Association Between Timing of Sexual Initiation and Suicidal Ideation Among Adolescents in South Korea: A Cross-Sectional Study

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ABSTRACT
Background: The age of adolescents’ sexual initiation is decreasing worldwide. Early sexual initiation has been reported to affect social, physical, and mental health, but little is known about the relationship between the timing of sexual initiation and suicidal ideation.

Purpose: This study was designed to identify the association between the timing of sexual initiation and suicidal ideation by gender.

Methods: This cross-sectional study used data from South Korea’s Youth Health Behavior Online Survey for 2016. Data on first- to 12th-grade students (N = 10,810) were analyzed using descriptive statistics, χ² tests, and hierarchical logistic regression.

Results: The results revealed a significant relationship between early sexual initiation and suicidal ideation among both boys and girls. This relationship remained significant after controlling for confounding variables that are known to affect suicidal ideation, including perceived stress, hopelessness, school grades, and sociodemographic characteristics. The risk of suicidal ideation was higher among students who first experienced sex in earlier grades (before the ninth grade) and was also higher in girls than in boys.

Conclusions/Implications for Practice: Health providers should be aware of the potentially higher risk of suicidal behavior among adolescents after early sexual initiation. Given the extreme sensitivity and vulnerability of this target population, a multidisciplinary school- or community-based intervention program to promote the mental health of affected individuals and the general student population is warranted.

KEY WORDS: adolescents, hopelessness, perceived stress, sexual initiation, suicidal ideation.
experience sexual abuse are more likely to consider and attempt suicide than their non-sexually-abused counterparts (Behnk et al., 2010; McFarlane et al., 2005). Women who have been sexually assaulted in both childhood and adulthood are more likely to have attempted suicide than women who were sexually assaulted only in adulthood (Cloitre et al., 1997). Furthermore, emerging evidence indicates that sexual behavior may be associated with suicide, particularly among early adolescents (H. J. Lee & Lee, 2019; Smith et al., 2020). H. J. Lee and Lee found that, among culturally diverse adolescents aged 12–17 years, those who had engaged in sexual intercourse faced 1.72-fold higher odds of suicidal ideation, 2.24-fold higher odds of having a suicide plan, and 2.71-fold higher odds of having attempted suicide compared with those who had not. In a recent study that included a large sample (N = 116,820) of individuals aged 12–15 years from 38 countries, a positive association was found between sexual intercourse and suicidal attempts in 32 countries, with a pooled odds ratio (OR) of 2.12 (Smith et al., 2020). Furthermore, in another study, adults who first had sexual intercourse at 12–14 years old were found to be more likely to have numerous mental health problems than those who first had intercourse at 15–17 years old (Mota et al., 2010). The above findings point to an association between suicide and the timing of sexual initiation. Therefore, early sexual initiators are hypothesized in this study to be at a higher risk of reporting suicidal ideation. Although in South Korean society, which emphasizes chastity before marriage (J. R. Lee, 2017), early sexual initiation may significantly increase the risk of suicidal ideation in youth, this issue has been inadequately addressed in the literature.

Suicidal ideation and actual suicide attempts present a complex, multifaceted phenomenon (Miller et al., 2013). To determine the independent association between the timing of sexual initiation and suicidal ideation, potential confounders must first be identified and controlled. Stress, school performance, and hopelessness have been identified in previous research as factors associated with suicidal behavior in adolescents (Evans et al., 2004; Hong, 2012; Park & Bae, 2012) and may affect suicidal ideation. The purpose of this study was to investigate the association between the timing of sexual initiation and suicidal ideation after controlling for possible confounding variables (sociodemographic characteristics, perceived stress, school performance, and hopelessness).

Methods

Study Design, Setting, and Sample

National-level data collected through the YHBOS (an anonymous self-reported web-based survey of 7th–12th graders in South Korea) were used in this study. This survey is conducted annually by the KCDC to identify adolescents' health-related behaviors. The data used in this study were from the 2016 YHBOS. The survey applied a stratified, three-stage clustering design. The first stage involved 229 cities and districts with similar demographic characteristics in terms of numbers of schools and residents and the employment rate overall and in the farming, mining, and service industries. In the second stage, schools were selected from these 229 cities and districts. In the final stage, one class was randomly selected from each grade at each selected school. Overall, the survey sampled 67,983 students from 800 schools (400 middle schools and 400 high schools) nationwide during the target year (2016). Ultimately, 65,528 students from 798 schools participated (response rate = 96.4%). For this study, only the data from 10,884 12th graders were examined to ensure homogeneity among the participants in terms of minimizing the confounding effects of sociodemographic characteristics on the dependent variable.

After excluding 74 students because of incomplete data, 10,810 participants (boys: n = 5,401; girls: n = 5,409) remained in the final analytic sample. The KCDC provided these data after the authors submitted the data use plan for this study.

Variables and Measurement

Data were taken from the structured questionnaire in the 2016 YHBOS. Suicidal ideation, the dependent variable in this study, was defined by the response (yes or no) to the question “Have you ever seriously considered committing suicide within the past 12 months?” The timing of sexual initiation, the independent variable, was defined by the response to the question “At what grade level (1st–12th grade) did you first have sexual intercourse?” Confounding variables related to suicidal ideation, identified from previous studies (Evans et al., 2004; Hong, 2012; Park & Bae, 2012), included sociodemographic characteristics (i.e., living with family, socioeconomic status, residential area, school type, and mixed-gender school) and confounding variables (perceived stress, hopelessness, and school performance). With regard to perceived stress, daily stress was measured using a 5-point scale ranging from 1 = no stress at all to 5 = severe stress. For this study, we categorized a score of 3 or higher as “under stress” and a score of 2 or below as “no stress.” Hopelessness was measured using the response (yes or no) to the question “Have you ever felt hopeless to such an extent that you stopped your everyday activities entirely for two weeks in a row within the past 12 months?” Finally, school performance was measured using the response (high, medium, or low) to the question “How has your school performance been for the past 12 months?”

Ethical Considerations

The protocol for this study was approved by the KCDC and the institutional review board of Dong-A University (IRB No. 2-1040709-AB-NN-01-201805-HR-002-02).

Statistical Analysis

The statistical analyses in this study were performed using IBM SPSS Statistics 24.0 (IBM Inc., Armonk, NY, USA). Analyses were conducted separately by gender. Similarly,
frequencies of the participants’ sociodemographic characteristics were reported by gender. Chi-square tests were used to examine the differences in suicidal ideation across sociodemographic characteristics by gender. Differences in study variables between boys and girls were analyzed using chi-square tests. Finally, the association between the timing of sexual initiation and suicidal ideation by gender was analyzed using hierarchical logistic regression. To avoid any possibility of confounding effects associated with suicidal ideation, three-step logistic regression models were used. In Model 0, the bivariate association between the timing of sexual initiation and suicidal ideation was analyzed without controlling for any confounding variables. In Model 1, the association was analyzed after controlling for sociodemographic variables that exhibited statistically significant differences ($p < .05$) for suicidal ideation. In Model 2, the association was analyzed after further controlling for hopelessness, perceived stress, and school performance.

## Results

### Participant Characteristics and Differences in Suicidal Ideation by Gender

In terms of the data on the 5,401 boys in this study, 92.0% lived with their families, 86.5% were of middle socioeconomic status, and 46.7% lived in a large city. Furthermore, 78.3% of the boys attended an academic high school, and 57.4% attended a mixed-gender school. Suicidal ideation was found to differ significantly by socioeconomic status ($\chi^2 = 33.74, p < .001$).

In terms of the data on the 5,409 girls in this study, 91.7% lived with their families, 91.5% were of middle socioeconomic status, and 44.1% lived in a large city. Furthermore, 82.6% of the girls attended an academic high school, and 54.9% attended a mixed-gender school. Suicidal ideation was found to differ significantly by socioeconomic status ($\chi^2 = 33.99, p < .001$; Table 1).

### Sexual Experience, Timing of Sexual Initiation, and Suicidal Ideation

The descriptive statistics for the study variables and the differences between boys and girls are presented in Table 2. In terms of the boys, the overall prevalence of sexual experience was 11.6%, with 0.8% reporting their first experience in the first to sixth grades, 4.0% in the seventh to ninth grades, and 6.8% in the 10th–12th grades. In terms of the girls, the overall prevalence of sexual experience was 5.1%, with 0.5% reporting their first experience in the first to sixth grades, 1.2% in the seventh to ninth grades, and 3.4% in the 10th–12th grades. The timing of sexual initiation differed significantly between boys and girls ($\chi^2 = 158.22, p < .001$). The prevalence of suicidal ideation was 9.1% in boys and 13.8% in girls, representing a significant difference by gender ($\chi^2 = 58.68, p < .001$). In addition, hopelessness ($\chi^2 = 139.28, p < .001$), perceived stress ($\chi^2 = 256.51, p < .001$), and school performance ($\chi^2 = 32.85, p < .001$) were found to differ significantly between boys and girls.

### Table 1

| Variable                  | Boys (n = 5,401) | Suicidal Ideation | Girls (n = 5,409) | Suicidal Ideation |
|---------------------------|------------------|-------------------|-------------------|------------------|
|                           | No               | Yes               | No                | Yes              |
|                           | n %              | n %               | n %               | n %              |
| Living with               |                  |                   |                   |                  |
| Family                    | 4,969 92.0       | 4,520 92.1        | 449 90.9          |                   |
| Other                     | 432 8.0          | 387 7.9           | 45 9.1            |                   |
| Socioeconomic status      |                  |                   |                   |                  |
| Low                       | 278 5.1          | 229 4.7           | 49 9.9            |                   |
| Middle                    | 4,673 86.5       | 4,284 87.3        | 389 78.7          |                   |
| High                      | 450 8.3          | 394 8.0           | 56 11.3           |                   |
| Residential area          |                  |                   |                   |                  |
| Rural area                | 425 7.9          | 383 7.8           | 42 8.5            |                   |
| Small city                | 2,454 45.4       | 2,237 45.6        | 217 43.9          |                   |
| Large city                | 2,522 46.7       | 2,287 46.6        | 235 47.6          |                   |
| School type               |                  |                   |                   |                  |
| Academic high school      | 4,170 78.3       | 3,780 78.2        | 393 79.6          |                   |
| Technical high school     | 1,153 21.7       | 1,053 21.8        | 101 20.4          |                   |
| Mixed-gender school       |                  |                   |                   |                  |
| Yes                       | 3,098 57.4       | 2,832 57.7        | 266 53.8          |                   |
| No                        | 2,303 42.6       | 2,075 42.3        | 228 46.2          |                   |
Association Between Timing of Sexual Initiation and Suicidal Ideation by Gender

In Model 0, an association between timing of sexual initiation and suicidal ideation was found among the boys in this study, with this association strongest when the timing of sexual initiation occurred in the first to sixth grades \((OR = 6.65, 95\% CI [3.62, 12.21])\), followed by the seventh to ninth grades \((OR = 2.53, 95\% CI [1.76, 3.63])\) and the 10th–12th grades \((OR = 1.84, 95\% CI [1.35–2.52])\). In Model 1, in the boy subgroup, after controlling for socioeconomic status (Table 1), the timing of sexual initiation was still shown to be associated with suicidal ideation. Furthermore, this association remained in the first to sixth grade \((OR = 2.55, 95\% CI [1.30, 5.00])\) and seventh to ninth grade \((OR = 1.58, 95\% CI [1.05–2.37])\) categories even after controlling for the variables of hopelessness, perceived stress, and school performance in Model 2.

Similarly, for girls, the timing of sexual initiation was associated with suicidal ideation in Models 0 and 1. Furthermore, in Model 2, sexual initiation in the first to sixth grades \((OR = 4.10, 95\% CI [1.55, 10.87])\) and seventh to ninth grades \((OR = 3.48, 95\% CI [1.93, 6.27])\) was associated with suicidal ideation (Table 3).

**Discussion**

Using a large, nationally representative sample of South Korean 12th graders, the prevalence of suicidal ideation was found in this study to be 9.1% in boys and 13.8% in girls. These rates are higher than the 2.8% and 4.3% rates of prevalence found in 15-year-old boys and girls, respectively, using data from 10 European countries (Barzilay et al., 2017). This difference may reflect that suicide is a complex phenomenon involving individual, familial, cultural, and social factors.

Meanwhile, the prevalence of sexual experience in this study was 11.6% in boys and 5.1% in girls, which is lower than the 16.8% and 9.5% in 12- to 15-year-old boys and girls, respectively, in data from 38 countries (Smith et al., 2020). It is also lower than the 31.0% in boys and 32.0% in girls found in a survey of 15-year-olds in Sweden (Makenzius & Larsson, 2012). The difference between other countries and South Korea in terms of sexual experience prevalence may result from cultural differences that affect perspectives and norms regarding sexual behavior and attitude.

The findings of this study highlight the importance of the timing of sexual initiation as a significant risk factor affecting suicidal ideation in South Korean adolescents. The significant strength of the relationship between these two variables was consistent and independent of other confounding variables known to affect suicidal ideation. This finding is meaningful because the association between sexual initiation and suicidal ideation is usually observed in victims of sexual assault (Behnken et al., 2010; Cloitre et al., 1997; McFarlane et al., 2005). The participants in this study were drawn from the general student population, among which coercion is believed to play an insignificant role in sexual intercourse. This result supports the findings of H. J. Lee and Lee (2019) and Smith et al. (2020), who reported that sexual behavior among early adolescents placed them at a greater risk of suicidal ideation and attempts. Furthermore, the results of this study showed that the risk of suicidal ideation differed by

**Table 2**

Differences in Study Variables Between Boys and Girls

| Variable                              | Boys \((n = 5,401)\) | Girls \((n = 5,409)\) | \(\chi^2\) | \(p\) |
|---------------------------------------|----------------------|-----------------------|-----------|-------|
| **Suicidal ideation during the last 12 months** | 58.68 < .001          | 58.68 < .001          |           |       |
| No                                    | 4,907 90.9           | 4,660 86.2            |           |       |
| Yes                                   | 494 9.1              | 749 13.8              |           |       |
| **Hopelessness during the last 12 months** | 139.28 < .001         | 139.28 < .001         |           |       |
| No                                    | 4,105 76.0           | 3,553 65.7            |           |       |
| Yes                                   | 1,296 24.0           | 1,856 34.3            |           |       |
| **Perceived stress**                  | 256.51 < .001        | 256.51 < .001         |           |       |
| No                                    | 1,133 21.0           | 533 9.9               |           |       |
| Yes                                   | 4,268 79.0           | 4,876 90.1            |           |       |
| **School performance during the last 12 months** | 32.85 < .001         | 32.85 < .001          |           |       |
| High                                  | 2,055 38.0           | 1,820 33.7            |           |       |
| Medium                                | 1,543 28.6           | 1,792 33.1            |           |       |
| Low                                   | 1,803 33.4           | 1,797 33.2            |           |       |
| **Timing of sexual initiation (grade)** | 158.22 < .001        | 158.22 < .001         |           |       |
| No experience                         | 4,776 88.4           | 5,134 94.9            |           |       |
| First to sixth                        | 46 0.8               | 25 0.5                |           |       |
| Seventh to ninth                      | 214 4.0              | 64 1.2                |           |       |
| 10th–12th                             | 365 6.8              | 186 3.4               |           |       |
the timing of sexual initiation. Students with early sexual initiation (first to sixth and seventh to ninth grades) were at a significantly higher risk of suicidal ideation than their peers with sexual initiation in the 10th–12th grades. This result is similar to Kim and Kim (2010) who found a stronger association between sexual initiation and risks of suicidal ideation and attempts in preteen students than in teenage students. This association may be explained using the findings of prior studies (Li et al., 2015; Makenzius & Larsson, 2012). Makenzius and Larsson reported that teenagers who initiated sexual intercourse at 14 years old or younger had less-positive school experiences; more injuries and involvement in physical violence; and greater tobacco, alcohol, and illicit drug use than their peers who initiated sexual intercourse at 15 years old. Moreover, females initiating intercourse earlier were more likely to have multiple sexual partners, report pregnancy, and be diagnosed with sexually transmitted diseases (Li et al., 2015). Therefore, when adolescents, especially girls, with earlier sexual initiation experience these events, it may lead them to contemplate suicide. Another possible explanation is that mental distress may be influenced by cultural expectations regarding adolescents’ sexual behavior, including the purity complex. The purity complex is known to affect girls more than boys and was supported by the findings in this study. Although the ORs for suicidal ideation in terms of the timing of sexual initiation were ameliorated when adjusting for each additional confounding variable for both genders, these reductions were smaller in the girl subgroup than the boy subgroup. Thus, the association between timing of sexual initiation and suicidal ideation was greater in the girl subgroup in this study.

There is clear evidence that South Korean girls experience more internal conflict resulting from early sexual experiences than their male counterparts. Compared with boys, girls with early sexual experience have reported higher frequencies of feeling down or distressed (Makenzius & Larsson, 2012; Moreau et al., 2019; Rouche et al., 2019), more severe symptoms of depression (Hallfors et al., 2005), and more severe feelings of regret and remorse (Wight et al., 2000). In addition to the universal purity complex in South Korea, there is a gender-specific cultural expectation that stresses virginity, especially for women (J. R. Lee, 2017), such that women with early sexual experience may feel ashamed and guilty for not protecting their virginity (Wang & Ho, 2011; Wight et al., 2000). These emotional reactions may arise immediately after sexual initiation and may adversely influence the emotions, behaviors, and overall mental health of women for the rest of their lives (Wang & Ho, 2011). Therefore, to prevent suicide in adolescents, school nurses and community nurses should investigate adolescents’ emotional and psychological

Table 3

| Variable                                      | Model 0 | Model 1 | Model 2 |
|-----------------------------------------------|---------|---------|---------|
|                                               | Boys    | Girls   | Boys    | Girls   | Boys    | Girls   |
|                                               | OR      | 95% CI  | OR      | 95% CI  | OR      | 95% CI  |
| Timing of sexual initiation                   |         |         |         |         |         |         |
| (grade; Ref: no experience)                   |         |         |         |         |         |         |
| First to sixth                               | 6.65    | [3.62, 12.21] | 4.46    | [1.99, 9.96] | 5.88    | [3.18, 10.89] | 3.41    | [1.50, 7.75] | 2.55    | [1.30, 5.00] | 4.10    | [1.55, 10.87] |
| Seventh to ninth                             | 2.53    | [1.76, 3.63] | 4.57    | [2.76, 7.58] | 2.41    | [1.67, 3.47] | 4.24    | [2.55, 7.07] | 1.58    | [1.05, 2.37] | 3.48    | [1.93, 6.27] |
| 10th–12th                                    | 1.84    | [1.35, 2.52] | 2.13    | [1.51, 3.01] | 1.79    | [1.30, 2.45] | 2.09    | [1.47, 2.95] | 1.23    | [0.87, 1.73] | 1.46    | [1.00, 2.13] |
| Socioeconomic status                         |         |         |         |         |         |         |
| (Ref: high)                                  |         |         |         |         |         |         |
| Low                                          | 1.50    | [0.98, 2.29] | 1.50    | [0.95, 2.36] | 1.00    | [0.62, 1.60] | 1.08    | [0.65, 1.80] |         |         |         |
| Middle                                       | 0.70    | [0.51, 0.94] | 0.72    | [0.50, 1.03] | 0.59    | [0.42, 0.83] | 0.72    | [0.48, 1.07] |         |         |         |
| Hopelessness during the last 12 months        |         |         |         |         |         |         |
| (Ref: no)                                    |         |         |         |         |         |         |
|                                              | 11.30   | [9.04, 14.12] | 9.78    | [8.05, 11.87] |         |         |         |
| Perceived stress                             |         |         |         |         |         |         |
| (Ref: no)                                    |         |         |         |         |         |         |
|                                              | 1.92    | [1.34, 2.75] | 3.82    | [2.13, 6.84] |         |         |         |
| School performance during the last 12 months  |         |         |         |         |         |         |
| (Ref: high)                                  |         |         |         |         |         |         |
| Low                                          | 1.42    | [1.12, 1.82] | 1.24    | [1.01, 1.52] |         |         |         |
| Middle                                       | 1.24    | [0.95, 1.62] | 0.92    | [0.74, 1.14] |         |         |         |

Note. Ref = reference group; OR = odds ratio; CI = confidence interval.
status and sexual experiences and manage them continuously. In particular, as girls with early sexual experience are more likely to commit suicide than boys, it will be necessary to develop systems and interventions that include individuals, families, and community experts to provide prompt management.

In this analysis, after controlling for the confounding variables, the feeling of hopelessness was found to have the strongest association with adolescent suicidal ideation. Howton et al. (2012) similarly found that stress arising from personal adversity was associated with hopelessness in adolescents, which, in turn, influenced suicide. Hopelessness has also been identified in earlier studies as an important psychological risk factor for suicide in older adults and adult populations (Brown et al., 2000; Lynch et al., 2004). Therefore, assessing hopelessness and developing interventions to address this factor will be critical to preventing adolescent suicide in the future.

Limitations
This study was limited by the structure of the YHBOSS (Chatterji et al., 2004), which uses self-report, single-item measures, with minimal information provided regarding study variables. In other words, each variable (i.e., suicidal ideation, perceived stress, and hopelessness) was measured using a single item rather than a multiple-item scale. This may introduce reliability and validity problems. Scales that have undergone psychometric testing should be used to conduct further studies of this issue. Moreover, because the data used in this study were drawn from a web-based survey, it is possible that the participants did not answer accurately, especially with regard to the question about their first sexual experience. Furthermore, this was a cross-sectional analysis of the YHBOSS data set, which limits causal inferences. Thus, the findings of this study should be interpreted with caution because of uncertainties regarding the directionality of the observed relationships. Longitudinal studies should be conducted in the future to address this limitation. Despite its limitations, the use in this study of a nationally representative sample with a high response rate promotes the generalizability of the findings to the overall adolescent population in South Korea.

Conclusions and Implications for Practice
This study was conducted to assess the association between the timing of sexual initiation and suicidal ideation among 12th graders using data from the 2016 YHBOSS. The timing of sexual initiation was identified as a significant factor in suicidal ideation. Moreover, the association between timing of sexual initiation and suicidal ideation was stronger in girls than in boys. Therefore, the study’s findings contribute to the development of adolescent suicide prevention programs by considering pertinent risk factors and gender differences. Our findings suggest several implications for practice. First, an assessment of sexual initiation should be included in adolescent suicide prevention programs. Second, adolescent suicide prevention programs should be data driven, owing to risk factors such as timing of sexual initiation and gender. Finally, any intervention program for this vulnerable population should include strategies to address hopelessness. Future studies to cross-validate these findings and to more comprehensively investigate mental health in adolescents with respect to the influence of early sexual initiation are sorely needed. Sensible, innovative suicide prevention programs for adolescents, who often struggle to resolve conflicts between their intimate personal experiences and strong cultural expectations, are urgently needed.

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