



Analysis of Sexual Behaviors among Adults in Korea: Results from the “Korean National Survey on Sexual Consciousness”

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Purpose: This study aimed to understand the characteristics of sexual behaviors among Korean adults to facilitate the development of strategies and policies focused on sexual health in groups categorized by sociodemographic characteristics.

Materials and Methods: A nationally representative probability sample of 2,500 individuals (1,273 men and 1,227 women) aged 18–69 years obtained using a stratified multiple-stage sampling method based on Statistics Korea (KOSTAT) participated in a cross-sectional online survey. The survey consisted of structured questionnaires comprising questions on demographic information, lifetime sexual behavior, and sexual behavior in the previous 12 months.

Results: The mean age at first sexual intercourse was lower in men than in women (21.9±4.4 vs. 24.1±4.4 years, p=0.001). The overall prevalence rate of sexual events with casual partners within previous 12 months was 13.1% (95% confidence interval [CI], 11.6%–14.5%). It was found to more commonly exist among lower age groups and men. The overall regular condom use rates with relationship partner and casual partner were 14.8% (95% CI, 13.2%–16.4%) and 39.6% (95% CI, 33.9%–45.3%), respectively. Condom use rate with casual partners among 20s and 30s men was 51.2%. Overall, only 10.4% of the respondents had received sexual education about sexually transmitted infections.

Conclusions: This study provided contemporary sexual behaviors in Korean adults, and identified socio-demographic factors that seem to influence sexual behaviors. Low condom use rates and low rate of receiving sexual education were concerns. The result of this study would be useful to health professionals to formulate policies and strategies related to sexual health.

Keywords: Adults; Probability sample; Sexual behavior; Sexual health; South Korea

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INTRODUCTION

Sexual well-being is essential for a satisfactory sexual life and is closely related to the physical, mental, and social well-being of a person. In 2002, the World Health Organization (WHO) described sexual health as

“a state of physical, emotional, mental, and social well-being related to sexuality; it is not merely the absence of disease, dysfunction, or infirmity” [1]. To achieve sexual health as per the WHO and establish relevant policies and practices, updated population data on sexual attitude and behavior are necessary.

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Unlike Western countries, discussing sexual behaviors has been a taboo in Korea, causing a lack of studies on sexual behavior. Public awareness about sexually transmitted infections (STIs) and human immunodeficiency virus/acquired immune deficiency syndrome has changed dramatically in Korea in the last three decades [2], generating interest on human sexuality and sexual behavior. Moreover, sexual education had been included in the general health curriculum in many Korean schools since 2009 [3]. However, STI prevalence in Korea has gradually increased during the last few decades [4]. Although the reason for this has not been ascertained clearly, sexual behaviors related to early sexual debut, paid sex and condom usage have been speculated as causative factors [5]. Therefore, to frame national sexual health programs, sexual behavior data concerning the general population is critical. Recent surveys on sexual behavior included limited age groups and were conducted exclusively among males or females, or specifically investigated only high-risk groups. More importantly, most of these surveys were not performed nation-wide [6-10].

The most recent nationally representative survey of adult sexual behavior in Korea was conducted in 2001, as a part of the Global Study of Sexual Attitudes and Behaviors (GSSAB) [11,12]; however, it included only middle to old age groups (40–80 years). Many changes occurred in Korea in the last decade, potentially influencing sexual behavior. The widespread availability of medicines treating impotence has increased sexual activity among older adults [6], and easy internet access through smart phones has influenced sexual knowledge [13]. Therefore, updated national data representing contemporary Korean sexual behavior is necessary to identify groups vulnerable to sexual diseases. This study was therefore conducted to obtain baseline data used in framing sexual health strategies and policies.

MATERIALS AND METHODS

1. Study design and subjects

This study was performed as a part of the Korean National Survey on Sexual Consciousness, from May 1, 2014 to March 1, 2015. A stratified probability sample from the South Korean population was used, adapting a multi-stage stratification sampling method. The inclusion criterion was age between 18 and 69 years. According to Statistics Korea (KOSTAT), in 2013,

37,665,188 individuals were aged 18–69 years, among whom 19,181,887 were males and 18,483,301 were females. Initially, 2,500 study participants (1,273 males and 1,227 females) were considered. These national probability samples were stratified by region and gender distribution was based on population ratio. Each geographical sample was stratified into five 10-year age bands (18–19, 20–29, 30–39, 40–49, 50–59, and 60–69 years), with teenagers representing the adolescent group.

After stratifying samples by gender, region, and age, we recruited participants randomly from a population of 300,000, using structured research panels from Neo Research & Solution (internet research company based in Seoul). The research panel was structured with the general population who agreed to participate in internet surveys. We randomly extracted 25,000 samples (10 times the designed sample) from this panel, as per the stratification design planned, and sent e-mails between November and December 2014, requesting them to visit the web portal. In the website, they were asked to participate in the survey and answer the study questionnaire. All participants who answered the questionnaires were paid 1,000 Korean Won as compensation.

2. Study variables

Socio-demographic data including age, gender, educational level, marital status, and monthly family income were obtained from the questionnaires. Educational level was classified into three categories namely middle school or lower, high school or college, and university or higher. Marital status was classified into three groups: currently married, never married, and divorced or widowed.

History of sexual behavior and attitude, during lifetime and for the previous 12 months were obtained, similar to other nationally representative studies on sexual behavior [14,15]. The questions on lifetime sexual behavior included experience (yes, no) of sexual intercourse and age during the first sexual intercourse. Regarding sexual behavior in the previous 12 months, the participants were asked to specify (yes, no) each sexual behavior, including having a current relationship sexual partner (spouse or domestic partner, girlfriend/boyfriend, or significant other) and the history of sexual events with casual partners (transactional sex partner or speed dating partner). Regarding condom usage, participants were asked to choose the frequency of condom

usage with relationship partner and casual partners in the previous 12 months, and reasons for not using a condom. Frequency of condom usage was categorized as always/consistently, sometimes, and never/seldom. Frequency of sexual intercourse was obtained from the number of sexual intercourses in the last month.

3. Statistical analysis

Frequency analysis was used to describe the subjects' baseline socio-demographics. Descriptive analyses were used to summarize the overall, age, gender, education level and family income-specific variables. The chi-square test, independent t-test, and one-way analysis of variance (ANOVA) were conducted to assess the statistical significance of specific trends between men and women, across age groups, and socio-demographic characteristic groups, where applicable. To assess the predictors of sexual activity and experience of sexual events with casual partners, we conducted multiple regression analysis. The $p < 0.05$ were considered to indicate statistical significance. Statistical analyses were performed using commercially available statistical software (IBM SPSS ver. 22.0; IBM Corp., Armonk, NY, USA).

4. Ethics statement

The purpose of the study was explained to all participants and informed consent was obtained. All data were self-reported by participants. This study was reviewed and approved by the Institutional Review Board (IRB) of the Korea University Guro Hospital, Korea (IRB No. 2015GR0057).

RESULTS

1. Participant characteristics

Totally, 2,500 participants (1,273 men and 1,227 women) completed the survey. Table 1 shows the participants' demographic data including educational level, marital status, and monthly family income. The data closely matches the statistics of the Korean standard population (registered population) in the Korean Statistical Information Service (KOSIS) of KOSTAT.

2. Lifetime sexual behaviors

1) Lifetime sexual intercourse experience

Fig. 1 presents data on the study population that had

Table 1. Socio-demographic characteristics of 2,500 survey participants

Characteristic	Men (n=1,273)	Women (n=1,227)
Age (y)		
18–19	73 (5.7)	61 (5.0)
20–29	228 (17.9)	206 (16.8)
30–39	269 (21.1)	259 (21.1)
40–49	298 (23.4)	288 (23.5)
50–59	264 (20.7)	261 (21.3)
60–69	141 (11.1)	152 (12.4)
Education level		
Middle school or lower	24 (1.9)	48 (3.9)
High school or college	396 (31.1)	568 (46.3)
University or higher	853 (67.0)	611 (49.8)
Marital status		
Currently married	795 (62.5)	804 (65.5)
Divorced or widowed	50 (3.9)	65 (5.3)
Never married	428 (33.6)	358 (29.2)
Monthly income (\$)		
<900	173 (13.6)	212 (17.3)
900–1,799	168 (13.2)	336 (27.4)
1,800–2,699	303 (23.8)	261 (21.3)
2,700–3,599	246 (19.3)	163 (13.3)
3,600–4,499	173 (13.6)	115 (9.4)
≥4,500	210 (16.5)	140 (11.4)

Values are presented as number (%).

experienced sexual intercourse at least once during lifetime. Totally 2,166 out of 2,500 participants (86.6%) had experienced sexual intercourse. The percentage of those with sexual intercourse experience was lower among teenagers and those in their 20s, than in other age groups, among both men and women. Among men, the higher education level and the higher income level groups showed a higher ratio of sexual intercourse experience.

2) Age at first sexual intercourse

We analyzed the 2,166 subjects who had experienced sexual intercourse. The mean age during the first sexual intercourse, according to gender is presented in Table 2. This age was statistically significantly lower among males (independent t-test, $p = 0.001$). In the below 30s age group, the age during the first sexual intercourse was lower in both gender and in the 40s and above age groups, the age at sexual initiation was similar.

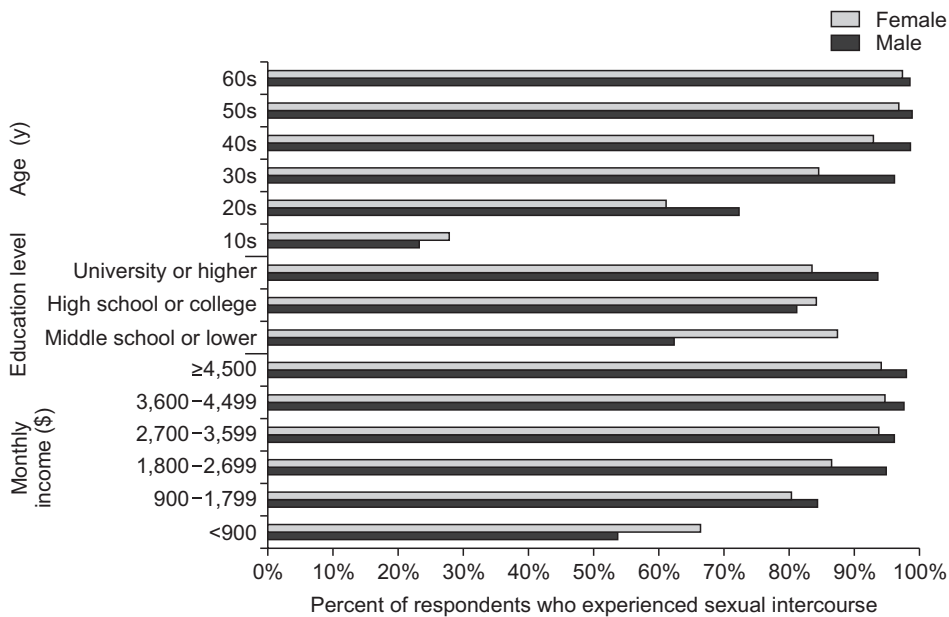


Fig. 1. Distribution of subjects who experienced sexual intercourse according to socio-demographic feature.

Table 2. The mean age at first sexual intercourse according to gender

	Men	Women
Overall ^a	21.9±4.4	24.1±4.4
Age (y) ^b		
18-19	17.9±1.1	17.6±1.6
20-29	20.4±2.4	21.0±2.5
30-39	21.3±3.8	23.6±4.3
40-49	22.8±4.3	24.6±4.0
50-59	22.3±4.4	25.3±4.5
60-69	22.8±6.3	24.9±4.9

Values are presented as mean±standard deviation.

^aIndependent t-test, $p < 0.05$; ^bANOVA, $p < 0.05$.

3. History of sexual behavior during previous 12 months

Previous 12-month history of sexual behavior among the 2,166 respondents who had experienced sexual intercourse is presented in Table 3.

1) Currently having a regular sexual partner

Among the 2,166 respondents who had experienced sexual intercourse, the proportion of those with a current sexual partner was lower in men than in women (82.6% vs. 87.6%). Higher education level and higher monthly income groups showed a higher proportion of respondents with a current sexual partner. Among the never married respondents, 51.8% currently had a sexual partner, and 31.3% of those divorced or widowed reported having a current sexual partner.

2) Prevalence of sexual events with casual partners

The overall prevalence of sexual events with casual partners was 13.1% (95% confidence interval [CI], 11.6%–14.5%). The frequency of sexual events with casual partners, according to gender, age, education level, monthly income, and marital status is shown in Table 3. Currently sexually active men in their 20s and 30s and those in the high education, high monthly income, and the unmarried groups had a high prevalence of sexual events with casual partners. In multivariate analysis, males, people in the younger age group, those with higher monthly income, and those without a current sexual partner tended to have a higher prevalence of sexual events with casual partners (Table 4).

3) Frequency of sexual intercourse (sexual activity)

The overall average frequency of sexual intercourse per month for the previous year was 3.0 times. The frequency of sexual intercourse according to gender, age, education level, monthly income, and marital status are shown in Table 3. Highest frequency of sexual intercourse was observed in the 30s age group while the 60s age group showed the lowest rate. On multiple regression analysis, it was found that the frequency of sexual intercourse was higher in those with higher monthly incomes, in the lower age groups, among males, and among those currently having a sexual partner (Table 5).

Table 3. Prevalence of sexual behaviors in the past 12 months

Variable	Having sexual partner ^a		Sexual events with casual partners ^a		Frequency of sexual intercourse (/mo)	
	Men	Women	Men	Women	Men	Women
Overall	937/1,135 (82.6)	903/1,031 (87.6)	257 (22.6)	26 (2.5)	3.3±3.6	2.7±3.0
Age (y)						
18–19	7/17 (41.2)	11/17 (64.7)	4/17 (23.5)	1/17 (5.9)	1.5±2.6	2.5±3.4
20–29	97/165 (58.8)	99/126 (78.6)	47/165 (28.5)	5/126 (4.0)	3.1±3.2	3.2±3.2
30–39	208/259 (80.3)	200/219 (91.3)	76/259 (29.3)	7/219 (3.2)	3.9±4.2	3.7±3.6
40–49	266/294 (90.9)	246/268 (91.8)	59/294 (20.1)	4/268 (1.5)	3.2±3.5	3.0±2.9
50–59	234/261 (89.7)	224/253 (88.5)	52/261 (19.9)	6/253 (2.4)	3.2±3.5	2.1±2.6
60–69	125/139 (89.9)	123/148 (83.1)	19/139 (13.7)	3/148 (2.0)	2.6±2.8	1.1±1.9
Education level						
Middle school or lower	10/15 (66.7)	31/42 (73.8)	3/15 (20.0)	1/42 (2.4)	2.3±2.3	0.8±1.2
High school or college	255/322 (79.2)	419/478 (87.7)	69/322 (21.4)	8/478 (1.7)	3.1±3.7	2.7±3.0
University or higher	672/798 (84.2)	453/511 (88.6)	185/798 (23.2)	17/511 (3.3)	3.4±3.6	2.8±3.1
Marital status						
Currently married	785/793 (97.4)	771/794 (97.1)	150/793 (18.9)	18/794 (2.3)	3.6±3.6	2.9±3.0
Divorced or widowed	14/47 (29.8)	21/65 (32.3)	17/47 (30.5)	2/65 (3.1)	1.7±3.4	1.0±3.0
Never married	138/295 (44.4)	111/172 (64.5)	90/295 (27.2)	6/172 (3.5)	2.6±3.5	2.4±3.0
Monthly income (\$)						
<900	50/93 (53.8)	113/141 (80.1)	13/93 (14.7)	1/141 (0.7)	1.8±3.0	1.9±2.5
900–1,799	96/142 (67.6)	228/270 (84.4)	27/142 (18.4)	4/270 (1.5)	3.0±3.7	2.5±3.2
1,800–2,699	216/288 (75.2)	195/226 (86.3)	69/288 (24.0)	12/226 (5.3)	3.0±3.4	2.5±3.2
2,700–3,599	216/237 (90.3)	140/153 (91.5)	48/237 (23.1)	4/153 (2.6)	3.5±3.6	3.0±3.0
3,600–4,499	160/169 (93.5)	101/109 (92.7)	42/169 (24.9)	2/109 (1.8)	3.6±3.9	2.8±2.6
≥4,500	199/206 (96.5)	126/132 (95.5)	58/206 (29.2)	3/132 (2.3)	3.8±3.6	3.1±3.1

Values are presented as number/total number (%) or mean±standard deviation.

^aProportions were the results from respondents who had experienced sexual intercourse.

Table 4. Multivariate analysis of experience of sexual events with casual partners

Variable	Subheading	Adjusted OR	95% CI	p-value
Gender	Men	1.000		
	Women	0.103	0.037–0.169	<0.01
Age (10-y age band)		0.857	0.798–0.916	<0.01
Education level	Middle school or lower	1.000		
	High school or college	1.223	0.809–1.637	0.63
	University or higher	1.230	0.813–1.647	0.62
Marital status	Currently married	1.000		
	Divorced or widowed	2.076	1.81–2.35	<0.01
	Never married	1.870	1.72–2.02	<0.01
Monthly income (\$)	<900	1.000		
	900–1,799	1.323	1.09–1.56	0.240
	1,800–2,699	2.526	2.31–2.75	<0.01
	2,700–3,599	2.411	2.17–2.67	<0.01
	3,600–4,499	2.526	2.26–2.79	<0.01
	≥4,500	3.185	2.93–3.44	<0.01

OR: odds ratio, CI: confidence interval.

Table 5. Multiple regression analysis of frequency of sexual intercourse

Prognostic factor	Nonstandardized coefficient (B)	Standard error	Standardized coefficients (β)	p-value
Age	-0.52	0.05	-0.20	<0.01
Monthly income	0.18	0.04	0.08	<0.01
Women	-0.64	0.13	-0.09	<0.01
Not having sexual partner	-2.72	0.17	-0.30	<0.01

R²=0.130.

4) Frequency of and attitudes toward condom usage

The frequency of condom use rate, relative to socio-demographic factors is presented in Table 6. Totally, 14.8% (95% CI, 13.2%–16.4%) and 39.6% (95% CI, 33.9%–45.3%) of the respondents used condoms always/consistently with regular partners and casual partners, respectively. Meanwhile, 24.4% (95% CI, 19.4%–29.4%) of the respondents never or seldom use condoms with casual partners. Older participants and participant with lower education level were tended to be more likely to use condoms never or seldom with casual partners ($p < 0.001$). A feeling of condoms being bothersome was the most common reason for not using them (57.4%). Other reasons included decreased sexual pleasure (35.8%), a request from their partner (17.5%), and unavailability (2.3%).

4. Sexual education

Sexual education experience regarding STIs among demographics factors are shown in Table 7. Only 10.4% of the respondents had received sex education regarding STIs. Overall, 11.2% of men had received sexual education, higher than the 9.6% in women. However, this was not statistically significant ($p = 0.186$). According to age-band, older participants were more likely to have had no experience of sexual education regarding STIs ($p < 0.001$).

DISCUSSION

The current study is the second nationally representative study of sexual behavior among Korean men and women. The previous study did not include young age groups with higher sexual activity and focused on sexual problems leading to decreased sexual activity in older age groups [11]. The current study considered wider age groups including adolescents and young age group. Consequently, we could identified various

problem of sexual behavior in those age groups such as lack of sexual education in the adolescents, the highest rate of sexual intercourse with casual partners in their 20s and 30s, and the lowest rate of sexual education regarding STIs in middle age group. Additionally, the current study investigated basic sexual behaviors, enabling educators to develop plans for improving the social knowledge associated with sexual behaviors.

Lifetime experience of sexual intercourse, which is the baseline parameter for sexual behavior, was not included in most previous studies, despite being conducted among individuals who had already been sexually active [10,12,15-17]. In our study, teenagers and those in their 20s reported lesser sexual intercourse experience that may reflects the conservative Koreans' traditional Confucian perspective on sexual intercourse before marriage. However, compared with that before 10 years, the percentage of those with sexual experience among adolescents and those in the 20s age group had increased [10].

The mean age during the first intercourse was higher in Korea than in Western countries [18,19]. Recent studies have reported that the age during the first sexual intercourse in Korea has been decreasing [20,21]. However, it can be assumed that among those in their 20s or younger, since the participants with no sexual intercourse experience were excluded, the reported age during the first sexual intercourse might be lower than that among those in their 30s or older.

Totally 85.6% of women in the 30s or younger age groups reported having spouse as the sexual partner, compared with 70.7% of their male counterparts. This difference might be due to the increasing age at marriage in Korea and the increased rate of unemployment, which affects dating and intimacy. The gender disparity was reversed in the 60s age group, with 89.9% men and 83.1% women reporting having a sexual partner. This is consistent with previous studies in

Table 6. The frequency of condom use relative to sociodemographic factors

	With relationship partner			With casual partner			p-value ^a
	Total	Always or consistently	Never or seldom	Total	Always or consistently	Never or seldom	
Overall	1,820	269 (14.8)/13.2–16.4	1,117 (61.4)/59.4–63.6	283	112 (39.6)/33.9–45.3	69 (24.4)/19.4–29.4	
Men	917	131 (14.3)/12.0–16.6	546 (59.5)/56.3–62.7	257	104 (40.5)/34.5–46.5	63 (24.5)/19.3–29.8	0.705
Women	903	135 (15.0)/12.6–17.3	571 (63.2)/60.1–66.4	26	8 (30.8)/13.0–48.5	6 (23.1)/6.9–39.3	
Age (y)							<0.001
18–19	18	6 (33.3)/11.6–55.1	5 (27.8)/7.1–48.5	5	1 (20.0)/–15.1–55.1	2 (40.0)/–2.9–82.9	
20–29	196	63 (32.1)/25.6–38.7	51 (26.0)/19.9–32.2	52	24 (46.2)/32.6–59.7	8 (15.4)/5.6–25.2	
30–39	408	68 (16.7)/13.1–20.3	199 (48.7)/43.9–53.6	83	43 (51.8)/41.1–62.6	10 (12.0)/5.0–19.1	
40–49	492	88 (17.9)/14.5–21.3	296 (60.2)/55.8–64.5	63	24 (38.1)/26.1–50.1	19 (30.1)/18.8–41.5	
50–59	458	35 (7.7)/5.2–10.1	350 (76.4)/72.5–80.3	58	17 (29.3)/17.6–41.0	18 (31.1)/19.1–42.9	
60–69	248	9 (3.6)/1.3–6.0	216 (87.1)/82.9–91.3	22	3 (13.6)/–0.7–28.0	12 (54.6)/33.7–75.4	
Education level							<0.001
Middle school or lower	41	4 (9.8)/6.7–18.8	36 (87.8)/77.8–97.8	4	1 (25.0)/–17.4–67.4	1 (25.0)/–17.4–67.4	0.005
High school or college	664	71 (10.7)/8.3–13.0	451 (67.9)/64.4–71.5	77	22 (28.6)/18.5–38.7	27 (35.1)/24.4–45.7	
University or higher	1,115	194 (17.4)/15.2–19.6	630 (56.5)/53.6–59.4	202	89 (44.1)/37.2–50.9	41 (20.3)/14.8–25.8	
Marital status							<0.001
Currently married	1,543	180 (11.7)/10.1–13.3	1,036 (67.1)/64.8–69.5	168	68 (40.5)/33.1–47.9	42 (25.0)/18.5–31.5	
Divorced or widowed	35	9 (25.7)/11.2–40.2	21 (60.0)/43.8–76.2	14	2 (14.3)/–4.0–32.6	5 (35.7)/10.6–60.8	
Never married	242	80 (33.1)/27.1–39.0	60 (24.8)/19.4–30.2	101	42 (41.6)/32.0–51.2	22 (21.8)/13.7–29.8	

Values are presented as number only or number (%)/95% confidence interval.
^ap-value for linear trend.

Table 7. The frequency of received sexual education regarding sexually transmitted infections according to demographic characteristics

Variable	Subheading	Received	Not received	p-value
Overall		261 (10.4)/9.2–11.6	2,239 (89.6)/88.4–90.8	
Gender	Men	143 (11.2)/9.5–13.0	1,130 (88.8)/87.0–90.5	0.186 ^a
	Women	118 (9.6)/8.0–11.3	1,109 (90.4)/88.7–92.0	
Age (y)	18–19	59 (44.0)/35.6–52.4	75 (56.0)/47.6–64.4	<0.001 ^b
	20–29	85 (19.6)/15.9–23.3	349 (80.4)/76.7–84.1	
	30–39	44 (8.3)/6.0–10.7	484 (91.7)/89.3–94.0	
	40–49	28 (4.8)/3.1–6.5	558 (95.2)/93.5–96.9	
	50–59	23 (4.4)/2.6–6.1	502 (95.6)/9.4–9.7	
	60–69	22 (7.5)/4.5–10.5	271 (92.5)/89.5–95.5	

Values are presented as number (%)/95% confidence interval.

^ap-value for chi-square test. ^bp-value for linear trend.

other countries [16,22]. It could be explained by factors like the age structure of marital relationships among adults (men tend to pair with younger women), different remarriage patterns, and shorter life expectancy in men, compared with that in women [23]. Interestingly, among adolescents with sexual intercourse experience, only half of them reported having current sexual partners. This might imply that the sexually active adolescents were having sexual relationship with casual partners including friends, recent acquaintances, or transactional sex partners.

Age and marital status are well-known, strong determinants of sexual activity which were consistent with our results [24]. The gender difference with respect to sexual activity might be because men have a higher interest and a more positive attitude about sex [23]. It is also possible that physiological changes in older women such as vaginal atrophy, lower libido, and other sexual health problems might affect sexual activity [25]. Males aged above 40 years, also showed decreasing sexual activity with age, possibly due to the increasing prevalence of sexual problems [11,26].

A history of sexual relationship with casual partners is the concerning sexual behavior, since those who engage in this behavior are exposed to high risk of STIs [27]. The identified vulnerable groups were males in their 20s and 30s who are in sexually active ages. Additional studies investigating the rate of condom use in these groups are important. Although the rates of condom use with casual partners among those in their 20s and 30s were higher than other age group, it cannot be excused. In addition, although older age group were less likely to be exposed to sexual relationship with casual partners, their condom use rates were reported

significantly lower than young ages. The current overall rate of regular condom use is lower than that in western countries [14,28]. Furthermore, the overall rate of condom use has declined, when compared with the past decade, in Korea [10,29]. Therefore, it is necessary to develop a program for promoting condom use in the general population.

Despite the recent increase in the interest on sexual education, only about 10% of Korean adults had received sexual education regarding STIs. In 2009, amidst the increasing emphasis on the health of adolescents, the Korean Ministry of Education, Science, and Technology amended the Middle School Education Act and health teachers were mandated to provide health education including sexual education. Despite the increase in health education classes, only 44.0% of the adolescents in our cohort had received sexual education regarding STIs, which could have been avoided by health teachers and students due to the curriculum, which probably included embarrassing and repulsive pictures or photos [3]. Another important finding was that sexual education regarding STIs in the 40s and 50s was too low. The number of STI patients beyond their 40s was less than 20% of total STI patents in 10 years ago, and recently the number of patients in those ages have accounted for more than 35% [4]. Although the relationship between rapid increase in STI of beyond 40s and low rate of sexual education in those ages has not been ascertained clearly, sexual education would reduce the STI. Therefore, providing opportunities for sex education among these groups is necessary.

The major strength of this study, compared to other previous studies in Korea [6-9,11], is that we used a multi-stratification sampling design to collect nation-

ally representative data, with wider age groups, focusing on both the gender. We believe that our results adequately reflect contemporary patterns of Korean sexual behaviors, necessary for formulation of policies and practices to provide better sexual health. Second, we recruited participants and collected data online, to minimize information bias. Face-to-face and telephone interviews would be unsuitable for such a survey, as it might be embarrassing for respondents to share sensitive personal information [30]. In contrast, online survey respondents would be more honest and candid about their sexual behaviors, due to time convenience, and privacy.

A limitation of the current study is that the age group of 70 years or older was not included. Nevertheless, they are less accessible for an online survey, and there is a risk of selection bias that might include healthy elderly people, while overlooking most of them who live in a hospitalized setting or in long-term health-care facilities. Moreover, the 60s age group who completed the online survey were probably limited in their representation of this age group. Therefore, to explore elderly sexual behaviors, a large-scale population-based study with an innovative study design should be conducted. Another limitation is that this population-based design did not include sexual minorities such as gays, lesbians, or bisexuals. The ability to integrate those groups in the analysis was limited in this study.

CONCLUSIONS

This population-based study showed that sexual behaviors among Korean adults differed not only by gender and age, but also by educational level, marital status, and income level. Especially, it was able to identify various sexual health problems in the adolescents, the young aged, middle aged, and the old aged groups. Adolescents lack sexual education regarding STIs, despite the government's policy to strengthen health education programs. In their 20s and 30s showed high-risk sexual behavior such as paid sex or sexual intercourse with speed dating partners, and almost half of them, although the rates were higher than in other age group, did not use condoms. The middle aged group was identified with the lowest rate of sexual education regarding STIs, probably due to the unavailability of sexual education. In the old aged group, the sexual activity was the lowest, hinting at the possibility of

sexual dysfunction. Thus, policies and education promoting awareness about safe sexual practice and STI prevention are necessary in each group.

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Conflict of Interest

The authors have nothing to disclose.

Author Contribution

Conceptualization: AST, KJW, MDG. Data curation: KJW, KHJ. Formal analysis: AST, KHJ. Funding acquisition: MDG. Investigation: AST, KJW, KHJ, AHS, MDG. Project administration: AHS, LSW, MDG. Supervision: MDG. Validation: PHS, PHJ, AHS, LSW, MDG. Writing – original draft: AST. Writing – review & editing: AST, MDG.

Data Sharing Statement

The data required to reproduce these findings cannot be shared at this time due to legal and ethical reasons.

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