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The Factors Contributing to Expenditures on Over-the-Counter Drugs in South Korea

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ABSTRACT

Objectives: To determine the factors contributing to the use of over-the-counter (OTC) drugs and to examine the relationship between the purchase of OTC drugs and the utilization of health care services in South Korea. **Methods:** This study used data from the 2008 Korea Health Panel Survey. The respondents were classified according to the purpose of the OTC drug use. The first group ($n = 364$) included respondents who had purchased OTC drugs for self-medication, and the second group ($n = 955$) included respondents who had taken OTC drugs for nutrition for more than 3 months. Logistic regression analyses were conducted to identify the factors contributing to the purchase of OTC drugs. **Results:** The self-medication group was more likely to be older and to have a chronic disease. In addition, the purchase of OTC drugs was related to the utilization of other health care services. The more outpatient services at clinics were used, the more the respondents tended to purchase OTC drugs for

self-medication and nutrition. As hospital outpatient visits increased, however, the purchase of OTC drugs for self-medication decreased and the purchase of OTC drugs for nutrition increased. **Conclusions:** This study shows that age and chronic disease are the major factors related to using OTC drugs for self-medication for long-term periods. Furthermore, this study suggests that the use of outpatient services is one of the factors associated with purchasing OTC drugs. Considering the potential adverse effects of OTC drugs, communication between physicians and patients should be encouraged at outpatient visits.

Keywords: expenditures, Korea Health Panel Survey, logistic regression, over-the-counter (OTC) drugs.

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Introduction

Over-the-counter (OTC) drugs are medicines that a consumer can purchase directly without a doctor's prescription. In Korea, some oral medicines for cold, digestion, pain, and nutrition as well as ointments are mainly sold as OTC drugs [1]. Using OTC drugs has advantages and disadvantages. First, using OTC drugs makes it possible to lower costs in terms of time and money that would be incurred by hospital visits [2,3]. It can sometimes, however, cause side effects if a consumer does not know the proper dose or use of the OTC drug [4,5]. In addition, mild diseases can develop into severe diseases by continuous self-medication without professional care [6]. Therefore, health care policymakers need to know about the characteristics of patients who frequently purchase OTC drugs or who spend money on OTC drugs for a long period of time.

The findings of studies that have examined the factors contributing to the use of OTC drugs show that older people, females, and more educated people are more likely to use OTC drugs [7–9]. In addition, according to a large survey in the United States, past experience, the desire to save time, distance, or money, and the belief that the illness is not serious enough to require consulting a doctor also affect the use of OTC

drugs [10]. Some researchers have attempted to examine the relationship between the use of OTC drugs and the utilization of health care services, showing that the use of health care services such as seeing a doctor and the prescribed drug is influenced by the use of OTC drugs [11,12]. The factors related to long-term expenditure on OTC drugs, however, have not yet been identified.

In Korea, the separation of prescribing and dispensing of drugs has been mandated since 2000 except for oriental medicines. For that reason, Korean patients who visit clinics or hospitals have to go to a pharmacy with their prescriptions to fill the prescriptions [13]. This system may influence the purchase of OTC drugs because access to OTC drugs increases through this process [14]. Therefore, a new study on the association of OTC drugs and other health care services should be of interest to health care policymakers, especially in the area in which the separation of prescribing and dispensing of drugs is implemented.

The objectives of this study were to ascertain the characteristics of patients who purchased OTC drugs over a long period of time (for more than 3 months), and to investigate the relationship between the use of OTC drugs and the utilization of other health care services by using the Korea Health Panel Survey.

Conflict of Interest: The authors have indicated that they have no conflicts of interest with regard to the content of this article.

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<http://dx.doi.org/10.1016/j.vhri.2013.01.010>

Methods

Data

In this study, the 2008 Korea Health Panel Data 1.2.1 beta version was used. The Korea Health Panel is longitudinal data to investigate the utilization of health services and medical expenditures including OTC drugs among Korean households. This panel survey consisted of 7,201 households and 22,595 respondents. Households selected for the Korea Health Panel sample were interviewed once or twice a year. It included questions about demographic characteristics, living expenses, purchase of pharmaceutical products, private health insurance, chronic diseases, and health service utilization including inpatient, outpatient, and emergency visits [15]. The interview about the purpose of OTC drug use, however, was performed only in wave 1 (2008), and so this study was designed as cross-sectional research.

Study Sample

Subjects were asked about all the OTC drugs they had taken for more than 3 months. We classified the subjects into three groups according to the purpose of the OTC drug use. The first group had purchased OTC drugs for self-medication ($n = 364$), and the second group had purchased OTC drugs for nutrition such as vitamins ($n = 955$). Those who had not used OTC drugs were included as a reference group ($n = 20,103$).

Statistical Analysis

Descriptive statistics (percentage, mean, and SD) were used to analyze the demographic differences between the three groups. Categorical variables were analyzed by using Pearson's chi-square test, and continuous variables were analyzed by using the Wilcoxon rank sum test.

Logistic regression analyses were also conducted to examine the characteristics of patients who had purchased OTC drugs over a long period of time and the relationship between the purchase of OTC drugs and the utilization of other health care services. The main independent variable was the annual number of outpatient visits in 2008, and the dependent variable was whether the subjects used OTC drugs for more than 3 months. In addition, outpatient visits were classified by the type of medical facility: "clinics," "hospitals," "dental clinics," and "oriental clinics."

Predisposing factors (sex, age, marriage, and education), enabling factors (income and insurance type), and need factors (health status: chronic disease status) suggested by Andersen and Newman [16] were used as control variables. All variables used in the logistic regression analysis and the reference category of each variable are presented in Table 2. Log transformation was used in the income variable because the income distribution was right-skewed. The regression analyses provided odds ratio (OR) for each independent and control variable contributing to the use of OTC drugs. All statistical analyses were carried out by using STATA SE 11 version. P values of less than 0.05 were considered significant.

Results

According to the results of this study, the proportion of those who had taken OTC drugs for self-medication was 1.7% and that for nutrition was 4.5% among the study population. The most common reason for using OTC drugs for self-medication was gastrointestinal problems (47.0%). The next four reasons for OTC drug use for self-medication were musculoskeletal (23.6%), cardiovascular (19.0%), neurologic (8.0%), and skin problems (6.6%).

Table 1 shows the characteristics of the three groups. The result of the univariate analysis indicates that there were significant differences between these three groups. The proportion of those who purchased OTC drugs for more than 3 months increased with age, from 0.55% for those aged 19 years and younger to 55.92% for those aged 40 to 64 years, but the proportion among those aged 65 years and older was 35.26%. The percentage of married people and Medical Aid beneficiaries was the highest in the OTC user group for self-medication among the three groups. Those using OTC drugs for self-medication were more likely to be female, older, not married, poor, a patient with chronic disease, and frequently use outpatient services. In contrast, those using OTC drugs for nutrition were more likely to be younger, married, and people with a high income.

Factors Associated with the Use of OTC Drugs for Self-Medication

Logistic regression analysis (Table 2) showed that the use of OTC drugs was associated with age, health insurance type, self-reported chronic disease status, and the annual number of clinic and hospital visits. After controlling for all other factors, older adults were more likely to use OTC drugs for self-mediation for a long period. Having chronic diseases was strongly associated with the purchase of OTC drugs for self-medication (OR = 59.04, 95% confidence interval [CI] 25.88–134.53). In addition, the results indicate that the odds ratio for OTC use for more than 3 months slightly decreased when the annual number of hospital visits increased (OR = 0.96, 95% CI 0.94–0.99). As the annual number of clinic visits increased, however, the odds ratio for OTC use slightly increased (OR = 1.01, 95% CI 1.00–1.01).

Factors Associated with the Use of OTC Drugs for Nutrition

The purchase of OTC drugs for nutrition such as vitamins and nutritional supplements was related to age, marriage status, education level, current working status, income, self-reported chronic disease status, and the annual number of clinic, hospital, and dentist visits. The people aged 20 to 39 years were less likely to use OTC drugs for nutrition than were those aged 19 years and younger (OR = 0.53, 95% CI 0.37–0.64). People who were more educated, had a high income, and had chronic diseases were more likely to purchase OTC drugs for nutrition. In addition, those who visited clinics, hospitals, or dentists frequently were more likely to purchase OTC drugs for nutrition for more than 3 months.

Discussion

This study was carried out to identify the factors related to the long-term purchase of OTC drugs and to examine the relationship between the purchase of OTC drugs and the utilization of other health care services. The prevalence of OTC drug use for more than 3 months for self-medication or nutrition was about 6.2%. We also found that the most common reason for using OTC drugs for self-medication over a long period of time was gastrointestinal problems.

The factors related to the long-term purchase of OTC drugs were significantly different across the purpose of OTC drug use. The group purchasing OTC drugs for self-medication was more likely to be older and have chronic diseases, while the group purchasing OTC drugs for nutrition was more likely to be younger and more educated. Using outpatient services frequently affected both groups positively. Age and poor self-reported health status have been associated with higher use of OTC drugs for self-medication in previous studies, although these studies did not focus on long-term expenditure on OTC drugs [7–9]. In Korea,

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