



Association between type of stress induced and suicidal ideation and attempt in Korean adolescents

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INTRODUCTION

- Adolescence is a stage of life when crucial changes happen, including physical, emotional and behavioral development. Due to this chaotic adjustment teenagers have to go through, mental problem of adolescent that may lead to suicide has been one of the social issues in many countries.
- The World Health Organization estimates that 62,000 adolescents died in 2016, as a result of self-harm, which is the third leading cause of death among those aged 15 to 19 years.
- Based on the Organisation for Economic Cooperation and Development(OECD) report, many countries including Canada, Finland, Switzerland decreased, while Korea showed big growth in suicide rate during the 1990s to 2017.
- Stress is a strong potential motive for adolescents to commit suicide; in addition to these vulnerability during the change in hormonal effect, adolescents are challenged by adverse environmental factors such as conflicts with parents, familial discord, academic stress, and school bullying.
- Stress coming from these sources, mostly from surrounding environment influence the youth greater than the adults; especially in 2020, when comparing the pandemic era to previous year, many students went through huge environmental change, such as online classes and spending majority of their time at home.
- Thus, from this study, we aim to explore the association between type of stress and suicidal behavior, including ideation and attempt in Korean adolescents in 2015 and 2020.

RESULTS

Table 1. General characteristics of the study subjects												
Variables	Suicidal Ideation						Suicidal Attempt					
	Male			Female			Male			Female		
	N	%	P-value	N	%	P-value	N	%	P-value	N	%	P-value
Total (N=77,363)	37,588	3,299	8.8	34,289	91.2		39,775	5,266	13.2	34,509	86.8	
Stress Type			<0.0001			<0.0001			<0.0001			<0.0001
None	2,147	49	2.3	2,098	97.7		755	26	3.4	729	96.6	
Family and home	5,992	912	15.2	5,080	84.8		4,580	1,146	25.0	3,434	75.0	
School and friends	3,108	426	13.7	2,682	86.3		3,753	765	20.4	2,988	79.6	
Academic achievement	21,639	1,590	7.3	20,049	92.7		25,094	2,672	10.6	22,422	89.4	
Personal/appearance	4,702	322	6.8	4,380	93.2		5,593	657	11.7	4,936	88.3	
Year			<0.0001			<0.0001			<0.0001			<0.0001
2015	25,280	2,333	9.2	22,947	90.8		24,671	3,279	13.3	21,392	86.7	
2020	12,308	966	7.8	11,342	92.2		15,104	1,987	13.2	13,117	86.8	
School year			0.0179			0.0179			0.0179			0.0179
Middle school	18,098	1,523	8.4	16,575	91.6		19,091	2,536	13.3	16,555	86.7	
High school	19,490	1,776	9.1	17,714	90.9		20,684	2,730	13.2	17,954	86.8	

Table 2. Results of factors associated with suicidal ideation and attempt by stress type

Variables	Suicidal Ideation				Suicidal Attempt			
	Male		Female		Male		Female	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Stress Type								
None	1.00		1.00		1.00		1.00	
Family and home	3.81	2.81 - 5.15	3.64	2.42 - 5.50	1.01	0.67 - 1.54	2.48	1.08 - 5.67
School and friends	2.91	2.13 - 3.99	2.48	1.64 - 3.75	0.87	0.56 - 1.36	1.61	0.70 - 3.71
Academic achievement	2.13	1.58 - 2.87	1.77	1.18 - 2.66	0.45	0.30 - 0.69	1.21	0.53 - 2.75
Appearance	1.88	1.37 - 2.58	1.66	1.10 - 2.51	0.64	0.43 - 1.06	1.26	0.55 - 2.90

- On the right side, table 3, subgroup analysis stratified by independent variables is presented. Table 3 demonstrates numerical values of the subgroup analysis stratified by the independent variables. For male, in all of the covariates, OR is the highest in stress type of family and home cause in suicidal ideation in reference to no stress induced adolescents. For female, except father and mother's education level under middle school had highest OR in stress coming from school and friends, every other covariate had highest likelihood of suicidal ideation when stress come from family and home. Same tendency was observed in suicidal attempt.

DISCUSSION

- The present study investigated about the type of stress adolescent receive and association to suicidal behavior, such as ideation and attempt. In this study, suicidal ideation was significantly related to all stress types, including stress coming from family and home, school and friends, academic achievement, and appearance in both male and female, when putting none stress group as reference. However, for suicidal attempt, only stress received group from family and home had increased likelihood to try commit suicide than none stress received group.
- Previous findings show relationship about academic failure and suicidal behaviour in adolescent. Nevertheless, this was not in alignment with the corresponding study, because in table 2, for suicidal attempt, it was shown that male group who answered academic achievement as their biggest stress cause had decreasing OR and statistically significant.
- One of our findings present that adolescents who have parents whose education level is below middle school showed decreased OR compared to those who graduated college or achieved above that level of education in table 3. This could be explained as parents who have high education level would expect their children to pursue the same relatively more than those who did not.
- As a result of this study, stress from family and home were the most influential stress cause for adolescents to think about and actually implement suicide. This was in consensus with the previous study saying, parent-child conflict appears to be a salient precipitating factor for children, and most commonly reported precipitant among children who died by suicide was family conflict.
- Our study had few limitations. First, it was a cross-sectional study design, being unable to track the adolescents with stress type for more than a limited period of time. Second, because the survey was conducted as self reporting, it might have untruthful answers, especially for suicidal attempt. Lastly, the data used for the study was a secondary data brought from KYRBS. Because the data was not collected by our own researchers, there were variables that needed to be considered for this subject of study, but was not available in the data set.

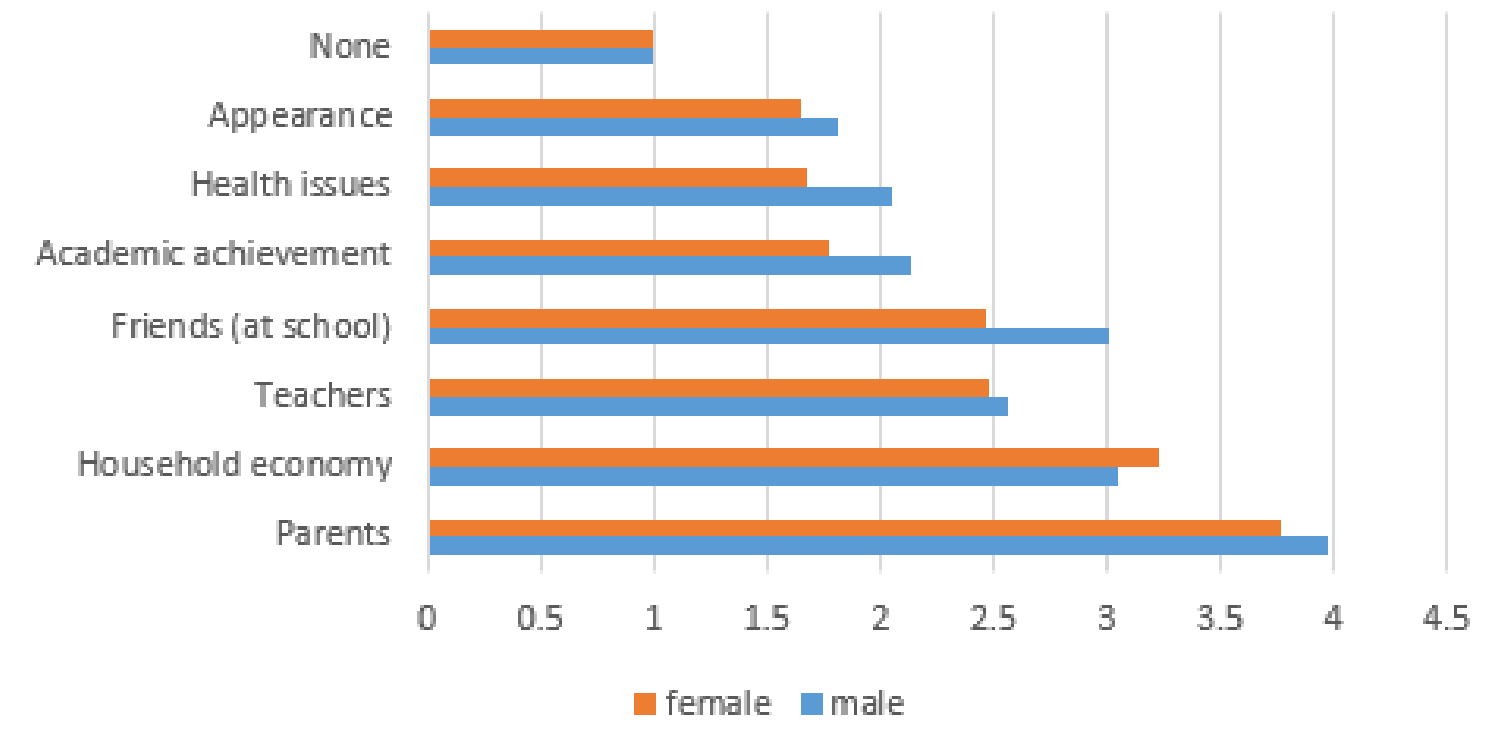
MATERIALS AND METHODS

- Data source:** Data from a Korea Youth Risk Behavior Web-based survey from 2015 and 2020 was used in this study.
- Study subjects:** Our study was carried out on data derived were from 77,363 individuals between 7th to 12th grade students after exclusion of those with missing values, and those who answered “etc” for the stress type and answered in descriptive form were also excluded.
- Dependent variables:** The dependent variable was suicidal ideation and attempt. Participants were asked the question “Have you ever seriously thought about committing suicide?” for ideation, and “Have you ever tried to commit suicide?” for attempt, with response options of Yes or No for the ideation.
- Interesting variables:** The variable of interest in this study was the type of stress. Participants were asked the question “What is the biggest reason for stress?” with 7 different answer choices. Based upon the answer given, stress type was divided into four causes: family and home, school and friends, academic achievement, personal(appearance). Those who answered “none” in the question “How much stress do you perceive daily?” were set as the reference group.
- Covariates:** Sociodemographic and health-related characteristics were all included as control variables. General characteristics included: gender, grade, academic grades, mother's education level, father's education level, household income, and living region. Health-related variables included: alcohol use, cigarette use, physical activity, feeling of hopelessness. Moreover, year variable was also adjusted.
- Statistical analysis:** The covariates were compared using the chi-squared test to confirm the association. Multi logistic regression analysis was used to evaluate the association between stress type and suicidal behavior(ideation and attempt). The data were analyzed from 7th to 12th grade students in Korea and then stratified by sex by using SAS 9.4 (SAS Institute Inc; Cary, North Carolina).

- Table 1 shows the general characteristic of the participants. The rate of the participants who had suicidal ideation was 8.8% in male and 13.2% in female, noticeably higher in female group.
- Among the different stress types who answered “yes” to suicidal ideation during the past 12 months, stress coming from family and home or school and friends account for the highest rates in both male and female(male: 15.2% and 13.7%, female: 25% and 20.4 %)
- The rate of the participants who had tried committing suicide was 1.6% in male and 2.5% in female, higher in female in same pattern with suicidal ideation. The rate of the participants answered “yes” to suicidal attempt was markedly lower than the rate of ideation, but in the midst of the causes of stress, stress origin of family and home or school or friends showed highest rate.

Table 2. The results of subgroup analysis stratified by independent variables												
Variables	Suicidal Ideation											
	Male				Female				Male			
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Stress Type												
None	1.00		1.00		1.00		1.00		1.00		1.00	
Family and home	3.81	2.81 - 5.15	3.64	2.42 - 5.50	1.01	0.67 - 1.54	2.48	1.08 - 5.67	1.01	0.67 - 1.54	2.48	1.08 - 5.67
School and friends	2.91	2.13 - 3.99	2.48	1.64 - 3.75	0.87	0.56 - 1.36	1.61	0.70 - 3.71	0.87	0.56 - 1.36	1.61	0.70 - 3.71
Academic achievement	2.13	1.58 - 2.87	1.77	1.18 - 2.66	0.45	0.30 - 0.69	1.21	0.53 - 2.75	0.45	0.30 - 0.69	1.21	0.53 - 2.75
Appearance	1.88	1.37 - 2.58	1.66	1.10 - 2.51	0.64	0.43 - 1.06	1.26	0.55 - 2.90	0.64	0.43 - 1.06	1.26	0.55 - 2.90

SUICIDE IDEATION BY STRESS TYPE



- Figure 1 above is the subgroup analysis stratified by variable of interest, stress type divided into all 7 categories as asked in the question.
- By comparing the two dependent variables, and also by visualizing it into a figure, the difference in result is more clear: suicide ideation is more affected by the stress types, and suicide attempt was profoundly less likely to happen in female group compared to high ORs in ideation.

CONCLUSION

- Adolescents who receive stress from family and home or school and friends are more likely to think or carry out the thought of suicide than those who have different stress causes.
- There should be targeted policies regarding adolescent suicide, and finding ways to manage those who have trouble with family or home setting in preventing suicide, especially in the pandemic era, when staying home is inevitable with social distancing.