

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/338862086>

Mental Well-being, and Coping Strategies during Stress for Preclinical Medical Students in Vietnam

Article · January 2019

DOI: 10.25133/JPS5v28n2.008

CITATIONS

11

READS

438

6 authors, including:



Quynh Huynh

Ho Chi Minh City Medicine and Pharmacy University

7 PUBLICATIONS 22 CITATIONS

SEE PROFILE



Chanuantong Tanasugarn

Mahidol University

17 PUBLICATIONS 103 CITATIONS

SEE PROFILE



Mondha Kengganpanich

Mahidol University

17 PUBLICATIONS 108 CITATIONS

SEE PROFILE



Khuong Quynh Long

Hasselt University

66 PUBLICATIONS 262 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



Adverse childhood experiences in Vietnamese adolescents [View project](#)



Mental health Promotion for Vietnamese medical students [View project](#)

Mental Well-being, and Coping Strategies during Stress for Preclinical Medical Students in Vietnam

Huynh Ho Ngoc Quynh^{1*}, Chanuantong Tanasugarn², Mondha Kengganpanich²,
Punyarat Lapvongwatana³, Khuong Quynh Long¹ and Thai Thanh Truc¹

Abstract

Inappropriate coping strategies may be key factors that have contributed to a consistently high prevalence of stress and mental disorders that have been reported worldwide, particularly in resource-limited countries. Thus, one aim of this paper is to estimate the prevalence of these inconstructive strategies, and explore more positive coping strategies through observation of undergraduate medical students in Vietnam. The methodology that has been employed for this project has been a cross-sectional analysis that was conducted on 411 first year medical students at the University of Medicine and Pharmacy in the cities of Ho Chi Minh and Can Tho who have shown signs of stress indicative of low mental well-being—that being a WHO-5 score of 13 or under or an answer of 0 to 1 to any of the five items of a WHO-5 mental diagnostic test. Participants completed a self-report questionnaire including a depression anxiety stress scale and a coping strategies inventory scale. The results show a prevalence of depression, anxiety, and stress that were identified in 51.6%, 70.3% and 49.9% of students respectively. Problem solving was impacted mostly by the failure of coping strategies, and subsequent failures in cognitive restructuring. Students who had mental disorders were more likely to engage in negative coping strategies such as self-criticism, and were less likely to choose positive coping strategies such as expressions of emotion and problem solving. Medical students face a wide range of stressful situations, and the findings of these particular students suggest that there is a failure of coping strategies to overcome these stressful occurrences. The findings indicate an urgent need to develop stress management programs and training workshops to build up early preventive mental health services at medical schools and to improve student support systems.

Keywords

Stress coping strategie; mental well-being; Vietnamese medical students; mental disorders

Introduction

The prevalence of mental health issues amongst college students has been increasing and poses a major challenge for public health professionals who are interested in establishing an effective response to these issues (Khawaja & Bryden, 2006; Melo-Carrillo, Van Oudenhove & Lopez-Avila, 2012; Stanley & Manthorpe, 2002). It is common for students to have various types of experiences that involve varying degrees of stress, anxiety, and depression during

¹ Faculty of Public Health, University of Medicine and Pharmacy, Ho Chi Minh City, Vietnam

² Department of Health Education and Behavioral Sciences, Faculty of Public Health, Mahidol University, Thailand

³ Department of Public Health Nursing, Faculty of Public Health, Mahidol University, Thailand

* Huynh Ho Ngoc Quynh, corresponding author. Email: hhnquynhytcc@ump.edu.vn,
huynhhongocquynh@gmail.com

their time in college. In recent decades, students in many countries tend to face more pressures due to higher expectations of academic achievements, fewer job prospects after graduation, and less preparation for independent living (Hanlon, 2012; Piqueras, Kuhne, Vera-Villaruel, van Straten & Cuijpers, 2011).

Compared to other kinds of vocational education, medical training is one of the most difficult initiations into a profession. Thus, medical students experience higher levels of stress during the course of their training, and this can lead to depression and even suicide (Calear & Christensen, 2010; Tempiski et al., 2012). The high prevalence of mental disorders experienced by medical students has been reported worldwide including 30-63% in the USA and Europe (Abdel Wahed & Hassan, 2017; Saeed, Bahnassy, Al-Hamdan, Almudhaibery & Alyahya, 2016), 45-67% in the Middle East, and 21-60% in Australia and Asian countries such as China, Hong Kong, Thailand, Vietnam, and Korea (Aktekin et al., 2001; Amrai, Zalani, Arfai & Sharifian, 2011; Castaldelli-Maia et al., 2012; Dyrbye, Thomas & Shanafelt, 2005; Morrison & Kirby, 2010; Toews et al., 1997; Zeldow, Clark, Daugherty & Eckenfels, 1985). Amongst medical students, stress is a normal part of medical education and can also be a motivator for certain individuals, but not all students can cope with the inordinate stress that is involved in medical training.

Stress and mental wellbeing of medical students are critical issues because these students will eventually become the future health workforce taking care of other people's physical and mental well-being. Stress is unavoidable, and it is impossible to totally eradicate it from daily life. Thus, it needs to be a positive impetus in all endeavors. It must actuate actions, and for stress to be positive, appropriate coping processes must be incorporated into daily activities. In terms of cognitive appraisal, Lazarus emphasizes that cognitive appraisal occurs when a person considers threats and assessments of resources required to minimize, tolerate, or eradicate the sources of stress (Lazarus, 1999). The students' mental well-being may be the result of meaning-based coping processes which can induce positive emotions, and can also lead to both apposite appraisal and successful adaptation to stressful conditions. Stress while undergoing medical training is due principally to academic demands, examinations, and an inability to cope with inordinate pressures. Such situations of failed coping skills entails a sense of helplessness, increased psychological pressures, mental tension, excessive workload, curricular factors, and personal life events connected directly or indirectly associated with the learning environment (Asudani, Monika & Akanksha, 2014; Reed et al., 2011; Fares, Al Tabosh, Saadeddin, El Mouhayyar & Aridi, 2016). Thus, the World Health Organization recommends that any attempt to promote mental health should focus on coping skills, improved relationships with peers, school members, and family (World Health Organization, 2005). Coping strategies such as problem solving, positive reinterpretation, reliance on social supports, and expression of emotions are shown to reduce stress and improve mental and physical health (Asudani et al., 2014; Moffat, McConnachie, Ross & Morrison, 2004). In terms of social support, the strategies that are applied can include maintaining positive emotions amongst students, enhancing student support activities, activating counseling services, developing peer support groups, strengthening personal coping skills by informational support, and strengthening connections or relationships between students and other school members. Moreover, by creating a network of social relationships for students, their mental well-being will also be promoted (Park et al., 2015; Zamani-Alavijeh, Dehkordi & Shahry, 2017).

Vietnam is a developing country with a population of over 90 million individuals (Hinh & Minh, 2013). In comparison to mental health profiles in other countries, mental disorders in this country are a sizable number. They are estimated to afflict 16.3% of the population of Vietnam; (World Health Organization, 2014) and it is estimated that in 2020, 20% of the

Vietnamese population will suffer from mental health disorders (Phuong et al., 2012). A typical duration for studies in standard university programs in Vietnam is four years, but for medical training this usually entails a six-year commitment, and thus medical school is considered the most stressful educational curriculum in this country. Many studies have been conducted on medical students in the country to investigate the prevalence of mental disorders, but little is known about the strategies the students tend to use as a means to cope with stress. It is likely that inappropriate coping strategies are key factors which contribute to the high prevalence of mental disorders in this population. Thus, even intervention to address mental disorders may not be sufficient and effective.

The purpose of this study is to explore the strategies of medical students to cope with daily stress so that effective intervention programs to promote mental well-being can exist at all medical schools.

Methods

Settings and participants

Data presented in this study is part of a mental wellness intervention project (Quynh, Tanasugarn, Kengganpanich & Lapvongwatana, 2018). In summary, a cross-sectional study was conducted during September - October 2017 amongst first year medical students at the University of Medicine and Pharmacy at Ho Chi Minh City (UMP HCMC) and Can Tho City (UMP CTC). HCMC UMP is one of the most highly ranked universities in Vietnam and receives students from the southern provinces of the country. UMP CTC is one of the biggest medical universities in the Mekong delta region. Previous research conducted at six medical schools in Vietnam report that first year medical students have a higher risk of mental disorders than students in later years of medical training, and recommend that medical universities should develop intervention activities for students in early years of their coursework (Anh, Dunne & Hoat, 2013). Therefore, in this study, a total of 1,018 first year students (374 students at UMP HCMC, and 644 students at UMP CTC) were screened for their mental health status using a World Health Organization well-being scale (WHO-5). A total of 411 first year medical students who had a low mental well-being status (i.e. WHO-5 score < 13) or answered 0 to 1 to any of the five items of the WHO-5 scale were recruited (Topp, Østergaard, Søndergaard & Bech, 2015). Because those who had nominal stress might have bias in answering stress coping strategies, they were eliminated from the study. This sample (n=411) was for the purpose of ensuring that participants in this study were actually those who experienced a high level of stress and thus could provide a purposeful study on apposite strategies to deal with stress.

Procedures and measurements

First year medical students were provided with details about the study and participation was on a voluntary basis. Participation was through written and informed consent. Students completed self-report questionnaires in about 30 minutes, placed their completed questionnaires in sealed envelopes, and returned them. The principal researcher was present at the study site to answer all questions raised by the participants. The students were asked to focus on their own responses without discussing them with other students.

Determinations of mental well-being for these medical students was measured using the World Health Organization Well-Being Index (WHO-5). WHO-5 is one of the most widely used questionnaires assessing subjective well-being (Taggart & Stewart-Brown, 2016; Topp et al., 2015). It has been translated into more than 30 languages, including Vietnamese (Anh, 2015), and has been used in research studies all over the world with good reliability (Anh et al., 2013; Pranita, Apte & Joshi, 2013; Topp et al., 2015). In this study, a score below 13 or an answer of 0 to 1 to any of the five items indicates poor well-being. The stress management ability of medical students was measured using the Coping Strategies Inventory scale (CSI). The CSI is a 72-item self-report questionnaire that was developed to assess coping mechanisms in thought and behavior in responding to stress (Tobin, 2001). The CSI includes 8 subscales: problem solving, cognitive restructuring, social support, expression of emotion, problem avoidance, wishful thinking, social withdrawal, and self-criticism. The eight CSI subscales have acceptable to good internal consistency within Cronbach's alpha, and this ranges from 0.67 to 0.87. For this study, there were moderate to strong positive correlations amongst subscales with the correlation coefficients ranging from 0.30 to 0.64 $p < 0.001$. Perceived social support was examined using the shorter Social Support Questionnaire (SSQ-6). The SSQ-6 includes questions to ask the respondent about individuals who have provided them with help or support during their study at the university. The SSQ number score (SSQN) and the SSQ Satisfaction Score (SSQS) were counted. The 21-item Depression Anxiety and Stress Scale (DASS-21) was used to assess symptoms of depression (14 items or DASS-D), anxiety (14 items or DASS-A), and stress (14 items or DASS-S). Scores of 4-8 were used and from them came classifications of depression, anxiety and stress (Tian, Sukanlaya, Yong & Firdaus, 2013). This scale has been transferred and validated in many languages, including Vietnamese (Tran, Tran & Fisher, 2013). In this study, reliability of measuring scales which were used in the questionnaires were tested. All scales had high levels of internal consistency.

Data analysis

Data were entered into EpiData by two experienced research assistants. Double entries were conducted randomly for 10% of returning students who filled out questionnaires to ensure data quality. Stata for Windows version 14, created by Stata Corp, Texas, was used to analyze the data. Descriptive statistics with frequency, percentages, mean scores, and standard deviation were performed. The independent t-test or ANOVA was used to determine the difference in scores of stress coping strategies when appropriate. Internal consistency and correlation matrix among CSI subscales were also checked. Multiple linear regression using Stepwise was performed to identify factors contributing to stress coping strategies. Type one error of 5% was also used.

Ethics

Ethics approval was granted by the Ethical Review Committee for Human Research, Faculty of Public Health, at Mahidol University, Thailand (COA no. MUPH 2016-093 and protocol number 76/2559) as well as UMP HCMC, Vietnam (protocol number 70/UMP-BOARD). Informed consent agreements were obtained from all participants in writing. Questionnaires did not include identity information and thus they were anonymous.

Results

More than half of the participants (57.7%) were male. The majority of these students reported having no religious affiliation (72.5%), living with friends (79.3%), receiving medium to high levels of social support (66.2%), and being satisfied with the support that they received (94.4%). Based on DASS-21, symptoms of depression, anxiety and stress were identified as experienced by 51.6%, 70.3% and 49.9% of students respectively. Based on the WHO-5, 63.7% of students reported having poor mental well-being.

Table 1: Participants' characteristics and mental health disorders

Characteristics	All n (%)	Poor mental well-being n=262 (63.7%)		Depression n=212 (51.6%)		Anxiety n=289 (70.3%)		Stress n=205 (49.9%)		
		n (%)	n (%)	p ^a	n (%)	p ^a	n (%)	p ^a	n (%)	p ^a
Sex										
Male	237 (57.7)	146 (61.6)	0.291	117 (49.4)	0.294	167 (70.5)	0.939	108 (45.6)	0.041	
Female	174 (42.3)	116 (66.7)		95 (54.6)		122 (70.1)		97 (55.7)		
Religious affiliation										
Yes	113 (27.5)	184 (61.7)	0.170	151 (50.7)	0.549	207 (69.5)	0.539	143 (48.0)	0.213	
No	298 (72.5)	78 (69.0)		61 (54.0)		82 (72.6)		62 (54.9)		
Live with										
Family members	77 (18.7)	52 (67.5)	0.574	43 (55.8)	0.697 ^b	55 (71.4)	0.167	40 (51.9)	0.336 ^b	
Friends	326 (79.3)	204 (62.6)		165 (50.6)		226 (69.3)		159 (48.8)		
Others	8 (2.0)	6 (75.0)		4 (50.0)		8 (100.0)		6 (75.0)		
Parents' marital status										
Living together	378 (92.0)	240 (63.5)	0.716	191 (50.5)	0.148	262 (69.3)	0.132	183 (48.4)	0.044	
Others	33 (8.0)	22 (66.7)		21 (63.6)		27 (81.8)		22 (66.7)		
Perceived social support										
Low	139 (33.8)	105 (75.5)	<0.001	91 (65.5)	<0.001	104 (74.8)	0.191	82 (59.0)	0.031	
Medium	221 (53.8)	131 (59.3)		98 (44.3)		147 (66.5)		100 (45.2)		
High	51 (12.4)	26 (51.0)		23 (45.1)		38 (74.5)		23 (45.1)		
Social support satisfaction										
Yes	388 (94.4)	242 (62.4)	0.017	194 (50.0)	0.008	268 (69.1)	0.023	186 (47.9)	0.001	
No	23 (5.6)	20 (87.0)		18 (78.3)		21 (91.3)		19 (82.6)		

^aAll *p* values were calculated using Chi-squared tests unless otherwise indicated; ^bFisher's exact tests

Table 2 shows the differences of scores of eight subscales of CSI among students' characteristics. Higher scores in four domains of engagement, including problem solving, cognitive restructuring, expression of emotions, and social support, were observed for students who received high levels of perceived social support. Students with symptoms of mental disorders had lower scores in these domains. However, there was no significant difference in scores for problem solving amongst those with and without symptoms of anxiety and stress. In disengagement domains, only those with low levels of social support had higher scores in social withdrawal. Students with symptoms of mental disorders were likely to have higher scores in wishful thinking, self-criticism, and social withdrawal.

Table 3 shows a multivariable model for factors associated with CSI subscales. Poor mental well-being and having symptoms of depression were negatively associated with scores for all aspects of engagement domains including problem solving, cognitive restructuring, expressing emotions, and social support scores. Those who lived with family members were less likely to express emotions effusively to cope with stress as compared to those who lived with friends (-0.20, 95% CI -0.32 - -0.08, *p* = 0.002).

Regarding disengagement domains, students living with family members had lower scores in problem avoidance (Coef = -0.20, 95% CI -0.35 - -0.06, $p = 0.005$). Having stress symptoms was significantly associated with higher scores of wishful thinking (Coef = 0.35, 95% CI 0.33 - 0.49, $p = 0.001$), self-criticism (Coef = 0.30, 95% CI 0.11 - 0.49, $p = 0.002$), and social withdrawal (Coef = 0.36, 95% CI 0.20 - 0.53, $p < 0.001$). The higher scores of self-criticism were also found amongst students who had symptoms of depression and anxiety. Female students and those who received higher levels of social support were associated with lower scores of social withdrawal.

Table 2: Factors associated with Coping Strategies Inventory domains

Factor	Problem Solving		Cognitive Restructuring		Express Emotions		Social Support		Problem Avoidance		Wishful Thinking		Self-Criticism		Social Withdrawal	
	Mean (s.d.)	<i>p</i> -value	Mean (s.d.)	<i>p</i> -value	Mean (s.d.)	<i>p</i> -value	Mean (s.d.)	<i>p</i> -value	Mean (s.d.)	<i>p</i> -value	Mean (s.d.)	<i>p</i> -value	Mean (s.d.)	<i>p</i> -value	Mean (s.d.)	<i>p</i> -value
Sex																
Male	3.7 (0.6)	0.088	3.6 (0.6)	0.988	3.1 (0.5)	0.484	3.1 (0.8)	0.630	2.9 (0.6)	0.856	3.3 (0.7)	0.387	3.0 (0.9)	0.290	2.9 (0.8)	0.040
Female	3.6 (0.6)		3.6 (0.6)		3.1 (0.5)		3.1 (0.7)		2.9 (0.6)		3.3 (0.7)		2.9 (0.9)		2.7 (0.8)	
Religious affiliation																
Yes	3.6 (0.6)	0.680	3.6 (0.6)	0.333	3.2 (0.6)	0.205	3.0 (0.8)	0.220	2.9 (0.6)	0.291	3.3 (0.7)	0.913	2.9 (0.8)	0.661	2.9 (0.8)	0.128
No	3.7 (0.6)		3.6 (0.6)		3.1 (0.5)		3.1 (0.7)		2.8 (0.6)		3.3 (0.7)		3.0 (0.9)		2.8 (0.8)	
Live with																
Family members	3.5 (0.6)	0.060	3.4 (0.6)	0.072	2.9 (0.5)	0.003	3.0 (0.8)	0.117	2.7 (0.6)	0.008	3.2 (0.7)	0.415	2.9 (0.8)	0.495	2.8 (0.7)	0.975
Friends	3.7 (0.6)		3.6 (0.6)		3.2 (0.5)		3.1 (0.7)		2.9 (0.6)		3.3 (0.7)		3.0 (0.9)		2.8 (0.8)	
Others	3.6 (0.7)		3.5 (0.7)		3.1 (0.8)		3.3 (0.5)		2.9 (0.7)		3.1 (0.7)		3.2 (0.7)		3.0 (0.8)	
Parents' marital status																
Living together	3.7 (0.6)	0.499	3.6 (0.6)	0.627	3.1 (0.5)	0.304	3.1 (0.7)	0.097	2.9 (0.6)	0.212	3.3 (0.7)	0.374	3.0 (0.8)	0.690	2.8 (0.8)	0.220
Others	3.6 (0.7)		3.5 (0.7)		3.0 (0.5)		2.9 (2.8)		2.7 (0.6)		3.2 (0.7)		3.0 (0.9)		3.0 (0.8)	
Perceived social support																
Low	3.6 (0.6)	0.041	3.5 (0.7)	0.002	3.1 (0.5)	0.082	2.8 (0.8)	<0.001	2.8 (0.6)	0.121	3.3 (0.8)	0.502	3.1 (0.9)	0.304	3.1 (0.8)	<0.001
Medium	3.7 (0.6)		3.6 (0.5)		3.1 (0.5)		3.2 (0.7)		2.8 (0.6)		3.3 (0.7)		2.9 (0.9)		2.7 (0.8)	
High	3.8 (0.5)		3.7 (0.5)		3.2 (0.5)		3.5 (0.5)		3.0 (0.6)		3.4 (0.7)		3.0 (0.8)		2.7 (0.6)	
Social support satisfaction																
Yes	3.7 (0.6)	0.309	3.6 (0.6)	0.088	3.1 (0.5)	0.076	3.1 (0.7)	<0.001	2.9 (0.6)	0.509	3.3 (0.7)	0.101	3.0 (0.9)	0.441	2.8 (0.8)	<0.001
No	3.5 (0.7)		3.4 (0.6)		2.9 (0.5)		2.6 (0.7)		2.8 (0.5)		3.5 (0.8)		3.1 (0.7)		3.4 (0.7)	
Poor mental well-being																
Yes	3.6 (0.6)	<0.001	3.4 (0.6)	<0.001	3.0 (0.5)	<0.001	2.9 (0.7)	<0.001	2.8 (0.5)	0.076	3.3 (0.8)	0.318	3.0 (0.9)	0.035	2.9 (0.7)	<0.001
No	3.8 (0.5)		3.8 (0.5)		3.3 (0.5)		3.5 (0.7)		2.9 (0.7)		3.2 (0.7)		2.9 (0.8)		2.6 (0.8)	
Depression symptoms																
Yes	3.6 (0.6)	<0.001	3.4 (0.6)	<0.001	3.0 (0.5)	0.009	2.9 (0.8)	<0.001	2.9 (0.6)	0.832	3.4 (0.8)	<0.001	3.3 (0.9)	<0.001	3.1 (0.7)	<0.001
No	3.8 (0.5)		3.7 (0.5)		3.2 (0.5)		3.3 (0.7)		2.9 (0.6)		3.1 (0.7)		2.7 (0.7)		2.5 (0.7)	
Anxiety symptoms																
Yes	3.6 (0.6)	0.106	3.5 (0.6)	<0.001	3.1 (0.5)	0.011	3.0 (0.7)	0.001	2.9 (0.6)	0.630	3.4 (0.7)	<0.001	3.1 (0.8)	<0.001	2.9 (0.8)	<0.001
No	3.7 (0.6)		3.7 (0.6)		3.2 (0.5)		3.3 (0.8)		2.8 (0.6)		3.1 (0.7)		2.6 (0.7)		2.5 (0.7)	

Factor	Problem Solving		Cognitive Restructuring		Express Emotions		Social Support		Problem Avoidance		Wishful Thinking		Self-Criticism		Social Withdrawal	
	Mean (s.d.)	p-value	Mean (s.d.)	p-value	Mean (s.d.)	p-value	Mean (s.d.)	p-value	Mean (s.d.)	p-value	Mean (s.d.)	p-value	Mean (s.d.)	p-value	Mean (s.d.)	p-value
Stress symptoms																
Yes	3.6 (0.6)	0.197	3.5 (0.6)	<0.001	3.0 (0.5)	0.002	2.9 (0.8)	<0.001	2.9 (0.6)	0.804	3.5 (0.7)	<0.001	3.3 (0.9)	<0.001	3.1 (0.8)	<0.001
No	3.7 (0.5)		3.7 (0.5)		3.2 (0.5)		3.3 (0.7)		2.9 (0.6)		3.1 (0.7)		2.7 (0.7)		2.5 (0.7)	

Table 3: Multivariate model for factors associated with Coping Strategies Inventory domains

Factor	Problem Solving		Cognitive Restructuring		Express Emotions		Social Support		Problem Avoidance		Wishful Thinking		Self-Criticism		Social Withdrawal	
	Coef (95% CI)	p-value	Coef (95% CI)	p-value	Coef (95% CI)	p-value	Coef (95% CI)	p-value	Coef (95% CI)	p-value	Coef (95% CI)	p-value	Coef (95% CI)	p-value	Coef (95% CI)	p-value
Sex																
Male	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Ref
Female	--	--	--	--	--	--	--	--	--	--	--	--	--	--	-0.19	0.007
-0.33 -0.05																
Religious affiliation																
Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Live with																
Family members	--	--	--	--	-0.20		--	--	-0.21		--	--	--	--	--	--
Friends	--	--	--	--	Ref		--	--	Ref		--	--	--	--	--	--
Others	--	--	--	--	-0.05	0.775	--	--	0.01	0.973	--	--	--	--	--	--
-0.40 -0.30																
Parents' marital status																
Living together	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Others	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Perceived social support																
Low	--	--	--	--	--	--	Ref		--	--	--	--	--	--	--	Ref
Medium	--	--	--	--	--	--	0.27	<0.001	--	--	--	--	--	--	-0.24	0.002
High	--	--	--	--	--	--	0.50	<0.001	--	--	--	--	--	--	-0.26	0.024
0.29 -0.72																
Social support satisfaction																
-0.49 -0.03																

Factor	Problem Solving		Cognitive Restructuring		Express Emotions		Social Support		Problem Avoidance		Wishful Thinking		Self-Criticism		Social Withdrawal	
	Coef (95% CI)	p-value	Coef (95% CI)	p-value	Coef (95% CI)	p-value	Coef (95% CI)	p-value	Coef (95% CI)	p-value	Coef (95% CI)	p-value	Coef (95% CI)	p-value	Coef (95% CI)	p-value
Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poor mental well-being																
Yes	-0.18 -0.30 - -0.06	0.005	-0.28 -0.40 - -0.17	<0.001	-0.24 -0.34 - -0.13	<0.001	-0.45 -0.60 - -0.31	<0.001	--	--	--	--	--	--	--	--
No	Ref		Ref		Ref		Ref		--	--	--	--	--	--	--	--
Depression symptoms																
Yes	-0.18 -0.30 - -0.06	0.003	-0.19 -0.30 - -0.07	0.001	-0.13 -0.24 - -0.03	0.010	-0.24 -0.38 - -0.10	0.001	--	--	--	--	0.31 0.12 - 0.50	0.001	0.30 0.14 - 0.47	<0.001
No	Ref		Ref		Ref		Ref		--	--	--	--	Ref			
Anxiety symptoms																
Yes	--	--	--	--	--	--	--	--	--	--	--	--	0.25 0.06 - 0.45	0.012	--	--
No	--	--	--	--	--	--	--	--	--	--	--	--	Ref		--	--
Stress symptoms																
Yes	--	--	--	--	--	--	--	--	--	--	0.35 0.22 - 0.49	<0.001	0.30 0.11 - 0.49	0.002	0.36 0.20 - 0.53	<0.001
No	--	--	--	--	--	--	--	--	--	--	Ref		Ref		Ref	

Note: Only significant factors in final stepwise linear regression model were presented

Discussion

The first sample of first year medical students in two of the biggest medical universities in Vietnam show moderate to high levels of depression, anxiety, and stress, and difficulties with problem solving. It also suggests ineffectual coping strategies, and low rates of cognitive restructuring that may be such because they were not predated on social withdrawal and problem avoidance strategies. When facing stress, medical students in Vietnam use active coping strategies (i.e. problem solving, cognitive restructuring, expression of emotions, and social support) more than passive coping strategies (i.e. wishful thinking, self-criticism, and social withdrawal). This finding is similar to previous studies in Nepal and Malaysia (Al-Dubai, Al-Naggar, Alshagga & Rampal, 2011; Sreeramareddy et al., 2007) in which medical students applied active specific efforts to cope with stressful situations such as reliance on religion, positive reframing, planning, acceptance, self-distraction, and emotional support. This is in stark contrast to Brazilian medical students (Bassols et al., 2015) who experienced higher degrees of stress and used more passive coping strategies including escape-avoidance tactics. This polarity may be due to differences in educational philosophy and cultural-psychosocial issues between countries (Varnum, Grossmann, Kitayama & Nisbett, 2010).

It has been consistently reported in literature that mental issues of morbidity and students' choices of coping strategies were affected by a wide range of psychosocial factors including lack of student support services, lack of facilities for physical extra-curricular activities, high parental expectations, goal setting, academic performance, career motivation, and worries about jobs (Quynh et al., 2018). The results of this study indicate that students who live with family members are less likely to choose problem avoidance to cope with stress. These findings are supported by evidence from previous studies in which family support has been shown to be efficient in helping students deal with stress (Saeed et al., 2016; Soliman, 2014). In Vietnam, people tend to pay more attention to academic achievement for pragmatic (usually monetary) objectives, as opposed to learning for the sake of increased knowledge. Many students think of it as solely for the objective of obtaining careers and for career advancement. Therefore, low scores on academic performance examinations sometimes make students feel as though they have lost respect. This is especially true for medical students who are expected to be intelligent and to always excel in their studies. This helps to explain the findings of this study in which students live with family members and are less likely to express their emotions when they are suffering from inordinate stress. These findings are consistent with previous studies amongst medical students and the general community (Kelly, Tyrka, Price & Carpenter, 2008; Madhyastha, Latha & Kamath, 2014). Other sources of assistance outside of the family, such as social support, are indispensable in helping students deal with stressful events. This is supported by previous studies (Fares et al., 2016; Park et al., 2015; Silva, Cerqueira & Lima, 2014; Sreeramareddy et al., 2007; Zamani-Alavijeh et al., 2017), in which students who perceived having high levels of social support and felt satisfied with it were more likely to choose active rather than passive coping strategies to respond to stress.

Moreover, the study found that Vietnamese medical students' coping strategies were negatively influenced by their own mental health status. Those who had mental disorders were more likely to engage in negative coping strategies such as self-criticism and less likely to choose positive coping strategies such as expressing emotions or problem solving. This, in turn, worsened their mental health status. Although consistently high levels of mental disorders are reported amongst medical students in Vietnam, the same is true for medical students in many countries (Anh et al., 2013). And merely an admission that mental disorders occur is not sufficient to address the problem in which successful coping strategies must be pursued. Intervention should focus on instructing medical students how to deal with stress

and how to live with stress when undertaking medical training (Quynh et al., 2018). Such intervention can help individuals overcome the onset of stress and prevent mental disorders amongst this population.

From the study, there are several implications for Vietnamese students. This study is one of the very few that has focused on both positive and negative aspects of mental health outcomes amongst Vietnamese students. By exploring what students tend to do to cope with many forms of stress during their medical university training, intervention activities were applied that improved mental well-being (Quynh et al., 2018). This study was also the first of its kind to investigate stress coping strategies amongst medical students, and found that participants chose active approaches to deal with stress. Given the fact that medical students in Vietnam have an overall awareness of mental health and stress that is better than most compatriots of the country, it might be assumed that their coping skills would be more advanced as well. But their situations are nonpareil, as medical school induces stress unlike any other. Thus, it is possible that Vietnamese students at other non-medical universities have very different strategies to overcome stress which have better, similar, nominal, or counterproductive outcomes. Thus, similar studies should be conducted on students at several universities in Vietnam to better understand whether or not they have successfully employed the same stress relief strategies and thus provide them with sufficient support and intervention. Definitely, based upon this study, support of family members alone is not sufficient for significant stress reduction when undertaking the rigors of medical training. Social support does, however, play a key 'protective factor' in helping students to develop appropriate strategies for stress reduction.

Conclusion

Medical students have always faced a wide range of stresses, and through these ordeals have attempted to find coping strategies to overcome them. However, these two medical schools specifically, and Vietnamese medical schools in general, do not presently provide student support services, especially for mental healthcare. The findings indicate an urgent need to develop stress management programs and training workshops to build up early preventive mental health services at medical school and improve student support systems.

Acknowledgements

This research was partially supported by WHO Western Pacific Region with the project name and number of WPVNM1611355, and with the task number of 8.13 and the award number of 63946. The authors gratefully acknowledge the time and effort given by medical students, universities administrators, and a core group of passionate students and school teachers of HCMC UMP and CT UMP to these particular studies.

References

- Abdel Wahed, W.Y., & Hassan, S.K. (2017). Prevalence and associated factors of stress, anxiety and depression among medical Fayoum University students. *Alexandria Journal of Medicine*, 53(1), 77-84. doi: 10.1016/j.ajme.2016.01.005

- Aktekin, M., Karaman, T., Senol, Y., Erdem, S., Erengin, H., & Akaydin, M. (2001). Anxiety, depression and stressful life events among medical students: a prospective study in Antalya, Turkey. *Med Educ*, 35, 12-17.
- Al-Dubai, S.A.R., Al-Naggar, R.A., Alshagga, M.A., & Rampal, K.G. (2011). Stress and coping strategies of students in a medical faculty in Malaysia. *The Malaysian Journal of Medical Sciences: MJMS*, 18(3), 57-64.
- Amrai, K., Zalani, H.A., Arfai, F.S., & Sharifian, M.S. (2011). The relationship between the religious orientation and anxiety and depression of students. *Procedia - Social and Behavioral Sciences*, 15, 613-616. doi: 10.1016/j.sbspro.2011.03.150
- Anh, T.Q. (2015). *Factors associated with mental health of medical students in Vietnam: A national study* (Doctor of Philosophy), Queensland University of Technology, Australia.
- Anh, T.Q., Dunne, M.P., & Hoat, L.N. (2013). Well-being, depression and suicidal ideation among medical students throughout Vietnam. *Vietnam Journal of Medicine and Pharmacy*, 5(2), 1-10.
- Asudani, V.H., Monika, R.S., & Akanksha, D. (2014). The impact of stress level and their coping strategies: a comparative study on female college teachers and female home makers. *International Journal of Advanced Research*, 2(9), 402-410.
- Bassols, A.M.S., Carneiro, B.B., Guimarães, G.C., Okabayashi, L.M.S., Carvalho, F.G., Da Silva, A.B., ... Eizirik, C.L. (2015). Stress and coping in a sample of medical students in Brazil. *Archives of Clinical Psychiatry (São Paulo)*, 42, 1-5.
- Calear, A.L., & Christensen, H. (2010). Systematic review of school-based prevention and early intervention programs for depression. *Journal of Adolescence*, 33(3), 429-438. doi: 10.1016/j.adolescence.2009.07.004
- Castaldelli-Maia, J.o.M.c., Martins, S.S., Bhugra, D., Machado, M.P., Andrade, A.G.d., Alexandrino-Silva, C.v., de Toledo Ferraz Alves, T.C.r. (2012). Does ragging play a role in medical student depression? Cause or effect? *Journal of Affective Disorders*, 139(3), 291-297. doi: 10.1016/j.jad.2012.02.003
- Hanlon, C. (2012). *State of mind - Addressing mental health issues on university campuses*. Retrieved from <https://www.ucarecdn.com/f7c8e350-7bf9-4bdd-8149-7e45dd12b629/>
- Hinh, N.D., & Minh, H.V. (2013). Public health in Vietnam: scientific evidence for policy changes and interventions. *Global health action*, 6, 20443-20443. doi:10.3402/gha.v6i0.20443
- Dyrbye, L.N., Thomas, M.R., & Shanafelt, T.D. (2005). Medical student distress: Causes, consequences, and proposed solutions. *Mayo Clinic Proceedings*, 80(12), 1613-1622. doi:10.4065/80.12.1613
- Fares, J., Al Tabosh, H., Saadeddin, Z., El Mouhayyar, C., & Aridi, H. (2016). Stress, burnout and coping strategies in preclinical medical students. *North American Journal of Medical Sciences*, 8, 75-81.
- Kelly, M.M., Tyrka, A.R., Price, L.H., & Carpenter, L.L. (2008). Sex differences in the use of coping strategies: predictors of anxiety and depressive symptoms. *Depression and anxiety*, 25(10), 839-846. doi:10.1002/da.20341
- Khawaja, N.G., & Bryden, K.J. (2006). The development and psychometric investigation of the university student depression inventory. *Journal of Affective Disorders*, 96(1?2), 21-29. doi: 10.1016/j.jad.2006.05.007
- Lazarus, R.S. (1999). *Stress and emotion: A new synthesis*. New York: Springer Publishing Company.
- Madhyastha, S., Latha, K.S., & Kamath, A. (2014). *Stress, coping and gender differences in third year medical students*, 16(2), 315-326. doi: 10.1177/0972063414526124
- Melo-Carrillo, A., Van Oudenhove, L., & Lopez-Avila, A. (2012). Depressive symptoms among Mexican medical students: High prevalence and the effect of a group psychoeducation intervention. *Journal of Affective Disorders*, 136(3), 1098-1103. doi:10.1016/j.jad.2011.10.040
- Moffat, K.J., McConnachie, A., Ross, S., & Morrison, J.M. (2004). First year medical student stress and coping in a problem-based learning medical curriculum. *Med Educ*, 38, 482-491.

- Morrison, W., & Kirby, P. (2010). *Schools as a setting for promoting positive mental health: Better practices and perspectives*. Retrieved from <https://www.jcsh-cces.ca/upload/JCSH%20Positive%20Mental%20Health%20Lit%20Review%20Mar%202010.pdf>
- Park, K.H., Kim, D.H., Kim, S.K., Yi, Y.H., Jeong, J.H., Chae, J., Roh, H. (2015). The relationships between empathy, stress and social support among medical students. *International Journal of Medical Education, 6*, 103-108. doi:10.5116/ijme.55e6.0d44
- Piqueras, J.A., Kuhne, W., Vera-Villaruel, P., van Straten, A., & Cuijpers, P. (2011). Happiness and health behaviours in Chilean college students: a cross-sectional survey. *BMC Public Health, 11*, 443. doi:10.1186/1471-2458-11-443
- Pranita, A., Apte, G.M., & Joshi, A.R. (2013). Assessment of WHO-5 well being index in 1st MBBS medical students. *International Journal of Scientific Research, 2*(2), 266-267.
- Quynh, H.H.N., Tanasugarn, C., Kengganpanich, M., & Lapvongwatana, P. (2018). The Vietnamese holistic mental well-being program in medical school: Strategies of social support, express emotion and problem avoidance. *Global Journal of Pharmacy and Pharmaceutical Sciences, 5*(2), 555656.
- Reed, D.A., Shanafelt, T.D., Satele, D.W., Power, D.V., Eacker, A., Harper, W., Dyrbye, L.N. (2011). Relationship of pass/fail grading and curriculum structure with well-being among preclinical medical students: a multi-institutional study. *Acad Med, 86*(11), 1367-1373. doi:10.1097/ACM.0b013e3182305d81
- Saeed, A.A., Bahnassy, A.A., Al-Hamdan, N.A., Almudhaibery, F.S., & Alyahya, A.Z. (2016). Perceived stress and associated factors among medical students. *Journal of Family & Community Medicine, 23*(3), 166-171. doi:10.4103/2230-8229.189132
- Silva, A.G., Cerqueira, A.T.D.A.R., & Lima, M.C.P. (2014). Social support and common mental disorder among medical students. *Revista Brasileira de Epidemiologia, 17*, 229-242.
- Soliman, M. (2014). Perception of stress and coping strategies by medical students at King Saud University, Riyadh, Saudi Arabia. *Journal of Taibah University Medical Sciences, 9*(1), 30-35. doi:10.1016/j.jtumed.2013.09.006
- Sreeramareddy, C.T., Shankar, P.R., Binu, V.S., Mukhopadhyay, C., Ray, B., & Menezes, R.G. (2007). Psychological morbidity, sources of stress and coping strategies among undergraduate medical students of Nepal. *BMC Medical Education, 7*(1), 26. doi:10.1186/1472-6920-7-26
- Stanley, N., & Manthorpe, J. (2002). *Students' mental health needs: Problems and responses*. London: Jessica Kingsley.
- Taggart, F., & Stewart-Brown, S. (2016). *A Review of questionnaires designed to measure mental wellbeing*. Retrieved on 25 November 2019 from https://warwick.ac.uk/fac/sci/med/research/platform/wemwbs/research/validation/frances_taggart_research.pdf
- Tempeski, P., Bellodi, P.L., Paro, H.B., Enns, S.C., Martins, M.A., & Schraiber, L.B. (2012). What do medical students think about their quality of life? A qualitative study. *BMC Medical Education, 12*(1), 1-8. doi:10.1186/1472-6920-12-106
- Tian, P.S.O., Sukanlaya, S., Yong, W.G., & Firdaus, M. (2013). Using the depression anxiety stress scale 21 (DASS-21) across cultures. *International Journal of Psychology, 48*(6), 1018-1029.
- Tobin, D.L. (2001). *User manual for the coping strategies Inventory scale*. Retrieved from https://www.academia.edu/30133319/User_Manual_for_the_COPING_STRATEGIES_INVENTORY
- Toews, J.A., Lockyer, J.M., Dobson, D.J., Simpson, E., Brownell, A.K., Brenneis, F., & Cohen, G.S. (1997). Analysis of stress levels among medical students, residents, and graduate students at four Canadian schools of medicine. *Acad Med, 72*, 997-1002.
- Topp, C.W., Østergaard, S.D., Søndergaard, S., & Bech, P. (2015). The WHO-5 well-being index: A systematic review of the literature. *Psychotherapy and Psychosomatics, 84*(3), 167-176.
- Phuong, T.B., Thao, T.P., Erickson, M., Preet, R., Trisnantoro, L., & Kinsman, J. (2012). *Vietnam Country Report*. Retrieved from <http://www.intrec.info/Country%20reports/INTREC%20-%20Vietnam.pdf>

- Tran, T.D., Tran, T., & Fisher, J. (2013). Validation of the depression anxiety stress scales (DASS) 21 as a screening instrument for depression and anxiety in a rural community-based cohort of northern Vietnamese women. *BMC Psychiatry*, 13(1), 1-7. doi:10.1186/1471-244x-13-24
- Varnum, M.E.W., Grossmann, I., Kitayama, S., & Nisbett, R.E. (2010). The origin of cultural differences in cognition: Evidence for the social orientation hypothesis. *Current directions in psychological science*, 19(1), 9-13. doi:10.1177/0963721409359301
- World Health Organization. (2005). *Promoting mental health: Concepts, emerging evidence and Practice*. Geneva
- World Health Organization. (2014). *Mental health atlas 2011*. Retrieved from http://www.who.int/gho/countries/vnm/country_profiles/en/
- Zamani-Alavijeh, F., Dehkordi, F.R., & Shahry, P. (2017). Perceived social support among students of medical sciences. *Electronic Physician*, 9(6), 4479-4488. doi:10.19082/4479
- Zeldow, P.B., Clark, D.C., Daugherty, S.R., & Eckenfels, E.J. (1985). Personality indicators of psychosocial adjustment in first-year medical students. *Social Science & Medicine*, 20(1), 95-100. doi:10.1016/0277-9536(85)90316-8