Journal of Korean Academy of Nursing (2005) Vol. 35, No. 8, 1433–1442

Predictors of Suicidal Ideation for Adolescents by Gender

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Purpose. The purposes of this study were 1) to examine the differences in suicidal ideation and psychological variables by gender, 2) compare the contribution of demographic-behavioral variables and psychosocial variables in explaining the variance in suicidal ideation, and 3) identify the most important predictors of suicidal ideation for male adolescents and female adolescents.

Methods. The subjects consisted of 271 male adolescents and 230 female adolescents. Data were collected through self-report questionnaires, which were constructed to include SSI-C, DEP subscale of the SCL-90-R, PACI, and SWLS. The data were analyzed by the SPSS/WIN program.

Results. Suicidal ideation differed by gender. Depression and family communication differed by gender. The unique contribution of demographic-behavioral variables and psychosocial variables in explaining the variance in suicidal ideation differed between male adolescents and female adolescents. The significant predictors of suicidal ideation for male adolescents were life satisfaction, depression, and family communication, explaining 28% of the variance in suicidal ideation. The significant predictors of suicidal ideation for female adolescents were depression, smoking, and life satisfaction, explaining 38% of the variance in suicidal ideation.

Conclusion. The findings of this study suggest that the approach to effective suicide prevention program for adolescents should consider gender differences.

Key Words : Adolescent, Suicide, Gender

INTRODUCTION

Youth suicide has been an issue of great concern in South Korea since youth suicide rates increased dramatically in 2004. At present, suicide is the second leading cause of death for adolescents in South Korea (Choi, 2004). In western countries, young females are twice as likely as males to report suicidal ideation and to attempt suicide. Males are more likely to commit suicide (Beautrais, 2002; Wichstrom & Rossow, 2002). Female adolescents more often report suicidal ideation than male adolescents in South Korea (Nam, 2004). Important risk factors for suicidal behavior such as depression, self esteem, alcohol abuse, and disruptive behavior are known to be gender skewed (Wichstrom & Rossow, 2002; Kelly et al, 2001). Estimates of suicidal ideation, suicidal attempt behavior, completed suicide, and important risk factor for suicidal behavior show that the relationships between gender and youth suicidal behaviors are complex (Beautrais, 2002). Gender seems to be an important factor in suicidal ideation and suicidal behavior for adolescents. Therefore, explaining the difference for risk factors by gender may improve our understanding of suicidal ideation and suicidal behavior for adolescents in general.

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Received May 2, 2005 ; Accepted July 18, 2005

While most adolescents live within constructive social setting and experience minimal stress, a significant number are at risk for adverse outcomes (Jessor, 1998), such as unhealthy behavior. A number of variables constitute multiple predictors of adverse outcomes for adolescents. Research is needed to increase the knowledge base of variables associated with adverse outcomes for adolescents. Research about suicidal ideation and behavior of adolescents has focused on demographic and behavioral risk factors (Brent, Baugher, & Bridge, 1999; Beautrais, 2002; Lester, 2001). These studies focused on who is at risk, but did not explain why certain adolescents may be at risk for suicide. These studies provide descriptive data and correlates of demographics and behaviors with suicide risk. Therefore, since these studies don't examine predictors of suicide ideation, they are problematic in the formulation of effective intervention strategies.

In this study, we included risk factors from two domains presumed to contribute to suicidal ideation for male adolescents and female adolescents: Demographic-behavioral variables and psychosocial variables. Demographic-behavioral variables contain demographic variables (e.g., school type, grade level, and economic status) and behavioral variables (e.g., smoking, drinking, and Wang-tta). We comprised psychosocial variables such as family communication and life satisfaction as well as depression in our study. This approach may explain who is at risk, and why certain adolescents are at risk for suicidal ideation. Especially, awareness of demographic-behavioral variables and psychosocial variables by gender may inform suicide risk recognition in a supportive setting, such as the school.

Although a specific cause for suicidal ideation has not been found, investigators identify psychosocial risk factors that may contribute to suicidal ideation and suicide attempts. Among females, depression is often considered a predominant psychosocial contributor. Females have rates of depression that are approximately twice those of males and these gender differences appear to be reflected in the higher rates of suicidal ideation and attempts by females (Fergusson, Horwood, & Lynskey, 1993). Reinherz and colleagues (1995) reported major depression associated with suicidal ideation in females, while substance use disorders were associated with suicidal ideation in males.

Among adolescents, family conflicts are often considered predominant psychosocial contributors (Grosz et al., 1994). Indeed, adolescents lacking one or both parents in the home presented to be more likely to attempt suicide than those with both parents present (Spruijt & Goede, 1997). Ary, James, and Biglan (1999) suggested that open communication patterns enhance psychosocial competence by promoting more direct discussion about important issues in adolescents' lives. Family communication was significantly correlated with suicidal ideation for adolescents in South Korea, but family communication did not differ significantly by gender (Nam, 2004). In the literature, parental absence, poor communication between family members, and conflict within the family (Portes, Sandhu, & Longwell-Grice, 2002) are generally considered the main risk factors for adolescence suicide.

There have been recent calls for more empirical attention to be paid to subjective experiences such as self-esteem and satisfaction with life. Self-esteem also relates to suicidal ideation and attempt (Kelly et al., 2001). However, self-esteem is often too much to handle related to suicidal ideation and suicidal behavior (Wichstrom & Rossow, 2002; Kelly et al., 2001). Recently, subjective well-being is the focus of considerable research (Diener, 2000; Fujita & Diener, 2005). Subjective well-being is a person's evaluative reaction to his or her life-either in terms of life satisfaction as cognitive evaluations or affect as ongoing emotional reactions (Diener & Diener, 1995). Life satisfaction is a conscious cognitive judgment of one's life in which the criteria for judgment are up to the person (Pavot & Diener, 1993). Individuals are likely to have unique criteria for a good life. Further, individuals may have very different standards for success of their lives (Pavot & Diener, 1993). Thus, it is necessary to assess each adolescent's global judgment of his or her life if we are to improve our understanding of his or her suicidal ideation.

Studies of psychosocial risk factors for adolescent suicidal ideation and suicidal behavior have been conducted (Lewinsohn, Rohde, & Seeley, 1993; Kelly et al., 2001; Rohling et al., 2004; Cox, Enns, & Clara, 2004), but we are aware of no study that has separately examined interaction effects among demographic-behavioral variables and psychosocial variables by gender. Determining the unique value that such interactions may have in predicting suicidal ideation for male adolescents and female adolescents would be particularly valuable to adolescent populations.

The aim of this study was to examine the differences of the level of suicidal ideation and psychological variables by gender, compare the contribution of demo-

graphic-behavioral variables and psychosocial variables in explaining the variance in suicidal ideation, and identify the most important predictors of suicidal ideation among demographic-behavioral variables and psychosocial variables for male adolescents and female adolescents. This paper examines gender issues in adolescents' suicidal ideation to consider the implications for suicide prevention of gender differences in suicidal ideation.

The specific research questions were:

(1) Do the level of suicidal ideation and psychosocial predictor variables for male adolescents differ from those for female adolescents?

(2) To what extent do demographic-behavioral variables and psychosocial variables explain the variance in suicidal ideation for male adolescents and female adolescents?

(3) What are the significant predictors of suicidal ideation among demographic-behavioral variables and psychosocial variables for male adolescents and female adolescents?

METHODS

Subjects

Subjects consisted of 501 adolescents who were students in the first (N = 235) and second grade (N = 266) in two general academic high schools (N = 321) and two vocational high schools (N = 180) in South Korea. The sample included 271 (54.1%) males and 230 (45.9%) females. The data collection was done during two months, from July 1st to September 15th, 2004. Subjects were a nonclinical sample and participation was voluntary. Students were informed about the goal of the research. In groups of 30–40 outside of class, participants completed the adolescents' demographic-behavioral variables questionnaire, and then, in order, the depression, family communication, life satisfaction, and suicidal ideation questionnaires. To maintain confidentiality, questionnaires were collected without identifiers. The research assistant collected completed questionnaires.

Instruments

Demographic-behavioral variables

Information on school type, grade level, academic achievement, change of schools, religion, economic status, parent alive, smoking, drinking, and Wang-tta was obtained.

Self-rated academic performance and economic status were recoded into three categories: high, middle, and low. The demographic variable parent alive was measured by whether the student had one or both parents who were alive. Smoking was measured by whether the student smoked more than one cigarette a week, or did not smoke. Drinking was measured by whether the student used alcohol more than one time a week, or did not use alcohol. The experience of Wang-tta was recoded into two categories: yes or no.

Suicidal ideation

Suicidal ideation was measured using the Korean version of the SSI-C (Scale for Suicide Ideation), which was developed by Beck, Kovaces, and Weissman (1979) and translated by Park and Sin (1991). The SSI-C is 19 self-report items measuring the intensity of suicidal thoughts. Each item is rated on a 3-point scale ranging from 0 to 2, so that higher scores indicate greater levels of suicidal ideation. The ratings are summed to yield a total score, which ranges from 0 to 38. Individual items assess characteristics such as wish to die, desire to make an active or passive suicide attempt, duration and frequency of ideation, sense of control over making an attempt, and number of deterrents. Reliability is supported by moderately high internal consistency and good concurrent and discriminant validity (Beck et al., 1999). In the present sample, internal consistency was obtained, a=.84.

Depression

Depression was measured using a subscale (DEP: Depression) of the Korean version of the SCL-90-R (Symptom Checklist-90-Revision), which was developed by Derogatis (1977) and translated by Kim and colleagues (1984). This comprises 6 items, for each of which the subjects should record the frequency of depression experienced during the past week on a five-point scale ranging from 'strongly disagree' to 'strongly agree'. The ratings are summed to yield a total score, which is calculated in terms of T-score (a standardized score). Higher scores indicate greater levels of depression. Reliability is supported by moderately high internal consistency (Kim et al., 1984). In the present sample, internal consistency was obtained, a=.82.

Family communication

Family communication was assessed using the Korean

version of the PACI (Parent-Adolescent Communication Inventory), which was developed by Barnes and Olson (1985) and translated by Min (1990). The PACI is a 20 self-report item measure that was designed to assess the perspectives of the adolescent regarding their communication process. Responses are on a 5-point scale ranging from 'strongly disagree' to 'strongly agree', so that higher scores reflect more functional communication. Reliability is supported by moderate internal consistency (Min, 1990). In the present sample, internal consistency was obtained, a=.83.

Life satisfaction

Life satisfaction was measured using the Korean version of the SWLS (Satisfaction With Life Scale), which was developed by Pavot and Diener (1993) and translated by Hong, Yi, and Park (2000). The SWLS is 5 self-report items measuring the intensity of life satisfaction. Responses are on a 7-point scale ranging from 'strongly disagree' to 'strongly agree', so that higher scores indicate greater levels of life satisfaction. Reliability and validity are supported by moderately high internal consistency and good concurrent and discriminant validity (Diener et al., 1985). In the present sample, internal consistency was obtained, a=.85.

Data Analysis

Differences in suicidal ideation and psychosocial variables by gender were made by an independent samples t-test. The relationship between suicidal ideation and psychosocial variables within gender was conducted by Pearson's correlation coefficient. Stepwise multiple regressions were conducted in separate analyses to compare the unique contribution of demographic-behavioral variables and psychosocial variables in explaining the variance in suicidal ideation for male adolescents and female adolescents. Multivariate prediction of suicidal ideation for male adolescents and female adolescents was tested using stepwise multiple regressions, entering demographic-behavioral variables and all of the psychosocial variables.

RESULTS

Demographic and behavioral variables of subjects

The participants' demographic-behavioral data by gen-

Table 1. Demographic and Behavioral Variables of Subjects

Factors		Total	Males	Females
		N (%)	N (%)	N (%)
School type	Vocational school	180 (35.9)	85 (17.0)	95 (19.0)
	Academic school	321 (65.1)	186 (37.1)	135 (26.9)
Grade level	1	235 (46.9)	105 (21.0)	130 (25.9)
	2	266 (53.1)	166 (33.1)	100 (20.0)
Academic achievement	High	110 (20.0)	63 (12.6)	37 (7.4)
	Middle	296 (59.0)	150 (29.9)	146 (29.1)
	Low	105 (21.0)	58 (11.6)	47 (9.4)
Change of schools	Yes	196 (38.9)	101 (20.2)	94 (18.8)
	No	306 (61.1)	170 (33.9)	136 (27.1)
Religion	Catholic	84 (16.8)	40 (8.0)	44 (8.8)
	Protestant	43 (8.6)	23 (4.6)	20 (4.0)
	Buddhism	142 (28.3)	70 (14.0)	72 (14.4)
	None & others	232 (46.3)	138 (27.6)	93 (18.6)
Economic status	High	17 (3.4)	11 (2.2)	6 (1.2)
	Middle	390 (77.8)	198 (39.5)	192 (38.3)
	Low	94 (18.8)	62 (12.4)	32 (6.4)
Parent alive	Yes	451 (90.0)	240 (47.9)	211 (42.1)
	No	50 (10.0)	31 (6.2)	19 (3.8)
Smoking	Yes	63 (12.6)	40 (8.0)	23 (4.6)
	No	438 (87.4)	231 (46.1)	207 (41.3)
Drinking	Yes	131 (26.1)	59 (11.8)	72 (14.4)
	No	370 (73.9)	212 (42.3)	158 (31.5)
Wang-tta	Yes	25 (5.0)	12 (2.4)	13 (2.6)
	No	476 (95.0)	259 (51.7)	217 (43.3)
Total		501 (100.0)	271 (54.1)	230 (45.9)

der are presented in Table 1.

Mean difference of suicidal ideation and psychosocial variables by gender

As can be seen in Table 2, the level of suicidal ideation differed between male adolescents and female adolescents. The suicidal ideation score for female adolescents was 8.93, which was much higher than those of male adolescence (7.19).

Psychosocial variables included in this study are presented in Table 3. The level of psychosocial factors, except life satisfaction, differed between male adolescents and female adolescents. The depression score for female adolescents was 30.59, which was much higher than those of male adolescence (27.06). The family communication for female adolescents was 64.79, which was higher than those of male adolescence (62.14). The life satisfaction scores were 19.33 for male adolescents and 18.66 for female adolescence.

Table 2. Mean Difference of Suicidal Ideation by Gender

Variables	Males (N = 271)	Females (N = 230)	t (p)
	Mean (SD)	Mean (SD)	
Suicidal ideation	7.19 (5.11)	8.93 (5.44)	3.674 (.000)

Correlations among suicidal ideation and psychosocial variables within gender

As expected, three psychosocial variables (depression, life satisfaction, family communication) correlated with suicidal ideation for both genders. Depression positively related to suicidal ideation, while family communication and life satisfaction negatively related to suicidal ideation for both genders. All psychosocial variables were significantly related to suicidal ideation, validating the proposed regression model. Predicting variables that correlates higher than r=.50 should be scrutinized carefully before both are included in a regression analysis. Correlating among predicting variables range from .29 to .47, and thus multi-collinearity among predictor variables was not a problem (Table 4).

Variance in suicidal ideation explained by demographic-behavioral variables and psychosocial variables for male adolescents and female adolescents

To compare the unique contribution of demographic-behavioral variables and psychosocial variables in ex-

Table 3. Mean Differences of Psychosocial Variables Related to Suicidal Ideation by Gender

Variables	Males (N = 271)	Females (N = 230)	t (p)
	Mean (SD)	Mean (SD)	
Depression	27.06 (9.61)	30.59 (9.93)	3.441 (.000)
Family communication	62.14 (9.77)	64.79 (11.51)	2.738 (.006)
Life satisfaction	19.33 (6.93)	18.66 (6.03)	1.131 (.259)

Table 4. Correlations Among Suicidal Ideation and Psychosocial Variables Within Gender

Variables	Suicidal ideation	Depression	Family communication	Life satisfaction
Male adolescents (N = 271)				
Suicidal ideation	1.000	.404	−.366	−.438
		(.000)	(.000)	(.000)
Depression		1.000	−.409	−.294
			(.000)	(.000)
Family communication			1.000	.301
				(.000)
Life satisfaction				1.000
Female adolescents (N = 230)				
Suicidal ideation	1.000	.526	−.302	−.446
		(.000)	(.000)	(.000)
Depression		1.000	−.405	−.477
			(.000)	(.000)
Family communication			1.000	.426
				(.000)
Life satisfaction				1.000

plaining the variance in suicidal ideation, stepwise multiple regressions were conducted in separate analyses. As depicted in Table 5, male adolescents' demographic-behavioral variables explained 3% of the variance in suicidal ideation, and Wang-tta was the only significant predictor of suicidal ideation for male adolescents. Psychosocial variables explained 28% of the variance in suicidal ideation, and life satisfaction, depression, and family communication were the significant predictors of suicidal ideation. However, female adolescents' demographic-behavioral variables explained 18% of the variance in suicidal ideation, and school type, change of schools, economic status, smoking, and Wang-tta were the significant predictors of suicidal ideation for female adolescents. Psychosocial variables explained 31% of the variance in suicidal ideation, and depression and life satisfaction were the significant predictors of suicidal ideation.

Predictors of suicidal ideation for male adolescents and female adolescents

To examine the significant predictors of suicidal ideation among adolescents' demographic-behavioral variables and all of the psychosocial variables for male adolescents and female adolescents, stepwise multiple regressions were conducted. As depicted in Table 6, life sat-

Table 5. Variance in Suicidal Ideation Explained by Demographic-behavioral Variables and Psychosocial Variables for Male Adolescents and Female Adolescents

	β	t	p	R^2	F	p
Models for males (N=271)						
Model 1				.03	8.50	.004
Wang-tta*	−.17	2.91	.004			
Model 2				.28	22.56	.000
Life satisfaction	−.31	4.59	.000			
Depression	.24	3.38	.000			
Family communication	−.15	−2.17	.031			
Models for females (N=230)						
Model 1				.18	10.06	.000
Smoking*	−.26	4.16	.000			
Economic status (high vs low)*	.16	2.63	.009			
Wang-tta*	−.13	2.28	.023			
Change of schools*	−.14	2.27	.024			
School type*	−.12	2.07	.039			
Model 2				.31	42.86	.000
Depression	.42	6.17	.000			
Life satisfaction	−.21	3.33	.001			

* Dummy coded (0, yes, high, vocational high school)
Model 1: demographic-behavioral variables
Model 2: psychosocial variables
β: standardized regression coefficient

Table 6. Predictors of Suicidal Ideation for Male Adolescents and Female Adolescents

Predictor variables	β	t	p	R^2	F	p
Overall model for males (N=271)						
				.28	22.58	.000
Life satisfaction	−.315	4.59	.000			
Depression	.247	3.38	.000			
Family communication	−.157	−2.17	.031			
Overall model for females (N=230)						
				.38	38.41	.000
Depression	.375	5.66	.000			
Smoking*	−.265	4.54	.000			
Life satisfaction	−.218	3.33	.001			

* Dummy coded (0, yes)
β: standardized regression coefficient

isfaction, depression, and family communication remained in the model, explaining 28% of the variance in suicidal ideation for male adolescents. A regression equation predicting suicidal ideation for males revealed that life satisfaction was the strongest predictor ($\beta = -.315$, $p < .001$), followed by depression ($\beta = .247$, $p < .001$). For the female adolescents, depression, smoking, and life satisfaction remained in the model, explaining 38% of the variance in suicidal ideation. A regression equation predicting suicidal ideation for females revealed that depression was the strongest predictor ($\beta = .375$, $p < .001$), followed by smoking ($\beta = -.265$, $p < .001$).

DISCUSSION

The purpose of this study was to present the evidence for gender differences in suicidal ideation. Female adolescents in this sample were found to be at the greater risk than male adolescents for suicidal ideation. The suicidal ideation scores were 7.19 for male adolescents and 8.93 female adolescents. The scores were similar to those of previous study. In a study involving adolescents by Nam (2005), the scores were 7.42 for male adolescents and 10.05 for female adolescents. The mean scores reflected high levels of suicidal ideation, whereas total scores of 2 or higher on the SSI-C were described as 'risk' (Beck et al., 1999).

As found by others (Kelly, et al., 2001, Nam, 2005), the level of suicidal ideation and depression for female adolescents was significantly higher than those for male adolescents. The finding indicates there are the differences in the level of suicidal ideation and depression by gender. Furthermore, suicidal ideation and depression correlated significantly more strongly in female adolescents. This relationship between suicidal ideation and depression in female adolescents cannot be overlooked. Based on these data, a school-based depression education would offer effective suicide prevention. Also, identifying female adolescents at risk for depression would help to reduce the impact of their symptom on their general academic functioning. In addition, diagnosing and treating depressive disorders in female adolescents at a young age would be expected to reduce the duration and the severity of depression in their adult lives

Significant differences were found between male adolescents' and female adolescents' mean scores for family communication. The level of family communication for female adolescents was significantly higher than those for male adolescents. But, suicidal ideation and family communication correlated significantly more strongly in male adolescents. The finding indicates dysfunctional communication patterns and suicidal ideation correlated more strongly in male adolescents. The expression of emotion seems to be an important factor in communication for adolescents. In general, male adolescents learn to suppress their feelings, while female adolescents are encouraged to express them. Therefore, it is necessary to encourage male adolescents to express emotion and to encourage male adolescents to seek information from parents about life-related questions.

The level of life satisfaction for female adolescents was slightly lower than that for male adolescents. As found by others (Diener & Diener, 1994), a significant difference was not found between male adolescent' and female adolescent' mean score for life satisfaction. Although we predict that females have lower levels of life satisfaction because they have traditionally possessed less power and fewer resources than men, for example, in Korean culture men possess more status and freedom, the findings indicated that their level of life satisfaction is close to those of males. It may be that the roles of adolescent males and females are more similar than others who are following more traditional roles.

Three psychosocial variables (depression, life satisfaction, family communication) were correlated with suicidal ideation for both genders. Depression was positively related to suicidal ideation for both genders, while family communication and life satisfaction were negatively related to suicidal ideation for both genders. These findings are consistent with and build upon previous research that focused on the psychosocial factors related to depression (Fergusson et al., 1993; Reinherz et al. 1995; Nam, 2004) and family communication (Nam, 2004).

The unique contribution of demographic-behavioral variables and psychosocial factors in explaining the variance in suicidal ideation was identified. Male adolescents' demographic-behavioral variables explained 3% of the variance in suicidal ideation, and Wang-tta was the only significant predictor of suicidal ideation for male adolescents. For female adolescents, demographic-behavioral variables explained 18% of the variance in suicidal ideation, and school type, change of schools, economic status, smoking, and Wang-tta were the significant predictors of suicidal ideation for female adolescents. It is important to note that a number of demographic-behavioral variables for females were associated

with suicidal ideation as main effects when tested in isolation (Table 5). The majority of demographic-behavioral variables except smoking were not predictive of suicidal ideation after adjusting for the influence of psychosocial predictors. The findings from this study suggest that identification of demographic-behavioral variables may inform suicide risk recognition in female adolescents. Also, this suggests that females who are involved in demographic-behavioral variables such as smoking, lower economic status, Wang-tta, change of schools, and vocational high school should be observed closely because they may have the potential for developing suicidal behavior.

To examine the significant predictors of suicidal ideation among adolescents' demographic-behavioral variables and all of the examined psychosocial variables, stepwise multiple regressions were conducted. In the analysis predicting suicidal ideation in males, the main effects were life satisfaction with depression and family communication. Unlike female adolescents, demographic-behavioral variables such as smoking did not influence level of suicidal ideation in male adolescents. This may indicate that suicidal ideation in male adolescents is more related to psychosocial variables rather than to demographic-behavioral variables. The findings from this study suggest that identification of subjective experience such as life satisfaction may inform suicide risk recognition in male adolescents.

As found by others (Kelly et al., 2001), depression was predictive of suicidal ideation for both genders. However, depression was strongly associated with suicidal ideation in female adolescents. Therefore, accurate assessment of female adolescents' suicidal ideation should include indication of level of depression. The findings from this study suggest that treatment of underlying depression is likely to be the most effective preventive measure in female adolescents. Also, school-based depression education curriculum would offer effective suicide prevention.

A regression equation predicting suicidal ideation for males revealed that life satisfaction was the strongest predictor. Therefore, accurate assessment of male adolescents' suicidal ideation should include indication of level of life satisfaction. Life satisfaction can and does change for some people, and that can be influenced by shifting evaluative standards and information. Because life satisfaction is less stable than personality, the influence of changeable environmental factors appears to substantially influence well-being (Fujita and Diener, 2005). Thus, for reducing suicidal ideation in male adolescents, it is necessary to improve life satisfaction in the intervention program.

Unlike male adolescents, family communication did not influence level of suicidal ideation in female adolescents. Thomas and colleagues (2001) found family dysfunction to be predictive of suicidal ideation in female adolescents. Family communication was predictive of suicidal ideation for male adolescents. Functional family communication is related to healthier male adolescent functioning. This is proposed to decrease suicidal ideation through promoting more functional discussion about important issues in male adolescents' lives. Also, a school-and family-based communication program would offer effective suicide prevention.

Through these results, the approach for an effective suicide prevention program for adolescents should consider gender differences. Identification of demographic-behavioral variables such as smoking, lower economic status, Wang-tta, change of schools, and vocational high school may inform suicide risk recognition in female adolescents. Especially for reducing suicidal ideation for female adolescents, it is necessary to include a school-based depression education program. For male adolescents, identification of behavioral variables such as Wang-tta may inform suicide risk recognition. In order to reduce suicidal ideation in male adolescents, it is necessary to design an intervention program that emphasizes improving life satisfaction and family communication as well as depression.

There are several limitations in this study. One limitation is that the number of risk factors measured was limited. For example, stressors, coping mechanism, and school adjustment were not measured in this study. A second limitation is the cross-sectional design, and causal inference is limited. Finally, the in-school sample was not representative, generalizability of the findings is also limited. To increase generalizability, recruiting adolescents from broad geographic areas with random selection is needed.

CONCLUSION AND RECOMMENDATION

The purpose of this study is to examine gender issues in adolescent suicidal ideation in order to consider the implications for designing a suicide prevention program based on gender differences in suicidal ideation.

In this study, the level of suicidal ideation differed by gender. The level of psychosocial factors except life satisfaction differed between males and females. Comparing the unique contribution of demographic-behavioral variables and psychosocial variables in explaining the variance in suicidal ideation, demographic-behavioral variables explained 3% of the variance and psychosocial variables explained 28% of the variance in suicidal ideation for male adolescents. For the female adolescents, demographic-behavioral variables explained 18% of the variance and psychosocial variables explained 31% of the variance in suicidal ideation. Identifying the most important predictors of suicidal ideation, life satisfaction, depression, and family communication remained in the model, explaining 28% of the variance in suicidal ideation for male adolescents. For the female adolescents, depression, smoking, and life satisfaction remained in the model, explaining 38% of the variance in suicidal ideation.

The finding indicates female adolescents are at greater risk than male adolescents for suicidal ideation. Female adolescents who are involved in demographic-behavioral variables such as smoking, lower economic status, Wang-tta, change of schools, and vocational high school should be observed closely as having the potential for developing suicidal behavior. Accurate assessment of female adolescents' suicidal ideation should include an indication of the level of depression and life satisfaction. A school-based depression education would offer effective suicide prevention in female adolescents.

Male adolescents who are related to demographic-behavioral variables such as Wang-tta should be observed closely as having the potential for developing suicidal behavior. Identification of life satisfaction and family communication as well as depression may inform suicide risk recognition in male adolescents. Therefore, accurate assessment of male adolescents' suicidal ideation should include indication of level of life satisfaction, depression, and family communication. For the suicide prevention for male adolescents, it is necessary to improve life satisfaction and family communication and to decrease depression through a school-and family-based intervention program.

Based on the outcomes of this study, it is suggested that repetitive studies are required in order to generalize the results of this study, and a program to decrease adolescent suicidal ideation needs to be developed, and studies to examine the effect of the program need to be conducted as well.

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