

ORIGINAL ARTICLE

Association between sexual behavior and suicidal ideation among South Korean middle school students

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Aim: To identify the association between sexual behavior and suicidal ideation among South Korean middle school students.

Methods: This study used raw data from the 2013 Korean Youth Risk Behavior Web-Based Survey. Among the data from 72,435 students, the data from 36,530 individuals in middle school were analyzed. The prevalence of sexual behavior and suicidal ideation, according to the participants' general characteristics, and suicidal ideation, according to sexual behaviors, were assessed by using a complex sample Chi-squared test. A complex sample logistic regression was used to examine the association between sexual behavior and suicidal ideation.

Results: Overall, 3.8% of the students reported having had sexual intercourse and 17.6% of the students reported suicidal ideation during the past 12 months. Having had sexual intercourse was statistically significantly associated with suicidal ideation. The students who had had sexual intercourse usually used contraception and those who had contracted sexually transmitted diseases were more likely to report suicidal ideation in both the unadjusted and adjusted models.

Conclusion: This study illustrates the need to develop a prevention program that addresses the common factors between sexual behavior and suicidal ideation in order to effectively reduce both sexual behavior and suicidal ideation in middle school students.

Key words: adolescent health, mental health, school health, sexual health, suicide.

INTRODUCTION

Suicidal behavior among adolescents is a major public health concern in many countries. According to the World Health Organization (2014), suicide was the second-leading cause of death among 15–29 year olds worldwide in 2012 and the second-leading cause of death among 15–24 year olds in the USA in 2013. In South Korea, suicide is the leading cause of adolescent death (Statistics Korea, 2014). The incidence of

adolescent suicides increased from 7.7 per 100,000 in 2001 to 13 per 100,000 in 2011. Furthermore, the adolescent suicide rate among 15–19 year-olds in Korea has been increasing, while the adolescent suicide rate in other Organization for Economic Co-operation and Development countries has been decreasing (Jeon, Bae, & Woo, 2013). Adolescent suicide is one of the most serious health problems in Korea.

It is important to identify the factors that are related to adolescent suicide before suicidal ideation becomes serious enough to bring on a suicide attempt because adolescent suicide is different from adult suicide and even a single suicide attempt can be fatal (Yoo, Son, & Nam, 2008). Suicidal ideation is one of the most important predictive factors for suicide as it is the first step in the path to suicide (suicidal ideation → suicide attempt → suicide)

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(Lewinsohn, Rohde, & Seeley, 1996). Suicidal ideation is more common in adolescence than during other life stages (Nock *et al.*, 2008). Park (2008) reported that adolescents who had experienced suicidal ideation were 30-fold more likely to have attempted suicide than those who had not experienced suicidal ideation.

Some frequently reported risk factors for suicidal ideation among adolescents include mental health problems, such as depression or hopelessness, impulsive or aggressive behaviors, perception of being overweight, alcohol and substance use, smoking cigarettes, and physical activity (Afifi, Cox, & Katz, 2007; Han, Kim, Ryu, Kang, & Park, 2009; King *et al.*, 2013; Pelkonen & Marttunen, 2003; Wang, Deng, Wang, Wang, & Liang, 2010). Many studies regarding adolescent suicidal ideation have been conducted in Korea. However, most of those studies focused on the relationship between suicidal ideation and mental health factors, such as depression and stress, family-related factors, such as socioeconomic status and family structure, and school-related factors, such as school record and relationship with peers or teachers (Kim & Lee, 2009; Lewinsohn *et al.*, 1996; Park, 2008; Park & Moon, 2010; Ra, Lee, Seo, Choi, & You, 2013). Park indicates that although numerous studies have been conducted on suicidal ideation, few have properly addressed the association between risky behavior and suicidal ideation in Korea.

Several studies have been conducted on the link between suicidal ideation and risky behaviors, but they used selective samples that are not representative of the general population. Furthermore, there are few studies that have assessed the relationship between adolescent sexual behavior and suicidal ideation in Korea. In particular, no study has been carried out in order to identify the relationship between suicidal ideation and specific sexual behaviors. Some studies that had been done in other countries reported an association between adolescent sexual behavior and suicidal ideation (Afifi *et al.*, 2007; Hallfors *et al.*, 2004). For example, Afifi *et al.* reported that male adolescents who had had sexual intercourse were 14.14-fold more likely to also have experienced suicidal ideation.

Therefore, the purpose of this study is to identify the association between suicidal ideation and sexual behavior among Korean middle school students by using a large nationwide research dataset. It is hoped that this study will aid in the development of an effective health promotion program to prevent risky sexual behavior and suicidal behavior by middle school students.

METHODS

Study design and participants

In this study, a secondary analysis was carried out by using the 2013 Korean Youth Risk Behavior Web-Based Survey (KYRBWS) (Korea Centers for Disease Control and Prevention, 2014). It was developed by the Korea Centers for Disease Control and Prevention (KCDC) to monitor adolescent health. The participants of this survey were from 7th to 12th grade nationwide. In the 2013 survey, the samples were collected from middle and high school students as a population as a whole in April, 2012. Sampling was carried out in three stages: stratification, sample allocation, and sampling (three-stage, cluster-sample design). At the stratification stage, 43 population groups and school grades (middle school, general high school, specialized high school) were used as the stratification variables to divide the population into 129 layers in order to minimize sampling error. At the sample allocation stage, after making the size of the specimen of 400 middle schools and 400 high schools, priority was given to five middle schools and five high schools by 16 municipalities and departments and the composition of specimens by stratification variables. The number of schools was allocated by city size (big city, small city, county area), area, school type (boys' school, girls' school, coeducational school), so that the ratio matched. Sampling was conducted by the stratified multistage extraction method, the primary extraction unit was a school, the secondary extraction unit was a class, and one class in each grade was randomly extracted from the sample school. The final number of survey participants was 72,435 (participation rate: 96.4%) of the 799 schools, excluding one school, and the students who did not agree to participate in the survey and absentees. Among them, the data of 36,530 middle school students were analyzed in this study. This study was approved by the Institutional Review Board for the Protection of Human Subjects at the authors' institution.

Instruments

Suicidal ideation

Suicidal ideation was measured by the following question: "Have you ever seriously considered attempting suicide during the past 12 months?" Students answered either "yes" or "no."

Sexual behavior

The questions on sexual behavior included whether the students had had sexual intercourse, the timing of first

sexual intercourse, contraceptive use, experience of sexual intercourse after drinking, sexually transmitted diseases (STDs), and pregnancy. There were three types of questions regarding sexual intercourse: experience of sexual intercourse with an opposite sex partner, experience of sexual intercourse with a same sex partner, and experience of sexual intercourse with partners of both sexes. The timing of first sexual intercourse was categorized as before graduating elementary school or after entering middle school. The possible responses to questions on contraceptive use were “always,” “usually,” “sometimes,” or “never.”

General characteristics

The questions regarding general characteristics included questions on the sex of the student, grades, family-related variables, school-related variables, and mental health-related variables that are known to relate to suicidal ideation.

The family-related variables included the perceived economic status and the living situation. The perceived economic status was classified as “high,” “middle,” or “low.” Living with the family was classified as living with the family or not living with the family. The school records were used as a school-related variable. They were classified as “high,” “middle,” or “low.” The mental health-related variables included the levels of depression and stress over the past 12 months. The responses to the questions on depression were either “yes” or “no” and the responses to the questions on stress were categorized as “a lot,” “a little,” or “very little.”

Data analysis

The KYRBWS used a complex sample design that passed the stages of stratification, specimen allocation, and multistage sampling in order to obtain representative specimens. In addition, the data of the students who participated in the survey were weighted so that they represented Korean adolescents. The weighting was calculated reflecting the extraction rate, the response rate, and the population structure of the population. After multiplying the reciprocal of the extraction rate and the reciprocal of the response rate, the weighting was adjusted in the same way as the number of middle and high school students nationwide as of April, 2013, as a sum of sex, school type, and grade weighting. The analysis of the data was conducted according to the data analysis guideline of the KCDC.

The analyses were adjusted for the complex sample design of the survey. It is because there is a risk of underestimating the variance of the estimator when analyzing a simple random sample design. All the descriptive statistics are represented as frequencies and percentages for the categorical variables. The prevalence of sexual behavior and suicidal ideation according to the participants’ characteristics and suicidal ideation according to the sexual behaviors were assessed by using the complex sample Chi-squared test. For the complex sample logistic regression analysis, an unadjusted logistic regression model, a model adjusted for sex and grade, and a model adjusted for sex, grade, perceived economic status, living with family, school records, depression, and stress were used in order to examine the association between sexual intercourse and suicidal ideation. Next, in order to understand the impact of sexual behavior, the models were rerun by using only the data from the students who had had sexual intercourse.

The data were analyzed by using IBM SPSS for Windows v. 21.0 (IBM Corporation, Armonk, NY, USA) and the significance level for all analyses was set at 0.05.

RESULTS

Overall, 1364 (3.8%) of the students reported having had sexual intercourse and 6344 (17.6%) of the students reported suicidal ideation during the previous 12 months. Table 1 shows the association between sexual intercourse, suicidal ideation, and general characteristics. There were significant associations between sexual intercourse and sex, grade, perceived economic status, living with family, school records, depression, and stress. Male students, 7th grade students, students who perceived themselves to be of high economic status, students who had not lived with their family, students who had low school records, students who experienced depression in the past 12 months, and students who felt a lot of stress reported more experiences of sexual intercourse.

There were also significant associations between suicidal ideation and sex, grade, perceived economic status, living with family, school records, depression, and stress. Female students, 8th grade students, students who perceived themselves to be of low economic status, students who did not live with their family, students who had low school records, students who had experienced depression in the past 12 months, and students

Table 1 Prevalence of sexual intercourse and suicidal ideation according to general characteristics

Characteristic	N (%)	Sexual intercourse (<i>n</i> = 1364)		Suicidal ideation (<i>n</i> = 6344)	
		N (%)	χ^2/P^\dagger	N (%)	χ^2/P^\dagger
Sex			159.59 <0.001		504.74 <0.001
Male	18,921 (51.8)	937 (5.0)		2435 (12.9)	
Female	17,609 (48.2)	427 (2.4)		3909 (22.2)	
Grade			16.89 0.004		15.99 0.002
7th	12,199 (33.4)	532 (4.4)		2009 (16.5)	
8th	12,113 (33.2)	416 (3.4)		2238 (18.5)	
9th	12,218 (33.4)	416 (3.4)		2097 (17.2)	
Perceived economic status			71.84 <0.001		413.88 <0.001
High	13,632 (37.3)	616 (4.5)		2021 (14.8)	
Average	17,174 (47.0)	501 (2.9)		2803 (16.3)	
Low	5724 (15.7)	247 (4.3)		1520 (26.6)	
Living with family			630.41 <0.001		78.41 <0.001
Yes	35,725 (97.8)	1221 (3.4)		6118 (17.1)	
No	805 (2.2)	143 (17.8)		226 (28.1)	
School record			7.69 0.030		270.08 <0.001
High	13,656 (37.4)	470 (3.4)		2014 (14.7)	
Middle	9601 (26.3)	339 (3.5)		1468 (15.3)	
Low	13,273 (36.3)	555 (4.2)		2862 (21.6)	
Depression			148.51 <0.001		8210.63 <0.001
Yes	10,518 (28.8)	586 (5.6)		4798 (45.6)	
No	26,012 (71.2)	778 (3.0)		1546 (5.9)	
Stress			28.47 <0.001		4433.11 <0.001
A lot	14,236 (39.0)	592 (4.2)		4803 (33.7)	
A little	14,932 (40.9)	464 (3.1)		1279 (8.6)	
Very little	7362 (20.2)	308 (4.2)		262 (3.6)	

N = 36,530.

[†] Complex sample Chi-square test.

who felt a lot of stress were at more risk of suicidal ideation.

Table 2 shows the general characteristics, sexual behavior, and suicidal ideation among students who had had sexual intercourse by sex. There were significant sex differences in grade, depression, stress, and suicidal ideation. In 7th grade, there were more female students than male students, while there were more

male students than female students in 8th and 9th grade. Regarding depression and suicidal ideation, female students were more likely to have depression and suicidal ideation than male students. Regarding stress, the female students reported more “a lot” answers than did the male students, while the male students more reported “little” and “very little”. There was no sex difference in sexual behavior.

Table 2 General characteristics and sexual behavior among students who had had sexual intercourse

Characteristic	Male (<i>n</i> = 937) N (%)	Female (<i>n</i> = 427) N (%)	χ^2/P^\dagger
Grade			
7th	346 (36.9)	186 (43.6)	12.39
8th	296 (31.6)	120 (28.1)	0.002
9th	295 (31.5)	121 (28.3)	
Perceived economic status			
High	442 (47.2)	174 (40.7)	3.97
Average	334 (35.6)	167 (39.1)	0.180
Low	161 (17.2)	86 (20.1)	
Living with family			
Yes	845 (90.2)	376 (88.1)	1.75
No	92 (9.8)	51 (11.9)	0.200
School record			
High	336 (35.9)	134 (31.4)	1.95
Middle	232 (24.8)	107 (25.1)	0.460
Low	369 (39.4)	186 (43.6)	
Depression	350 (37.4)	236 (55.3)	52.09 <0.001
Stress			
A lot	365 (39.0)	227 (53.2)	19.76
A little	336 (35.9)	128 (30.0)	<0.001
Very little	236 (25.2)	72 (16.9)	
Suicidal ideation	230 (24.5)	169 (39.6)	37.00 <0.001
Sexual intercourse			
With an opposite sex partner	677 (72.3)	309 (72.4)	0.29
With a same sex partner	135 (14.4)	66 (15.5)	0.870
With both sex partners	125 (13.3)	52 (12.2)	
Timing of first sexual intercourse			
Before graduating elementary school	570 (64.3)	243 (59.1)	0.82
After entering junior high school	317 (35.7)	168 (40.9)	0.360
Sexual intercourse after drinking	153 (16.3)	69 (16.2)	0.25 0.680
Contraception			
Always	185 (19.7)	73 (17.1)	2.84
Usually	41 (4.4)	23 (5.4)	0.490
Sometimes	37 (3.9)	23 (5.4)	
Never	674 (71.9)	308 (72.1)	
Sexually transmitted diseases	88 (9.4)	42 (9.8)	0.13 0.750

N = 1364.

[†] Complex sample Chi-square test.

Table 3 Association between the experience of sexual intercourse, depression, and suicidal ideation

Variable	N (%)	OR (95% CI)	AOR (95% CI) [†]	AOR (95% CI) [‡]
Depression	***	–	–	–
Yes	4798 (45.6)	13.16 (12.34–14.03)	12.700 (11.88–13.57)	–
No	1546 (5.9)	1.00	1.000	–
Sexual intercourse	***	–	–	–
Yes	399 (29.3)	2.07 (1.82–2.34)	2.367 (2.084–2.689)	1.745 (1.492–2.041)
No	5945 (16.9)	1.00	1.000	1.000

N = 36,530.

*** $P < 0.001$.[†] Adjusted odds ratios (AORs) were adjusted for sex and grade;[‡] the AORs were adjusted for sex, grade, perceived economic status, living with family, school record, depression, and stress.

CI, confidence interval.

Table 3 shows the association between the experience of sexual intercourse and suicidal ideation. Also, depression that was related to suicidal ideation was examined. The students who had experience of depression more often reported suicidal ideation ($\chi^2 = 8210.62$, $P < 0.001$). In both the unadjusted model and the adjusted model, depression was associated with suicidal ideation. The students who had experience of sexual intercourse more often reported suicidal ideation ($\chi^2 = 149.26$, $P < 0.001$). In both the unadjusted model and the adjusted model, sexual intercourse was associated with suicidal ideation.

Table 4 shows the association between specific sexual behaviors and suicidal ideation among those students

who had had sexual intercourse. A Chi-squared test revealed significant associations between suicidal ideation and the timing of the first sexual intercourse ($\chi^2 = 4.61$, $P = 0.03$), sexual intercourse after drinking ($\chi^2 = 59.06$, $P < 0.001$), contraceptive use ($\chi^2 = 28.25$, $P < 0.001$), and STD status ($\chi^2 = 42.76$, $P < 0.001$). The students who first had had sexual intercourse after entering middle school, the students who had had sexual intercourse after drinking, the students who usually used contraception, and the students who had contracted a STD were more likely to report suicidal ideation. There was no significant association between the experience of sexual intercourse with a same sex partner or with both sex partners and suicidal ideation. In the

Table 4 Association between sexual behaviors and suicidal ideation among students who had had sexual intercourse

Variable	N (%)	OR	AOR (95% CI) [†]	AOR (95% CI) [‡]
Sexual intercourse				
With an opposite sex partner	277 (28.1)	1.00	1.00	1.00
With a same sex partner	62 (30.8)	0.73 (0.52–1.03)	0.70 (0.49–1.01)	0.67 (0.44–1.01)
With both sex partners	60 (33.9)	1.03 (0.72–1.50)	1.07 (0.73–1.55)	0.89 (0.58–1.36)
Timing of first sexual intercourse	*			
Before graduating elementary school	224 (27.6)	1.00	1.00	1.00
After entering junior high school	163 (33.6)	1.47 (1.50–1.89)	1.29 (0.98–1.71)	1.21 (0.87–1.67)
Sexual intercourse after drinking	***			
Yes	112 (50.5)	2.11 (1.51–2.96)	2.05 (1.44–2.93)	1.39 (0.88–2.20)
No	287 (25.1)	1.00	1.00	1.00
Contraception	***			
Always	88 (34.1)	1.37 (0.99–1.89)	1.39 (1.01–1.91)	1.47 (0.98–2.21)
Usually	31 (48.4)	2.08 (1.24–3.49)	1.99 (1.16–3.40)	2.71 (1.35–5.46)
Sometimes	25 (41.7)	148.00 (0.73–2.99)	1.31 (0.62–2.76)	0.84 (0.39–1.80)
Never	255 (26.0)	1.00	1.00	1.00
Sexually transmitted diseases	***			
Yes	67 (51.5)	2.24 (1.43–3.49)	2.20 (1.36–3.56)	2.57 (1.38–4.79)
No	332 (26.9)	1.00	1.00	1.00

N = 1364.

* $P < 0.05$ and *** $P < 0.001$.[†] Adjusted odds ratios (AORs) were adjusted for sex and grade;[‡] the AORs were adjusted for sex, grade, perceived economic status, living with family, school record, depression, and stress.

CI, confidence interval.

unadjusted model, the students who first had had sexual intercourse after entering middle school (odds ratio [OR] = 1.47, confidence interval [CI] = 1.15–1.89), those who had had sexual intercourse after drinking (OR = 2.11, CI = 1.51–2.96), those who had usually used contraception (OR = 2.08, CI = 1.24–3.49), and those who had contracted STDs (OR = 2.24, CI = 1.43–3.49) were more likely to report suicidal ideation. In the model that had been adjusted for sex and grade, the students who had experienced sexual intercourse after drinking (adjusted odds ratio [AOR] = 2.05, CI = 1.44–2.93), those who had always used contraception (AOR = 1.39, CI = 1.01–1.91), those who had usually used contraception (AOR = 1.99, CI = 1.16–3.40), and those who had contracted STDs (AOR = 2.20, CI = 1.36–3.56) were more likely to have experienced suicidal ideation. In the model that had been adjusted for sex, grade, perceived economic status, living with family, school records, depression, and stress, the students who had usually used contraception (AOR = 2.71, CI = 1.35–5.46) and those who had contracted STDs (AOR = 2.57, CI = 1.38–4.79) were more likely to have experienced suicidal ideation.

DISCUSSION

This study used a cross-sectional research design to identify the association between sexual behavior and suicidal ideation among Korean middle school students by using the secondary data of the KYRBWS in 2013. The current study is one of the first studies to examine the relationship between middle school students' sexual behavior and suicidal ideation in South Korea.

It was found that the students who reported having had sexual intercourse were at increased risk of suicidal ideation. Especially the students who had had sexual intercourse after drinking, who had contracted STDs, and who had usually used contraception were more likely to report suicidal ideation.

These results were similar to other countries' previous research that reported an association between adolescent sexual behavior and suicidal ideation. There are several possible explanations for the association between sexual behavior and suicidal ideation among adolescents. The first possible explanation is related to the age norm theory (Meier, 2007). According to this theory, in any society, there are norms for social behavior that apply to a certain age group, and when persons do not follow the norms, they become targets of social punishment or social stigmas, which leads to negative

results. With sex in adolescence being a taboo, students having sexual intercourse might experience psychological and social stress, leading to mental health problems and suicidal ideation. This phenomenon is particularly more prominent in Korean society, where the youth hold liberal views on romantic relationships, while the parents' generation has a conservative perception (Kim, 2015).

The second explanation is that there are some common factors between sexual behavior and suicidal ideation. Previous researchers reported that adolescent suicidal ideation is related to psychological factors, such as depression, anger, stress, alienation, self-esteem, and self-control; family-related factors, such as family relationships and the family structure; other risk behaviors, such as drinking, smoking, and drug use; and personal factors, such as perceived economic status, health, and happiness (King *et al.*, 2013; Lewinsohn *et al.*, 1996; Nock *et al.*, 2008; Park, 2008; Ra *et al.* 2013; Wang *et al.*, 2010). Also, many risk factors for adolescent sexual behavior have been identified. Psychological factors, such as self-esteem, self-efficacy, decision-making skills, and goal-setting skills; personality traits, such as antisocial and sensation-seeking traits; other risk behaviors, such as drinking, smoking, and drug use; and family factors, such as the parental living arrangement and family function. These are all particularly important (Kawabata *et al.*, 2007; Ryu, Kim, & Kwon, 2007; Song *et al.*, 2012; Wild & Flisher, 2004; Yu, Kim, & Kim, 2014). Common factors in sexual behavior and suicidal ideation include self-esteem, depression, other risk behaviors, and family-related factors. Thus, risky behaviors in adolescence are related with one another and have common causes. Kawabata *et al.* explain that adolescents who take part in risky behavior have serious psychosocial problems like depression or a low self-esteem, and they could turn to risky behavior in an effort to assuage or escape these problems. (Jessor's (1982) problem behavior theory posits that problematic behaviors, such as drinking, smoking, and sexual intercourse, in adolescents are used to relieve concerns, to satisfy the desire to be loved, and to feel valued.

The third explanation is the relationship with depression, which is one of the most powerful predictive factors for suicidal ideation. After having sexual intercourse, some adolescents experience depression, which leads to suicidal thoughts. According to a Heritage Foundation report (Rector, Johnson, & Noyes, 2003), 25.3% of girls and 8.3% of boys who were sexually active reported that they were depressed most of the time, while only 7.7% of girls and 3.4% of boys

who were not sexually active reported that they were depressed most of the time. Also, 14.3% of girls and 6.0% of boys who were sexually active had attempted suicide, while 5.1% of girls and 0.7% of boys who were not sexually active had attempted suicide. The report indicates that early sexual activity leads to emotional stress and reduces happiness. Shrier, Harris, Sternberg, and Beardslee (2001) reported that depression is associated with a lack of condom use by boys and a prevalence of STDs in girls. Also, Park and Son (2009), who researched depression in Korean adolescents, reported that those adolescents who had experienced sexual intercourse were depressed about twice as often as those who had never had sexual intercourse. Also, in this study's results, the students who had experience of depression more likely reported suicidal ideation.

The results of this study indicated that practical sexual education could reduce the risk of suicidal behavior in adolescence. It is important to develop a comprehensive program that is focused not only on suicidal behavior but also on the various behaviors that can be used to reduce the likelihood of suicidal behaviors effectively among Korean middle school students.

In contrast, it is unclear why the students who usually used contraception had more experience with suicidal ideation than those who had never used contraception in this study. It could be that the students who usually used contraception had more experience with sexual intercourse than those who had never used contraception. In other words, the students who responded that they never used contraception might not have been accustomed to sexual intercourse or might only have had sexual intercourse one time.

Limitations of the study

There are several limitations to this study. First, it used a cross-sectional research design and therefore the findings cannot identify causal relationships between sexual behavior and suicidal ideation. Second, the data were self-reported; thus, there was most likely a social desirability bias because sexual behavior is a very sensitive topic in Korea. Third, as this survey focused on adolescent health-related behavior, future longitudinal studies on psychosocial factors, such as self-esteem, that are known to be associated with sexual behavior and suicidal ideation, are necessary. Fourth, this survey included many questions about various health-related behaviors; thus, the questions about each behavior were limited. Regarding sexual behavior, there was no question about specific sexual behaviors, such as

relationship loyalty, number of partners, and frequency of sexual behaviors. A further survey that includes these questions is needed in order to clarify the relationship between adolescents' sexual behavior and suicidal ideation.

CONCLUSION

Despite the above-mentioned limitations, the findings of this study have important practical implications. The current results indicate that adolescents who had experience with sexual intercourse were more likely to experience suicidal ideation than those who did not. These results indicate that there is a need to develop a prevention program that targets sexual behavior in order to reduce the likelihood of suicidal ideation among middle school students. The risky behaviors of adolescence are related to each other and therefore it is important to develop a prevention program that can be applied to various risky behaviors, rather than a program that focuses on one specific behavior.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

G. L. conceived and designed the study; S. S. analyzed the data and wrote the manuscript.

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