ORIGINAL RESEARCH

Prevalence of depression in first-year medical students at Universitas Airlangga, Surabaya, Indonesia

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Article Info	ABSTRACT
  *Corresponding authors Dina Arini Izzah dinaarini@gmail.com Suksmi Yitnamurti suksmi.yitnamurti.i.s @fk.unair.ac.id	**Background**: Depression is a mental disorder with a relatively high prevalence rate in medical students around the world. Medical students are often faced with a variety of pressures ranging from academic to social stress so that the prevalence of depression in medical students tends to be higher than general population. **Objective**: to find the prevalence of depression in medical students at Universitas Airlangga, Surabaya, Indonesia. **Materials and Methods**: This research was a descriptive cross-sectional study of first-year medical students at Universitas Airlangga, Surabaya, Indonesia in the academic year of 2017/2018. The data collection was carried out using Beck Depression Inventory II questionnaires as a measurement instrument and was analyzed by SPSS 16.0. **Results**: From 86 samples obtained from first-year students, 37.20% of them experienced mental conditions that were considered abnormal (mean score of 10.14 ± 7.093), starting from mild mood disturbance (23.26%) to the most severe category, severe depression (1.16%). There was no extreme depression category in this study. Furthermore, mean score of male subjects is 8.57 ± 6.120 while mean score of female subjects is 10.64 ± 7.351. **Conclusion**: This study revealed that the prevalence of depression in first-year medical students at Universitas Airlangga, Surabaya, Indonesia in the second semester of academic year 2017/2018 was quite high, which was more than one third of the total respondents, while the prevalence in female subjects was higher than in male subjects.

BACKGROUND

Depression is a symptom of mental disorder characterized by sadness and loss of interest in activities (NIMH, 2017). Depression usually decreases the productivity because there is a feeling of loss of energy, difficulty concentrating, feeling guilty and useless. Some even have a desire to harm themselves (WHO, 2018). Depression can affect mind, mood, and physical health. Depressed people tend to have a lack of enthusiasm, insomnia, and are unable to enjoy life (Cui & Cui, 2015).

Depression can be caused by various factors. The biggest risk factors are due to psychosocial stress exposure (Sharma & Wavare, 2013). The prevalence of depression increases in post-puberty to adulthood because of biological and social factors. In adulthood, human brain will experience maturation in cognitive, social understanding, and self-awareness in addition to those required to be able to understand and begin to be aware of social obligations (Bugaj, et al., 2016). The body considers adapting to these various changes to be a cause of severe stress.

Stress will trigger the amygdala to stimulate the hypothalamus to produce CRH. This hormone triggers the anterior pituitary to secrete ACTH, which causes the adrenal gland to produce cortisol hormone (Ionescu et al., 2013). Normally, high systemic cortisol levels will give negative feedback to the hippocampus so the hypothalamus stops producing CRH (Villanueva, 2013; Fakhouri, 2015; Iorfino, et al., 2016). However, people who experience depression will have dysfunction in the HPA axis regulation so feedback does not occur.

There are parts of the brain that occur physiologically when they are depressed. Some areas have decreased activity such as anterior cingulate cortex, prefrontral cortex, subgenual cingulate, and ventral striatum but in some other areas increase, such as amygdala and orbitofrontal cortex. Generally the brain structure affected by depression will experience atrophy, however the pituitary will experience the opposite (Villanueva, 2013; Fakhouri, 2015; Iorfino, et al., 2016). This change might affect a person's cognitive condition.

Medical students are often faced with a variety of pressures ranging from academic to adaptation and social stress, so that the prevalence of depression in medical students tends to be higher than that of the general population (Moir, et al., 2018; Mao, et al., 2019; Elsawy, et al., 2020). Previous systematic review and meta-analysis study concluded that the prevalence of depression in medical students had a fairly high rate, namely 27.2% (37,933 out of 122,356 people; 95% CI, 24.7% up to 29.9%,). In fact, 11.1% of them had the desire to commit suicide (Rotenstein et al., 2016). Another meta-analysis study stated that depressive symptoms were experienced by almost one third of medical students worldwide and were relatively higher in first-year students (Puthran et al., 2016).

Therefore, this study aimed to find out the prevalence of depression in medical students at Universitas Airlangga, Surabaya, Indonesia especially in first-year medical students to see is it matches with the previous study.

MATERIALS AND METHODS

This was a descriptive study using cross-sectional design. This research was carried out to medical students at Universitas Airlangga, Surabaya, Indonesia. Population studied were first-year students in the second semester of 2017/2018 academic year. Sample studied were students who are willing to fill out the online-distributed questionnaires.

The inclusion criteria of this study were first-year students who wanted to fill out the questionnaire that had been given while the exclusion criteria were students who were not willing to be involved in this research. Data was obtained with a validated questionnaire in Indonesian, namely Beck Depression Scale II (BDI II). The questionnaire is a depression measuring instrument consisting of 21 items. Subjects chose one of four statements that best suited to their conditions being experienced on each item. Furthermore, the total score was categorized based on the predetermined cut-off. BDI II scores ranged from 0 to 63. Subjects with score of 0 – 10 were considered normal. Those with score of 11 – 16 indicated mild mood distubance, 17 – 20 showed borderline clinical depression, 21 – 30 were moderate depression, 31 – 40 were severe depression, while the score above 40 indicated extreme depression. Then the data were analyzed both statistically with SPSS 16.0 and explained descriptively. The statistic are displayed in the form of table and chart.

RESULTS

The total number of subject who valid in completing the questionnaire were 86 students.

Table 1. Statistical data on prevalence of depression

	N (%)	Mean ± SD	Med	Min-max
Total	86	10.14 ± 7.093	9.0	0 – 33
Considered normal	54 (62.79)	5.87 ± 3.144	6.0	0 – 10
Considered not normal	32 (37.20)	17.34 ± 5.976	15.0	11 – 33
Mild mood disturbance	20 (23.26)	13.5 ± 1.638	13.0	11 - 16
Borderline clinical depression	4 (4.65)	18.25 ± 0.500	18.25	18 – 19
Moderate depression	7 (8.13)	25.57 ± 2.507	25.0	22 – 30
Severe depression	1 (1.16)	33.00 ± 0	33.0	33
Extreme depression	-	-	-	-
Male	21 (24.4)	8.57 ± 6.120	7.0	0 – 22
Female	65 (75.5)	10.64 ± 7.351	9.0	0 – 33

From the Table I, it can be observed that the average total sample is 10,14 with a standard deviation of 7,093 and a median of 9.0. Furthermore, the sample was categorized based on the depression score obtained from filling out the questionnaire. Apparently, only 54 (62.79%) subjects were considered normal, while the other 32 (37.20%), or more than one third of the samples, were abnormal. The abnormal subjects consisted of five categories, consisting of 20 (23.26%) subjects with mild mood disturbance, 4 (4.65%) subjects with borderline clinical depression, 7 (8.13%) subjects with moderate depression, and 1 (1.16%) subject even suffered severe depression with a BDI II score of 33. However, in this study no one suffered from extreme depression.
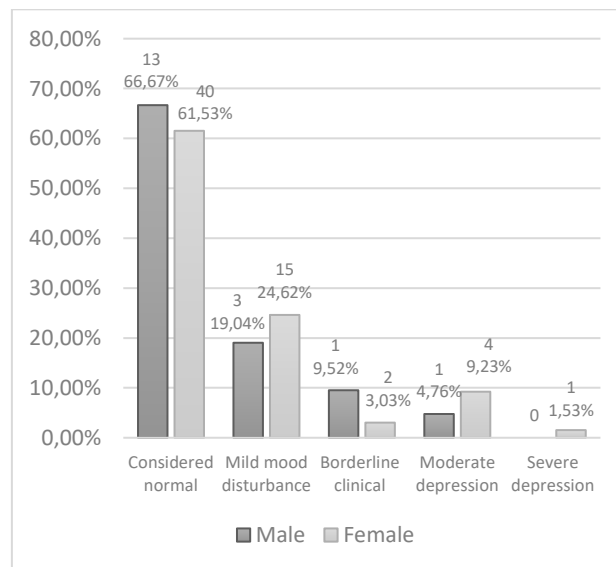

Figure 1. Prevalence of depression in first-year medical students

The number of male and female subjects in this study was quite unbalanced. The ratios of the number of males to that of females was 1 : 3. Furthermore, in terns of score depression, female subjects appeared to score higher in average than male subjects. The highest score in male subjects was only 22, while the scores of 23-33 were experienced entirely by female subjects. This means that, the category of severe depression is suffered by female subject.

DISCUSSION

Students experience various pressures during lectures, including academic demands, non-academic activities, time restrictions, and demands for adjustments to the social environment. In medical students, these demands can be even more severe due to various additional challenges, whether the increasingly heavy burden pursued by the target score and time or the challenges of a stressful adaptation to social environment (Pacheco, et al., 2017).

Depression which in this study was measured using Beck Depression Inventory II showed that the number of depressive symptoms in all respondents was 37.20%. In accordance with what was mentioned in the previous meta-analysis study, depression was experienced by almost one third of medical students worldwide (Puthran et al., 2016). The number of depressive symptoms in this study is an extremely high for first-year students. This can be caused by the fact that first-year students still need time to adapt to new environments that are full of pressure. The rate of depression in medical students is higher in the first year of study with the most precipitating factors due to academic stress, followed by social adaptation problems (Basnet et al., 2012).

Comparison rates of depression in female subjects is higher than that in male. The previous study stated that this is due to differences in reactivity, one of which is about stress coping styles (Abate, 2013). Hormonal change is one of the reasons that can explain the cause of high prevalence of depression in female compared to male. Fluctuating systemic estrogen levels can trigger depression, especially when levels are low in the blood. Whereas in male, even though estrogen levels are low in blood, they do not experience fluctuations. In addition, the brain has an important role in the low prevalence of depression in male so that depression in male is explained more complex (Albert, 2015).

CONCLUSION

Prevalence of depression rates in Universitas Airlangga, Surabaya, Indonesia medical students in the first semester of the academic year 2017/2018 are quite high, at 33.75% or more than one third with an average value of 9.65 ± 6.799. Depression scores in female subjects were found to be higher compared to that in male. In fact, the highest score in this study was experienced by a female subject at the level of severe depression. Because of the high prevalence of depression in medical students, especially for first-year students, it would be nice if medical education providers realized that they could prevent or give follow ups on students related to high prevalence of depression.

REFERENCES

Abate, K.H., 2013. Gender disparity in prevalence of depression among patient population: a systematic review. Ethiop J Health Sci. 23(3): 283–8.

Albert, P.R., 2015. Why is depression more prevalent in women? J Psychiatry Neurosci. 40(4): 219–21.

Basnet, B., Jaiswal, M., Adhikari, B., Shyangwa, P.M., 2012. Depression among undergraduate medical students. Kathmandu Univ Med J. 10(39): 56–9.

Bugaj., TJ., Cranz., A., Junne, R. Erschens, W. Herzog, C., 2016. Nikendei. Psychosocial burden in medical students and specific prevention strategies. Mental Health & Prevention, 1(4): 24-30.

Cui, R., Cui, R., 2015. Editorial. A systematic review of depression. Curr Neuropharmacol. 13(4): 88796493.

Elsawy, W., Sherif, A., Attia, M., & El-Nimr, N.A., 2020. Depression among medical students in Alexandria, Egypt. African Health Sciences, 20(3): 1416–25.

Fakhouri, M., 2015. New insights into the neurobiological mechanisms of major depressive disorders. General Hospital Psychiatry, 37(2): 172-77.

Ionescu, D.F., Niciu, M.J., Mathews, D.C., Richards, E.M., Zarate, C.A., 2013. Neurobiology of anxious depression: a review. Depress Anxiety, 30(4): 374–85.

Iorfino, F., Hickie, I.B., Lee, R.S.C. et al., 2016. The underlying neurobiology of key functional domains in young people with mood and anxiety disorders: a systematic review. BMC Psychiatry. 16: 156.

Mao, Y., Zhang, N., Liu, J. et al., 2019. A systematic review of depression and anxiety in medical students in China. 2017. BMC Med Educ. 19: 327.

Moir, F., Yielder, J., Sanson, J., Chen, Y., 2017. Depression in medical students: current insights. Advances in Medical Education and Practice. 9: 323–33.

Pacheco, J.P., Giacomin, H.T., Tam, W.W., Ribeiro, TB., Arab, C., Bezerra, I.M., Pinasco, G.C., 2017. Brazilian Journal of Psychiatry, 39(4).

Puthran, R., Zhang, M.W.B, Tam, W.W., Ho, R.C., 2016. Prevalence of depression amongst medical students: A meta-analysis. Med Educ. 50(4): 456–68.

Rotenstein, L.S., Ramos, M.A., Torre, M., Segal, J.B., Peluso, M.J., Guille, C., et al. 2016. Prevalence of depression, depressive symptoms, and suicidal ideation among medical students: A systematic review and meta-analysis. 316(21): 2214.

Sharma, B., Wavare, R., 2013. Academic stress due to depression among medical and para-medical students in Indian Medical College: Health initiatives cross sectional study. J Heal Sci. 3(5): 29–38.

Villanueva, R., 2013. Neurobiology of major depressive disorder. Neural Plast., 873278.

WHO, 2018. Mental health Depression?: Let's talk. 2–3.