



Predictors of the Timing of Sexual Intercourse Initiation among Adolescents in South Korea

Jung Hee Yeo¹ · Hyunjeong Park² · Eun-Young Kim¹ 

Published online: 2 January 2019
© Springer Science+Business Media, LLC, part of Springer Nature 2019

Abstract

While the age of sexual intercourse initiation has decreased in South Korea, its correlates have not been identified using a nationally representative sample. This study investigated the predictors of the timing of sexual intercourse initiation among high school students in South Korea. A total of 10,810 students in the twelfth grade were selected from the Youth Health Behavior Online Survey (2016), and their data were analyzed using descriptive statistics and survival analysis. Approximately 11.6% of boys and 5.1% of girls reported having sexual intercourse. Significant predictors of the timing of sexual intercourse initiation among male students were the presence of parents, living with their family, socioeconomic status, grade of alcohol consumption initiation, grade of smoking initiation, and school type. Except for school type, the same results were found for girls. Sex education that targets high risk groups using the factors identified in this study may be effective in influencing positive changes in behavioral outcomes, such as delayed initiation of sex.

Keywords Adolescents · Sexual intercourse · Survival analysis · South Korea

Introduction

Sexual behavior during adolescence is an important indicator of a healthy and safe sexual life in adulthood [1]. According to Statistics in South Korea [2], the mean age of sexual intercourse initiation has decreased from 13.9 in 2008, to 13.6 in 2012, and to 13.2 in 2015. This decrease in the age of sexual intercourse initiation has been theorized to be influenced by the societal changes in sexual perception, values, and culture, including perspectives about marriage and family structure [3].

Several studies have identified negative outcomes for sexual intercourse during adolescence [4–6]. These outcomes include high rates of sexually transmitted diseases, pelvic inflammatory disease, cervical cancer, unwanted pregnancies, and social isolation [5]. Particularly, the early onset of sexual intercourse has been linked to an increased likelihood of having multiple sex partners, having inappropriately

frequent intercourse, having intercourse while drunk [6], forcing a partner to have intercourse, and decreased use of proper contraception [4]. Therefore, the early onset of sexual intercourse is associated with risky sexual behavior and adverse outcomes. Further, early engagement in sexual intercourse can have immediate and long-term effects on the physical and emotional development of adolescents, ranging from individual to serious social problems.

Research in developed countries has previously reported on the personal and social impact of early sexual onset, and many studies have examined the correlates of early onset of sexual intercourse using a psychosocial perspective in the United States [7]. This perspective portrays early intercourse as a type of form-breaking or deviance [8], and as a method of compensating for inadequate social relationships [7]. According to this perspective, smoking, alcohol consumption, academic performance, poverty, family structure, lack of parental supervision, and place of residence may be associated with early sexual intercourse [5, 9].

However, while these factors have been identified in other countries, most factors associated with early sexual intercourse initiation have not been examined in South Korean adolescents. The existing studies have focused on the frequency of sexual intercourse, or factors that affect current sexual intercourse status [10–12]. Hence, their findings are

✉ Eun-Young Kim
eykim@dau.ac.kr

¹ Department of Nursing, Dong-A University, 32
Daesingongwon-ro, Seo-gu, Busan 49201, South Korea

² Department of Nursing, Towson University, Towson, MD,
USA

not sufficient to establish practical guidelines or interventions to prevent or reduce early sexual intercourse initiation among adolescents. Moreover, to identify the patterns and correlates of the timing of sexual initiation, survival analysis is the most appropriate method, but there is little research using this method in South Korea. Therefore, using survival analysis, we will investigate the predictors of the timing of sexual intercourse initiation using data from the 2016 Youth Health Behavior Online Survey in South Korea. The purpose of this study was to (1) identify the status of having engaged in sexual intercourse and the timing of sexual intercourse initiation by gender, (2) determine the difference in the cumulative proportion surviving sexual intercourse initiation by gender, and (3) identify the predictors of the timing of sexual intercourse initiation by gender.

Methods

Study Design, Setting, and Sample

We used data from a national cross-sectional survey, the Youth Health Behavior Online Survey 2016. The survey is conducted annually by the Korea Centers of Disease Control and Prevention (KCDC) to examine the health behaviors of Korean adolescents, grades 7–12. We were provided these data by the KCDC after submission of the data use plan. In total, 65,528 students from 798 schools participated in this national survey. From the overall sample, 10,884 students in twelfth grade were included in the sample for this study. We excluded 74 students who had incomplete responses and had a total of 10,810 students in the final sample used for data analysis.

Study Variables and Measurement

Time was defined as the duration (survival period) from the baseline point (first grade) to the time the adolescents initially engaged in sexual intercourse, which could range from first grade to eleventh grade. The event was defined as the first time an adolescent engaged in sexual intercourse. For those students who had not yet engaged in sexual intercourse, the time was coded as twelfth grade at the time of the survey. The independent variables associated with initial engagement in sexual intercourse comprised sociodemographic characteristics (e.g., parental presence, living with family, socioeconomic status, and place of residence), health-related behaviors (e.g., grade of initiation of alcohol consumption and smoking), and school (e.g., school type, co-education status). In addition, the initial engagement in sexual intercourse and the cumulative proportion surviving refer to the cumulative proportion of students who had not had sexual intercourse at each period (1-grade interval).

The cumulative proportion ranges from 0 to 1, with values decreasing with the occurrence of initial sexual intercourse within each period.

Analysis

First, sexual intercourse status and the timing of sexual intercourse initiation by gender were reported as frequencies and percentages. Second, the cumulative proportion surviving initial sexual intercourse was determined by gender using the Kaplan–Meier Method, and the differences between genders were analyzed using the Log–rank test. Third, the predictors of the timing of sexual intercourse initiation were examined by gender using Cox’s multivariate proportional hazards model. Before analyzing these models, the tolerance limit and variance inflation factor were assessed to identify the potential for collinearity among independent variables by gender. Estimates were evaluated for statistical significance based on 95% CIs with $p < .05$. All analyses were conducted using SPSS software, version 24.0 (IBM SPSS Statistics for Windows, Armonk, NY: IBM Corp).

Results

Characteristics of Participants

The characteristics of the sample are presented in Table 1. Most of participants had two parents (91.7% of boys, 92.7% of girls), lived with their families (92.0% of boys, 91.7% of girls), and were middle-income with regards socioeconomic status (86.5% of boys, 91.5% of girls). For place of residence, 46.7% of boys and 44.1% of girls lived in large cities. Over one-third (34.6%) of boys and less than half (45.2%) of girls had no experience with drinking alcohol. Slightly less than two-thirds (64.3%) of boys and the majority of girls (89.2%) did not smoke, and 22.0% of boys and 5.9% of girls had their first smoking experience in middle school. Nearly 78% of boys and over 82% of girls attended academic high school; 57.4% of boys and 54.9% of girls attended coeducational schools.

Status of Sexual Intercourse, Timing of Sexual Intercourse Initiation, and Cumulative Proportion Surviving

The percentage of students who reported having sexual intercourse experience was 11.6% of boys and 5.1% girls. Among the boys who reporting having sexual intercourse ($n = 625$), the first-time rates were 1.6% both in first and second grades, 1.8% in sixth grade, 4.8% in seventh grade, 12.8% in eighth grade, 16.6% in ninth grade, 20.8% in tenth grade, 21.6% in eleventh grade, and 16.0% in twelfth

Table 1 General characteristics by subjects (n = 10,810)

Characteristics	Categories	Boys (n = 5401) n (%)	Girls (n = 5409) n (%)
Parental presence	Two parents	4953 (91.7)	5012 (92.7)
	One parent	366 (6.8)	364 (6.7)
	No parent	82 (1.5)	33 (0.6)
Living with	Family	4969 (92.0)	4959 (91.7)
	Other	432 (8.0)	450 (8.3)
Socioeconomic status	Low	278 (5.1)	236 (4.4)
	Middle	4673 (86.5)	4950 (91.5)
	High	450 (8.3)	223 (4.1)
Place of residence	Rural area	425 (7.9)	360 (6.7)
	Small city	2454 (45.4)	2666 (49.3)
	Large city	2522 (46.7)	2383 (44.1)
Grade at initiation of alcohol consumption	No alcohol consumption	1867 (34.6)	2447 (45.2)
	1st–3rd grade	207 (3.8)	82 (1.5)
	4th–6th grade	201 (3.7)	129 (2.4)
	7th–9th grade	1521 (28.2)	1178 (21.8)
	9th–12th grade	1605 (29.7)	1573 (29.1)
Grade at initiation of smoking	No smoking	3471 (64.3)	4825 (89.2)
	1st–3rd grade	98 (1.8)	25 (0.5)
	4th–6th grade	294 (5.4)	90 (1.7)
	7th–9th grade	1186 (22.0)	321 (5.9)
	9th–12th grade	352 (6.5)	148 (2.7)
School type*	Academic high school	4170 (78.3)	4407 (82.6)
	Vocational high school	1153 (21.7)	931 (17.4)
Coeducational school	No	2303 (42.6)	2439 (45.1)
	Yes	3098 (57.4)	2970 (54.9)

*Missing data excluded

grade. Among the girls reporting having experienced sexual intercourse (n = 275), the first-time rates were 2.5% in first grade, 2.9% in second grade, 0.7% in sixth grade, 4.0% in seventh grade, 8.7% in eighth grade, 10.6% in ninth grade, 24.7% in tenth grade, 22.9% in eleventh grade, and 20.0% in twelfth grade (Table 2).

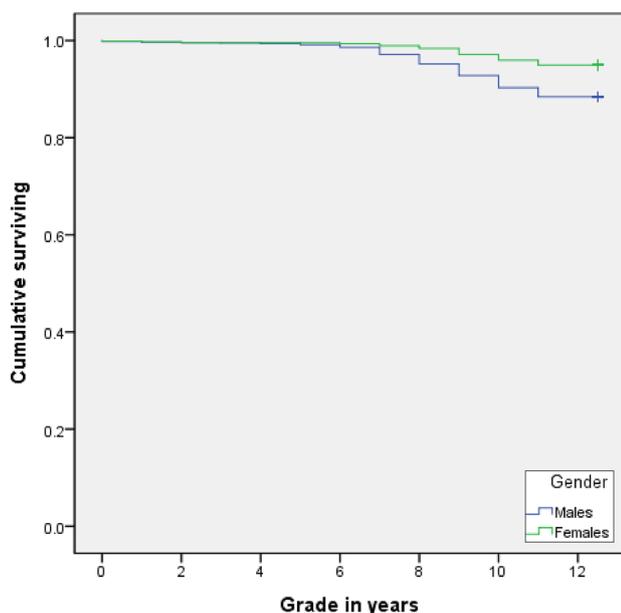
Based on the survival tables, the cumulative proportion of boys who had never engaged in sexual intercourse was estimated to be 99.0% until sixth grade, and this percentage annually dropped by about 2.0% after eighth grade, reaching 92.8% in ninth grade, and 88.4% in twelfth grade. The cumulative proportion of girls who had never engaged in sexual intercourse was estimated to be 99.0% until the seventh grade, and annually dropped by about 1.0% after ninth grade, reaching 97.1% in ninth grade, and 94.9% in twelfth grade. The difference in the cumulative proportion of boys and girls who had not engaged in sexual intercourse was statistically significant (Log-rank = 150.08, $p < .001$; Fig. 1).

Predictors of Timing of Sexual Intercourse Initiation by Gender

Cox's multivariate proportional hazards model of the timing of sexual intercourse initiation are presented in Table 3. Early sexual intercourse initiation for boys was correlated with having only one parent present (HR = 1.44, $p = .007$), living without family (HR = 1.42, $p = .012$), and attending vocational high school (HR = 1.47, $p < .001$). Interestingly, the timing of both initial alcohol consumption and smoking initiation was associated with the early onset of sexual intercourse. Compared to non-drinking participants, the risk of sexual intercourse initiation was higher when alcohol consumption started between first and third grade (HR = 2.81, $p < .001$), between fourth and sixth grade (HR = 4.02, $p < .001$), between seventh and ninth grade (HR = 3.23, $p < .001$), and between tenth and twelfth grade (HR = 1.78, $p < .001$). In addition, compared to non-smoking participants, the risk of initially having sexual intercourse

Table 2 Percentage of first sexual intercourse and cumulative proportion surviving by gender and grade (n = 10,810)

Categories		Boys		Girls	
		n (%)	Cumulative proportion surviving (%)	n (%)	Cumulative proportion surviving (%)
Sexual intercourse	Yes	625 (11.6)		275 (5.1)	
	No	4776 (88.4)		5134 (94.9)	
Timing of first sexual intercourse	1st grade	10 (1.6)	99.8	7 (2.5)	99.9
	2nd grade	10 (1.6)	99.6	8 (2.9)	99.7
	3rd grade	8 (1.3)	99.5	6 (2.2)	99.6
	4th grade	2 (0.3)	99.4	1 (0.4)	99.6
	5th grade	5 (0.8)	99.4	1 (0.4)	99.6
	6th grade	11 (1.8)	99.1	2 (0.7)	99.5
	7th grade	30 (4.8)	98.6	11 (4.0)	99.3
	8th grade	80 (12.8)	97.1	24 (8.7)	98.9
	9th grade	104 (16.6)	95.2	29 (10.6)	98.4
	10th grade	130 (20.8)	92.8	68 (24.7)	97.1
	11th grade	135 (21.6)	90.3	63 (22.9)	95.9
	12th grade	100 (16.0)	88.4	55 (20.0)	94.9
	Total	625 (100.0)		275 (100.0)	

**Fig. 1** Cumulative surviving (that is, yet to experience first sex) at each grade by gender

was greater when participants started smoking between first and third grade (HR = 5.44, $p < .001$), between fourth and sixth grade (HR = 5.83, $p < .001$), between seventh and ninth grade (HR = 3.14, $p < .001$), and between tenth and twelfth grade (HR = 2.98, $p < .001$).

For girls, the results were similar to those of boys, although the hazard ratio was larger, except for school type, which was non-significant in girls (HR = 1.14, $p = .368$).

Particularly, the timings of initiation of drinking alcohol and smoking were strong predictors in increasing the probability of early sexual intercourse initiation; first experience with drinking alcohol between first and third grade (HR = 10.00, $p < .001$), between fourth and sixth grade (HR = 6.37, $p < .001$), between seventh and ninth grade (HR = 3.42, $p < .001$), and between tenth and twelfth grade (HR = 3.34, $p < .001$); first smoking experience between first and third grade (HR = 9.51, $p < .001$), between fourth and sixth grade (HR = 6.12, $p < .001$), between seventh and ninth grade (HR = 4.31, $p < .001$), and between tenth and twelfth grade (HR = 5.60, $p < .001$) were reported.

Discussion

In this study, 11.6% of adolescent boys and 5.1% of adolescent girls reported having engaged in sexual intercourse. These results are similar to previous studies conducted in South Korea [3, 12, 13]. However, studies conducted in the US reported 50–70% of adolescent boys and girls had had sexual intercourse by the time they reached twelfth grade [5, 14, 15], which vastly differs from the results of this study. This difference between the number of adolescents in the US and South Korea who have initiated sexual intercourse could result from differences in culture that affect perspectives and norms regarding sexual behavior and attitude.

Moreover, this study reported that the percentage of students who engaged in sexual intercourse before 13 years old was 7.4% in boys, and 9.1% in girls. A national study of adolescents in the US reported the percentage of students having

Table 3 Cox proportional hazards regression on sexual intercourse initiation by gender (n = 10,810)

Variables	Categories	Boys (n = 5401)			Girls (n = 5409)		
		HR	95% CI	p	HR	95% CI	p
Parental presence	Two parents	1					
	One parent	1.44	1.11–1.87	0.007	1.18	0.79–1.75	0.421
	No parent	1.60	0.99–2.51	0.054	2.60	1.27–5.36	0.009
Living with	Family	1					
	Other	1.42	1.08–1.87	0.012	1.47	1.03–2.10	0.035
Socioeconomic status	Low	1			1		
	Middle	0.72	0.54–0.96	0.025	0.53	0.36–0.78	0.001
	High	1.16	0.81–1.67	0.420	0.71	0.38–1.31	0.272
Place of residence	Rural area	1			1		
	Small city	1.06	0.80–1.42	0.683	0.90	0.59–1.37	0.615
	Large city	1.21	0.90–1.61	0.211	1.14	0.73–1.78	0.558
Grade at initiation of alcohol consumption	No alcohol consumption	1			1		
	1st–3rd grade	2.81	1.86–4.25	<0.001	10.00	5.40–18.52	<0.001
	4th–6th grade	4.02	2.74–5.89	<0.001	6.37	3.52–11.51	<0.001
	7th–9th grade	3.23	2.41–4.32	<0.001	3.42	2.23–5.24	<0.001
	9th–12th grade	1.78	1.31–2.42	<0.001	3.34	2.22–5.04	<0.001
Grade at initiation of smoking	No smoking	1			1		
	1st–3rd grade	5.44	3.65–8.10	<0.001	9.51	4.73–19.13	<0.001
	4th–6th grade	5.83	4.48–7.57	<0.001	6.12	3.87–9.68	<0.001
	7th–9th grade	3.14	2.53–3.40	<0.001	4.31	3.09–6.02	<0.001
	9th–12th grade	2.98	2.20–4.04	<0.001	5.60	3.84–8.18	<0.001
School type	Academic high school	1			1		
	Vocational high school	1.47	1.23–1.75	<0.001	1.14	0.86–1.50	0.368
Coeducational school	No	1			1		
	Yes	1.02	0.86–1.21	0.838	0.79	0.61–1.02	0.071

sexual intercourse before the age of 13 was 7.3% for boys and 3.4% for girls [4]. Thus there were similar rates of sexual intercourse at age 13 for boys in the US and South Korea, but the percentage of South Korean girls was much higher than the percentage reported in the US. According to Han et al. [13], rates of having sexual intercourse for adolescent girls in Korea is rapidly increasing compared to the rates of male students. This difference is theorized to result from injudicious openness of sexual intercourse as South Korea's traditional sexuality, which emphasizes women's purity, shifts into libertarian sexuality concept [16]. This cultural shift in views toward female sexuality implies that adolescent girls are recognizing themselves as sexual objects and that their own sexual behavior is individually determined. However, when this sexual self-determination is exercised, adolescent girls in South Korea are may be negatively influenced by gender inequalities, leading to earlier ages of sexual onset in girls compared to boys [16]. Thus, tailored and detailed plans to promote the delay of adolescent girls' engagement in sexual intercourse should be developed.

Two notable predictors of sexual intercourse initiation in this study were the grades in which students started drinking

alcohol and smoking. Boys who began drinking alcohol and smoking between fourth and sixth grade, and girls who began drinking alcohol and smoking between first and third grade had higher risks of early sexual intercourse initiation than those students who did not drink alcohol or smoke. In previous studies, smoking and drinking were related to an increased probability of sexual intercourse in adolescence [17–19]. However, there have been few studies that have reported an association between the time of initiating smoking or drinking alcohol and sexual intercourse. Based on the results of the present study, providing tailored education about the hazards of smoking and drinking alcohol with younger girls and boys could also delay sexual intercourse initiation.

Among the demographic factors examined in this study, parental presence, living with family, and socioeconomic status were predictors of the timing of sexual intercourse initiation in both boys and girls. Specifically, students who were low-income, who were not living with family, or whose parents were absent had a higher probability of having sexual intercourse at a younger age. The results about the parental presence and living with family are similar to previous

studies in the US [19, 20] and in South Korea [11, 12, 21]. In addition, the results related to socioeconomic status were similar to studies of adolescents in the US [5] and South Korea [21]. Additional awareness and attention should be given to the effects of parental presence, living with family, and socioeconomic status to delay the timing of first sexual intercourse among South Korean adolescents.

School type was a predictor of the timing of first sexual intercourse for boys. Boys in vocational high schools had a higher risk of early sexual intercourse initiation compared to boys in academic high schools. This could reflect school characteristics, where the aim of vocational high schools for students is to obtain employment after graduation, whereas the goal of academic high schools for students is to enroll in college after graduation. Studies of sexual intercourse among adolescents in South Korea often utilize different types of school as a variable because students who are enrolled in different types of schools are likely to have different goals, and their sociodemographic characteristics are very different [10, 12]. Thus, culturally, and socially tailored sex education programs in vocational high schools should be offered in school, and continuous monitoring and surveillance system in community should be provided and targeted at those students at risk.

This study provides valid and credible results using a large national sample. However, since the study was conducted as a secondary analysis that used cross-sectional and retrospective data, variables were limited and several predictors of the timing of first sexual intercourse were not included in data collection. Further research which includes additional related variables should be implemented. In addition, as the temporal relationships are not clear, caution should be taken when inferring causality. In fact, investigating the timing of the first sexual intercourse experience is difficult. However, in developed countries, many longitudinal studies have been conducted since 2000 [20, 22], and similar studies should be performed at the national level in Korea.

Conclusion

This study utilized data from the Youth Health Behavior Online Survey conducted in 2016 to identify the predictors of the timing of first sexual intercourse among twelfth grade students. The results showed that predictors of the timing of first sexual intercourse experience among males were: grade at the initiation of smoking, grade at the initiation of drinking, presence of parents, living with family, economic status, and school type. Among female students, grade at the initiation of drinking, grade at the initiation of smoking, presence of parents, living with family, and economic

status were predictors of the timing of first sexual intercourse experience.

Acknowledgements This study was supported by the Dong-A University research fund.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval This study was approved by the Korea Centers for Disease Control and Prevention, and the Institutional Review Board of D institution (IRB No. 2-****-201,712-**-057-02).

References

1. Bozon, M., & Kontula, O. (1997). Initiation sexuelle et genre: comparaison des évolutions de douze pays européens. [Sexual initiation and gender: a comparison of trends in twelve European countries]. *Population*, 52(6), 1367–1400. <https://doi.org/10.2307/1534632>.
2. Statistics Korea. 2016 Korea youth statistics [Internet]. Seoul: Statistics Korea. 2016 [cited 2017 Nov 5]. Available from: <http://kostat.go.kr/wsearch/search.jsp>.
3. Lee, G. (2016). Sexual behaviors and sexual experience of adolescents in Korea. *Journal of the Korea Academia-Industrial Cooperation Society*, 17(12), 71–80. <https://doi.org/10.5762/KAIS.2016.17.12.71>.
4. Finer, L. B., & Philbin, J. M. (2013). Sexual initiation, contraceptive use, and pregnancy among young adolescents. *Pediatrics*, 131(5), 886–891. <https://doi.org/10.1542/peds.2012-3495>.
5. Lammers, C., Ireland, M., Resnick, M., & Blum, R. (2000). Influences on adolescents' decision to postpone onset of sexual intercourse: a survival analysis of virginity among youths aged 13 to 18 years. *The Journal of Adolescent Health*, 26(1), 42–48. [https://doi.org/10.1016/S1054-139X\(99\)00041-5](https://doi.org/10.1016/S1054-139X(99)00041-5).
6. O'Donnell, L., O'Donnell, C. R., & Stueve, A. (2001). Early sexual initiation and subsequent sex-related risks among urban minority youth: the reach for health study. *Family Planning Perspectives*, 33(6), 268–275. <https://doi.org/10.2307/3030194>.
7. Miller, B. C., & Fox, G. L. (1987). Theories of adolescent heterosexual behavior. *Journal of Adolescent Research*, 2(3), 269–282. <https://doi.org/10.1177/074355488723007>.
8. Miller, B. C., & Sneesby, K. R. (1988). Educational correlates of adolescents' sexual attitudes and behavior. *Journal of Youth and Adolescence*, 17(6), 521–530. <https://doi.org/10.1007/BF01537829>.
9. French, D. C., & Dishion, T. J. (2003). Predictors of early initiation of sexual intercourse among high-risk adolescents. *The Journal of Early Adolescence*, 23(3), 295–315. <https://doi.org/10.1177/0272431603254171>.
10. Chang, S. B., Kim, S., Han, I. Y., Park, Y. J., Kang, H. C., & Lee, S. K. (2001). Sexual behavior and related factors of coitus of teenage girls in Korea. *Journal of Korean Academy of Nursing*, 31(5), 921–931. <https://doi.org/10.4040/jkan.2001.31.5.921>.
11. Kim, M. J. (2003). A study on the factors causing the female adolescent sexual activity: focused on the peer group's sexual experiences, social support and coping. *Journal of the Korean Home Economics Association*, 14(6), 63–74.
12. Kwon, H. J., Kim, K. H., Choi, M. H., & Kim, H. Y. (2006). A study on the variables forecasting female adolescent's sexual

- intercourse. *Journal of Korean Academy of Psychiatric and Mental Health Nursing*, 15(2), 170–178.
13. Han, S. H., Kim, J. J., & Choe, M. J. (2002). Effect factors on initiating sexual activity among Korean young adults. *Journal of the Korean Society of Health Statistics*, 27(1), 21–36.
 14. Kann, L., Kinchen, S., Shanklin, S. L., et al. (2014). Youth risk behavior surveillance—United States 2013. *Morbidity and Mortality Weekly Report*, 63(4), 1–172.
 15. Singh, S., Wulf, D., Samara, R., & Cuca, Y. P. (2000). Gender differences in the timing of first intercourse: data from 14 countries. *International Family Planning Perspectives*, 26(1), 21–28. <https://doi.org/10.2307/2648286>.
 16. Ju, J. S. (2015). Libertarian sex and sexual self determination. *The Journal of Asian Women*, 54(1), 7–36.
 17. Gwon, S. H., & Lee, C. Y. (2015). Factors that influence sexual intercourse among middle school students: using data from the 8th (2012) Korea youth risk behavior web-based survey. *Journal of Korean Academy of Nursing*, 45(1), 76–83. <https://doi.org/10.4040/jkan.2015.45.1.76>.
 18. Nik Farid, N. D., Che' Rus, S., Dahlui, M., Al-Sadat, N., Che'Rus, S., Dahlui, M., & Al-Sadat, N. (2003). Determinants of sexual intercourse initiation among incarcerated adolescents: a mixed-method study. *Singapore Medical Journal*, 54(12), 695–701. <https://doi.org/10.11622/smedj.2013244>.
 19. Zimmer-Gembeck, M. J., & Helfand, M. (2008). Ten years of longitudinal research on U.S. adolescent sexual behavior: developmental correlates of sexual intercourse, and the importance of age, gender and ethnic background. *Developmental Review*, 28(2), 153–224. <https://doi.org/10.1016/j.dr.2007.06.001>.
 20. Blum, R. W., Beuhring, T., Shew, M. L., Bearinger, L. H., Sieving, R. E., & Resnick, M. D. (2000). The effects of race/ethnicity, income, and family structure on adolescent risk behaviors. *American Journal of Public Health*, 90(12), 1879–1884. <https://doi.org/10.2105/AJPH.90.12.1879>.
 21. Koh, Y. J., Kim, Y., & Noh, J. (2000). Contribution of behavioral disturbance, peer acceptance and friendship to the self-perceived social competence in Korean elementary-school children. *Korean Journal of Psychology: Development*, 13(2), 65–78.
 22. Waldron, M., Doran, K. A., Bucholz, K. K., Duncan, A. E., Lynskey, M. L., Madden, P. A. F., & Heath, A. C. (2015). Parental separation, parental alcoholism, and timing of first sexual intercourse. *Journal of Adolescent Health*, 56, 550–556. <https://doi.org/10.1016/j.jadohealth.2015.01.011>.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.