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DEPRESSION, ANXIETY, AND ASSOCIATED FACTORS AMONG YOUNG ADULT POPULATIONS

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ABSTRACT

Background: *Depression and anxiety, prevalent mental health disorders among millions of young adults, significantly burden individual, familial, and societal health and well-being.* ***Objectives:*** *to determine the proportion of depression and anxiety and associated factors among young adults.* ***Materials and methods:*** *A cross-sectional study was conducted on 1302 young adults from September to December 2024 in Binh Minh district, Vinh Long province. Depression and anxiety were screened using the PHQ-9 and GAD-7 scales, respectively.* ***Results:*** *Among young adults, a concerning 3.2% faced the dual challenge of both depression and anxiety, while separate instances of these conditions stood at 3.5% and 3.0%, respectively. The overall prevalence proportions of depression and anxiety were 6.7% and 6.2%, respectively. Significant associations ($p<0.05$) were observed between these risks and family/peer relationships, health issues, self-rated health, alcohol use and PSQI score.* ***Conclusions:*** *Targeted interventions addressing family and peer relationships, managing health concerns, promoting healthy lifestyle choices, and improving sleep hygiene are warranted to mitigate depression and anxiety risk in this population.*

Keywords: *depression, anxiety, related factors, young adults.*

I. INTRODUCTION

Mental disorders are prevalent among adolescents worldwide, affecting one in seven individuals aged 10-19 and accounting for 15% of the global disease burden in this age group. Depression, anxiety, and behavioral disorders stand out as major contributors to illness and disability in this critical developmental stage [1]. Additionally, depression affects roughly 3.8% of the population, including 5% of adults (50% more common in women) and 5.7% of those over 60. Around 280 million people globally have depression, and over 10% of pregnant women are affected. Suicide is a major concern, causing over 700,000 deaths yearly and is the fourth leading cause of death in young adults (15-29) [2]. Alongside depression, anxiety disorders are widespread, impacting 301 million people in 2019, or about 4% of the population. Often beginning in youth, anxiety disorders can interfere with everyday activities and negatively affect personal, social, and professional life [3]. Several global studies, including those by Blanco *et al.* (2014) provided an analytical model of risk factors for depression and anxiety [4], Zhang *et al.* (2021) with 25.6% had depressive symptoms, 26.9% had anxiety symptoms, and 20.6% had a combination of depression and anxiety symptoms [5], Gawrych *et al.* (2022) [6], Basta *et al.* (2022) [7], and Bie *et al.* (2024) [8] showed the proportion of this issue, they have offered comprehensive perspectives on the prevalence, context, and associated factors of depression and anxiety among adolescents and young adults.

In Vietnam, a concerning snapshot of adolescent mental health reveals over a quarter (27.1%) grappling with mental disorders, with anxiety (18.6%) being particularly prevalent alongside depression (4.3%) [9]. While existing research often focuses on students or those with chronic conditions, a crucial gap exists in understanding the mental well-being of young adults. Limited studies specifically address young adults (e.g., La Thi Thu Thuy *et al*., 2020 (16.4% with mental difficulties) [10]; Pham Phuong Mai *et al*., 2022 (10% and 15.6% with mild to extremely severe depression and anxiety, respectively) [11]; Rchom H' An *et al*., 2023 (54.4% had depression) [12]). Consequently, there is a need for mental health research among young adults to assess behavioral and cognitive changes and the impact of the post-COVID-19 pandemic. Such data is crucial for developing effective community-based approaches to prevent depression and anxiety, and to enhance young people's coping mechanisms for stressors. Therefore, this study aimed to determine the prevalence of depression, anxiety, and associated factors among young adults.

II. MATERIALS AND METHODS

2.1. Materials

Young individuals (adolescents and youth) currently residing in Binh Minh district, Vinh Long province.

- Inclusion criteria: Individuals aged 15-30 currently residing in Binh Minh district, Vinh Long province.

- Exclusion criteria: Individuals who declined to participate in the study; individuals who were absent at the time of data collection; and individuals with communication impairments (hearing, speech) that affected their ability to complete the interview were excluded.

2.2. Methods

- **Study design:** A cross-sectional study design.

- **Sample size and sampling method:** the sample size was calculated using a proportion estimation formula with a relative precision, specifically a relative estimated error of $\varepsilon = 15\%$, $\alpha = 5\%$, a confidence interval $Z = 1.96$, and a mental health problem prevalence of 21.7% among young adults from a previous study [9]. After applying a design effect (D.E) of 2 to ensure sample representativeness due to the multi-stage sampling method, the minimum required sample size was 1234 participants. The actual sample size in our study was 1302 participants.

- **Research variables:** Depression was assessed using the Patient Health Questionnaire-9 (PHQ-9), a 9-item scale evaluating symptoms over the past two weeks. Each item was scored on a 4-point Likert scale (0=not at all, 1=several days, 2=more than half the days, and 3=nearly every day). The total PHQ-9 score ranged from 0 to 27, with a cut-off score of 10 or greater indicating a risk of depression [13,14]. Similarly, anxiety was assessed using the Generalized Anxiety Disorder-7 (GAD-7) scale, a 7-item questionnaire evaluating symptoms over the past two weeks. Each item was scored on a 4-point Likert scale (0=not at all, 1=several days, 2=more than half the days, and 3=nearly every day). The total GAD-7 score ranged from 0 to 21, with a cut-off score of 10 or greater indicating a risk of anxiety [15]. Individuals with both depression and anxiety had PHQ-9 $\geq$10 and GAD-7 $\geq$10 [13-16].

Related factors included socio-demographic characteristics (age, gender, religion, living area, education level), family relationships, peer relationships, alcohol consumption, current health problems, self-rated health, physical activity levels, and PSQI score (assessed by the Pittsburgh Sleep Quality Index, PSQI).

- **Data collection procedure:** Data were collected by using a house-to-house approach within the community, facilitated by community health workers from local commune/ward health stations. Eligible individuals, based on pre-defined inclusion and exclusion criteria, were interviewed face-to-face by trained interviewers using a standardized questionnaire.

- **Statistical analysis:** Data was entried by using Epidata software and analyzed using by SPSS software. Categorical variables were summarized as frequencies and percentages, while continuous variables were summarized as means and standard deviations (SD). Chi-square tests were used to analyze the association between two categorical variables. Univariate logistic regression was employed to examine the relationship between a categorical outcome variable and a continuous predictor variable. Statistical significance was defined as $p \leq 0.05$.

- **Ethics approval:** Our study received ethical approval from the Institutional Research Ethics Review Board of Can Tho University of Medicine and Pharmacy with approval number 22.060.GV/PCT-HĐĐĐ dated November 30, 2022. Participants provided voluntary informed consent and had the right to withdraw from the study at any time. All research data were kept confidential.

III. RESULTS

3.1. Characteristics of young adults

Table 1. Sociodemographic characteristics of young adult

Characteristics		Frequency (n=1302)	Percentage (%)
Gender	Female	651	50.0
	Male	651	50.0
Age	15-19	588	45.2
	20-24	280	21.5
	25-30	434	33.3
Religion	Non-religious	885	68.0
	Religious	417	32.0
Living area	Urban	604	46.4
	Rural	698	53.6
Education level	Less than high school	757	58.1
	High school or higher	545	41.9
Family relationships	Disturbed	173	13.3
	Undisturbed	1129	86.7
Peer relationships	Negative	326	25.0
	Positive	976	75.0
Current health problems	Yes	209	16.1
	No	1093	83.9
Self-rated health	Regular/poor/very poor	356	27.3
	Very good/good	946	72.7
Alcohol consumption	Yes	679	52.2
	No	623	47.8
Levels of physical activity	Low	509	39.1
	Moderate	570	43.8
	High	223	17.1
PSQI score (mean ± SD)		3.29±2.38	

Our study examined 1302 young adults, with a 1:1 male-to-female ratio. The majority were aged 15-19 (45.2%), non-religious (68.0%), and resided in rural areas

(53.6%). Over half (58.1%) had less than a high school education, while 95.2% reported middle or high income. A significant proportion reported poor family relationships (13.3%), current health problems (16.1%), and poor self-rated health (27.3%). Alcohol consumption was prevalent (52.2%), and moderate physical activity was the most common level of exercise (43.8%). The average sleep quality (PSQI) score was 3.29 (2.38).

3.2. The prevalence of depression and anxiety among young adults

Table 2. The prevalence of depression and anxiety among young adults

Outcome	Frequency (n=1302)	Percentage (%)
Main outcome:		
Absence of depression and anxiety	1176	90.3
Only had depression	45	3.5
Only had anxiety	39	3.0
Having both depression and anxiety	42	3.2
Overall depression:		
Yes	87	6.7
No	1215	93.3
Overall anxiety:		
Yes	81	6.2
No	1221	93.8

3.2% of young adults had both depression and anxiety. The prevalence of isolated depression and anxiety was 3.5% and 3.0%, respectively. Furthermore, the overall prevalence of depression and anxiety disorders in our study was 6.7% and 6.2%, respectively.

3.3. Factors associated with depression and anxiety among young adults

Table 3. Factors associated with depression and anxiety among young adults

Factors		Depression and Anxiety		OR (95% CI)	p-value*
		Yes n (%)	No n (%)		
Gender	Female	26 (4.0)	625 (96.0)	1.65 (0.88-3.11)	0.117
	Male	16 (2.5)	635 (97.5)		
Age	15-19	22 (3.7)	566 (96.3)	1.17 (0.59-2.31)	0.658
	20-24	6 (2.1)	274 (97.9)	0.66 (0.25-1.73)	0.392
	25-30	14 (3.2)	420 (96.8)	1	-
Religion	Non-religious	25 (2.8)	860 (97.2)	0.68 (0.37-1.28)	0.233
	Religious	17 (4.1)	400 (95.9)		
Living area	Urban	21 (3.5)	583 (96.5)	1.16 (0.63-2.15)	0.633
	Rural	21 (3.0)	677 (97.0)		
Education level	Less than high school	23 (3.0)	734 (97.0)	0.87 (0.47-1.61)	0.652
	High school or higher	19 (3.5)	526 (96.5)		
Family relationships	Disturbed	22 (12.7)	151 (87.3)	8.08 (4.31-15.2)	<0.001
	Undisturbed	20 (1.8)	1109 (98.2)		
Peer relationships	Negative	25 (7.7)	301 (92.3)	4.69 (2.50-8.79)	<0.001
	Positive	17 (1.7)	959 (98.3)		
Current health problems	Yes	14 (6.7)	195 (93.3)	2.73 (1.41-5.28)	0.002
	No	28 (2.6)	1065 (97.4)		
Self-rated health	Regular/poor/very poor	33 (9.3)	323 (90.7)	10.6 (5.04-22.5)	<0.001
	Very good/good	9 (1.0)	937 (99.0)		

Factors		Depression and Anxiety		OR (95% CI)	p-value*
		Yes n (%)	No n (%)		
Alcohol consumption	Yes	32 (4.7)	647 (95.3)	3.03 (1.48-6.22)	0.002
	No	10 (1.6)	613 (98.4)		
Levels of physical activity	Low	23 (4.5)	486 (95.5)	1.46 (0.62-3.46)	0.386
	Moderate	12 (2.1)	558 (97.9)	0.66 (0.26-1.71)	0.392
	High	7 (3.1)	216 (96.9)	1	-
PSQI score (mean ± SD)		7.76±2.44	3.15±2.23	1.76 (1.56-1.98)	<0.001**

(*): Chi-square Test; (**): Univariate logistic regression

Our study found statistically significant associations ($p<0.05$) between depression and anxiety risk and the following factors: family relationships, peer relationships, current health problems, self-rated health, and alcohol consumption. Furthermore, each one-point increase in PSQI score was associated with a 1.76-fold increase in depression and anxiety risk (95% CI: 1.56-1.98, $p<0.001$).

IV. DISCUSSION

In our study, co-occurrence of depression and anxiety was found in 3.2% of young adults, while the independent prevalence rates for depression and anxiety were 3.5% and 3.0%. The overall prevalence of depression and anxiety disorders in our study was 6.7% and 6.2%, respectively. Prevalence of depressive and anxiety symptoms differs across studies globally. A study by Zhang *et al*. (2021) on people aged 12-17 reported depressive symptoms in 25.6%, anxiety symptoms in 26.9%, and co-occurring symptoms in 20.6% [5]. Gawrych *et al.* (2022) found that 56% of participants aged 18-23 years reported depressive symptoms [6]. Another study by Basta *et al.* (2022) in Greek adolescents/young adults (aged 15-24 years) reported depression prevalence of 29% (based on PHQ-9) and anxiety prevalence of 15% (based on GAD-7) [7]. Vietnamese research highlights the prevalence of mental health challenges in young adults. Pham Phuong Mai *et al.* (2022) reported depression in 9.93% and anxiety in 15.6% of 15-24 year olds [11]. Notably, Rchom H'An *et al.* (2023) found a high rate of depression (54.4%) among dormitory students [12]. A U.S. cohort study of 1.7 million individuals aged 5-22 revealed comparable increases to potential trends in our study. Between 2017 and 2021, new depression diagnoses increased by 55.6% (1.35% to 2.1%), and prevalent depression by 60.0% (2.55% to 4.08%). New and prevalent anxiety (without depression) increased by 31.1% (1.77% to 2.32%) and 35.2% (3.13% to 4.22%), respectively [17]. The study's findings provide valuable prevalence data for the specific young adult population examined. However, the comparison with other studies emphasizes the complex and context-dependent nature of mental health prevalence, highlighting the need for further research to understand the factors contributing to these variations and to develop targeted interventions for different subgroups within the young adult population. The differing rates underscore the importance of considering specific age groups, geographical locations, and potentially other contextual factors when interpreting and comparing mental health prevalence data.

Our research showed that poor family and peer relationships, health issues, self-rated health, and alcohol use were linked to a higher risk of depression and anxiety. Additionally, worse sleep quality was also associated with a significantly increased risk. Guimarães G.O. *et al.* revealed a substantial cumulative incidence of anxiety disorders in young adults (10.9%), including generalized anxiety disorder (6.5%) [18]. Female gender and prior

depressive episodes were associated with increased risk. Early identification of these disorders is crucial for timely management and mitigating the overall disease burden [18]. Blanco *et al.* (2014) reported that a single factor model explained the co-occurrence of anxiety and major depression disorders [4]. This factor mediated the increased risk associated with low self-esteem, family history of depression, female sex, childhood abuse, race, education, trauma, and family environment [4]. Adolescents and young adults (10-24 years) have experienced a notable 52% increase in anxiety disorders over the 30-year period from 1990 to 2021, a clear indicator of the growing global mental health burden. Socioeconomic factors, especially in middle Socio-Demographic Index (SDI) regions, and the COVID-19 pandemic have intensified this trend. [8]. Pham Phuong Mai *et al.* (2022) found that among young Vietnamese individuals aged 15-24, factors associated with increased depression included Christian affiliation, non-standard marital status, urban residence, and lower household income. Conversely, being female, of ethnic minority background, Buddhist or Christian, single, urban-dwelling, having only elementary education, or lower household income were linked to higher reported anxiety symptoms [11]. Our study's findings are largely consistent with current knowledge and literature regarding factors associated with depression and anxiety disorders. According to the U.S. Center for Disease Control and Prevention, the causes of depression are complex and likely involve a combination of genetic, biological, environmental, and psychological factors. Several factors can increase the risk, including a family history of depression, stressful or traumatic life events, major life changes, medical conditions, certain medications, and substance use [19]. While our study has limitations regarding the comprehensive assessment of all mental health aspects, notably lacking an evaluation of stress levels and coping mechanisms in young adults, our findings offer valuable insights for researchers and policymakers. These results can inform the development of community-based intervention programs centered in schools and workplaces, aimed at enhancing awareness and problem-solving skills at the individual level, as well as strengthening familial and peer connections to improve mental well-being post-COVID-19.

V. CONCLUSION

Our findings highlight a significant association between several modifiable factors and the heightened risk of depression and anxiety among young adults. Notably, compromised familial and social relationships, co-occurring health issues, negative self-perception of health, and alcohol consumption were independently correlated with increased vulnerability. Furthermore, a direct relationship was observed between poor sleep quality, as indicated by elevated PSQI scores, and a substantial increase in the likelihood of experiencing depression and anxiety symptoms. Future research should prioritize the development and evaluation of targeted interventions and explore the underlying mechanisms linking these factors to mental health outcomes.

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