

**Short Communication**

**DEMOGRAPHIC FACTORS ASSOCIATED WITH ORAL CONTRACEPTIVE USE IN KOREAN WOMEN**

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**ABSTRACT**

**Objective:** We determined the prevalence of oral contraceptive (OC) use and the demographic factors associated with OC use in Korean women.

**Methods:** A descriptive epidemiologic study was conducted using data for women aged 20-54 y collected by the 2005-2009 Korea National Health and Nutrition Examination Surveys. OC use and demographic characteristics were obtained from the participants by questionnaire.

**Results:** During the study period, the prevalence of OC use ranged from 14.8% to 16.0%. Longer duration of OC use was positively associated with age and with increased cigarette smoking and decreased education. However, the use of OCs was not associated with body mass index, household income, alcohol drinking, or regular exercise.

**Conclusion:** Oral contraceptives are used widely by Korean women, and their use is associated with several demographic factors.

**Keywords:** Oral contraceptive, Prevalence, Demographics, KNHANES

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Oral contraceptives (OCs) are a preferred method of contraception among women, with an estimated 150 million women worldwide using OCs [1]. Although OCs are a widely accepted contraceptive modality worldwide [2], there are differences in the prevalence of OC use among countries. OCs are used as a contraceptive method by 8.8% of women age 15-49 y worldwide, whereas over 18% of women of reproductive age in developed countries use OCs [3]. For example, approximately 11.6 million or 19% of the women in the United States are using OCs [1, 4].

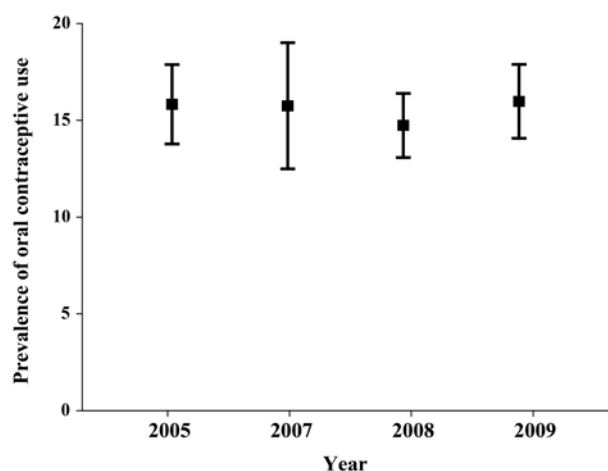
Over the past few decades, OCs has been modified to minimize their adverse effects, and a wide range of OC formulations is currently available in Korea [5-10]. At the population level, however, the trends in OC use and determinants of OC use in Korean women have not been described. Therefore, this study determined the prevalence of OC use during 2005-2009 and examined demographic factors associated with OC use in Korean women using data from the Korea National Health and Nutrition Examination Survey (KNHANES), a nationally representative survey conducted in the Republic of Korea.

This study used data from the 2005-2009 KNHANES provided by the Korea Centers for Disease Control and Prevention. The KNHANES sample is selected using a stratified, multistage, cluster sampling design with proportional allocation based on the National Census Registry. The survey randomly sampled 700 sampling units, which included 1006 women aged 20-54 y who did not take drugs for hormone replacement therapy.

The KNHANES includes well-established questions to determine the demographic characteristics of the subjects. These included questions on age, gender, education level, income, physical exercise, smoking habit, and alcohol consumption. Height and weight were measured with the participants wearing light clothing and no shoes. Body mass index (BMI) was then calculated as weight (kg) divided by the square of height (m). Then, the subjects were categorized as underweight (BMI<18.5), normal (18.5≤BMI<23.0), overweight (23.0≤BMI<25.0), or obese (BMI ≥25.0), according to World Health Organization (WHO) definitions for Asian populations. The study protocol was approved by the Korean Ministry of Health and Welfare and was conducted in accordance with the Ethical Principles for Medical Research involving Human Subjects, as defined by the

Declaration of Helsinki. The study received institutional review board (IRB) approval (# NSO-11702, KCDC-2007-02CON-04-P, KCDC-2008-04EXP-01-C, KCDC-2009-01CON-03-2C). All study participants provided written informed consent.

As a demographic factor, education level was categorized as less than a high school diploma, high school diploma, and college or higher. Alcohol consumption was assessed by questioning the subjects about their drinking behavior during the month before the interview. The subjects were asked about the average frequency and amount of alcoholic beverage intake. This information was converted into the amount of pure alcohol (ethanol) consumed per day.



**Fig. 1: Estimated prevalence and 95% confidence intervals of oral contraceptive use in Korean women aged 20-54 y**

Statistical analyses for prevalence accounted for the survey design, and appropriate procedures in SAS, such as surveyfreq, were used with weighted data. Means and standard deviations (SD) or standard

errors (SE) of the demographic characteristics were calculated according to the duration of OC use. The presence of a linear trend was evaluated by defining a linear contrast with the Mantel-Haenszel trend test. All statistical analyses were conducted using SAS (ver. 9.3; SAS Institute, Cary, NC, USA).

The 2005 KNHANES data revealed that 15.85% (95% confidence interval [CI], 13.80-17.90%) of the women age 20-54 y resident in the Republic of Korea reported having taken OCs. This proportion decreased slightly to 15.77% (95% CI, 12.51-19.03%) and 14.76% (95% CI, 13.10-16.41%) in 2007 and 2008, respectively, but increased to 16.00% (95% CI, 14.09%-17.91%) in 2009 (fig. 1).

Nationwide health surveys have become a valid, widely used research tool for determining patterns of medical drug use in the general population [11-13]. Using national health survey data, this study revealed that 14.8-16.0% of Korean women aged 20-54 y used OCs during the study period, which is consistent with previous

studies. An American study using data from 1982, 1995, and 2002 National Surveys of Family Growth found that 15.6-18.9% of women aged 15-44 y used OCs [14]. Similarly, a study carried out in Spain found that 18.3% of women between 15 and 49 y of age had used OCs during the previous 6 mo [15].

We included 1006 women aged 20-54 y; their demographic characteristics are presented in table 1. In brief, OC users averaged 40.6 y old, with young adults (20-34 y) comprising 27.5% of the sample, and women age 45 y and older comprising 38.3%.

The mean BMI and average monthly household income of the study population were 23.3 and \$2554, respectively. Nearly half the sample reported a high school education (47.9%), and 28.4% had not completed high school. The majority of OC-using women were non-smokers (81.0%), and the mean daily alcohol consumption among OC users was 4.94 g. Nearly half of the OC-using women exercised regularly.

**Table 1: Demographic characteristics of participants in Korean women aged 20-54 y**

Characteristics		N	%
Age (y)	<35	277	27.5
	35-44	344	34.2
	45-54	385	38.3
BMI	<18.5	44	4.4
	18.5-22.9	460	45.7
	23-25	245	24.4
	>25	257	25.6
	>High school	286	28.4
Education	High school	482	47.9
	>High school	238	23.7
	<1400	225	22.4
Average household income (US\$/mo)	1400-2299	274	27.2
	2300-3200	246	24.5
	>3200	261	25.9
	Never	815	81.0
Cigarette smoking	Ever	191	19.0
	0	314	31.2
Alcohol consumption (g/d)	>0-5.0	479	47.6
	>5.0	213	21.2
	Yes	474	47.1
Regular exercise	No	532	52.9

Table 2 presents the basic participant characteristics and outcomes of the study, sorted by the duration of OC use. Duration of OC use was correlated positively with age (P for trend<0.001) and the amount of cigarette smoking (P for trend=0.046). As the duration of OC users increased, participants were more likely to have a low education level (P for trend<0.001). However, BMI, average household income, the amount of alcohol consumed, and regular exercise were not significantly associated with increased OC use.

In this nationwide cross-sectional study of Korean women age 20-54 y, the duration of OC use was positively associated with age and cigarette smoking and negatively associated with education level. Although self-reporting of OC use and drinking and smoking patterns may lead to misclassification and measurement error [16], the strength of this study is that it assessed the prevalence of OC use and demographic factors associated with OC use in Korean women using nationally representative data.

**Table 2: Demographic characteristics by duration of oral contraceptive use**

Characteristics	Duration of oral contraceptive use				P for trend
	<0-3 mo (n = 469)	<3-12 mo (n = 319)	<12-36 mo (n = 136)	>36 mo (n = 82)	
Age (y), mean (SD)	39.1 (8.8)	41.3 (7.9)	43.4 (7.9)	42.2 (8.2)	<0.001
BMI, mean (SD)	23.1 (3.5)	23.6 (3.3)	23.4 (3.5)	23.8 (2.7)	0.159
Education (%)					<0.001
<High school	118 (25.2)	94 (29.5)	47 (34.6)	27 (32.9)	
High school	211 (45.0)	164 (51.4)	64 (47.1)	43 (52.4)	
>High school	140 (29.9)	61 (19.1)	25 (18.4)	12 (14.6)	
Average household income (US\$/mo), mean (SE)	2613.1 (75.5)	2511.7 (96.4)	2520.3 (154.2)	2442.9 (213.4)	0.461
Smoking (cigarettes/d), mean (SE)	0.9 (0.2)	1.1 (0.2)	1.1 (0.3)	1.9 (0.5)	0.046
Alcohol drinking (g/d), mean (SE)	4.3 (0.6)	5.8 (0.8)	4.9 (1.2)	5.3 (1.1)	0.755
Regular exercise (%)	253 (53.9)	163 (51.1)	71 (52.2)	45 (54.9)	0.861

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**CONFLICT OF INTERESTS**

All authors have none to declare

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