, as Medical Aid is free or much cheaper than health insurance. Second, healthcare providers may have given excessive treatment, as Medical Aid is reimbursed based on fee-for-service.⁵⁸

After adjusting for annual household income, respondents who do not participate in economic activities showed significantly higher outpatient utilization. This can be explained that they were relatively older and have lower educational level. When comparing urban and rural residence, outpatient utilization was clearly higher among males residing in the rural area. This could be interpreted by the fact that the rural population is relatively "older" as a result of Korea's rapid urbanization, and has lower educational background than the urban population. Due to such sociodemographic characteristics, the rural population's need for healthcare is relatively greater than that compared with the urban population, which explains the higher use of medical services in such regions.⁵⁹ Given that the gap between the rural and the urban population's access to healthcare is small in Korea, the role of sociodemographic factors may have been underlined, rather than being offset by the gap in access to healthcare.

In both males and females, chronic diseases were positively associated with outpatient visits. Looking at the distribution of patients with chronic diseases, males made more frequent outpatient visits than females in both research years,

although the percentage of patients with chronic diseases among males was 10% lower compared with females. Females are not only relatively lower in socioeconomic status but they also carry a heavy responsibility in domestic labor, childrearing, and elderly care, which serves as great barriers to making the time-consuming visits to hospitals.⁶⁰ Although females do have a strong need for healthcare, there seems to be some restrictions in this need being translated into an actual visit to the hospital. The range of chronic diseases at the KHP includes all of the following chronic diseases defined in the Ministry of Health and Welfare's Notification 2002–40, June 1st, 2002: malignant neoplasm, diabetes, thyroid disease, liver disease, hypertensive disease, heart disease, cerebrovascular disease, respiratory disease, tuberculosis, behavioral and mental disorder, renal failure, and nervous system diseases. This list includes a broad range of chronic diseases because the definition of chronic disease was based on an open survey of diseases that lasted more than 3 months. This is why the percentage of people with chronic diseases is relatively high (57% in 2010 and 60% in 2011.)

Through this research, we confirmed that women's use of medical services can be affected more significantly by economic status than men's use. It is also possible that aspects of Korean culture contribute to this finding. In a largely patriarchal society, like Korea, females, especially older females, take on larger roles and feel greater responsibility in taking care of their partner and children. With a lower social status, resources for healthcare can be limited or placed as lower priority, which can be exacerbated by greater income disparity.

This study could not follow changes over time, as limitations in gathering information about factors relevant to our study restricted our use of the KHP data to only 2 select years. We cannot entirely rule out the possibility of such problems remaining, despite the extensive efforts made by the KHP to reduce selection bias and to ensure representativeness of population in sampling and research. Underrepresented groups, such as those in the low-income class, might have had a lower chance of being interviewed or selected. This can be a critical limitation. In addition, other potential factors that could be associated with medical service utilization, such as pregnancies and childbirth checks, interest in health and health behaviors, and physical activity, were not assessed. Detailed information on the basis of self-rated health status was insufficient. Thus, some focus group sessions should have been conducted.

However, despite these limitations, our study is important in that we differentiated and analyzed the factors associated with healthcare access based on sex in a large representative sample of Korean adult population of all ages, with the added strength that by using data from 2 consecutive years, we were able to both ensure validity of our findings over time, as well as analyze differences between the years.

Conclusions

In this study analyzing gender differences in outpatient utilization, we found that most factors do not vary between sexes, but socioeconomic factors were associated more with female than male. Unlike males, females with higher household incomes accessed outpatient services more frequently. This suggests that females are at a greater risk of medical inequality based on economic difficulties. As females with

economic hardship are more likely to be limited in their access to medical care, there is a greater need for special consideration for these individuals. Providing targeted support in medical bills or medical services can be an effective way to reduce inequality in healthcare. In a follow-up study, further research or analysis is required to the extent to which medical needs are unmet for females of varying economic status.

Author Disclosure Statement

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