

# A Comparative Study about Risk Factors Influencing Suicide Ideation between Korean and Multicultural Adolescents

Lee, Hanju

Department of Nursing, Sangmyung University, Cheonan, Korea

**Purpose:** In South Korea, suicide mortality has rapidly increased, so it has become a major public health concern. Multicultural adolescents are regarded as a high-risk group due to their situation. In this study, we compared the prevalence and risk factors of suicide ideation between Korean and multicultural adolescents. **Methods:** Data from the eleventh Korean Youth Risk Behavior Web-based Survey (2015), collected by the Korean Centers for Disease Control and Prevention, were statistically analyzed using the descriptive statistics and multivariate logistic regression. The total participants were 63,376 in numbers. They were composed of 62,649 (98.9%) Korean and 727 (1.1%) multicultural adolescents. **Results:** I found that the prevalence of suicide ideation was significantly higher among the multicultural adolescents (15.8%) compared with those of Korean (11.3%). The risk factors of suicide ideation in the Korean group were co-residence without family, poor perceived health status, depressive mood, high stress level, poor perceived happiness level, and experience of violence. Conversely, the risk factors of the multicultural group were smoking, depressive mood, and experience of violence. **Conclusion:** These findings suggest that appropriate and practical prevention strategies should focus on psychological and environmental factors in order to prevent suicide ideation and reduce suicide behavior in Korean and multicultural adolescents.

**Key Words:** Adolescents, Cultural diversity, Suicidal ideation

## INTRODUCTION

In the past few years, the number of marriage immigrants and foreign workers living in South Korea has increased rapidly. According to statistics from the Ministry of Interior in 2015, of the 1,711,013 foreign nationals living in South Korea, 144,912 (8.05%) were married to immigrants and 93,249 (5.4%) were married to naturalized persons; 83~89% of these individuals were women [1]. This increasing number of international marriages and migrant workers has led to an increasing number of adolescents from multicultural backgrounds. Indeed, according to youth statistics from 2016, the number of students from multicultural families reached 82,536 in 2015, or 1.4% of the total number of students, which was an 24.0% increase from 2012 [2]. Since South Korea is rapidly transforming into a multicultural society, it would be important task to ensure that people with diverse backgrounds can success-

fully integrate into and live safely within Korean society.

Adolescence is a psychologically unstable developmental stage, and when adolescents' interaction with their surrounding environment is problematic, they are at high risk of developing extreme thoughts and taking extreme action, such as death with despair [3]. suicide ideation is a logical precedent of suicide attempts and behaviors. Indeed, the stronger the suicide ideation, the greater the likelihood of attempting suicide [4]. Adolescents are known to be more likely to express their thoughts of suicide [5]. According to statistics released by the Statistics Korea, suicide is the main cause of deaths among adolescents in South Korea from 2007. In 2014, it was reported that the rate of suicide was 7.4 per 100,000 people [2]. The Korea Youth Policy Institute conducted a "survey on the mental health status of 2012 Korean children and adolescents" in 8,745 elementary, middle and high school students. In this sample, 23.4 % of respondents indicated that they had thought about

**Corresponding author:** Lee, Hanju

Department of Nursing, Sangmyung University, 31 Sangmyungdae-gil, Dongnam-gu, Cheonan 31066, Korea.  
Tel: +82-41-550-5429, Fax: +82-41-550-5545, E-mail: dalbich@smu.ac.kr

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suicide [6].

It has been reported that, in the adolescent period, when individuals are typically beginning to form their identity, children of multicultural families are at an increased risk to experience identity crisis and confusion that is more severe than that experienced by their Korean families [7]. Not only are these individuals possibly more vulnerable to anxiety about social acceptance and the fear of rejection, but they also tend to not receive support at home [8]. Therefore, it is not surprising that one study found a rate of depression in this population of 18.2% [9]. Further, in a study comparing suicide behaviors among adolescents of multicultural families and adolescents in the general population, Kim and Kim [10] reported that the risk of suicide was higher when the father, or if both parents were foreigners.

Researchers have shown that being from a multicultural family can influence adolescents' psychology, including their likelihood of attempting suicide. In particular, children of multicultural families in South Korea tend to experience emotional difficulties because of social prejudice and discrimination [11], low socioeconomic status, and psychological and social maladjustment [12]. These factors in turn generate stress and increase the likelihood of negative coping behaviors [34]. Such coping behaviors include health risk behaviors such as drinking and smoking, the likelihood of which is already high in adolescence [13,14]. Another report has shown that drugs, depression, school violence, drinking, and family conflicts are related to suicidal thoughts [15].

Conversely, as the level of mother's education increased, and as income level of the family increases, the level of child's achievement motivation, self-esteem, and learning activity also increases. There have also been studies reporting that the level of psychological behavioral development of multicultural adolescents is higher than typical adolescents [16]. In other words, multicultural families should not be considered as a homogeneous group and should not be necessarily perceived as vulnerable. This is because the academic and psychological development levels of their children often vary according to environmental factors, such as parental education and income level. Therefore, rather than providing support for multicultural adolescents only by considering the specificity of multiculturalism, the development of integrated programs, which include Korean adolescents in crisis and keeps the commonalities of all adolescents in mind, can be more effective at incorporating multicultural adolescents into Korean society and increasing the acceptance of multicultural adolescents by Korean adolescents.

While the precise factors have differed among research-

ers, in general, the factors influencing suicidal behavior can be grouped into social, home environment, personality, mental-health-related, and stressful-life-event-related factors. In particular, mental-health-related factors such as depression and anxiety have been attracting attention as major contributors to suicidal thoughts and attempts [17,18]. Park [19] conducted a study on suicide attempts of Korea adolescents based on the 2006 youth online survey data. Park stated that the factors influencing suicide attempts were varied, and included personal characteristics and health behavior. This was especially true for suicidal thoughts, factors related to mental health (depression, stress, and happiness), health risk behaviors (perceived health status, drinking, smoking, drug use, sexual activity, absence of breakfast, presence of disease), and personal characteristics (co-residence type, academic achievement). Based on the data of the youth online survey in 2012, Park et al., who conducted studies on suicide ideation in multicultural adolescents, found that health-related variables (alcohol, drugs), mental health (happiness, depression), economic conditions, and school violence experience affected suicide ideation [15]. These two studies occurred at different time points, only one group was examined for factors influencing suicide ideation and attempts, and some of the variables explored were also different. Therefore, it is difficult to directly compare what factors influenced suicide attempts and ideation among Korean and multicultural adolescents in Korea. Thus, it cannot be argued that the factors influencing suicidal ideation are the same or different between the two groups.

The present study was conducted to investigate and compare the risk factors influencing suicide ideation among adolescents from multicultural families and Korean families by same dataset, and to provide basic data for the development of one comprehensive programs for the prevention of suicide of adolescents itself not differentiate Korea or multicultural. The specific purposes of this study are as follows: (1) to analyze the rates of suicide ideation among adolescents from multicultural and Korean families; (2) to analyze what general characteristics of these two groups of adolescents relate to suicide ideation; (3) and to determine and compare the relationship between general characteristic factor, health risk behavior, psychological variables and suicide ideation in two groups.

## METHODS

### 1. Study Design

A cross-sectional study design was used with a random-

ized sample of adolescents in Korea. This study is a secondary data analysis wherein I compared suicide ideation between adolescents of multicultural and Korean families and identified the factors that influence suicide ideation. Data were taken from the 2015 Korean Youth Risk Behavior Web-Based Survey (KYRBWS). The KYRBWS is a government-approved statistical survey that has been performed annually by the Korea Centers for Disease Control and Prevention since 2005 in order to monitor health risk behaviors among Korean adolescents. It uses a stratified multistage cluster sampling design to obtain a nationally representative sample of middle and high school students. After the survey was fully explained to potential participants, those who provided their informed consent completed the anonymous, self-administered web-based survey during a regular class period. The KYRBWS collects no identifiers (e.g., students' names, schools, telephone numbers, home addresses, or social security numbers).

## 2. Study Participants

A total of 70,362 students from 400 middle schools and 400 high schools participated in the survey (response rate=96.7%). So, the final sample of this study was 63,376 students (32,715 boys and 30,661 girls, mean age=14.96±1.74 years, range=12~18 years). They were composed of 62,649 (98.9%) Korean adolescents and 727 (1.1%) multicultural adolescents. Additional details about the sampling methodology and survey procedure are available elsewhere [20].

## 3. Measures

### 1) Multicultural families

The following questions were asked: "Was your father born in Korea?" and "Was your mother born in Korea?" If both parents were native Koreans, adolescents were classified as being from a Korean family. Adolescents whose father or mother (or both) was foreign born were classified as being from a multicultural family.

### 2) Socio-demographic variables

Socio-demographic variables included age, gender, residence (size of city), co-residence status, perceived family economic status, and perceived academic achievement. Residence was classified as rural area, small city, or large city. Co-residence status was classified as living with family or living with others. Perceived family economic status and academic achievement were both assessed using 5-point Likert.

### 3) Health behavior variables

Health behavior variables included perceived health status, alcohol drinking, and smoking. Perceived health status was assessed using a 5-point Likert scale (very healthy, healthy, normal, a little unhealthy, and very unhealthy). Smoking was assessed with the following question (with possible responses of "yes" or "no"): "Have you smoked a cigarette in the last 1 month?" Alcohol drinking was assessed with a similar question (also yes/no): "Have you drank alcohol in the last 1 month?"

### 4) Psychological variables

Psychological variables were perceived stress, depression, perceived happiness, experience of violence (by friends, elders, etc.). The level of perceived stress was measured with the following question: "How much stress do you usually feel?" Participants responded using a 5-point Likert scale (very much, a lot, an average amount, a little, and not feel). Depression was assessed with the following yes/no question: "Have you ever felt sad or desperate enough to stop your daily life over two weeks in the last 12 months?" The level of perceived happiness was measured with the following question: "How happy do you feel?" Responses were made on a 5-point Likert scale (very happy, a lot, an average amount, a little unhappy, and very unhappy). Experience of violence was assessed with the following yes/no question: "Have you ever experienced hospital treatment for violence?"

### 5) Suicide ideation

Suicide ideation was assessed with the yes/no question: "Have you seriously thought of committing suicide during the past 12 months?"

## 4. Data Analysis

Descriptive statistics were used to identify general characteristics, health behavior, psychological variables, suicide ideation rate of two groups. The  $\chi^2$  test was used to compare study variables according to presence of suicide ideation in adolescents from multicultural and Korean families. Logistic regression analyses were performed to determine the factors that influence the odds of suicide ideation. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated, with suicide ideation as the main outcome variable and health behaviors and psychological variables as the main predictors, after controlling for gender, residence, co-residential status, perceived economic status, and perceived academic performance. The purpose of this study was to compare the factors affecting suicide

ideation in Korean adolescents and the factors affecting suicide ideation in adolescents in multicultural families. Therefore, the two groups were separated and analyzed statistically within each group. All analyses took into account the sampling design parameters, including weighting, clustering, and stratification. Specifically, participants' general characteristics were weighted according to each respondent's probability of being selected for the sex-, grade-, and school-type-specific distributions for the region [20]. The finite population correction factor was used to avoid overestimation when developing variance estimates for population parameters.

## 5. Ethical Considerations

This was a secondary analysis of the data from a study approved as an official project by the institutional review board of the Korea Centers for Disease Control and Prevention in 2014 (2014-06EXP-02-P-A). The private information of each participant was coded during data analysis in order to blind researchers. As such, this study did not need the approval of an institutional review board.

## RESULTS

### 1. Demographic Characteristics and Suicide Ideation of Participants

Of the 63,376 respondents, 727 (1.1%) were from multicultural families (54.2% were male and 45.8% were female), 62,649 (98.9%) were adolescents from general Korean families (52.0% were male and 48.0% were female).

Among multicultural adolescents, the regional distribution was as follows: 323 (49.8%) resided in small and medium sized cities, 232 (35.1%) resided in metropolitan cities and 172 (15.1%) resided in the rural area. Among Korean adolescents, 29,844 (50.2%) resided in small and medium sized cities, 27,941 (43.8%) resided in metropolitan cities and 4,864 (5.9%) resided in the rural area. The difference in residential area between the two groups were statistically significant ( $p < .001$ ).

The average economic status of multicultural adolescents was 169 (25.5%) high, 352 (46.4%) medium and 206 (28.1%) low, respectively. Among Korean adolescents' households, the economic status were as follows: 23,446 (37.6%) upper-class, 29,805 (47.4%) middle-class, and 9,398 (15.0%) lower-class. The differences in socioeconomic status between the two groups was significant ( $p < .001$ ).

The academic achievement level was as follows: 315 multicultural students (43.3%) answered "low", which was

higher than Korean adolescent (20,815, 33.4%,  $p < .001$ ). A total of 492 (67.4%) of the multicultural adolescents answered that they were healthy in their subjective health perception, which was less than that of the Korean adolescents (45,916, 73.1%,  $p = .003$ ).

Among the students who reported alcohol use, the percentage of students who answered that they had consumed alcohol within the past month was not significantly different between the two groups. However, among students who had ever smoked a cigarette, 76 (55.1%) of the multicultural respondents said that they had smoked within the past month, compared with 4,358 (43.1%) of Korean adolescents ( $p = .004$ ).

In the perception of happiness, 77 (10.9%) of the multicultural adolescents responded as unhappy, which was more than Korean adolescents 4,770 (7.8%,  $p = .005$ ). Additionally, 296 (41.6%) multicultural respondents answered that they had experienced stress which was a higher rate than the 21,807 (35.1%) Korean adolescents who answered the same way. Further, there were more multicultural adolescents who reported depression ( $p = .003$ ). In addition, more multicultural household adolescents reported that they experienced violence ( $p < .001$ ). The prevalence of suicide ideation was 15.8% among adolescents of multicultural families, which was significantly higher than the 11.3% among adolescents of Korean families (Table 1).

### 2. Association between Variables and Suicide Ideation by Family Origin

The relationships between demographic characteristics and suicide ideation was analyzed in both multicultural and Korean families (Table 2). In both types of family, age was not associated with suicide ideation. The significant factors associated with suicide ideation in Korean adolescents were gender, residence, perceived economic status, co-residence status, and perceived academic performance. Girls had a higher prevalence of suicide ideation than did boys (13.6% vs. 9.2%, respectively), while adolescents living in rural areas had a lower prevalence (9.8%) compared adolescents living in large and small cities (11.3% and 11.5%, respectively). Additionally, adolescents with a low perceived economic status (17.9%) had a higher prevalence than did those with a "middle" and "high" status (both 10.1%). The suicide ideation prevalence was higher among those who were not living with family members (13.5%) than among those living with family members (11.2%). Perhaps with a low academic performance had a suicide ideation prevalence of 13.8%, which was higher than the 10.0% among those with middle and high perfor-

**Table 1.** Demographic Characteristics and Prevalence of Suicide Ideation of Participants

(N=63,376)

Variables	Categories	Korean adolescents	Multicultural adolescents	$\chi^2$ or t (p)
		M±SD, n (%)	M±SD, n (%)	
Age (year)		15.07±0.02	14.85±0.06	2.77 (.006)
Gender	Male	32,339 (52.0)	376 (54.2)	1.24 (.280)
	Female	30,310 (48.0)	351 (45.8)	
Area of residence	Rural	4,864 (5.9)	172 (15.1)	95.47 (< .001)
	Large city	27,941 (43.8)	232 (35.1)	
	Small/Medium city	29,844 (50.2)	323 (49.8)	
Economic status	Low	9,398 (15.0)	206 (28.1)	92.42 (< .001)
	Medium	29,805 (47.4)	352 (46.4)	
	High	23,446 (37.6)	169 (25.5)	
Co-residence status	Lives with family	60,116 (96.4)	640 (86.6)	165.75 (< .001)
	Lives without family	2,533 (3.6)	87 (13.4)	
Academic performance	Low	20,815 (33.4)	315 (43.3)	26.84 (< .001)
	Medium	17,709 (28.3)	177 (24.1)	
	High	24,125 (38.3)	235 (32.6)	
Perceived health	Bad	3,477 (5.6)	52 (7.0)	10.09 (.003)
	Moderate	13,256 (21.3)	183 (25.6)	
	Good	45,916 (73.1)	492 (67.4)	
Present drinking <sup>†</sup>	No	14,806 (59.8)	145 (57.6)	0.46 (.493)
	Yes	9,784 (40.2)	110 (42.4)	
Present smoking <sup>†</sup>	No	5,832 (56.9)	70 (44.9)	8.18 (.004)
	Yes	4,358 (43.1)	76 (55.1)	
Happiness perception	Unhappy	4,770 (7.8)	77 (10.9)	9.70 (.005)
	Moderate	16,248 (26.3)	192 (27.6)	
	Happy	41,631 (65.9)	458 (61.5)	
Mental stress	Not feel	13,175 (20.7)	146 (18.8)	11.47 (.002)
	Moderate	27,667 (44.3)	285 (39.6)	
	Much feel	21,807 (35.1)	296 (41.6)	
Depression	No	48,287 (76.9)	532 (72.1)	7.74 (.003)
	Yes	1,4362 (23.1)	195 (27.9)	
Experience of violence	No	61,542 (98.1)	675 (91.8)	126.06 (< .001)
	Yes	1,197 (1.9)	52 (8.2)	
Suicide ideation	No	55,654 (88.7)	622 (84.2)	12.06 (.001)
	Yes	6,995 (11.3)	105 (15.8)	
Total		62,649 (98.9)	727 (1.1)	

<sup>†</sup>Limited to those who have ever smoked or alcohol drink.

mance.

Among participants of multicultural families, the prevalence of suicide ideation was influenced only by perceived economic status and co-residential status. Specifically, suicide ideation was more likely among those with a low perceived economic status (23.5%) than among those with a middle (11.6%) or high (14.8%) economic status. Furthermore, adolescents living with non-family mem-

bers had a higher suicide ideation prevalence (29.6%) than did those living with family members (13.6%).

Among adolescents of multicultural families, perceived health status, drinking, perceived happiness, perceived stress, depression, and experience of violence were all related to suicide ideation.

Specifically, those with a poorer perceived health tended to have higher suicide ideation. Furthermore, adoles-



**Table 2.** Association between Variables and Suicide Ideation (Yes) by Family Origin

Variables	Categories	Korean adolescents		Multicultural adolescents	
		n (%)	$\chi^2$ (p)	n (%)	$\chi^2$ (p)
Gender	Male	1,916 (9.2)	296.78 (< 001)	41 (13.3)	4.06 (.091)
	Female	4,079 (13.6)		64 (18.7)	
Area of residence	Rural	481 (9.8)	9.18 (.021)	18 (11.4)	1.87 (.525)
	Large city	3,099 (11.3)		38 (16.8)	
	Small/Medium	3,415 (11.5)		49 (16.3)	
Economic status	Low	1,682 (17.9)	482.07 (< 001)	46 (23.5)	13.69 (.002)
	Medium	2,987 (10.1)		35 (11.6)	
	High	2,326 (10.1)		24 (14.8)	
Co-residence status	Lives with family	6,686 (11.2)	11.51 (.001)	81 (13.6)	16.12 (.001)
	Lives without family	309 (13.5)		24 (29.6)	
Academic performance	Low	2,831 (13.8)	201.70 (< 001)	52 (18.2)	3.77 (.203)
	Medium	1,789 (10.0)		21 (11.5)	
	High	2,375 (10.0)		32 (15.7)	
Perceived health	Bad	975 (28.2)	1,618.84 (< 001)	15 (28.3)	12.08 (.003)
	Moderate	2,090 (16.0)		35 (20.2)	
	Good	3,930 (8.6)		55 (12.8)	
Present drinking	No	1,901 (12.8)	59.35 (< 001)	16 (11.6)	10.14 (.005)
	Yes	1,569 (16.3)		28 (27.2)	
Present smoking	No	818 (14.0)	21.32 (< 001)	16 (23.4)	0.96 (.402)
	Yes	757 (17.3)		23 (30.7)	
Happiness perception	Unhappy	2,078 (43.5)	6,604.96 (< 001)	37 (44.9)	65.37 (< 001)
	Moderate	2,504 (15.4)		30 (18.4)	
	Happy	2,413 (5.8)		38 (9.4)	
Mental stress	Not feel	280 (2.3)	5,268.78 (< 001)	10 (8.5)	30.67 (< 001)
	Moderate	1,570 (5.7)		26 (9.9)	
	Much feel	5,145 (23.7)		69 (24.6)	
Depression	No	1,936 (4.1)	10,834.07 (< 001)	24 (5.6)	145.42 (< 001)
	Yes	5,059 (35.3)		81 (42.0)	
Experience of violence	No	6,566 (10.8)	730.73 (< 001)	80 (12.7)	55.90 (< 001)
	Yes	429 (35.9)		25 (49.5)	

cents who engaged in alcohol drinking had a higher prevalence than did those who did not engage in this behavior (27.2% vs. 11.6%). Participants with poorer perceived happiness tended to have a higher suicide ideation prevalence (44.9% unhappy vs. 18.4% moderate happy, 9.4% happy), as did adolescents with high stress (i.e., >average), depression (42.0% with depression vs. 5.6% without depression) and experience of violence (49.5% with experience of violence vs. 12.7% without).

Among adolescents of Korean families, suicide ideation was associated with perceived health status, alcohol drinking, smoking, perceived happiness, perceived stress, depression, and experience of violence, showing roughly the

same patterns as the adolescents of multicultural families for perceived health status, alcohol drinking, happiness, and stress as well as experience of violence. But the association for smoking were significant different from adolescents of multicultural.

### 3. Determinants of Suicide Ideation by Family Origin

Among adolescents of Korean families, the following characteristics were significantly related to odds of reporting suicide ideation: age, gender, co-residence status, perceived health, depression, perceived stress, perceived happiness, and experience of violence (Table 3). More specifi-

cally, older age (OR=0.86 for every 1 year), female gender (OR=1.43), living without family members (OR=1.39), poor perceived health status (OR=1.37), depressive mood (OR=8.68), >average perceived stress (OR=2.70), >average perceived happiness (OR=3.29), and experience of violence (OR=3.32) were all positively associated with increased odds of suicide ideation.

For adolescents of multicultural families, the following characteristics were statistically significantly related to odds of reporting suicide ideation: gender, perceived economic status, smoking, perceived stress, depression, and experience of violence. Specifically, female gender (OR=13.16), ≤ average perceived economic status (OR=21.53), smoking (OR=13.14), depression (OR=18.87), >average perceived stress (OR=3.16) and experience of violence (OR=54.07) had positive and significant associations with odds of suicide ideation.

## DISCUSSION

This study was a secondary analysis of national survey data. The purpose of the current study was to compare the rate of suicide ideation and the factors of multicultural and Korean adolescents. A composite sample analysis method was used to analyze survey data designed to reflect the gender, age, and demographic structure of the population [20]. As a result of the survey, the percentage of Korean and multicultural adolescents were 99% to 1%, respectively. According to 2015 statistics, the percentage of multicultural household adolescents (middle and high school students) in Korea was 1.4%. As the current data reflects the percentage, it is likely to accurately depict the actual situation of multicultural adolescents in Korea [2].

To our knowledge, this is the first nationally representative study which compare the prevalence of suicide ideation and influencing factors among adolescents from mul-

**Table 3.** Determinants of Suicide Ideation by Family Origin

Variables	Categories	Korean adolescents		Multicultural adolescents		
		OR (CI)	<i>p</i>	OR (CI)	<i>p</i>	
Socio-demographic	Gender	Male (Ref)				
		Female	1.43 (1.22~1.69)	< .001	13.16 (5.63~30.78)	< .001
	Area of residence	Rural	1.17 (0.89~1.53)		0.70 (0.29~1.70)	
		Large city	1.15 (0.99~1.34)	.157	0.74 (0.34~1.62)	.637
		Small/Medium (Ref)				
	Economic status	High (Ref)				
Low	1.09 (0.93~1.29)	.278	21.53 (5.75~80.57)	< .001		
Co-residence status	Lives with family (Ref)					
	Lives without family	1.48 (1.14~1.92)	.003	1.39 (0.42~4.56)	.592	
Academic performance	High (Ref)					
	Low	0.92 (0.79~1.06)	.249	2.54 (0.17~38.11)	.499	
Health risk behavior	Perceived health	Healthy (Ref)				
		Unhealthy	1.37 (1.08~1.75)	.011	2.08 (0.69~6.25)	.194
	Alcohol drinking (yes)		0.98 (0.85~1.17)	.976	2.85 (0.51~16.05)	.234
Smoking (yes)		1.10 (.95~1.28)	.193	0.08 (0.03~0.22)	< .001	
Psychological variables	Happiness perception	Happy (Ref)				
		Unhappy	3.29 (2.760~3.91)	< .001	1.65 (0.39~7.08)	.493
	Mental stress	Not feel (Ref)				
		Feel	2.70 (2.01~3.63)	< .001	3.16 (1.45~6.88)	.004
Depression (yes)		8.68 (7.45~10.12)	< .001	18.87 (2.98~119.60)	.002	
Experience of violence (yes)		3.32 (2.45~4.50)	< .001	54.08 (23.63~123.76)	< .001	

OR=odds ratio; CI=confidence interval; Ref=reference.

ticultural families and Korean families using same dataset in South Korea. As noted above, the suicide rate among Korean adolescents is a serious public health issue. In this study, the suicide ideation rate of adolescents was 11.3% among adolescents from Korean families and 15.8% among adolescents from multicultural families. This result is lower than that of Park [19], who reported that 23% of Korean adolescents attempted suicide, in a study using 2006 youth online data. Further, the current rate is lower than 2011 data where suicide attempts were reported by 22.4% of multicultural adolescents [12], and 2012 data where suicidal thoughts of multicultural adolescents were reported at 21.2% [15]. Although the suicide rate of adolescents is decreasing, deaths from suicide are still ranked as the number one cause of adolescent death. It is possible that the rate of adolescents thinking about suicide is artificially low. This is because these individuals may avoid thinking about the pain of reality. However, this does not accurately represent the high rate of actual attempts among those who feel suicidal. Therefore, Korean society still must take preventive measures against suicidal ideation in youth.

In this study, the general characteristics that related to the suicide ideation of adolescents were different in two groups. There were notable differences in characteristics related to suicide ideation between Korean and multicultural families. Among Korean adolescents, gender, area of residence, perceived economic status, co-residence type, and academic performance. but in multicultural adolescents, gender, area of residence, academic achievement were not significant.

In a previous study [22], gender demonstrated a significant relationship with suicide ideation in Korean adolescents. These results are inconsistent with a study that shows that the relationship between gender and suicide ideation was not significant in multicultural adolescents [15]. However, in the logistic analysis of the current study, gender affected suicide ideation in both groups, with female being 1.43 times more likely in the Korean group and 13.16 times more likely in multicultural group to display suicide ideation, when compared to males.

Also, area of residence and academic performance was not related to suicide ideation in adolescents from multicultural families, but it was in adolescents from Korean families. In the logistic analysis, neither the residence area, nor academic achievement of the two groups had any effect on suicide ideation. This result is different from previous studies, which reported academic achievement as a factor influencing suicide ideation among Korean adolescents [6], and worry about academic achievement and ad-

mission to upper school as factors that caused suicidal thoughts among multicultural adolescents [2].

Perceived economic status and co-residence type were also common characteristics related to suicide ideation in both groups of adolescents. However, in the logistic analysis, it was found that Korean adolescents were influenced by their co-residence type while perceived economic status influenced multicultural adolescents. This is consistent with the results of a study in which suicide attempts were more frequent among families of lower socioeconomic status [10], and among single parent families and adolescents raised by their grandparents [6]. In other words, living with family members in a stable living environment, whether Korean or multicultural, increases psychological stability, resulting in less suicide ideation.

Overall, the home environment variables appear more influential of the suicide ideation of adolescents than do individual factors such as academic performance. This accords with a meta-analysis of the protective factors associated with suicide ideation in adolescents [23], wherein the effect size of the family environment variables was statistically significant.

In the analysis of the prevalence of suicide ideation according to health risk behaviors and psychological factors, the factors associated with suicide ideation among adolescents from Korean families were perceived health status, alcohol drinking, smoking, perceived happiness, perceived stress, depression, and experience of violence. Those among adolescents from multicultural families, perceived health status, alcohol drinking, perceived happiness, perceived stress, depression, and experience of violence were related to suicide ideation.

Notably, the odds of suicide ideation were higher in only Korean adolescents when they perceived themselves as unhealthy. This agrees with one study showing that greater perceived health was associated with lower suicide ideation [7]. However, it is not consistent another study [15] reporting that suicide ideation and health status were not related. This discrepancy is perhaps because health status is how one feels about one's physical condition at the time of investigation; as such, it is perhaps unrelated to continuous or repetitive suicide ideation.

Alcohol drinking and smoking were related to suicide ideation in adolescents from Korean families, among multicultural adolescents, only alcohol drinking was related to suicide ideation. However, in logistic analysis, smoking alone was a significant factor for suicide ideation among adolescents in multicultural families. These results are somewhat consistent with a study wherein suicide ideation was higher among alcohol drinking and smokers [7],



as well as a study wherein suicide ideation was only related to alcohol drinking [15]. Health risk behaviors such as alcohol drinking and smoking can serve as a mechanism for the release of mental pressure. In other words, health risk behaviors such as drinking and smoking may lead to suicidal thoughts, while those who actually commit suicide may reduce their thoughts by drinking and smoking. This is because smoking rates and drinking rates of adolescents in multicultural families are lower than those of Korean families [24], and smoking rates and drinking rates of multicultural families are higher than those of general household adolescents [25]. Therefore, this relationship seems to require further research to analyze what are the causes and long-term results through longitudinal study.

Perception of happiness was associated with suicide ideation in both groups, but logistic analysis showed that suicidal ideation among Korean adolescents were more associated with the perception of unhappiness. The results regarding happiness is consistent with a previous study showing the same [7].

Stress was associated with suicide ideation in both groups. The more stress one perceived, the more suicide ideation occurred. The magnitude of the relationship of suicide ideation with stress appears to vary from researcher to researcher, with one study [15] reporting that stress was not significantly related, and another [26] noting that it was. Jeon et al.[26] reported that stress related to family, peer, and teacher relationships were main factors influencing adolescents' suicide ideation. The relationship between suicide ideation and stress in adolescents seems to reflect a special situation of adolescents in Korea, and their experience of stress due to overly competitive academic environment.

Depression was associated with suicide ideation in both groups. Depression is considered to be the most direct cause of suicide, and in a study of college students in Korea, depression has proven to significantly predict suicidal ideation [27]. However, around 14.3% of children of married immigrants have been reported to experience depression or helplessness [28], thus indicating that adolescents from multicultural families are more likely to feel depressed and experience suicide ideation than are Korean adolescents. Thus, the former population would require particular management.

The experience of violence was related to suicide ideation in both Korean and multicultural adolescents. This is consistent with the results of previous studies [29]. Note that violence in this study is not only physical violence but also verbal and emotional violence. If adolescents in mul-

ticultural families experience difficulties in adapting to school because of differences in appearance and language development or linguistic and emotional conflicts with peers or seniors, it may lower their confidence and increase their depression and stress. This, in turn, would predict a likelihood of suicide ideation.

These results suggest that Korean adolescents and multicultural adolescents display similar causes of suicide ideation such as stress, depression, and violence victimization experiences. Korean adolescents were more likely to display suicide ideation when they did not live with their families or considered themselves unhappy. However, multicultural adolescents displayed more suicidal when they felt that their economic status was bad. Living with one's family and economic status are the family environment factors surrounding adolescents. This suggests that it is necessary to provide a supplementary program that can substitute for a negative family environment for both groups, as negative family environment may effect adolescents emotionally and result in suicide.

This study has a clear strength in its inclusion of data from 72,060 adolescents from a nationally representative sample in South Korea, which improves the external validity of the study results. However This study has the following limitations in the application and interpretation of our results.

First, it cannot capture adolescents' period of residence in South Korea, their frequency of use of the Korean language, or their country of birth. These are likely to affect participants' level of adaptation, and thus their likelihood of suicide. Second, depressive mood and perceived stress was only measured with a single item each, rather than with standardized multi-item measures. This may limit the validity of the measurements of these variables. Third, this study is a cross-sectional study, so it is difficult to ensure causality in epidemiological studies, and has limitation in generalize. it will be interpretate only for adolescents in South Korea.

## CONCLUSION

Even within the context of these limitations, the results of the present study indicate that approximately 11.3% and 15.8% of adolescents from Korean and multicultural families, respectively, engaged in suicide ideation, which in turn, were associated with family environment and psychological problems. Therefore, rather than only providing support for local communities of multicultural adolescents by considering the specificity of multiculturalism, the development of integrated programs that include all

adolescents in crisis could be more effective in helping multicultural adolescents to assimilate to Korean society.

However, the cross-sectional nature of this study limits our understanding of the influencing factors; thus, future prospective studies are required in order to identify the casual relationships among suicide ideation and various risk factors.

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