Factors Associated with Mental Distress Among Medical Students of Universitas Pembangunan Nasional Veteran Jakarta

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ABSTRACT

Background: Mental distress refers to common mental disorders, such as depression, anxiety, and somatic symptoms, and is considered public health problem. It is reported that university students tend to have higher levels of mental distress compared to the general population, especially in medical students. **Objective:** The purpose of this study is to determine the risk factors affecting mental distress among medical students. **Methods:** A cross-sectional study using a survey was conducted among preclinical medical students at UPN Veteran Jakarta in June 2020. This study used proportional stratified sampling to complete questionnaires including demographic characteristics, adverse childhood experiences (ACE), family APGAR, and self-reporting questionnaire (SRQ-20). Data were analyzed by using logistic regression. **Results:** Among 138 participants, 36.2% had at least one of ACE, 55.1% of students came from a family with dysfunction, and 36.2% experienced mental distress. In multivariate analyses, some essential factors associated with mental distress are gender (OR=12.059, 95% CI: 2.311,62.916), adverse childhood experiences (OR=3.080, 95% CI: 1.903,4.983), family function (OR=2.733, 95% CI: 1.097,6.809), and family structure (OR=0.290, 95% CI: 0.085,0.984). **Conclusion:** Students who are female, have history of adverse childhood experience, come from family with dysfunction, or non- nuclear family structure are more likely to be screened positive for mental distress. This study recommends an urgency of counselling service availability for medical students and community awareness to build a healthy family environment.

Keywords: Adverse childhood experiences; Family function; Mental distress.

BACKGROUND

Mental distress refers to common mental disorders which are depression, anxiety, and somatic symptoms, and is considered a public health problem. Common mental disorders (CMD) refer to depressive, anxiety, and somatoform disorders that meet the criteria of nosology in ICD-10 and DSM-V[1]. The prevalence of mental distress in the Indonesian population has escalated from 6% in 2013 to 9.8% in 2018[2], particularly college students who were found to have a higher prevalence compared to the general population[3].

University students globally are quarrelling with the soaring prevalence of mental health issues. Studies across eight countries (Belgium, Germany, United States, Australia, Mexico, Northern-Ireland, South-Africa) reported that 35,3% of first-year college students screened positive for at least one common DSM-IV disorder (anxiety, mood, or substance disorder). Some factors correlated to be screened positive were being female, unmarried or deceased parents, older age, low school ranking, and extrinsic reasons for university admission[4]. A systematic review showed the prevalence of depression and anxiety worldwide among medical students were 28% and 33,8% respectively[5,6]. While other systematic reviews presented much lower rates with the prevalence of depression and anxiety were 11% and 7,04% respectively with another finding that inferred preclinical students were 1.63 more prone to be depressed than clinical students[7]. A cross-sectional study performed in a medical faculty in Indonesia reported that the prevalence of anxiety and depression were 43% and 25% respectively[8]. A study in German showed that 23,5% of university students experienced somatoform syndrome while it showed a higher number in a study performed in

a university in Indonesia with a prevalence of 35,7%[9,10]. Factors associated with mental distress among medical students are female gender, ethnicity, marital status, poor academic performance, socioeconomic status, parental education, and family relationship[11].

Mental distress can affect a person's ability in managing daily life. Especially in preclinical medical students, mental distress could affect cognitive functioning, learning, and could affect future predicaments in physician which may lead to poor patient care[12,13]. This is due to the tremendous stress experienced by medical students compared to other nonmedical majors. During this university period, there is a crucial need for early identification and treatment for these debilitating mental health issues.

Determinant factors of mental health are divided into individual, socioeconomic, and environmental risk factors. Individual risk factors include biological, psychological, and behavioral factors. Socioeconomic factor encompasses social and economic factors. Social factors include life-course, family factors, community, local services, and country-level factors. Environmental factors referred to inequality and racism[14,15].

The purpose of this study is to determine the risk factors affecting mental distress and its prevalence including individual and socioeconomic risk factors among preclinical medical students of Universitas Pembangunan Nasional Veteran Jakarta.

RESEARCH METHODS

Design

A cross-sectional study was conducted in June 2020 among preclinical medical students who were enrolled in 2017, 2018, and 2019 at Universitas Pembangunan Nasional Veteran Jakarta in June 2020. This study used proportional stratified sampling to complete questionnaires including demographic characteristics, adverse childhood experiences (ACE), family APGAR, and self-reporting questionnaire (SRQ-20). The sample size of this study was 138, calculated by the regression logistic sample size formula. The inclusion criteria were active preclinical students of Universitas Pembangunan Nasional Veteran Jakarta and the exclusion criteria were students that did not agree to participate by not signing the informed consent form.

Instrument

Adverse Childhood Experiences Questionnaire was used to measure the history of ACE. It was initially developed by Felliti et al[16] and validated by Saraswati[17]. The instrument is composed of 17 questions.

The family function was identified by the APGAR Family questionnaire. It is composed of 5 questions measuring five areas of family function with a three-point scale ranging from 0 to 2[18]. The Family function assessed by this questionnaire including adaptation, partnership, growth, affection, and resolve. The APGAR Family scale is reliable and valid to use[19].

Self-Reporting Questionnaire (SRQ-20) developed by the World Health Organization (WHO) was used to measure common mental disorders. The questionnaire has been used in Riset Kesehatan Dasar 2013 and 2016 and is composed of 20 dichotomy response questions. Cut off score used by this study is six points[2].

Data Analysis

Data were analyzed using SPSS software (version 24). Descriptive and bivariate analyses using chi-squared tests and its alternative method, Fischer and Kolmogorov-Smirnov, were conducted. Logistic regression analyses were performed using Backward Stepwise Method to identify variables affecting mental distress. Gender, adverse childhood experiences, physical activity, family function, family structure, and family income are the variables that were tested in the multivariate model. The type I error used in this study was considered to be 5% for all analyses. Ethical clearance of this study was obtained from Health Research Ethics Committee of Universitas Pembangunan Nasional Veteran. Participants were apprised about the objectives of this study and had signed informed consent regarding their participation.

RESULTS

Participants

Among 138 participants, 36.2% have at least one history of ACE. Most of the participants do not exercise regularly with the frequency of fewer than three times a week, have a nuclear family, and monthly family income greater than or equal to regional minimum wage. Family with dysfunction both moderate and severe is the most encountered factor among all participants. More than a quarter of all participants experience mental distress. The participants demographic background are presented in Table 1.

Bivariate analyses were performed to explore factors associated with mental distress. According to the results that are presented in Table 2, risk factors that were significantly associated with mental distress were gender, ACE, and family function. In both female and male gender, the proportion of students without mental distress was higher but the percentage of mental distress in females was higher than males. Most of the students who have a history of ACE scored greater than or equal to six in SRQ-20 hence indicating mental distress. Both participants with physical activity are less than three times a week and greater than or equal to three times a week do not experience mental distress. Students with healthy family function have less proportion of students with mental distress. In each type of family structure, most participants do not experience mental distress. Participants with family income higher than regional minimum wage do not experience mental distress.

Multivariable logistic regression was fit with a P-value of 0.561 of Hosmer-Lemeshow model fitness. All variables were included in multivariate analysis. At each step, the variable that was the least significant was removed. The process ends when it identified all the variables are significant. In multivariable logistic regression, gender,

Table 1. Univariate analysis of mental distress and its associated factors

No	Risk factors	Number	%
	Gender		
1	Female	115	83.3
	Male	23	16.7
	Adverse childhood experiences		
2	Yes	50	36.2
	No	88	63.8
	Physical Activity		
3	< 3 times a week	99	71.7
	≥ 3 times a week	39	28.3
	Family function		
4	Healthy	62	44.9
	Moderate dysfunction	46	33.3
	Severe dysfunction	30	21.7
	Family structure		
	Nuclear	105	76.1
	Single-parent	3	2.2
5	Blended	8	5.8
	Extended	18	13
	Other	4	2.9
	Family income		
6	< UMR/UMK	12	8.7
	≥ UMR/UMK	126	91.3
	Mental distress		
7	No	88	63.8
	Yes	50	36.2

Table 2. Bivariate analyses of factors associated with mental distress

No	Risk factors	Mental distress				p-value
		No		Yes		
		n	%	n	%	
	Gender					
1	Female	68	59.1	47	40.9	0.011
	Male	20	38.6	3	13.0	
2	**Adverse childhood experiences**					
	Yes	16	32	34	68	0.000
	No	72	81.8	16	18.2	
3	**Physical Activity**					
	< 3 times a week	60	60.6	39	39.4	0.218
	≥ 3 times a week	28	71.8	11	28.2	
4	**Family function**					
	Healthy	47	75.8	15	24.2	
	Moderate dysfunction	19	41.4	27	58.6	0.001
	Severe dysfunction	22	73.3	8	26.7	
	Family structure					
	Nuclear	67	63.8	38	36.2	
5	Single-parent	2	66.7	1	33.3	
	Blended	5	62.5	3	37.5	1
	Extended	11	61.1	7	38.9	
	Other	3	75	1	25	
	Family income					
6	<UMR/UMK	6	50	6	50	0.299
	≥UMR/UMK	82	65.0	44	34.9	

adverse childhood experiences, family function, and family structure significantly explained 44.2% of the dependent variable.

Factors significantly associated with mental distress are gender (OR=12.059, 95% CI: 2.311,62.916), ACE (OR=3.080, 95% CI: 1.903,4.983), family function (OR=2.733, 95% CI: 1.097,6.809), and family structure (OR=0.290, 95% CI: 0.085,0.984). Even though the family structure in the crude analysis was not associated with mental distress, the presence of other variables associated with the family structure in the multivariable regression logistic model made the P-value statistically significant.

Table 3. Multivariate analysis model

No	Risk factors	p-value	B	OR	95% CI		Nagelkerke R Square
					Lower	Upper	
1	Gender (female)	0.003	2,490	12.059	2.311	62.916	
2	Adverse Childhood Experiences (yes)	0.000	1,125	3.080	1.903	4.983	0.442
3	Family function (dysfunction)	0.031	1,005	2.733	2.733	1.097	
4	Family structure (nuclear)	0.047	-1,238	0.290	0.085	0.984	

DISCUSSION

The purpose of this study is to determine the associated factors related to mental distress and its prevalence. As many as 36,2% of preclinical students of Universitas Pembangunan Nasional Veteran Jakarta screened positive for mental distress. The prevalence of mental distress observed in this study is higher than reported in the Indonesian population stated in Indonesian Basic Health Research in 2018 which is 9,8%[2]. This finding supported a previous study that found that the proportion of university students who experienced psychological distress was higher than the general population[3]. This significant gap suggests the urgent need for further evaluations and interventions targeted to reduce mental distress in preclinical students. Mental health services for students with severe mental health problems, peer counsellors, promotion of how to handle stress and burnout at university should be made to address this issue.

Higher odds of mental distress were observed among female students. This is in line with a previous study that found that the female gender has a higher risk of common mental disorders that encompasses depression, anxiety, and somatic symptoms[20,21,22,23,24]. Gender disparity in mental health could be explained by several factors which are biology, psychology, and environmental factor. Biological factors include genetic, hormonal influences, and psychological stress responsiveness. Psychological factors include temperament, coping styles, and personality. Environmental factors are referred to as stress exposure, sexual, and physical abuse[22]. The WHO estimates 30% of women worldwide have been victims of sexual and physical abuse[25]. This finding address the need for gender-specific risk factors and interventions.

The odds of mental distress were increased in students with ACE. Individuals with a history of adverse ACE chronic stress exposure before the age of 18 that leads to over-alteration and dysfunction of the hypothalamus-pituitary-adrenal axis that persists into adulthood. This has significant role in the pathophysiology of mental distress experienced by students[26,27].

Higher chances of mental distress are also found among individuals with a dysfunctional family. Family function is defined as how family members communicate, relate, maintain a relationship, and make decisions to solve a problem together[28]. This is consistent with previous studies in which the internal quality of a family or family function has a significant association with mental distress referred to as mood disorders and neurosis[18,29,30].

Family structure is significantly associated with mental distress after taking other variables into account. The nuclear family structure has a negative association with mental distress as supported by previous studies[31,32]. The ground for this outcome is based on a previous study that stated children from nuclear family structure have better socio-emotional outcomes than children from other family types[33]. These findings can assist stakeholders in screening potential risk factors of common mental disorders. Students with a history of adverse childhood experiences, dysfunctional family, and non-nuclear family structure can be given access to counselling services offered in institution and community.

The present study found no association between physical activity nor family income. Those findings are contradictory to previous studies. The insignificant association between physical activity could be explained by the lack of specificity of the variable. A previous study has shown that moderate physical activity is correlated with a lower chance of depression, while high-intensity physical activity is correlated with a higher chance of depression[34]. Association between family income and mental distress found an insignificant result which is inconsistent with previous studies[35,36,37,38]. This could happen because the majority of participants have family income greater than or equal to the regional minimum wage.

The limitations of this study are the period of data collection was during the pandemic of COVID-19 when students were learning virtually so the findings could be constrained to response bias, the study lacks follow-up and specifications of mental health disorders, and cross-sectional design makes the cause-effect relationship of the variables could not be determined.

CONCLUSIONS

From this study, the following conclusions can be drawn:

1. As many as 36,2% of preclinical students of Universitas Pembangunan Nasional Veteran Jakarta screened positive for mental distress. The majority of the students' gender is female, do not exercise regularly with the frequency of fewer than three times a week, have a nuclear family, and monthly family income greater than or equal to regional minimum wage. Family with dysfunction both moderate and severe is the most encountered factor among all participants. More than a quarter of all participants experience mental distress.
2. As many as four out of six risk factors are significantly associated with mental distress. The risk factors are gender, ACE, family function, and family structure after taking other variables into account.
3. The most dominant factors in increasing the odds of mental distress are women, the presence of ACE, family with dysfunction, and non-nuclear family structure are more likely to have mental distress.

This study recommends a more comprehensive counselling policy for medical students, further examining students that screened positive for mental distress, assessing other risk factors affecting mental distress, and awareness to build a healthy family environment.

Ethical Approval and Informed Consent
Ethical clearance of this study was obtained from Health Research Ethics Committee of Universitas Pembangunan Nasional Veteran Jakarta with Ethical Approval No. 2497/ VI/2020/KEPK. Participants were apprised about the

objectives of this study and had signed informed consent regarding their participation.

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Availability of Data and Material
Data and material can be obtained via corresponding author.

Conflicts of Interest
There is no conflict of interest in this study.

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