

ORIGINAL ARTICLES

The prevalence of stress-related covid19 quarantine among secondary-and-highschool students in northern Vietnam

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ABSTRACT

Objective: The study was conducted to examine the mental effects of COVID-19 quarantine on students in secondary and high schools in the North of Vietnam.

Methods: The cross-sectional study was 5752 students in secondary-and-high schools involved in this study.

Results: Based on stress levels, there was 25.9% of students having stress (n=1487), 10.4% of them had Mild stress level; 9.4% of them had Moderate stress level; 4.5% of them had Severe stress level and 1.6% of them had Extremely Severe stress level. Females students, students in high schools, students with divorced parents, domestic violence/fight had high risk of stress. Additionally, students, who feel isolated, usually contacted to their friends and wanted to go back to schools, were reported high risk of stress.

Conclusion: Stress is one of the most common mental health which may causes suicide in young generation. During COVID-19 quarantine, the rate of stress among students increased but parents/guardians did not pay attention on it.

INTRODUCTION

Stress is one of the most common mental health problems among students in secondary and high schools and The COVID-19 pandemic is increasing the rate of stress due to COVID19 pandemic (1-3). The pandemic was officially announced by the World Health Organization (WHO) on March 11, 2020. Twenty days later, Vietnam was locked down from April 1,2020 based on Directive, No.16/CT-TTg. Starting on April 23, social distancing was enforced based on Directive, No.15/CT-TTg (4). Vietnamese people were told to stay at home and only went out for extreme necessities, and all schools and universities were closed. To control the

spread of the disease, students in secondary and high schools were not allowed to go to their schools, which meant that they did not have any opportunity to see their classmates and teachers.

The consequence of COVID19 on teenagers focuses on their health, safety, and well-being because the COVID10 symptoms in them are less serious than adults (5). Teenagers could not go outside to meet their friends, classmates and family members. Therefore, they are isolated at their houses, but they may not fully understand why they are in this situation. They have to stay at home and/or take remote learning instead of talking with friends and teachers face-to-face, their communication is



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limited on the screens. Staying at home equals to less of social interactions and exercise which could help reduce stress. Additionally, their patients or guardians also impact on their mental health, especially the negative impacts, such as domestic violence, stress for economic and societal disruption.

However, most publications related to mental health due to COVID19 have paid attention to adults, not on teenagers (6), (2). It is important to know the feeling of students about the effects of COVID19 and how it changes their daily lives to help them manage their mental problems. This study is the first study conducted in Vietnam to examine the stress-related consequences of COVID19 on students in secondary and high schools.

METHODS

Study design

This was a cross-sectional survey.

Time and location

The secondary-and-high-school students in northern Vietnam were invited to join this survey. The data were collected within 5 days (from 27 to 31, July 2020). At that time, students had finished the school year and started their summer holiday.

Sampling methods

Although the COVID-19 pandemic has been stably controlled, the government and the Ministry of Health still recommended that people stay at home and practice nonpharmaceutical measures (including travel bans and restrictions, reduced contact, and social distancing) in order to reduce the transmission of coronavirus in the community. Therefore, surveyors/ volunteers (Medical students) collected data in their hometown.

We selected 120 third year medical students, and each of them requires to collect at least 50 secondary-and-high-school students in their neighborhood (in the same district). a gate-to-gate sampling method was applied. That means the first household was the first house in the right hand of surveyors/volunteers' house. If there was no student in this household, we would move to the next following household. The following households were next to the previous household. Self-reported interview was used to fill out the survey. After explaining the purpose of this survey to students and their parents/guardians, surveyor/volunteer invited them to join this survey if they agreed to answer the survey. The phone number of parents/guardians were collected, and the senior researchers would randomly check to confirm the consistency of the data by calling the phone number of parents/guardians.

Study participants

Participants who met the following inclusion criteria took part in the survey: (1) was in grade from 6 to 12 in the last school year; (2) agreeing to take part in the study; (3) their parents agree to let them answer the survey; and (4) having able to read and respond to the questionnaire in Vietnamese.

The response rate was 98.85%. A total of 5819 students were participated this survey and 5752 of them completed this survey.

Variables

The student participants were required to fill in the questionnaire by themselves. The following information was collected: 1)Demographic characteristics: gender, school level, grade, socioeconomic, with whom they were, parent's marital status; 2)Factors related to family members: income reduced, parents losing job, domestic conflict/fight during COVID-19 pandemic; 3)Factors related to schools/

classmates/friends: Feeling isolated, Usually contact to friends, Want to go back to school, Missing classmates and friends; Worried about the difficulty of studying, Difficulty of remote courses, Knowing the information of COVID-19. All variables in part 2 and 3 were binary variables, students chosen Yes/No.

Stress scale

The DASS-21 scale was used to measure psychosocial impact (<https://maic.qld.gov.au/wp-content/uploads/2016/07/DASS-21.pdf>). The survey was translated into Vietnamese by a bilingual researcher using the translation-back translation method. The DASS-21 includes 21 Likert-type items and related 3 factors: Depression (items: 3, 5, 10, 13, 16, 17, and 21), Anxiety (items: 2, 4, 7, 9, 15, 19, and 20), and Stress (items: 1, 6, 8, 11, 12, 14, and 18). We only use the items of stress for this survey. The available options for answering this scale were: 0: did not apply to me at all; 1: applied to me to some degree, or some of the time; 2: applied to me to a considerable degree or a good part of the time; and 3: applied to me very much or most of the time. Scores on the stress was multiplied by 2 to calculate the final score, and the cut-off of different level of stress, as following: Normal (0-14); Mild (15-18); Moderate (19-25); Severe (26-33); and Extremely Severe (over 34). However, in this study, we only used the cut-off score of 14. Students, having score were less and equal to 14, were considered as Normal, and students, having score were over 14, were coded as Stress.

Statistical analysis

Descriptive statistics were used to examine characteristic data and stress categorization, including frequency and percent. Inferential statistics were applied to perform the comparison between groups using Chi-square test. To determine the factors associated with

stress situation of students, binary and multiple logistic regression model was applied. The variates was chose in model are in groups of factors related to family members and factors related to schools/classmates/friends. The significance level was set at $p < 0.05$. All statistical analyses were carried out using Stata 15.0 software and Microsoft Excel 2016 (Microsoft, Redmond, WA, USA).

Ethical Approval

The survey was permitted to conduct in community by Hanoi Medical University. All third year medical students were permitted to collect data in their hometown. All selected students required to complete COVID19 Safety Certificate providing by Ministry of Health, and they were asked to using facemasks during the data collecting process. Medical students (research volunteers) asked the agreement of parents/guardians and students after explaining the purpose of the study.

RESULTS

Demographics of participating students

There were 5752 students in secondary-and-high schools involved in this study. The proportion of females was higher than that of males, at 59.3 and 40.7, respectively. Students in high school took into account of 55.4% and students in secondary school were 44.6%. Nearly half of them had Good grade last semester (47.7%). Most of them lived with their parents (93.5%) and had middle SES (97.9%). Based on stress levels, there was 25.9% of students having stress ($n=1487$), 10.4% of them had Mild stress level; 9.4% of them had Moderate stress level; 4.5% of them had Severe stress level and 1.6% of them had Extremely Severe stress level.

Main finding

Table 1. Demographics background of participating students related to stress

Demographic background	Normal n (%)	Stress n (%)	Total	p
Gender				
Male (n=2341)	1801 (42.2)	540(36.3)	2341(40.7)	<0.0001
Female (n=3411)	2464 (57.8)	947(63.7)	3411(59.3)	
School level				
Secondary school (n=2567)	1854(43.5)	713(47.9)	2567(44.6)	0.003
High school (n=3185)	2411(56.5)	774(52.1)	3185(55.4)	
Grade				
Bad (n=677)	510(12.0)	167(11.2)	677(11.8)	0.285
Moderate (n=2744)	2052(48.1)	692(46.5)	2744(47.7)	
Good (n=2331)	1703(39.9)	628(42.2)	2331(40.5)	
Socioeconomic				
Low (n=371)	269(6.3)	102(6.9)	371(6.4)	0.616
Middle (n=5055)	3749(87.9)	1306(87.8)	5055(87.9)	
High (n=326)	247(5.8)	79(5.3)	326(5.7)	
Living with				
Parents (n=5380)	4015(94.1)	1365(91.8)	5380(93.5)	0.002
Others (n=372)	250(5.9)	122(8.2)	372(6.5)	
Parents' married status				
Married (n=5316)	3969(93.1)	1347(90.6)	5316(92.4)	0.002
Divorced (n=436)	296(6.9)	140(9.4)	436(7.6)	

Table 1 demonstrates that there are differences between normal and stressed students in groups gender, school level, living with, and parents' marital status.

Tables 2. Prevalence of students having stress-related COVID 19

	Normal n (%)	Stress n (%)	Total	p
Factors related to family member (parents/guardians)				
Income reduced				
No	1128(26.5)	372(25.0)	1500(26.1)	0.279
Yes	3137(73.5)	1115(75.0)	4252(73.9)	

	Normal n (%)	Stress n (%)	Total	p
Parents losing job				
No	3888(91.2)	1382(92.9)	5270(91.6)	0.035
Yes	376(8.8)	105(7.1)	481(8.4)	
Domestic conflict/fight				
No	4082(95.7)	1373(92.3)	5455(94.8)	<0.0001
Yes	183(4.3)	114(7.7)	297(5.2)	
Factors related to school/classmates/friends				
Feeling isolated				
No	3383(79.3)	1130(76.0)	4513(78,5)	0.007
Yes	882(20.7)	357(24.0)	1239(21,5)	
Usually contact to friends				
No	550(12.9)	245(16.5)	795(13.8)	0.001
Yes	3715(87.1)	1242(83.5)	4957(86.2)	
Want to go back to school				
No	407(9.5)	1228(82.6)	5086(88.4)	<0.0001
Yes	3838(90.5)	259(17.4)	666(11.6)	
Missing classmates and friends				
No	2131(50.0)	880(59.2)	3011(52.4)	<0.0001
Yes	2132(50.0)	607(40.8)	2739(47.6)	
Worried about the difficulty of studying				
No	1962(46.0)	577(38.8)	2539(44.1)	<0.0001
Yes	2303(54.0)	910(61.2)	3213(55.9)	
Difficulty of remote courses				
No	1786(42.2)	458(30.8)	2254(39.2)	<0.0001
Yes	2464(57.8)	1029(69.2)	3493(60.8)	
Knowing the information of COVID-19				
No	87(2.0)	41(2.8)	128(2.2)	0.106
Yes	4178(98.0)	1446(97.2)	5624(97.8)	

Table 2 demonstrated the prevalence of students having stress-related COVID-19. There was no different between groups of students had income reduced and knew the information

of COVID-19. Other factor showed the significant different between students in two groups of normal and stress.

Table 3. Association of Stress and COVID19-related factors

	Model 1		Model 2	
	RawOR	95%CI	AdjustedOR	95%CI
<i>Demographics background</i>				
Female	1,28	1,13 – 1,45	1.32	1.17 – 1.50
Highschool	0.83	0.74 – 0.94	0.92	0.88 – 0.95
Grade				
Good	1.12	0.92-1.37	1.08	0.85-1.37
Moderate	1.03	0.85- 1.25	1	0.8-1.25
Socioeconomic Status (vs. High)				
Low	1.18	0.84- 1.67	1.1	0.77- 1.57
Middle	1.09	0.84- 1.41	1.06	0.81-1.40
Married Parents	1.39	1.12 – 1.72	1.37	1.10 – 1.70
<i>Factors related to family member (parents/guardians)</i>				
Income reduced	1.08	0.94 – 1.23	1.17	1.01 – 1.35
Parents losing job	0.78	0.63 – 0.98	0.71	0.56 – 0.90
Domestic conflict/fight	1.85	1.45 – 2.36	1.68	1.30 – 2.17
<i>Factors related to schools/classmates/friends</i>				
Feeling Isolated	1.21	1.05 – 1.39	1.19	1.03 – 1.45
Missing classmates/friends	0.69	0.61 – 0.78	0.76	0.67 – 0.86
Not usually contact to friends	1.33	1.13 – 1.57	1.22	1.02 – 1.37
Not want to go back to school	2.00	1.69 – 2.37	1.79	1.50 – 2.15
Worried about the difficulty of studying	1.34	1.19 – 1.52	1.21	1.06 – 1.37
Difficulty of remote courses	1.64	1.44 – 1.86	1.58	1.39 – 1.81
Knowing the information of COVID-19	0.73	0.5-1.07	0.79	0.53-1.18

n=5752; R²=0.0387; p<0.0001

Table 3 showed the association between stress and COVID-19-related factors based on Binary and Multiple Logistic Regression Model.

DISCUSSION

To our knowledge, this is the first study to examine the prevalence of stress-related to

COVID19 among secondary-and-high-school students with a large simple size of 5752. Our study points out an important the effects of COVID19 in Vietnamese young generation who is not paid attention during quarantine.

We found that around 26% of students reported stress, our finding was lower than a study in Chinese population with

32.1% suffering stress in different levels during COVID-19 quarantine (7) anxiety, depression, and stress during the initial stage of the COVID-19 outbreak. The data will be used for future reference. Methods: From 31 January to 2 February 2020, we conducted an online survey using snowball sampling techniques. The online survey collected information on demographic data, physical symptoms in the past 14 days, contact history with COVID-19, knowledge and concerns about COVID-19, precautionary measures against COVID-19, and additional information required with respect to COVID-19. Psychological impact was assessed by the Impact of Event Scale-Revised (IES-R). It could be explained because the study in China conducted during the first two weeks of lock down, the number of case and death because of COVID-19 were high, so the Chinese population was panic and they did not prepare well. Our finding equaled to a systematic review of stress during COVID-19 (3).

During quarantine, students contacted most of time with their parents/guardians because they could not go outside, so they were affected by their parents/guardians' emotions. Table 3 showed that the decrease of income was not that much made students stress. However, we did not measure the percent change in income which had an effect on students' mental health because the sharply decrease of income may lead to students' stress. It was explained by if their parents/guardians lose their job had positive impact on students' stress. Besides, students living in family with domestic conflict/fight during COVID-19 quarantine had higher odds of stress than students living in family without. COVID-19 changed our daily activities, all the companies/schools were locked down and people were asked to stay at home, some of

them lose their jobs and some of them worked from home. Parents/Guardians themselves also suffered mental health, so a current study pointed out an increase of domestic violence during lock down (8), (9), and it put an indirect consequences to teenagers (10).

Other factors related to school also influenced students' stress. During COVID-19 lock down, students may feel isolated, miss their friends/classmates, usually contact to their friends and want to go back to school. It is the fact that schools were closed longer than universities/companies, and students suffer adverse effect on mental health (7) anxiety, depression, and stress during the initial stage of the COVID-19 outbreak. The data will be used for future reference. Methods: From 31 January to 2 February 2020, we conducted an online survey using snowball sampling techniques. The online survey collected information on demographic data, physical symptoms in the past 14 days, contact history with COVID-19, knowledge and concerns about COVID-19, precautionary measures against COVID-19, and additional information required with respect to COVID-19. Psychological impact was assessed by the Impact of Event Scale-Revised (IES-R). Many teenagers missed out some biggest moments of their young lives, as well as everyday moments like chatting with friends and mates in class (11). Many of them had their own problems which could not be told to their parents/guardians, they were normally share with their friends or health workers at their school, but they may not do it during COVID-19 quarantine. Especially, Vietnamese Government and schools may not pay attention on reducing the effects of COVID-19 on mental health, they focused more on prevent the spread of the disease, such as handwashing and social distancing. As a result, teenagers, who

showed milder cases and a better prognosis than adults related to COVID-19 (12), did not know how to make them feel better during COVID-19 quarantine.

Some students worried about the difficulty of studying and difficulty of remote courses during lock down. The odds of stress among students worried about difficulty of studying as well as remote course was 1.34 and 1.64 times higher than students did not worried. Lock down situation was absolutely new, Vietnamese students, especially secondary-and-high-school students may not take remote courses before. They worried about how to handle with this situation and if they did not receive any support from families or schools, they could not access to remote system. Some students did not have internet at home, they could not study as well.

This study had several limitations. First of all, the data was collected after COVID-19 quarantine because we need an informed consent from parents/guardians, so recall bias should be taken into account. Secondly, DASS-21 was developed for epidemiological research, and was not intended for clinical determinations. The classification of symptoms levels in this study is different from clinically diagnosed cases of major mental health disorder. Additionally, this cross-sectional study did not present a conclusion of causal relationships. Finally, in the future, we should examine the effects of protected factors to determine how students cope with stress during COVID-19 quarantine.

CONCLUSIONS AND RECOMMENDATIONS

This is the first study in Vietnam explored the stress-related to COVID-19 quarantine among students in secondary and high

schools in Northern Vietnam. Stress is one of the most common mental health which may causes suicide in young generation. During COVID-19 quarantine, the rate of stress among students increased but parents/guardians did not pay attention on it.

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REFERENCES

1. Dubey S, Biswas P, Ghosh R, Chatterjee S, Dubey MJ, Chatterjee S, et al. Psychosocial impact of COVID-19. *Diabetes Metab Syndr*. 2020;14(5):779–88.
2. Torales J, O'Higgins M, Castaldelli-Maia JM, Ventriglio A. The outbreak of COVID-19 coronavirus and its impact on global mental health. *Int J Soc Psychiatry*. 2020 Jun 1;66(4):317–20.
3. Salari N, Hosseini-Far A, Jalali R, Vaisi-Raygani A, Rasoulpoor S, Mohammadi M, et al. Prevalence of stress, anxiety, depression among the general population during the COVID-19 pandemic: a systematic review and meta-analysis. *Globalization and Health*. 2020 Jul 6;16(1):57.
4. VGP News | Viet Nam to go into 15-day nationwide social distancing to curb COVID-19 - Viet Nam to go into 15-day nationwide social distancing to curb COVID-19 [Internet]. [cited 2020 Oct 5]. Available from: <http://news.chinhphu.vn/Home/Viet-Nam-to-go-into-15day-nationwide-social-distancing-to-curb-COVID19/20203/39472.vgp>
5. Vessey JA, Betz CL. Everything Old is New again: COVID-19 and Public Health. *J Pediatr Nurs*. 2020;52:A7–8.
6. Garcia de Avila MA, Hamamoto Filho PT, Jacob FL da S, Alcantara LRS, Berghammer M, Jenholt Nolbris M, et al. Children's Anxiety and Factors Related to the COVID-19 Pandemic: An Exploratory Study Using the Children's Anxiety Questionnaire and the

- Numerical Rating Scale. *International Journal of Environmental Research and Public Health*. 2020 Jan;17(16):5757.
7. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, et al. Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China. *Int J Environ Res Public Health* [Internet]. 2020 Mar [cited 2020 Oct 7];17(5). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7084952/>
 8. Usher K, Bhullar N, Durkin J, Gyamfi N, Jackson D. Family violence and COVID-19: Increased vulnerability and reduced options for support. *Int J Ment Health Nurs* [Internet]. 2020 May 7 [cited 2020 Oct 8]; Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7264607/>
 9. Das M, Das A, Mandal A. Examining the impact of lockdown (due to COVID-19) on Domestic Violence (DV): An evidences from India. *Asian J Psychiatr*. 2020 Dec;54:102335.
 10. CDC. For Teens and Young Adults [Internet]. Centers for Disease Control and Prevention. 2020 [cited 2020 Oct 9]. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/stress-coping/young-adults.html>
 11. How teenagers can protect their mental health during coronavirus (COVID-19) [Internet]. [cited 2020 Oct 8]. Available from: <https://www.unicef.org/vietnam/stories/how-teenagers-can-protect-their-mental-health-during-coronavirus-covid-19>
 12. Ludvigsson JF. Systematic review of COVID-19 in children shows milder cases and a better prognosis than adults. *Acta Paediatrica*. 2020;109(6):1088–95.