Original Article

Prevalence of depression and anxiety among college students living in a disaster-prone region

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ABSTRACT

The present study examined the prevalence rate of depression and anxiety among college students living in a disaster-prone area of Aceh, Indonesia. College students enrolled in two public Universities in Banda Aceh were randomly selected to participate in the self-administered standardized questionnaires for depression and anxiety. The prevalence rates of depression and anxiety were 18.8% and 27.4%, respectively. Depression was associated with gender and BMI while anxiety was only associated with gender. Depression is also positively correlated to anxiety. Depression and anxiety are prevalent among college students living in a disaster prone area. Early detection and timely treatment of mental disorders should be beneficial to the students living in this circumference.

1. Introduction

College students living in a disaster-prone area are more likely to develop complex mental and psychological afflictions because of exposure to both the disaster and the various stressors as part of student life. Depression is one of common problems among them. A systematic review suggests that the students weighted mean prevalence of depression was 30.6%, with rates ranging from 10% to 85%.[1] Different designs, locations and measurement tools used gave varying rates. Among college students, depression is associated with many factors including race, academic performance,[2] academic stress, social support, parents education and relationship with parents.[3] The presence of depression not only deteriorates their academic performance,[4,5] but also predicts such suicide ideation.[6] Yet, the evidence on depression rate among students living in a disaster-prone area is scarce.

Anxiety is also common among college students. The rate of anxiety ranged from 15%[7] to 64.3[8] and is associated with many factors including gender, the source of funding,[9] field of study, satisfaction with education, study year, place of living,[10] race, academic performance, mother's education, and extra-curricular activity.[2] The presence of anxiety is associated with lower academic performance[5] and also positively correlated with depression.[11,12] Report on anxiety problem among student living in a disaster-prone area has been limited.

Aceh is a province of Indonesia that is located at the northern-end of Sumatra Island. Aceh is considered as one of natural disaster-prone areas in Indonesia as both volcanic mountains and earthquakes exist in the province. The Acehnese, local people residing in the province, have experienced recurring natural disasters. The most memorable event, obviously the devastating Tsunami on Boxing Day 2004 killed approximately 129,775 inhabitants.[13,14] The most recent earthquake occurred on 7 December 2016 in Pidie Jaya district, approximately 164 km from Banda Aceh, where the present study was conducted. The latest earthquake killed 104 people, injured approximately 1000 survivors, and temporarily displaced more than 85,000 people.[15] A recent study among university students in Aceh confirms that 96% of the students have been exposed to traumatic events during their lifetime, and 21% of them met criteria for post-traumatic stress disorder.[16] The information on the rate of depression and anxiety of college students in Indonesia and the rates of college students living in a disaster-prone area is scarce. To the best of our knowledge, this is the first study to report the rate of depression and anxiety among college students living in a disaster-prone area of Indonesia.

2. Material and methods

2.1. Participants

This cross-sectional study was conducted in two public universities in Banda Aceh, Indonesia. Of 323 college students who were randomly selected and requested to fill in self-administered questionnaires, 266 responded, filled and returned the questionnaires (response rate = 82%). Stat-calc was used to calculate sample size, using 95% confidence level, and 30% population proportion. All students enrolled at these universities were eligible to participate in the study.

2.2. Assessment tools

Demographic information: The first part of the survey contained questions about the socio-demographic conditions of the respondents. Furthermore, depressive symptoms and anxiety problems were assessed using well-established instruments.

Depressive symptoms: Symptoms of depression were measured using the nine items of Patient Health Questionnaire (PHQ-9).[17] PHQ is a depression module of self-administered diagnostic instruments for common mental disorders. It has good psychometric properties and has been extensively used in other studies.[18] Each item of PHQ-9 is scored from 0 (not at all) to 3 (nearly every day), resulting in the possible maximal score of 27. The score of 5, 10, 15 and 20 is interpreted as mild, moderate, moderately severe and severe depression, respectively.[17] Conforming to the previous suggestions,[17,18] the present study uses the cut-off point of ≥10 as the case of depression.

Anxiety disorder: The seven items of Generalized Anxiety Disorder (GAD-7) scale[19] was used to measure the anxiety related problems. It has good psychometric properties in both primary care[20] and general population[21] settings. Each item of GAD-7 is scored from 0 (not at all) to 3 (nearly every day), making a total score of 21. The score of 5, 10 and 15 is interpreted as mild, moderate and severe anxiety, respectively.[19] Although the cut-off of 10 is optimal for detecting GAD,[19] the cut-off of 8 maximizes both sensitivity and specificity for detecting any anxiety disorder[22]. The present study, therefore, uses the cut-off point of ≥8 as the case of clinical anxiety.

2.3. Statistical analysis

Statistical analyses were performed using the Stata 13 statistical software. Socio-demographic variables were reported with descriptive statistics. Continuous variables were summarized as mean and Standard Deviation (SD) or median and Inter Quartile Range (IQR), where appropriate. The difference between proportions was tested using Chi-square test or Fisher exact test, while the Mann-Whitney or Kruskal-Wallis test was used to comparing the mean or rank mean of continuous variables. Correlation between two numerical variables was analysed using the Pearson correlation coefficient. Logistic regression analysis was performed to understand which variables predict the presence of depression and anxiety.

2.4. Ethical issues

Ethics approval was obtained from an Ethics Committee of Syiah Kuala University. The respondents provided their informed consent and participated in the study voluntarily.

3. Results

3.1. Socio-demographic

Social-demographic and clinical features of respondents are summarized in Table 1. The majority of respondents were Acehnese (79.3%), single (95.5%) and obtained financial support from parents (88.7%). More than half (51.8%) was female and live alone or with friends (60.6%). The distribution of living arrangements between genders was relatively similar (x^2 = 0.017, p = 0.89).

3.2. Depression

The estimate of clinical depression (PHQ-9 ≥ 10) was 18.8%. The majority of the respondents had a mild level of depression (47.7%) and only one (0.4%) suffered from severe depression (PHQ-9 ≥ 20). Bivariate analyses suggest that depression was associated with gender (x^2 = 4.91, p = 0.02) and Body Mass Index (BMI) (U = 4.23, p = 0.01), and not with other socio-demographic variables (p < 0.05). Female had a higher rate of depression than the male (66% vs. 34%) while those with depression had a higher BMI mean rank than those without depression. Logistic regression confirmed that only BMI independently predicts the presence of depression (p = 0.001).

3.3. Anxiety

Approximately a quarter of respondents (27.4%) met the criteria for anxiety (GAD7 ≥ 8) and five persons (1.9%) even suffered from severe anxiety (GAD7 ≥ 15). The remaining nearly half (45.1%) did not suffer from it. Bivariate analyses suggest that anxiety was only associated with gender (x^2 = 9.3, p = 0.002), and not with other socio-demographic variables (p < 0.05). Regression analysis also showed that only gender predicts the presence of anxiety

Table 1
Demographic and clinical features of respondents.

Variables	Number	% or SD
Mean of age (years)	19.7	1.8
Female gender	138	51.8
Marital status		
Single	254	95.5
Married	12	4.5
Mean of BMI	20.9	3.6
Mean number of sibling	3.2	1.6
Ethnicity		
Acehnese	211	79.3
Non-Acehnese	55	20.7
Living arrangement		
With parent	105	39.5
Alone or with friends	161	60.6
Financial source		
Parents	236	88.7
Scholarship	25	9.4
Self-financed	5	1.9
Mean of PHQ score	6.3	4
PHQ ≥ 10	50	18.8
Severity of depression		
None	89	33.5
Mild	127	47.7
Moderate	38	14.3
Moderately severe	11	4.1
Severe depression	1	0.4
Mean of GAD7 score	5.6	4
GAD7 ≥ 8	73	27.4
Severity of anxiety		
None	120	45.1
Mild	102	38.3
Moderate	39	14.7
Severe	5	1.9

(p = 0.001). Further statistical analyses confirmed that the presence of depression was associated with the presence of anxiety (x^2 = 92.04, p = 0.001). Comorbidity between depression and anxiety was found in 15.4% of total population. Also, the score of depression was positively correlated with the score of anxiety (r = 0.77, p = 0.001).

4. Discussion

The present report unveils the gaps in the literature on depression and anxiety among college students living in a disaster-prone area by reporting the prevalence rate and examining various factors that may determine these symptoms. Socio-demographic factors examined in the study were gender, age, marital status, ethnicity, living arrangement and financial source.

The depression rate of 18.8% in this population was higher compared to the rates in the neighbouring countries of Malaysia (9.7%)[23] and Thailand (11.5–12.2%).[24] The fact that Acehnese have experienced long lasting military conflict and recurrent natural disasters[25] might explain this discrepancy. Meanwhile, students in the mentioned neighbouring countries lived in a relatively stable condition.

The present study also showed that depression was significantly associated with gender and BMI. Female students were likely to have higher depression rate than the male, the finding of which was in accordance with some of the previous reports.[1] However, further regression analysis confirmed that depression was only predicted by BMI, and not by gender. College students with high BMI mean rank tend to have more depression than those with lower BMI mean rank. This finding was contrary to the situation among medical students in Egypt where BMI was a found as a predictor of anxiety, but not to depression.[8] Over-estimation of personal weight seems to explain the high rate of depression in students.[26] Nevertheless, further investigations are required to explain this premise. After all, the student's college life is full of pressure and thus, they are considered as an at-risk group for the development of depression.[27]

The finding of 27.4% students with anxiety in this study is relatively lower compared to the prevalence of 64.3% in Egypt,[8] 47.1% in Turkey[10] and 29% in Malaysia.[23] The finding of 1.9% students with severe anxiety is also lower than 15% prevalence of severe and extremely severe anxiety that reported in the US.[7] Despite the fact that the current study was conducted in a disaster-prone area, it is not well understood why the rate was lower than that previously reported. The use of different measurement scales might contribute to the different rates between studies. Various coping mechanism such as peer or family support, religiosity, field of study, self-concept and other aspects could also have been contributory factors. However, further mixed of qualitative and quantitative investigations might help to explaining the gaps.

In the current study population, the presence of anxiety was only associated with and predicted by gender and not by other variables. This finding is in line with the previous studies where anxiety was found to be associated with gender, and that female students had a higher score of anxiety than the males.[8,10] Other factors such as age, marital status, ethnicity, living arrangement and financial source were not associated with anxiety.

5. Conclusions

The present study confirmed that among college students living in a disaster-prone area, gender plays an important role only in the presence anxiety, but not depression. On the other hand, the factors such as age, ethnicity, living arrangement, marital status and source of finance seem not to determine the presence of depression in the present study population. Further investigations are required to unveil the role of those variables towards ascertaining the presence of mental and psychological distress, especially depression and anxiety among college students living in various settings and circumstances.

Furthermore, the severity of previous disaster experience of respondents was not specifically analysed in the current study. This variable might play the significant role on the presence of depression and anxiety among respondents. Thus, this limitation might introduce bias to the findings. In conclusion, these results somehow widen the knowledge on the importance role of place of living in the development of psychological problems and offer compelling evidence for considering the various factors that might determine the presence of depression and anxiety. Efforts for prevention, early detection, and timely treatment should be highly considered.

Conflict of interest

None.

Acknowledgement

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