DEPRESSION, AXIETY AND ASSOCIATED FACTORS AMONG YOUNG PEOPLE DURING THE SECOND WAVE OF COVID-19 IN VIETNAM

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This cross-sectional study was conducted nationwide with a sample size of 9.781 participants in order to describe the prevalence of depression and anxiety among Vietnamese youth (15-24 years old) during a COVID-19 outbreak and associated factors. The 21-item Depression, Anxiety and Stress Scale was used in this study. Results showed that 10% of the Vietnamese youth exhibited mild to extremely severe depression and 15.6% reported mild to extremely severe anxiety. Particularly, 1% of participants reported having severe or extremely severe symptoms of depression and 2.6% having severe or extremely severe symptoms of anxiety. Being christian or of other marital status or living in urban areas or having near poor or poor household income were all associated with increased depression among young people. Meanwhile, youth who were female, of ethnic minorities, Buddhist, Christian, or single, lived in urban areas, had only an elementary education, or had near low or low household income reported more anxiety symptoms. Findings from this study call for appropriate interventions to improve the mental health of the young population, especially in the context of COVID-19 pandemic.

Keywords: Depression, Anxiety, Youth, COVID-19, Vietnam.

I. INTRODUCTION

Mental health disorders are considered major global health problems, with more than 54 million people experiencing a variety of mental disorder symptoms.[1] Mental disorders were estimated to account for 32.4% of years lived with disability and 13% of disability-adjusted life years.[2] As of 2017, among a wide range of mental health concerns, anxiety disorders were the most common forms of psychopathology and depression was one of the leading causes of disability with more than 264 million people affected globally.[3] Notably, these mental concerns are among the most prevalent psychological concerns for young people[4] and they often occur in comorbidity.[5]

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The prevalence of mental health disorders is increasing among youth - 1 in 10 people reported experiencing at least one mental health problem.[6] Findings from the U.S. National Survey from 2009 to 2017 showed that the incidence of depression increased by 52% in the 2005 - 2017 period among adolescents aged 12 - 17, and 63% in 2009 - 2017 among young adults aged 18-25.[7] Approximately, 20% of adolescents may experienced a mental health disorder each year.[8] and 50% and 75% experienced problems before the age of 14 and by the age of 24, respectively.[9]

There exists little research on the prevalence of depression and anxiety among young people in Vietnam in recent years despite evidence of COVID-19 impacts on mental health. According to a study by the U.S. CDC, during the outbreak of COVID-19 from August 2020 to February 2021, the incidence of depression or anxiety increased

from 36.4% to 41.5% in seven days, mainly among 18 to 29 years old.[10] In Vietnam, little is known about the prevalence of these mental disorders among youth during the COVID-19 pandemic. Extant literature while scarce, rather focuses on the general Vietnamese population with predominant recruitment of adult participants.[11, 12] As such, we could find only one study which highlighted approximately 9% of depressive and anxiety symptoms among Vietnamese young adults from 18 to 26 years old[13] Still, there is insufficient evidence on how commonly Vietnamese youth, defined as between 14 and 25 years old by the World Health Organization,[14] experienceddepression and anxiety in a pandemic-related context.

Therefore, this study aimed to describe the prevalence of depression and anxiety and associated factors among Vietnamese young people during the second wave of the COVID-19 pandemic in 2020.

II. SUBJECTS AND METHODS

1. Study participants and Procedures

This was a cross-sectional study using Depression, Anxiety and Stress Scale (DASS-21) to measure the outcome.[15]

Eligible participants were those who were between 15 and 24 years old and could give consent to participate in the study. People who were cognitively unable to give consent or answer questions were excluded from the study.

To estimate the sample size, we used the following formula:[16]

$$N = Z^2_{(1-\alpha/2)}\frac{p(1-p)}{d^2}$$

In which:

α (2-side significant level) = 0.1

p (Expected proportion in population) = 0.032[17]

d (absolute precision) = 0.003

Therefore, N ≥ 9312. Convenient sampling was utilized to recruit participants in 2 months (from June 2020 to August 2020). Hanoi medical students were trained to recruit and conduct face-to-face interview using structured questionnaires at participants' households in 12 different provinces in Vietnam.

2. Measures

- Sociodemographic variables: were composed of age, sex, ethnicity, marital status, living area, education level, and economic status.

- Variables of depression and anxiety: Previous research validated the use of DASS-21-V for Vietnamese adolescents, showing the scale's adequate internal consistency and convergent validity.[15 18] DASS-21 is a 4-point Likert scale (0 = 'Did not apply to me at all-Never', 1 = 'Applied to me to some degree, or some of the time–Sometimes', 2 = 'Applied to me to a considerable degree, or a good part of time - Often', 3 = 'Applied to me very much, or most of the time - Almost always'), consisting of 21 items. Of which, items 3, 5, 10, 13, 16, 17, and 21 are for depression and items 2, 4, 7, 9, 15, 19, and 20 are for anxiety. According to the scale, the subscale scores were calculated for participants' depression and anxiety by doubling the total scores in each subscale. Subscale scores should range from 0-42. Participants were categorized into different levels of clinical severity:

(1) Normal (0-9 for depression, 0-7 for anxiety);

(2) Mild (10-13 for depression, 8-9 for anxiety);

(3) Moderate (14-20 for depression, 10-14 for anxiety);

(4) Severe (21-27 for depression, 15-19 for anxiety);

(5) Extremely severe (≥ 28 for depression, ≥ 20 for anxiety).

3. Statistical Analysis

Data was entered and analyzed by STATA 16 software. Findings that followed normal distribution were reported in percentage, means, and standard deviation. Logistic regression was used to assess the relationship between sociodemographic variables and depression and anxiety prevalence.

4. Ethical issues

This study was conducted with the approval of the Institute for Preventive Medicine and Public Health as the practicum module. We obtained full consent from participants before data collection. All identifiable information was recoded to ensure the confidentiality.

III. RESULTS

1. Sociodemographic characteristics of participants

Table 1. Sociodemographic characteristics of participants (N = 9.781)

		n	Percentage (%)
Age	15 - 18	1.171	12.0
	19 - 24	8.610	88.0
Sex	Male	4.531	46.3
	Female	5.250	53.7
Ethnicity	Kinh	9.309	95.2
	Other	472	4.8
Religion	None	9.270	94.78
	Buddhist	202	2.07
	Catholic	278	2.84
	Christian	17	0.17
	Other	14	0.14
Marital status	Single	7.693	78.65
	Married	2.006	20.51
	Divorced/ Separated	36	0.37
	Widowed	8	0.08
	Other	38	0.39
Living area	Rural	4.866	49.75
	Urban	4.915	50.25
Education	Elementary	21	0.21
	Secondary	413	4.22
	High school	2.436	24.91
	Vocational	380	3.89
	College/ University	6.429	65.73
	Other	102	1.04

		n	Percentage (%)
Household income	High	383	3.92
	Middle	8.776	89.72
	Near poor	383	3.92
	Poor	239	2.44

Table 1 described the sociodemographic characteristics of participants in our study (N=9.781). 88% were between 19 and 24 years old. The majority of participants were female (53.7%). Most were Kinh, the most common ethnicity in Vietnam (95.2%). 94.78% of participants claimed no religion. Our sample included a relatively similar representation of Buddhists (2.07%) and Catholics (2.84%). Most participants reported to be single (78.65%). The distribution in terms of living area was split with 49.75% living in rural areas and 50.25% in urban areas. A major portion of our sample reported high education with 65.73% having graduated from a college or university and 24.91% having graduated from high school. In terms of household income, 89.72% of participants reportedin the middle level while the smallest portion of the sample (2.44%) reported the in the low level.

2. The prevalence of depression and anxiety among young people in Vietnam

2.1 Levels of depression and anxiety

DASS-21 screening results showed that participants displayed relatively similar levels of symptoms of depression (Mean=1.78) and anxiety (Mean=1.77), suggesting moderate severity of both disorders. Figure 1 illustrated the prevalence of depression and anxiety among young people in Vietnam. 15.6% and 10% of participants reported mild to extremely severe symptoms of anxiety and depression, respectively. Particularly, 1% showed severe to extremely severe depression while 2.6% reported severe to extremely severe anxiety.
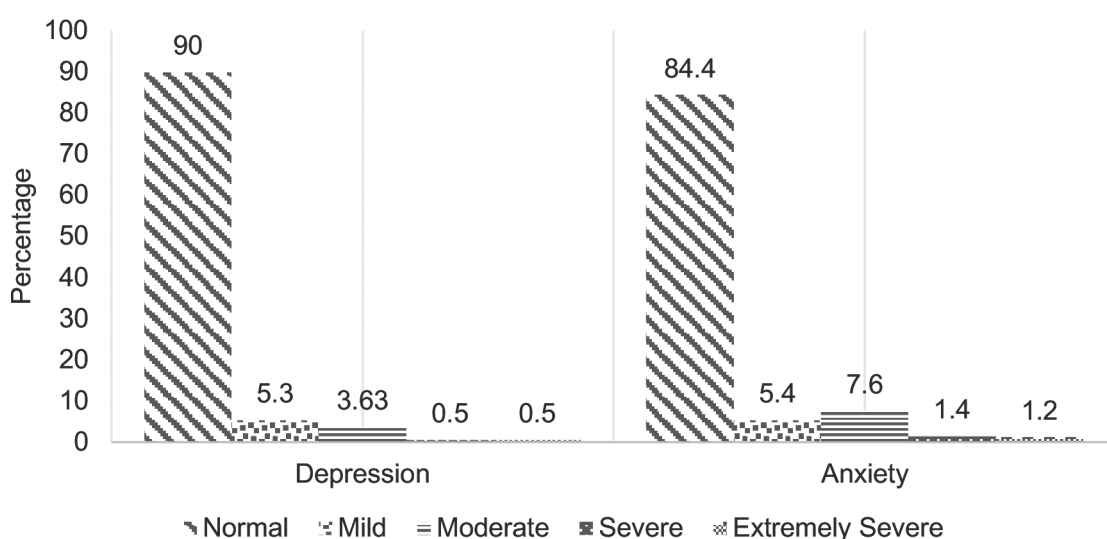

Figure 1. Levels of depression and anxiety among young people in Vietnam (N=9.781)

2.2. Factors associated with symptoms of depression and anxiety among young people in Vietnam

Table 2. Factors associated with depressive symptoms (N = 9.781)

		n	OR	95% CI
Sex	Male	342	1	
	Female	412	0.98	0.87 - 1.10
Ethnicity	Kinh	707	1	
	Other	47	1.16	0.89 - 1.51
Religion	None	699	1	
	Buddhist	30	1.65	1.16 - 2.35
	Catholic	21	1.07	0.75 - 1.52
	Christian	4	2.88	1.01 - 8.19
	Other	0	1	-
Marital status	Single	645	1	
	Married	92	0.53	0.45 - 0.64
	Divorced/Separated	5	1.49	0.65 - 3.41
	Widowed	2	4.63	1.04 - 20.73
	Other	10	2.51	1.24 - 5.09
Living area	Rural	337	1	
	Urban	417	1.27	1.13 - 1.44
Education	Elementary	2	1	
	Secondary	40	0.96	0.27 - 3.38
	High school	191	0.85	0.25 - 2.90
	Vocational	22	0.71	0.20 - 2.51
	College/University	494	0.83	0.24 - 2.83
	Other	5	0.57	0.14 - 2.33
Household income	High income	26	1	
	Middle income	611	1.11	0.79 - 1.55
	Near low	65	2.77	1.86 - 4.12
	Low	52	3.64	2.38 - 5.58

Religion, marital status, living area, and household income were indicative of depressive symptoms among young people. Logistic regression analysis results showed that Christians were 2.88 times more likely to have depressive symptoms than those with no religion (95% CI: 1.01 – 8.19). Those who are widowed were 4.63 times more likely to have depression than single people. However, this finding was not significant because 95% CI was large, ranging from 1.04 – 20.73 and the number of observations for this category was small. On the other hand, participants with other marital statuses (e.g., in a relationship) were 2.51 times more likely to report

depressive symptoms than single counterparts (95% CI: 1.24 - 5.09). Additionally, young people living in urban areas were 1.27 times more likely to report depressive symptoms than those living in rural areas (95% CI: 1.13 - 1.44). Also, those having near low and low household income were 3.64 and 2.77 times, respectively, more likely to report depressive symptoms than those having high household income (95% CI: 2.38 - 5.58, 1.86 - 4.12).

Table 3. Factors associated with the prevalence of anxiety (N=9.781)

		n	OR	95% CI
Sex	Male	733	1	
	Female	994	1.21	1.08 – 1.34
Ethnicity	Kinh	1.626		
	Other	101	1.29	1.02 – 1.61
Religion	None	1.607	1	
	Buddhist	61	2.06	1.52 – 2.79
	Catholic	50	1.04	0.77 – 1.43
	Christian	8	4.23	1.63 – 11.0
	Other	1	0.37	0.05 – 2.80
Marital status	Single	1.471	1	
	Married	234	0.56	0.48 – 0.65
	Divorced/Separated	7	1.02	0.48 – 0.65
	Widowed	3	2.54	0.61 – 10.63
	Other	12	1.95	0.98 – 3.87
Living area	Rural	768	1	
	Urban	959	1.29	1.16 – 1.43
Education	Elementary	6	1	
	Secondary	89	0.68	0.26 – 1.82
	High school	446	0.56	0.22 – 1.45
	Vocational	62	0.48	0.18 – 1.30
	College/University	1.117	0.52	0.20 – 1.36
	Other	7	0.18	0.05 – 0.62
Household income	High income	58	1	
	Middle income	1.490	0.14	0.86 – 1.52
	Near low	105	2.11	1.48 – 3.02
	Low	74	2.51	1.70 – 3.71

Key indicators of anxiety symptoms among young people included sex, ethnicity, religion, living area, education level, and household income. Our findings suggested that female participants were 1.21 times more likely to report anxiety symptoms than male counterparts. Also, those of ethnic minorities were 1.29 more likely to report anxiety symptoms than those of

Kinh (95% CI: 1.24 - 5.09). In addition, religion was predictive of young people's anxiety. In fact, participants following Buddhism were 2.06 more likely to report anxiety symptoms than those of no religion (95% CI: 1.24 – 5.09). Participants who were Christian were 4.23 more likely to report anxiety symptoms than those of no religion (95% CI: 1.63 -11.0). Those who were married were twice less likely to report anxiety symptoms than those who were single (95% CI: 0.48 – 0.65). Participants residing in urban areas were 1.29 times more likely than counterparts in rural areas (95% CI: 1.16 – 1.43). Additionally, those at higher education levels (e.g., some high school, postgraduate) were 0.82 times less likely to report anxiety symptoms than those with elementary education (95% CI: 1.16 – 1.43). Household income was also an important indicator of young people's anxiety. Our results suggested that those with low or near low household income were 2.11 and 2.51 times, more likely than those with high income (95% CI: 1.48 – 3.02 and 1.70 – 3.71).

IV. DISCUSSION

To our knowledge, this was the first large-scale study investigating the prevalence of depression and anxiety symptoms among young people in Vietnam, especially during a COVID-19 outbreak. Our results showed that the prevalence among this population was 15.6% for anxiety and 10% for depression. Compared to young people in the United States (14.3% for depression and 31.9% for anxiety),[19] though the prevalence rate of depressive symptoms in our study was relatively similar, anxiety symptoms was lower. This discrepancy can be explained by the differences across samples. While the U.S. study focused only adolescents aged 13 to 18,[19] our study recruited participants who were between 15 and 24 years old. In

addition, sample size can also contribute to the mentioned differences. Our large sample size (N = 9.781) was much larger than sample sizes found in domestic and international studies of the same topic. In addition, different use of instrumentation can play a huge role in incongruent prevalence rates. While the U.S. study measured the prevalence of depression and anxiety via DSM-IV criteria,[19] we utilized DASS-21 criteria instead. Yet, while our findings did not replicate the prevalence rates found in literature, they align with the general consensus that the prevalence of anxiety symptoms is often higher than that of depressive symptoms.

In our study, sex was a notable indicator of the prevalence of anxiety symptoms among young people in Vietnam during a COVID-19 outbreak. In particular, though there was no sex difference in depression scores, female participants were 1.21 times more likely to report greater anxiety than male counterparts. In fact, the sex difference in anxiety symptoms in our study is greater than that in a study in China of the same year, which showed that female participants who were between 12 and 18 years old were only 1.15 times more likely to report increased anxiety compared to male participants of the same age range.[20] Age range may account for this discrepancy. While the other study observed a more restricted age range,[20] ours included a broader measure of age (15-24).

Religion was also related to anxiety symptoms among young people in Vietnam. Our results indicated that, compared to those with no religious affiliation, those who were Buddhist and Christian were at 2.06 times and 4.23 times, respectively, greater odds of displaying anxiety symptoms. A different study emphasized the relationship between increased religious behaviors and reduced depressive

and anxiety symptoms.[21] Perhaps, our study did not replicate the mental health benefits of religion due to the religious representation in our sample. While our sample was comprised of mostly atheists (94.87%) and some Christians (0.17%), other study recruited a major portion of Christians (73%) and a small portion of atheists (11.5%) for their study sample.[21]

In addition, our study underscored the association between lower household income and increased depressive and anxiety symptoms. Compared to those with high household income, young people with low or near low household income were at 3.64 times and 2.77 times, respectively, of reporting depressive symptoms. For anxiety symptoms, those with near p low and near low household income were 2.51 times and 2.11 times, respectively, more likely to report higher scores than those with high-tier household income. According to a large study in Germany of 1586 young people aged 7 to 18, low household income was linked to migration background, limited living space, and increased mental health problems.[22] Evidence in a different study on young people's mental problems during the COVID-19 pandemic suggests similar trends.[23] As our findings support current literature, we speculate that the relationship between family income and the prevalence of depressive and anxiety symptoms among young people during the COVID-19 pandemic can be universal.

Lastly, living area was also associated with how common depressive and anxiety symptoms were among the young population in Vietnam. Our results indicated those who lived in cities were at 1.27 greater odds for reporting more depression symptoms than those who lived in rural areas. Similarly, compared to those in rural areas, city dwellers were 1.29 times more likely to score higher in anxiety symptoms. A study in China found that adolescents living in cities had lower likelihood of reporting increased depressive and anxiety symptoms compared to those living in rural areas (37.7% vs. 47.5% and 32.5% vs. 40.4%).[20] This discrepancy in findings may suggest that the role of living area may vary in prediction of the prevalence of depression and anxiety among young people in Asia during the COVID-19 pandemic.

V. CONCLUSION

Our study described the prevalence of depressive and anxiety symptoms among young people aged 15 to 24 in Vietnam during the COVID-19 pandemic. We highlighted the correlation between sociodemographic variables and depressive and anxiety symptoms. Religion, other marital status, metropolitan living, and near low or low household income were all related to young people's elevated depression. Also, we found a positive relationship between female sex, minority ethnicity, Buddhism, Christianity, single status, metropolitan living, elementary education level, near p low or low household income and greater anxiety symptoms. Such findings emphasize the needs for implementing effective mental health interventions for Vietnamese young people enduring many COVID-19-related impacts. Specifically, we recommended to develop early intervention programs which target young people who exhibit mild to extremely severe depression and anxiety with eclectic outlets for mental health care. Additionally, further research, particular longitudinal research should be conducted to investigate other social determinants of the prevalence of depression and anxiety, as well as stress, and to examine the trends of depression and anxiety prevalence among young people over various COVID-19 waves in Vietnam.

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