

Depressive symptoms and suicidal ideation among Vietnamese students aged 13–17: Results from a cross-sectional study throughout four geographical regions of Vietnam

Health Psychology Open
July-December 2020: 1–7
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DOI: 10.1177/2055102920973253
journals.sagepub.com/home/hpo



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Abstract

We conducted a cross-sectional study in four provinces located in four different geographical areas in Vietnam to examine the prevalence and associated factors of depression and suicide ideation among school students aged 13–17. A sample of 6407 students from secondary school and high school participated in our survey to complete self-reported questionnaires. Depressive symptoms were measured by the Center for Epidemiologic Studies Depression scale (CES-D). Suicidal ideation and associated factors were measured by the Global School Student Health Survey (GSHS) questionnaire. We found that 31.7% of students had depressive symptoms, and 11% reported suicidal ideation during the last year. Female students and older students were more at risk of experiencing depressive symptoms and suicidal ideation than male students and younger students. Bullying, violence, smoking, and alcohol consumption appear as risk factors, while a good relationship with parents/guardians may protect school students from having depressive symptoms and suicidal ideation.

Keywords

adolescent, depression, risk factors, student, suicide

Introduction

Mental health problems including depression and suicide among adolescents are among the most important public health concerns globally. Depression, a common mental health disorder, is ranked as one of the leading causes of disability among adolescents (Vos et al., 2016). School-aged students with major depression may be at a high risk of engaging in suicidal behaviors. The World Health Organization reported that suicide is the third leading cause of death in 15–19-year-olds (WHO, n.d.b). With mild depression, students may have trouble partaking in normal daily activities and may feel as if life is not worth living. The burden of depression and suicide among adolescents is highest in low-income and middle-income countries (Thapar et al., 2012).

Worldwide research has revealed that a considerable number of adolescents experience depressive symptoms and

suicidal ideation, although the estimates vary across countries. Recent systematic reviews have indicated that the prevalence of adolescent depression was 43.55% in Iran (Sajjadi et al., 2013) and 23.4% in China (Tang et al., 2019). A descriptive study in Thailand reported that 34.9% of adolescent respondents exhibited depressive symptoms (Somrongthong et al., 2013), while an increase of depressive symptoms among

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school students aged 13 to 18 was observed in the US (Twenge et al., 2017). A survey from a rural school in the US estimated a prevalence level of 22.3% for suicidal ideation among adolescents (Bhatta et al., 2014), and a national survey in France yielded a prevalence level of 10% (Janssen et al., 2017). Recently, WHO reported that the pooled 12-month prevalence of suicide ideation among adolescents across nine countries in South-East Asia was 6.8%, however, there were no data from Vietnam (WHO, 2017).

In the past decade, there have been a few studies on mental health among adolescents in Vietnam. The estimates of depressive symptoms and suicidal ideation among a sample of secondary school students from the Can Tho city in the south of Vietnam were found to be 22.8% and 26.3%, respectively (Nguyen et al., 2013). A survey that was conducted among high school students in Hanoi, the capitol of Vietnam, located in the North, found that suicidal ideation was reported by 21.4% of females and 7.9% of males (Phuong et al., 2013). These percentages are higher than the prevalence reported in a previous study on Hanoi teenagers and young adults aged 15–24 (Blum et al., 2012). School connectedness and positive parental support appeared as protective factors, while bullying and violence were reported as major risk factors of mental health complications among adolescents (Blum et al., 2012; Le et al., 2017; Nguyen et al., 2013; Phuong et al., 2013).

Previous studies on adolescents' mental health in Vietnam were conducted in small-scale using data from one province. We conducted this study to determine the prevalence of depression and suicidal ideation among students aged 13–17 years old from four different provinces across four geographical regions in Vietnam during the 2016–2017 school year, and examine any related factors to having symptoms of depression and suicidal ideation.

Methods

Study design

This is a cross-sectional study.

Study participants

Participants recruited for this study consisted of secondary school students from grades 7, 8, and 9, and high school students from grades 11 and 12 (equivalent to school students aged 13–17).

Study setting

The study was conducted in four provinces located in four different geographical regions across the entirety of Vietnam, including Hai Phong Province (Red River Delta region), Nghe An Province (Central Coast region), Can Tho

Province (Mekong River Delta region), and Kontum Province (Highland region).

Sample size and sampling

Four provinces located at four different ecological regions were selected purposefully. Stratified random sampling was conducted according to district, school, and grade. First, one urban district and two rural districts were randomly selected per province. Next, we randomly selected one high school and one secondary school per district. Students from grade 7 to grade 11 were recruited by randomly selecting three classes per grade at secondary schools and two classes per grade at high schools, then all students available in the selected classroom at the time of the survey were invited to participate voluntarily in this study.

The average number of students per class was approximately 50. Finally, we obtained a sample size of 6407 participants from 12 secondary schools and 12 high schools. All invited students agreed to participate in the survey, the respondent rate was 100%.

Measurements

The dependent variables. Dependent variables were depressive symptoms and suicidal ideation.

Level of depressive symptoms was measured using a Center for Epidemiologic Studies Depression scale (CES-D). The CES-D includes 20 items covering the following components: sadness, poor appetite, concentration, sleeplessness, loss of interest, and suicidal thoughts and intentions. A four-point scale including, "Rarely or none of the time", "Some or a little of the time", "Occasionally or a moderate amount of time", "Most or all of the time", was converted to score from 0 to 3. The possible scores ranged from 0 to 60, with the higher scores indicating a higher level of depression. A cut-off point of 16 was chosen to detect the cases having depressive symptoms (Radloff, 1977). Participants who scored under 16 points were categorized as "do not have depressive symptoms". The Vietnamese version of the CES-D scale was validated and applied in previous studies involving Vietnamese school and university students (Le et al., 2017; Nguyen et al., 2007, 2013; Tran et al., 2014)

The prevalence of suicidal ideation during the last 12 months was measured by the question "During the past 12 months, did you ever seriously consider attempting suicide?". If participants answered "Yes", they were considered as "has experienced suicidal ideation" and vice versa.

The independent variables. The independent variables include demographic variables, individual factors (bullying, violence, and emotional difficulties), health risk behaviors (physical activity, smoking, and alcohol consumption), and familial factors (relationship with parents/guardians). These

independent variables were adapted from the Global School-based Student Health Survey (GSHS) (WHO, n.d.a).

There were six selected indicators to measure individual factors: having close friends or not, having been physically attacked or not, having been seriously injured or not, having been bullied or not, having been worried or not, and having experienced difficulty focusing on homework or not. Students were asked, “How many close friends do you have?”, with four options: 0, 1, 2, and 3 or more. Students were recorded as not having close friends when they selected 0. Students also were asked if they were physically attacked, seriously injured, bullied, worried, and hard to focus on homework during the past 30 days. These variables were collapsed into two categories during analysis, with 0 indicating students were not physically attacked, seriously injured, bullied, worried, and hard to focus on homework.

The number of days a participant used alcohol or cigarettes and the number of days a participant was physically active during the past 30 days were binary coded with 0 indicating no alcohol and tobacco use and no physical activity, respectively.

Finally, students were asked 6 questions about their relationships with their parents/ guardians to examine if they experienced support from parents/guardians during the last 30 days: (1) “How often did your parents or guardians check to see if your homework was done?”, (2) “How often did your parents or guardians understand your problems and worries?”, (3) “How often did your parents or guardians go through your belongings without your approval?”, (4) “How often did your parents or guardians give you advice and guidance?”, (5) “How often did your parents or guardians require you to have good grades/manners?”, (6) “How often did your parents or guardians respect your sense of freedom?”. The answer options were “Never/Rarely/Sometimes/Most of the time/or Always”. Students who selected “rarely/sometimes/most of the time/or always” in questions 1, 2, and 4 were coded as “yes”, while those who selected “never” in questions 3, 5, and 6 were recorded as “yes”, meaning that they experienced positive relationships with their parents/ guardians during the past 30 days.

Data collection

The data were collected during April 2017. A self-reported questionnaire was applied to collect data in a classroom setting. Firstly, trained assistant researchers introduced the purpose of the study and the questionnaire to the students and provided the students with consent forms. All students then were asked to read the consent forms and decide if they would agree to participate. If students consented to study participation, they were given the questionnaires to complete in the classroom. During the survey time, the assistant researchers were available in the classroom to

respond to any comments raised by the students. It took between 30 and 40 minutes for the students to complete the questionnaires. All selected students agreed to participate in the survey, the response rate is 100%.

Data analysis and statistical method

Data analysis was performed using STATA 15 software. All hypotheses were tested the level of statistical significance by using p -value <0.05 . Multiple logistic regression was employed as the main data analysis to examine the factors related to depressive symptoms and suicidal ideation, adjusting for gender, age, grade, ethnic group, father’s and mother’s education.

In the multiple logistic regression model for suicidal ideation, having depressive symptoms was also included as an independent variable to assess the association between having depressive symptoms and having suicidal ideation.

Ethical considerations

The study proposal was approved by the General Department of Preventive Medicine, Ministry of Health, Vietnam (Decision No96/QD-DP April 20th, 2017). All students in the study provided their consent before survey was administered. Students were allowed to withdraw from the survey at any time.

Results

General information of the participants

Table 1 shows the demographic information of 6407 participants. The proportion of females was slightly higher than the proportion of males, at 53.8% and 46.2%, respectively. The numbers of students in the age group of 13–15, and in the age group of 16–17 were similar (50.9%; $n=3258$ and 49.1%; $n=3139$, respectively). Regarding grade point average last semester, nearly half of the respondents reported obtaining moderate grades (48.2%), followed by bad (25.0%), and good (24.4%). The majority (96.2%) of respondents reported that they were from the Kinh ethnic group. In terms of parents’ education, the proportion students whose fathers holding a high school degree and lower was 72.5%, which was similar to that of mother’s education (70.6%).

Main findings

Table 2 presents the prevalence of students that reported having depressive symptoms and suicidal ideation. Nearly one-third (31.7%) reported experiencing depressive symptoms during the last 2 weeks. Female students were more likely than male students to have had depressive symptoms. Students aged 16–17 were also more likely to have

Table 1. Demographic background of participants.

	Number	%
Gender		
Male	2966	46.2
Female	3461	53.8
Age		
13–15	3258	50.9
16–17	3139	49.1
Grade point average last semester		
Excellent	154	2.4
Good	1562	24.4
Moderate	3079	48.2
Bad	1598	25.0
Ethnic group		
Kinh	6211	96.2
Others	243	3.8
Father's education		
High school and lower	4584	72.5
Diploma and higher	1742	27.5
Mother's education		
High school and lower	4501	70.6
Diploma and higher	1879	29.4

depressive symptoms than those aged 13–15 ($p < 0.05$). The past year prevalence of suicidal ideation among participants was 11.0% ($n = 669$). Female students reported more suicidal ideation than male students, 12.0% and 8.8%, respectively. There were no significant differences in previous semester grade point average between students with and without depressive symptoms and between students with and without suicidal ideation.

Table 3 reports odds ratios (ORs) and 95% confidence intervals from the multiple logistic regression analyses to show how individual factors, health risk behaviors, and familial factors are related to depression symptoms, as well as suicidal ideation. All analyzed individual factors are strongly related to both depressive symptoms and suicidal ideation. Students who reported to be worried showed the highest odds of displaying depressive symptoms ($OR = 4.1$), followed by those who reported difficulty focusing on homework ($OR = 2.9$) and being bullied ($OR = 2.2$). For students without close friends, the odds of having depressive symptoms and suicidal ideation are respectively 1.99 and 2.49 times higher than those having close friends. Students who engaged in smoking and alcohol consumption in the past 30 days had a higher risk of reporting depressive symptoms and suicidal ideation than students who abstained from those behaviors. Particularly, alcohol use is responsible for 2.63 times higher of risk of having suicidal ideation. We did not observe any association between physical activity and depression, or suicidal thoughts.

Parental support and involvement such as checking homework, understanding difficulties and worries, and

giving advice significantly lowered the odds of having depressive symptoms and suicidal ideation. However, parents' negative behaviors including going through the students' belongings without students' approval, requiring students to have good grade points or behaviors, and disrespecting students significantly increased the odds of having depressive symptoms and suicidal thoughts among their children.

We also examined the association between depression and suicidal ideation and found that compared to those without depressive symptoms, students with depressive symptoms have a 6.64 times higher risk of suicidal ideation ($OR = 6.64$; 95%CI = 5.51–8.01).

Discussion

The strength of this study

To our knowledge, this is the first study to have been conducted in four provinces, which represents four different geographical regions of Vietnam with a large sample size of over 6000 participants. In this study, we applied standard tools including the CES-D scale and GSHS questionnaires. Focusing on school students at adolescent age, our findings provide important evidence for action to improve the mental health of the young generation in Vietnam.

Main findings

We found that about one-third of participants reported depressive symptoms, which is comparable with previous studies in Vietnam and Asian countries (Nguyen et al., 2013; Sajjadi et al., 2013; Somrongthong et al., 2013; Tang et al., 2019; Tran et al., 2014). However, the past year prevalence of suicidal ideation in this study is higher than a previous study conducted among youths in Hanoi in 2006 (Blum et al., 2012), and higher than the last year prevalence of suicidal ideation among adolescents in South East Asia (6.8%) (WHO, 2017). This may suggest an increased trend in suicidal ideation among Vietnamese adolescents in recent years, and may be related to strong socio-economic changes in Vietnam.

Consistent with previous studies worldwide, female students in this study were more likely to experience depressive symptoms and suicidal ideation more than male students (Le et al., 2017; Merikangas et al., 2010; Ranney et al., 2013). We also found that the higher the age of the students, the higher the prevalence of depression was; this was similar to results from other countries as well (Thapar et al., 2012).

Regarding individual risk factors, we found that experiencing violence and being bullied, in agreement with previous studies, are significantly associated factors with depressive symptoms and suicidal ideation among school students, (Bhatta et al., 2014; Johnson et al., 2019; Le et al.,

Table 2. Prevalance of students having depressive symptoms and suicidal ideation.

	No depressive symptoms	Depressive symptoms	<i>p</i> -value	No suicidal ideation	Suicidal ideation	<i>p</i> -value
	<i>n</i> (%)	<i>n</i> (%)		<i>n</i> (%)	<i>n</i> (%)	
Total	4141 (68.3)	1924 (31.7)		5396 (89.0)	669 (11.0)	
Gender						
Male	2026 (72.8)	756 (27.2)	<0.05	2673 (91.2)	257 (8.8)	<0.05
Female	2115 (64.4)	1168 (35.6)		3010 (88.0)	412 (12.0)	
Age						
13–15	2159 (70.3)	913 (29.7)	<0.05	2884 (89.6)	336 (10.4)	>0.05
16–17	1960 (66.0)	1010 (34.0)		2770 (89.2)	334 (10.8)	
Grade point average last semester						
Excellent	103 (70.6)	43 (29.4)	>0.05	127 (84.7)	23 (15.3)	>0.05
Good	1035 (69.7)	449 (30.3)		1376 (89.5)	161 (10.5)	
Moderate	2001 (69.5)	919 (31.5)		2739 (90.0)	304 (10.0)	
Bad	985 (66.3)	500 (33.7)		1410 (88.7)	179 (11.3)	

Table 3. Factors associated with depression symptoms and suicidal ideation among sample.

	Depressive symptoms		Suicidal ideation	
	OR	95%CI	OR	95%CI
Demographic background				
Age (13–15)*	1.3	1.1; 1.5	1	0.8; 1.3
Gender (Male)*	1.4	1.2; 1.6	1.4	1.2; 1.8
Ethnic group (Kinh)*	1.2	0.8; 1.7	0.6	0.3; 1.2
Mother's education (High school and lower)*	1.1	0.9; 1.3	1.3	1; 1.7
Father's education (High school and lower)*	1	0.8; 1.2	1	0.8; 1.4
Individual factors				
No close friends**	1.99	1.72; 2.30	2.41	1.99; 2.93
Been physically attacked during the last 12 months***	1.7	1.4; 1.9	1.9	1.6; 2.3
Been seriously injured in the last 12 months***	1.7	1.5; 2.0	1.8	1.5; 2.2
Been bullied in the last 30 days***	2.2	1.9; 2.6	2.9	2.4; 3.5
Been worried in the last 12 months***	4.1	3.6; 4.7	2.8	2.3; 3.4
Difficulty focusing on homework in the last 12 months***	2.9	2.4; 3.5	2.4	1.8; 3.2
Health risk behaviors				
Alcohol use***	1.79	1.57; 2.03	2.63	1.99; 3.48
Tobacco use***	1.61	1.29; 2.02	1.79	1.49; 2.16
Physical activity***	0.97	0.85; 1.17	0.84	0.69; 1.03
Familial factors (relationship with parents/guardians)				
Checked homework***	0.72	0.72; 0.79	0.73	0.68; 0.8
Understood students' problems and worries***	0.68	0.65; 0.71	0.66	0.62; 1.2
Went through students' belongings without approval***	1.32	1.26; 1.38	1.28	1.19; 1.37
Gave advice and instructions**	0.72	0.68; 0.75	0.77	0.71; 0.82
Required students to have a good grade point average and manners***	1.05	1; 1.1	1.12	1.04; 1.20
Disrespected students***	1.5	1.45; 1.6	1.46	1.37; 1.56
Depressive syptoms***	–	–	6.64	5.51; 8.01

*Reference group. **Yes is a reference group. ***Never/no is a reference group.

Note. Bold entries showed that the odd ratio between two groups is statistically significant.

2017; Surkan et al., 2020). People who have been exposed to shocking or frightening situations may experience negative physiological and psychological reactions (Husky et al., 2020). While most individuals will recover from these initial effects, others may develop serious mental

disorders, such as depression (American Psychiatric Association, 2013). Our study findings also reinforced previous findings on the association between smoking, alcohol consumption, and poor mental health of the young population (Peltzer and Pengpid, 2015). These findings strongly

support the idea that intervention programs to improve students' mental health must consider the impacts of school violence and bullying, and health risk behaviors.

Family members, especially parents, were the primary support for children and critical in their children's development of healthy patterns of attachment and emotional self-regulation (Harter, 2012). Students who reported often being taken care of by parents, including checking homework, understanding students' difficulties, and giving advice, were less likely to have depressive symptoms and suicidal ideation. In contrast, a lack of positive parental guidance was linked to depression and suicide among children, as has been communicated by prior research among elementary school-aged children (Sheftall et al., 2016). Therefore, relationships with family members are an important component in protecting young people from poor mental health conditions (Phuong et al., 2013).

Limitations of the study

This study has some limitations. First, the CES-D was developed for epidemiological research, and was not intended for clinical determinations. The classification of symptom levels in this study is different from clinically diagnosed cases of major depressive disorder. However, as the CES-D can be used for screening purposes, our study indicates that clinical research may be warranted in this target population. Second, this cross-sectional study did not present a conclusion of causal relationships. Finally, the data were collected by self-reported questionnaires, therefore, recall bias should be taken into account.

Conclusions

The number of school students experiencing depressive symptoms and suicidal ideation were high, with female and older students were more likely to have depressive symptoms and suicidal ideation. We found that individual risk factors, such as being bullied, being injured, being beaten, smoking, and alcohol consumption were associated with increased risks of depressive symptoms and suicidal ideation among students aged 13–17 years old, and care and positive involvement of parents/guardians plays an important part in reducing the risk of depression and suicidal ideation.

Recommendations

Preventive actions are needed to improve adolescent mental health in Vietnam. Interventions to reduce depression and suicidal ideation should be targeted at female students and late adolescents. Communication campaigns on bullying, violence, and health risk behavior are important, while the roles of family and parents need to be boosted. Further

research should explore causes of depression and suicidal ideation among female students and late adolescents.

Acknowledgements

We sincerely thank the presidents of the 24 schools included in this study and all for their enthusiastic participation. We would like to thank the interviewers who contributed to the data collection process. We also would like to thank Mr. Khoa Tran (nabongoug@ucla.edu) and Mr. Alex Speciale (alspeciale@gmail.com) for their supports in language editing.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This study was funded by the General Department of Preventive Medicine-Ministry of Health

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