Health care utilization and costs among medical-aid enrollees, the poor not enrolled in medical-aid, and the near poor in South Korea

Jae Woo Choi1,2, Eun-Cheol Park2,3, Sung-Youn Chun1,2, Kyu-Tae Han1,2, Euna Han4 and Tae Hyun Kim2,5*

Abstract

Background: Although government has implemented medical-aid policy that provides assistance to the poor with almost free medical services, there are low-income people who do not receive necessary medical services in Korea. The aim of this study is to highlight the characteristics of Medical-Aid enrollees, the poor not enrolled in Medical-Aid, and the near poor and their utilization and costs for health care.

Methods: This study draws on the 2012 Korea Welfare Panel Study (KOWEPS), a nationally representative dataset. We divided people with income less than 120% of the minimum cost of living (MCL) into three groups (n = 2,784): the poor enrolled in Medical-Aid, the poor not enrolled in Medical-Aid (at or below 100% of MCL), and the near poor (100–120% of MCL). Using a cross-sectional design, this study provides an overview of health care utilization and costs of these three groups.

Results: The findings of the study suggest that significantly lower health care utilization was observed for the poor not enrolled in Medical-Aid compared to those enrolled in Medical-Aid. On the other hand, two groups (the poor not enrolled in Medical-Aid, the near poor) had higher health care costs, percentage of medical expenses to income compared to Medical-Aid.

Conclusion: Given the particularly low rate of the population enrolled in Medical-Aid, similarly economically vulnerable groups are more likely to face barriers to needed health services. Meeting the health needs of these groups is an important consideration.

Keywords: Health care utilization, Medical cost, Economically vulnerable groups

Introduction

The public healthcare system in Korea has two components, National Health Insurance and Medical-Aid. The national health insurance system, which is managed comprehensively in the form of social insurance, is funded by contributions from beneficiaries and provides coverage to all citizens [1]. The other component – Medical-Aid – is a public medical assistance program targeted at poor individuals who are recipients of the National Basic Livelihood Security System in Korea as a part of the social welfare programs [2, 3]. As of 2012, Medical-Aid had 1,507,044 beneficiaries, representing 3.0% of the country’s population [4]. The Korean Medical-Aid program is comparable to the US Medicaid program, which was established in 1965, and provided health care services to approximately 58 million people in 2011, including low-income families, seniors, disabled, and pregnant women [5].

Efforts have been made to strengthen the benefit of health care for low-income people in South Korea. Korea’s economic crisis, which occurred in 1997, affected a number of low-income people and limited medical
utilization by dropping access to primary care. To solve this problem, Government implemented the Medical-Aid expansion policy in order to increase access to primary care. As a result, the level of preventable hospitalization of those newly enrolled by Medical-Aid decreased significantly compared to those covered by the National Health Insurance [6]. Subsequently, government continuously expanded Medical-Aid subjects in an effort to protect and promote health of those with low-income [7]. In addition, the Ministry of Health and Welfare introduced Medical-Aid for the near poor in 2004; the purpose of this policy was to extend Medical-Aid to the population whose income is more than 100% but less than 120% of the minimum cost of living (MCL), and thus previously had been left in a blind spot [8]. Medical-Aid increased by 15% in 2005 due to policy improvement and, since then, the number of beneficiaries has shown a slight increase. However, patients with a rare and intractable disorder, chronic disease, and children under the age of 18 in Medical-Aid for the near poor were included in National Health Insurance from 2008 after the policy implementation and eligibility transition resulted in a reduction of the number of recipients from 1,852,714 in 2007–1,507,044 in 2012 [9, 4]. In addition, a significant number of low-income persons did not receive Medical-Aid eligibility, even though they are poorer than the near poor. Although their income level is below 100% of the poverty-line, they are excluded when their property is more than criteria or income property of their support obligor is over a certain level [8]. Approximately 10% of the total population of South Korea is below 120% of poverty level; of these, 3.16% are Medical-Aid beneficiaries, and the others are in a blind spot of health care [10].

Even if all Koreans are covered with NHI or Medical-Aid, public expenditure as a proportion of total health expenditure is only 56 %, which is lower than the OECD average (72 %), and is the fourth lowest OECD level of spending after Chile (46 %), USA (48 %), and Mexico (51 %) in 2013 [11]. Previous studies have reported an association of low-income with a greater likelihood of reporting an unmet need for health care [12]. However, no empirical research to elucidate health care utilization and costs among low-income groups divided according to specific criteria has been conducted. Therefore, this study examines general characteristics by dividing Medical-Aid enrollees, the poor not enrolled in Medical-Aid, and the near poor, respectively. In addition, we compare out-of-pocket (OOP) payments, utilization, and the financial burden of health care services among them.

Methods
Data
This study used the 2012 Korea Welfare Panel Study (KOWEPS) of Korea, representative national households, conducted by the Korea Institute for Health and Social Affairs along with the Seoul National University Social Welfare Research Center. KOWEPS was collected using an interview research method where the interviewer questioned and recorded the answers of the interviewees. A stratified cluster systematic method was used in selection of the sample of households for the research. This survey was conducted with the goal of understanding the living conditions and welfare demands of the population group, and to evaluate the effectiveness of policies to utilize information of policies. These data are appropriate for analysis of the characteristics of low-income persons, such as Medical-Aid beneficiaries, because more than half of sampling consists of low-income households below 60% of median income and the data include various questionnaires which can be used for in-depth examination of utilization of health care. In addition, results of analysis can be easily generalized because KOWEPS has conducted a survey of all people including those in rural areas.

Study sample
The total sample size of KOWEPS was 17,984 individuals (9,800 households) in 2012. We classified adults under 120% of minimum cost of living, which is measured by the countable income according to three groups (n = 2,784). The first group consisted of enrollees in Medical-Aid which did not exceed 100% of poverty (n = 1,036). The second group included the poor not enrolled in Medical-Aid which did not exceed 100% of poverty (n = 1,325). The third group consisted of adults who were the near poor, ranging from 100–120 % of minimum cost of living (n = 523).

Dependent variable
Three primary dependent variables were examined: out-of-pocket costs, medical utilization, and financial burden of health care services. Out-of-pocket costs were defined as annual average direct payment for hospitalizations, outpatient visits, dental treatment, surgery, prescription drugs, nursing care, and health examination. Medical utilization was measured by the number of outpatient visits and length of stay in hospital per person during a year. Finally, we examined the financial burden of health care services by estimation of the proportion of medical expenses to disposable income [13].

Explanatory variables
In this study we used several covariates to control for demographic and socioeconomic characteristics and health status. Demographic characteristics included sex, age, marital status, and socioeconomic factors including education and employment status. As a proxy for health status, we used self-rated health, depression, disability,
and chronic disease to control for the participant’s health condition and health behavior, which can affect health care utilization.

Statistical analysis
Data were analyzed using the SAS 9.2 program (SAS Institute, Cary, NC, USA). General characteristics were analyzed using descriptive statistics and comparison between three groups using One-way ANOVA. We analyzed amount of utilization (outpatient visits and length of stay) using negative binomial regression because they are count variables. OOP spending did not show normal distribution, log transformation was performed for the data analyses. Multiple regression method was used to examine the association between explanatory variables and the dependent variables. For all statistical tests, the level of significance was 0.05.

Definitions
Minimum cost of living
Minimum cost of living is minimum expense to sustain one’s life. 2012 minimum monthly cost of living presented by the government was 488 USD (United States Dollars) per single-person household, 831 USD per two-person households, 1,075 USD per three-person households, and 1,319 USD per four-person households. Minimum cost of living is set by rate of increase in minimum cost of living. The evaluated income of property, is used in selection of Medical-Aid enrollees, the near poor compared to minimum cost of living. The evaluated income subtracted from ordinary income to cash benefit is provided by the National Basic Living Security Act and various government subsidies. The converted income of property is the sum of general property, financial property, and converted income for car [15].

Countable income
Countable income, that is the sum of evaluated income and converted income of property, is used in selection of Medical-Aid enrollees or the near poor. Countable income of property is defined as the sum of general property, financial property, and property derived from ordinary income to cash benefit. Countable income is used in selection of Medical-Aid enrollees, the near poor compared to minimum cost of living. The evaluated income subtracted from ordinary income to cash benefit is provided by the National Basic Living Security Act and various government subsidies. The converted income of property is the sum of general property, financial property, and converted income for car [15].

Results
Baseline characteristics
The demographic, socioeconomic, and health related characteristics of the three groups are shown in Table 1. Compared to Medical-Aid enrollees, the other groups included a higher percentage of persons 65 years and over (48.4% (medical-aid enrollees) versus 81.7% (the poor not enrolled in medical-aid) versus 74.5% (the near poor), p < .0001). Medical-Aid enrollees tended to have more education (11.0% versus 5.8% versus 8.3% with above university, p < .0001), lower married status (30.5% versus 49.2% versus 48.7%, p < .0001), and more disability (33.1% versus 17.1% versus 13.2%, p < .0001). Compared to the near poor, ranging from 100–120 % of minimum cost of living, the other groups (medical-aid enrollees, the poor not enrolled in medical-aid) had a lower percentage of people with inactive/unemployed status (61.5% versus 75.7% versus 74.0%, p < .0001), better self-rated health (58.2% versus 45.2% versus 49.2%, p < .0001), and a lower percentage had depression (32.6% versus 40.8% versus 40.1%, p < .0094). Compared to the other groups, the second group (the poor not enrolled in medical-aid) had more arthritis (26.3% versus 19.9% versus 21.3%, p < .0008), however, Medical-Aid enrollees had less hypertension with chronic conditions than the other two groups (16.9% versus 22.5% (the poor not enrolled in medical-aid) versus 23.6% (the near poor), p < .0009). No statistically significant differences with regard to sex, presence of chronic disease, and a few chronic conditions (cancer, gastritis, diabetes mellitus, stroke, myocardial infarction) were observed between the three groups.

Table 3 shows multiple regression results after adjusting for socio-demographic characteristics (e.g., age and education) and health status (e.g., self-rated health, chronic disease). The results indicate that compared to the Medical Aid enrollees, only the poor not enrolled in Medical Aid had statistically significantly lower number of outpatient visits and length of stay, but both the poor not enrolled in Medical Aid and the near poor had higher OOP spending as well as percentage of medical expenses to income.

Discussion
We performed an analysis by dividing people into three groups, Medical-Aid enrollees, the poor not enrolled in Medical-Aid, and the near poor, and supposed that OOP payment, medical utilization, and financial burden of health care services are significantly different among them. Medical utilization was significantly lower for the poor not enrolled in Medical-Aid compared to Medical-Aid enrollees. These results show that low-income groups excluded in Medical Aid could have unmet need of medical utilization. This is similar to previous studies that reported higher levels of unmet need and lower rates of health care utilization for low income people compared to middle to high income people [16, 17,
18, 19, 20]. And, indeed, this is borne out, with these US studies identifying uninsured and low income as two of the strongest correlates of unmet need [21–23, 24, 25, 26, 27, 28, 29–31, 32]. In countries with universal health care coverage, such as UK, Germany, and Canada, research on unmet need has been less

| Variables                        | Total (N = 2,784) | Medical-Aid (N = 1,036) | Poor not enrolled in Medical-Aid (N = 1,325) | Unit: N (%) | p-value |
|----------------------------------|-------------------|-------------------------|---------------------------------------------|-------------|---------|
| **Gender**                       |                   |                         |                                             |             |         |
| Male                             | 956               | 375 (36.2)              | 444 (33.5)                                 | 137 (24.4)  | 0.2586  |
| Female                           | 1,828             | 661 (63.8)              | 881 (66.5)                                 | 286 (76.6)  |         |
| **Age**                          |                   |                         |                                             |             | <.0001  |
| 20 ~ 39                          | 213               | 124 (12.0)              | 62 (4.7)                                   | 27 (6.4)    |         |
| 40 ~ 64                          | 672               | 411 (39.7)              | 180 (13.6)                                 | 81 (19.1)   |         |
| ≥65                              | 1,899             | 501 (48.4)              | 1,083 (81.7)                               | 315 (74.5)  |         |
| **Education level**              |                   |                         |                                             |             | <.0001  |
| Below elementary school          | 1,745             | 539 (52.0)              | 938 (70.8)                                 | 268 (63.4)  |         |
| Middle/high school               | 813               | 383 (37.0)              | 310 (23.4)                                 | 120 (28.4)  |         |
| Above university                 | 226               | 114 (11.0)              | 77 (5.8)                                   | 35 (8.3)    |         |
| **Marital status**               |                   |                         |                                             |             | <.0001  |
| Married                          | 1,174             | 316 (30.5)              | 652 (49.2)                                 | 206 (48.7)  |         |
| Single                           | 274               | 186 (18.0)              | 63 (4.8)                                   | 25 (5.9)    |         |
| Divorced or separated            | 1,328             | 531 (51.3)              | 607 (45.8)                                 | 190 (44.9)  |         |
| **Employment status**            |                   |                         |                                             |             | <.0001  |
| Economically active              | 655               | 200 (19.3)              | 310 (23.4)                                 | 145 (34.3)  |         |
| Inactive/unemployed              | 2,025             | 784 (75.7)              | 981 (74.0)                                 | 260 (61.5)  |         |
| **Self-rated health**            |                   |                         |                                             |             | <.0001  |
| Good                             | 1,366             | 468 (45.2)              | 652 (49.2)                                 | 246 (58.2)  |         |
| Bad                              | 1,418             | 568 (54.8)              | 673 (50.8)                                 | 177 (41.8)  |         |
| **Depression**                   |                   |                         |                                             |             | 0.0094  |
| Yes                              | 1,092             | 423 (40.8)              | 531 (40.1)                                 | 138 (32.6)  |         |
| No                               | 1,501             | 527 (50.9)              | 723 (54.6)                                 | 251 (59.3)  |         |
| **Disability**                   |                   |                         |                                             |             | <.0001  |
| Yes                              | 625               | 343 (33.1)              | 226 (17.1)                                 | 56 (13.2)   |         |
| No                               | 2,159             | 693 (66.9)              | 1,099 (82.9)                               | 367 (86.8)  |         |
| **Chronic disease**              |                   |                         |                                             |             | 0.2184  |
| Yes                              | 2,303             | 867 (83.7)              | 1,098 (82.9)                               | 338 (79.9)  |         |
| No                               | 481               | 169 (16.3)              | 227 (17.1)                                 | 85 (20.1)   |         |
| **Chronic conditions**§          |                   |                         |                                             |             |         |
| Cancer                           | 76                | 35 (3.4)                | 28 (2.1)                                   | 13 (3.1)    | 0.1552  |
| Arthritis, low back pain, disc   | 644               | 206 (19.9)              | 348 (26.3)                                 | 90 (21.3)   | 0.0008  |
| Gastritis, gastric ulcer          | 62                | 23 (2.2)                | 31 (2.3)                                   | 8 (1.9)     | 0.8623  |
| Diabetes mellitus                | 256               | 105 (10.1)              | 118 (8.9)                                  | 33 (7.8)    | 0.3307  |
| Hypertension                     | 573               | 175 (16.9)              | 298 (22.5)                                 | 100 (23.6)  | 0.0009  |
| Stroke                           | 112               | 34 (3.3)                | 60 (4.5)                                   | 18 (4.3)    | 0.2998  |
| Myocardial infarction            | 97                | 30 (2.9)                | 47 (3.5)                                   | 20 (4.7)    | 0.2199  |

§each rate of chronic conditions is calculated by group
extensive than in the United States, perhaps because of the relative lack of direct cost-based barriers to care. Studies conducted in Canada have identified some population groups with increased likelihood of reporting an unmet health care need, such as women, people in worse health, nonelderly, higher educated, lower income, nonimmigrants, urban residents, and individuals without prescription drug insurance [33, 34, 35]. In addition, OOP spending of two groups (the poor not enrolled in Medical-Aid, the near poor) was higher than that of Medical-Aid enrollees and proportion of medical expenses to income was significantly higher than that of Medical-Aid enrollees, respectively. This is similar to previous studies that reported higher levels (range from 11.3 to 19.8 %) of proportion of medical expenses to income for low income people compared to middle (range from 3.5–6.6 %) to high (range from 2.0–5.5 %) income people [36, 37].

If we only judge range of subject of application, no one in Korea should be excluded from benefit of medical security. However, there is a blind spot, those who do not receive medical coverage at all between National Health Insurance and Medical-Aid in Korean medical social security. Most of the poor not enrolled in Medical-Aid because of a blind spot are excluded from

### Table 2
Average health utilization, OOP spending, and proportion of medical expenses to income by group

| Variables                              | Medical-Aid Mean | Poor not enrolled in Medical Aid Mean | p-valuea | The near poor Mean | p-valueb |
|----------------------------------------|------------------|--------------------------------------|---------|--------------------|---------|
|                                        | Std Dev          | Std Dev                              |         | Std Dev            |         |
| The number of outpatient visits        | 33.8             | 30.3                                 | 0.0452  | 29.5               | 0.0668  |
| Length of stay                         | 7.5              | 3.6                                  | <.0001  | 5.7                | <.0001  |
| OOP spending (unit: USD§)              | 803              | 1,226                                | <.0001  | 1,778              | <.0001  |
| Proportion of medical expenses to      | 6.5              | 0.1                                  | <.0001  | 15.8               | <.0001  |
| income (unit: %)                       |                  |                                      |         |                    |         |

aT-test or Chi-square test results
bANOVA test results
§1 USD = 1,134 won
OOP out-of-pocket

### Table 3
Factors associated with health utilization, OOP spending, proportion of medical expenses to income

| Variables                              | The number of outpatient visits | Length of stay | Ln (out-of-pocket spending) | % of medical expenses to income |
|----------------------------------------|---------------------------------|----------------|----------------------------|-------------------------------|
| Subject (ref = medical-aid)            |                                 |                |                            |                               |
| Poor not enrolled in Medical Aid       | -0.173***                      | -0.290**       | 1.143***                   | 0.090***                      |
| The near poor                          | -0.101                         | 0.243          | 1.597***                   | 0.109***                      |
| Gender (ref = male)                    |                                 |                |                            |                               |
| Female                                 | 0.342***                       | -0.319         | 0.175*                     | -0.0223                       |
| Age (ref = 20–39)                      |                                 |                |                            |                               |
| 40–64                                  | 0.204*                         | 0.418          | -0.529***                  | 0.012                         |
| ≥65                                    | 0.286**                        | -0.347         | -0.630***                  | -0.037                        |
| Education level (ref = below elementary school) |                                 |                |                            |                               |
| Middle/High school                     | -0.163***                      | -0.261         | 0.196**                    | -0.033                        |
| Above university                       | -0.268**                       | -0.701         | 0.480***                   | -0.109**                      |
| Marital status (ref = married)         |                                 |                |                            |                               |
| Single                                 | -0.038                         | -1.267**       | -0.778***                  | 0.074                         |
| Divorced or separated                  | 0.040                          | 0.043          | -0.861***                  | -0.005                        |
| Employment status (ref = economically active) |                                 |                |                            |                               |
| Inactive/unemployed                    | 0.124**                        | 0.531*         | -0.017                     | 0.028                         |
| Self-rated health (ref = good)         | 0.373***                       | 0.944***       | 0.392***                   | 0.007                         |
| Depression (ref = no)                  | -0.002                         | 0.503**        | 0.017                      | 0.029                         |
| Disability (ref = no)                  | 0.094                          | 0.255          | 0.103                      | -0.014                        |
| Chronic disease (ref = no)             | 1.383***                       | 0.954***       | 0.577***                   | 0.024                         |

*Adjusted odds ratio from multiple regression analysis with all of the variables in Table 1
Statistically significant differences are *p < .05 **p < .01 ***p < .001
Medical-Aid due to eligibility of support obligor. Although their income level is lower than minimum of living, they lack the qualifications because income of the support obligor who has responsibility for their support is higher than criteria. Therefore, Government needs to protect people by alleviating the strict criteria of support obligor.

A blind spot in medical security includes the near poor as well as the poor not enrolled in Medical-Aid. Since income of the near poor exceeds a minimum of living, they mainly have unstable employment status such as daily or temporary work. In addition, they have the possibility of losing eligibility to receive social welfare benefits according to longitudinal default of premium or have limited benefit due to relatively low-income level. Actually, the number of low-income people who do not receive benefit of National Health Insurance was 1,170 thousand (4.3% of the total population) in 2011, and this amounts to a third of the poor not enrolled in Medical-Aid [38]. In particular, because the near poor have to pay more out-of-pocket payments than Medical-Aid enrollees who receive benefit of health care, their burden is greater than that of the general population as well as Medical-Aid enrollees. Since South Korea has implemented various medical supporting programs in an effort to solve this problem, most assistance programs support a few non-covered medical costs or partially insured payments for certain diseases such as cancer [39, 19]. Even though they have similar acute or chronic diseases compared to other low-income people, the near poor who have low accessibility have unmet need for health services due to financial burden of health care services, and it could result in reverse discrimination, where their income is lower compared to Medical-Aid enrollees after paying one’s medical costs if demand for health care is high [40, 8]. In other words, since all people excluding Medical-Aid enrollees are National Health Insurance subscribers in the current medical social security, there should be no one without protection. However, the near poor are always in danger of being excluded from protection of medical security until they are able to receive benefit of National Health Insurance through stable income, and fall into medical poverty where they cannot utilize medical services. Such medical poverty could lead to unhealthy status, making one’s work difficult and result in repeat poverty that falls into poverty. Current programs supporting the medical expenses focus on insured payment in South Korea. Since non-insured payment accounted for 16% of total medical cost in 2010 [41], this could result in a heavy burden on the near poor. Thus, government planning for support of increasing financial accessibility of the near poor is needed.

This study has a few limitations. This study was cross-sectional in design; thus, there could be issues of causality. Second, we did not follow up with regard to location of treatment. Delayed reimbursement, a high cutback rate, and the relatively lower profit rate from Medical-Aid patients have led most health care providers to refuse or discriminate against Medical-Aid enrollees [42]. Even though the results will be different according to the hospital type used, we did not identify the information. Third, the prevalence of chronic conditions is likely to be higher than reported in KOWEPS, because some conditions were not diagnosed. Finally, the results of our research are more likely to be statistically biased due to endogeneity problems caused by the selection bias. Since unobserved characteristics would bias the results through error terms or residual, caution is needed in interpreting the results.

Despite these limitations, our research differs from previous studies in dividing income level. Although many previous literature studies regarding exactly the same or similar empirical hypotheses such as medical utilization or expenses of low-income people have already been reported, we used a more delicate design in classifying the subjects for low-income people. In previous studies on this topic in South Korea, the subjects are mainly divided by total income (or disposable income); however, in this study, we used countable income in separating them in this study. As we described above, countable income includes converted income of property as well as evaluated income, and the government mainly utilizes the countable income compared to minimum cost of living when they implement policy according to income level.

Conclusions
Medical utilization by the poor not enrolled in Medical-Aid and the near poor is significantly lower compared to Medical-Aid enrollees. These results show that low-income groups excluded from Medical-Aid could have unmet need of medical utilization and could experience medical poverty. Therefore, medical benefit for low-income people who are not able to access necessary health care should be intensified. We suggest a few ways to enhance medical benefit for them. First, a premium imposing system in National Health Insurance can transform coinsurance rate into discriminatory imposition according to income level. Second, government should alleviate strict criteria by changing eligibility to receive social welfare benefits and planning for support to increase financial accessibility of the near poor.

Competing interests
The authors declare that they have no competing interests.

Authors’ contributions
JW analyzed data and wrote initial draft. Data collection was undertaken by SY and EA. EC and TH designed the study and contributed critical feedback.
and editing throughout the process. All authors have read and approved the final manuscript.

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Author details
1Department of Public Health, Graduate School, Yonsei University, Seoul, Korea. 
2Department of Preventive Medicine, Yonsei University College of Medicine, Seoul, Korea. 
3Department of Hospital Administration, Graduate School of Public Health, Yonsei University, Incheon, Korea. 
4Department of Hospital Administration, Graduate School of Public Health, Yonsei University, 50-1 Yonsei-ro, Seodaemun-gu, Seoul 120-752, Republic of Korea.

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References
1. Oh JJ. Success of case management for medical aid initiative in Korea. Health Soc Care Community. 2013;21(5):464–71.
2. Health Insurance Review & Assessment Service. (2013). Medical-Aid out-of-pocket payments criteria information [accessed on September 3, 2013]. Available at http://www.hira.or.kr/dummy.do?pgmid=HRIA030927010000.
3. Lee YY, Jun JK, Suh M, Park BY, Kim Y, Choi KS. Barriers to cancer screening among medical aid program recipients in the Republic of Korea: a qualitative study. Asian Pac J Cancer Prev. 2014;15(2):589–94.
4. National Health Insurance Service. (2012). Medical-Aid Statistics annual report [accessed on September 12, 2013]. Available at http://www.nhis.or.kr/menu/boardRetrieveMenuSet.xm?menuId=F3323.
5. Conti MS. Effect of Medicaid disease management programs on emergency admissions and inpatient costs. Health Serv Res. 2013;48(4):1359–74.
6. Shin HC, Kim S. The impact of medical aid expansion to include population with low income on the preventable hospitalizations. Health Policy and Management. 2010;20(1):87–102.
7. Choi JS, Jo CS, Kim SR, Choi YJ. An estimation of the price elasticity of demand for health care after implementation of office visit copayment for medical Aid beneficiaries. The Korean Journal of Health Economics and Finance. 2010;16(3):91–114.
8. Shin YS, Park SI. A study on benefits provision to the near poor. Health and Welfare Policy Forum. 2012;185:6.
9. Kim MH. Medical recognition and attitude changes through medical aid. Journal of Regional Studies. 2007;15(2):125–50.
10. Shin HW. Gaps in health service and ways to narrow them. Health and Welfare Policy Forum. 2009;15:55–16.
11. OECD (2015). “Health at a glance 2013: OECD indicators.” Organization for Economic Cooperation and Development. http://www.oecd-ilibrary.org/social-issues-migration-health/health-at-a-glance-2013_health_glance-2013-en.
12. Heo JH, Oh JW, Kim JK, Lee MW, Lee JS, Kwon SM, et al. Poverty in the midst of plenty: unmet needs and distribution of health care resources in south Korea. Plos one. 2012;7(11):e51004.
13. Xu K, Evans DB, Kawabata K, Zeramdini R, Klavus J, Murray CJ. Household catastrophic health expenditure: a multicountry analysis. Lancet. 2003;362(9378):1117–22.
14. Kim JS. Review on the eligibility requirements of the national basic living security program. Korean Social Security Studies. 2009;25(1):1–24.
15. Huh S, Kim MG, Ryu HS. An evaluation study of the methods for converting assets into income in national basic livelihood security program. Korean Social Security Studies. 2009;25(1):1–24.
16. Joo JM, Kwon SM. Difference in outpatient medical expenditure and physician practice patterns between medical aid and health insurance patients. Health Policy and Management. 2009;19(3):125–41.
17. Kim CW. A difference in utilization of cancer inpatient services by income class of residents in Jeju island. Health Policy and Management. 2003;13(3):104–28.