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Difference of Psychological Distress among First- and Third-year Indonesian Medical Students

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Abstract

BACKGROUND: Psychological distress is an emotional response characterized by various psychological symptoms, including depression and anxiety. Among medical students, psychological distress may derive from surrounding environment. Adaptability in learning new things, competitive situation, social issues, educational demands, fatigue, lack of support, as well as insufficient resting time are known contributing factors to the occurrence of psychological distress. It has been known that psychological distress is common among medical students.

AIM: The aim of the study was to investigate the difference of psychological distress symptoms score among medical students in the 1st- and 3rd-year groups.

METHODS: This cross-sectional analytical study is a numerical comparative analysis involving 1st- and 3rd-year medical students of Universitas Sumatera Utara. 10 item Kessler Psychological Distress (K-10) questionnaire was used to assess psychological distress symptoms score. Comparison of psychological distress scores between first and third year medical students was carried out using independent t-test or Mann–Whitney.

RESULTS: Significant difference of psychological distress scores was found between the groups ($p < 0.0010$).

CONCLUSION: We found that 1st-year medical students exhibited more profound psychological distress compared to those in third year.

Introduction

Psychological distress, a common mental disorder occurred in society with emotional changing feature, is clinically characterized with depression, anxiety symptoms, and somatic complain [1]. These symptoms are variously manifested in several psychological responses such as losing interest, sadness, desperation, and sometimes that the symptoms could have led to functional disabilities and misbehavior [2]. Although these phenomena are temporary due to environmental situations and are based on the emotional responses of stressor, anxiety and depression are a stable condition which commonly ambiguous to be clinically diagnosed [2]. Subsequently, understanding of psychological distress could also be beneficial to determine whether a person requires medical intervention related to mental disorders.

University, as the most common place for young people spending their time daily to study becomes associated with psychological distress due to its competitive environment and high demands. For instance, medical schools/faculties in Indonesia require their students to complete 4-year undergraduate studies, followed by 2-year of clinical study (similar to practical) and 1-year of internship. Technically speaking, the competitiveness among students, support from families, financial support, and parental restriction may lead to distress, depression, and anxiety. These have become an emerging social problem among medical students [1], [3]. On the other hand, being a medical doctor requires medical expertise both in theoretical and practical aspects which takes years of experience as this profession focuses in treating human-beings [4]. As a result, it has been reported that a third of medical students who have suffered from mental disorder are not able to graduate [5], and another higher prevalence of psychological distress was found from 21.6% to 56% due to studying, practicing and working hard to obtain clinical skills [6], [7], [8], [9]. Moreover, in improving their academic performance, these students often have to sacrifice their spare time which may actually be spent with their families that are probably far away from the students [10] Therefore, medical students are more likely to experience psychological distress, thus it becomes a topic of interest to study further.

In determining the psychological distress, an acceptable assessment is based on the emotional suffering with depression and anxiety symptom [11]. For instance, the Kessler Psychological Distress-10 (K-10) is a relatively short questionnaire based on depression and anxiety conditions that have been

experienced in the past 4 weeks. The K-10 is used to perform short screening to assess whether a person requires depth and structured interview [2], [12], and fortunately this assessment has been validated into Indonesian language with 85.5% and 74.7% of sensitivity and specificity, respectively [12], [13]. K-10 questionnaire also possess a good internal consistency and discriminative properties to asses depression and anxiety [14].

Research Methodologies

Participants

The population target is the medical students from the Faculty of Medicine, Universitas Sumatera Utara. We used systematic random sampling to recruit participants to our study. Eligible subjects were first- and third-year medical students of February to April 2020 batch that fulfilled the inclusion criteria. The inclusion criteria were Indonesian first- and third-year students studying at Faculty of Medicine, Universitas Sumatera Utara, cooperative and are willing to participate in the study. While, the exclusion criteria are students with clinically diagnoses psychiatric comorbidities or other medical diagnosis, experiencing head trauma, and those who are consuming illegal drugs/additives. In this study, 60 subjects from the first- and third-year students were recruited for each group.

Research design

This cross-sectional analytical study is a numerical comparative analysis involving first- and third-year medical students of Universitas Sumatera Utara. Comparison of psychological distress scores between first- and third-year medical students was carried out using independent t-test or Mann–Whitney.

K-10 assessment procedure

Before the beginning of the study, written explanation was given to all participants and only participants providing consent that will be involved in further study. Participants were interviewed to obtain demographical characteristics including ages, gender, parents' income, housing, year of study, ethnicity, and origin place/hometown.

We recruited a total of 245 and 257 1st- and 3rd-year medical students, respectively, and 221 1st year students, and 246 3rd-year students were eligible. Finally, systematic random sampling was used and 60 students for both groups were involved in the study. Fist-year medical students were interviewed directly through online communication, while third year medical students were allowed to self-report the questionnaire. The following Figure 1 illustrates the study flowchart.

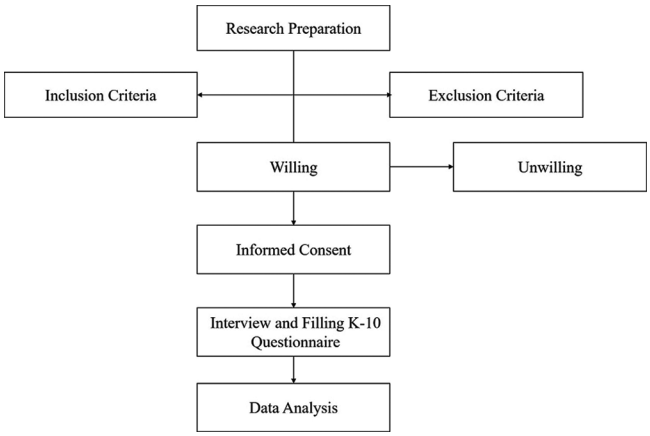

Figure 1: The research flowchart of k-10 assessment

Statistical analysis

To determine the psychological distress among the subjects, four types of statistical analysis were performed. First, Kolmogorov–Smirnov was used to assess normality of the data, then variant test was performed. T-test was used when data are distributed normally; otherwise, Mann–Whitney test would be carried out.

Ethical study

This study was carried out after receiving the informed consent signed by the study subjects following clear and detail explanation. This study has also been given permission by the Ethical Committee of Medical Research issued by the Faculty of Medicine, Universitas Sumatera Utara with no. 198/TGL/KEPK FK USU-RSUP HAM/2020.

Results

Demographical data

The data sampling was performed during February to April 2020. The normality data were analyzed through Kolmogorov–Smirnov as subjects were more than 50 individuals. The numerical variables are illustrated in mean + standard deviation. Table 1 shows the demographical data of study subjects.

According to Table 1, demographical data for research subjects are illustrated in six categories, which are divided into two groups (First- and Third-year group). The median ages for both groups were 19 (1st-year group) and 20 (3rd-year group), and respectively, the groups were dominated by females with slight differences,

Table 1: Demographical distribution characteristics of research subjects

Characteristics	First year students	Third year students	p
Ages	Med (min–max)	Med (min–max)	
	19 (17–20) years of old	20 (19–22) years of old	<0.001[a]
Gender			
Male	28 (46.7%)	26 (43.3%)	0.855[b]
Female	32 (53.3%)	34 (56.7%)	
Parents income (in IDR*)			
≤IDR 5,000,000	14 (23.3%)	8 (13.3%)	0.238[b]
≥IDR 5,000,000	46 (76.67%)	52 (86.7%)	
Housing			
Living with family	26 (43.3%)	29 (48.3%)	0.714[b]
Rented flat/room	34 (56.7%)	31 (51.7%)	
Ethnicity			
Bataknese	32 (53.3%)	23 (38.3%)	0.460[b]
Non-Bataknese	28 (46.7%)	37 (61.7%)	
Hometown			
Medan city	28 (46.7%)	27 (45.0%)	1.000[b]
Outside Medan city	32 (53.3%)	33 (55.0%)	

[a]Mann–Whitney U test, [b]Chi-square test, *Indonesian Rupiah.

which were 32 and 34 individuals. In terms of parents' income, more than 75% of our subjects have parents' income above IDR 5,000,000, in which both groups had almost a half of percentage. Interestingly, more than half of the research subjects have been living without their family by renting flats/rooms in which the 1st-year group and 3rd-year group proportion were accounted for 56.7% and 51.7%, respectively. From the total 60 research subject from every group, inverse comparison of percentage was obtained in term of ethnicity, in which the 1st-year was dominated by Bataknese (53.3%), and 3rd-year was populated by non-Bataknese ethnic (61.7%). Furthermore, both of the groups shared similar percentage for hometown categories in which more than 50% of subjects were from Medan.

Table 2 displays the proportion of research subjects experiencing psychological distress that are classified from cutoff value (above or less than 18).

Table 2: The percentage of research subjects experienced psychological distress

Group	n	Psychological distress with cut-off value ≥18	Non-psychological distress with cut-off value <18
First-year Group	60	31 (51.7%)	29 (48.3%)
Third-year Group	60	16 (26.7%)	44 (73.3%)

According to Table 2, the subjects that have experienced more profound psychological distress were 1st-year medical students (n = 31, 51.7%). On the other hand, the 3rd-year medical students that have experienced psychological distress were only 16 (26.7%) which was almost a half proportion compared to 1st year students.

Based on Table 3 above, the median scores of K-10 in the 1st-year group were 18 with lowest score of 9 and the highest score of 26. In contrast, for the 3rd-year group the scores appear lower compared to that in the 1st-year group, in which the median score was 13, with minimum score of 6 and maximum score of 21. Moreover, the Mann–Whitney U Test has suggested that p < 0.001 which implies significant differences.

Table 3: The K-10 scores of subject groups

Group	n	Median (min–max)	p
K-10 scores of 1st-year group	60	18 (9–26)	p < 0.001*
K-10 scores of 3rd-year group	60	13 (6–21)	

*Mann–Whitney U test.

Table 4 displays the K-10 scores based on the housing category. It can be seen that both groups collectively show similarity (p = 0.562 and p = 0.896 for 1stst- and 3rd-year group, respectively) indicates that there is no significant difference of psychological distress score based on housing category.

Table 4: The K-10 scores of subjects based on the housing category

Housing category	n	K-10 Scores	p
First-year Group		Median (min–max)	p = 0.562[a]
Living with Family	26	18 (10–26)	
Rented Flats/Rooms	34	18 (9–21)	
Third-year Group		Average ± Std.	p = 0.896[b]
Living with Family	29	13.59 ± 3.88	
Rented Flats/Rooms	31	13.45 ± 4.03	

[a]Mann–Whitney U test. [b]t-test independent.

In Table 5, it can be seen that the K-10 scores were similar in both groups. The Bataknese in the 1st-year group showed K-10 score of 17.5, and the non-Bataknese' score was 18. Thus, no significant differences were obtained for this category (Table 6).

Table 5: The K-10 scores of subject groups based on the ethnicity

Ethnicity	n	K-10 Scores	p
First-year Group		Median (min – max)	
Bataknese	32	17.5 (9-26)	p = 0.82[a]
Non-Bataknese	28	18 (10 – 23)	
Third-year Group		Average ± Std.	
Bataknese	23	14.13 ± 4.27	p = 0.344[b]
Non-Bataknese	37	13.14 ± 3.71	

[a]Mann–Whitney U test, [b]t-test independent.

Similarity of the statistical results were also found in with p = 0823 for 1st-year group, and p = 0.771 for the third-year group. Hence, no significant differences were obtained.

Table 6: The K-10 scores of subjects based on the origin of hometown

Hometown	n	K-10 Scores	p
First-year Group		Median (min–max)	
Medan	28	17.50 (9–26)	p = 0.823[a]
Outside Medan	32	18 (10–21)	
Third-year Group		Average ± std.	
Medan	27	13.55 ± 3.95	p = 0.771[b]
Outside Medan	33	13.48 ± 3.96	

[a]Mann–Whitney U test, [b]t-test independent.

Discussion

This cross-sectional study is an analytical study with numerical comparative analysis using unpaired groups and single measurements. The assessment of psychological distress was carried out using the Kessler Psychological Distress-10 (K-10) in which the subjects of assessment were 1st- and Third-year medical students who have been studying in the Faculty of Medicine, Universitas Sumatera Utara. From the

total of 120 subjects, the demographical characteristics that were obtained after selectively recruiting based on the inclusion criteria, the median ages of both groups were 19 years-of-old for the 1st-year, and 20 years-of-old for 3rd-year. As in Table 1, the p value of ages < 0.001, significant differences were obtained which implies to the difference of percentage of subjects that have experienced psychological distress. Tran *et al*. in Australia in 2018 have estimated that at least 10–20% teenagers experienced one of mental disorders worldwide. This mental disorder includes anxiety that was accounted for 17%, in which majority are teenagers of 15–19 years of age [13]. This in line with our finding that psychological distress is present in 1st and 3rd year medical students as they were mostly 17–20 years of age.

For gender category, female student comprises more than half of proportion both 53.3% and 56.7% in 1st and 3rd year group, respectively. Interestingly, no significant differences were obtained from the statistical analysis. However, Qamar *et al*. have concluded that the female military medical students (13.0%) experienced higher psychological distress than the male students (11.2%; p = 0.011) [9]. Although no specific criteria such as 1st-, 2nd-, 3rd-, or 4th-year students were reported, the use of K-10 as the assessment instrument of psychological distress may have been considered as similar results. The difference lies on the presence of significant difference between male and female in our findings.

In regard of parents/guardian income, both groups had similarity. In fact, Al Saadi *et al*. argued that psychological distress is more possible to be occurred in a family who has medium-to-insufficient income [4]. A lower stress level occurred in the last-year-of-study, and a higher level of stress was experienced in the early study-time by students with a lower income parents than those who had sufficient financial income parents contribute to psychological distress. In our study, the average income of the medical-students' parents is classified as "sufficient" [4].

Based on the median (minimum–maximum) K-10 scores in both 1st- and 3rd-year group, a difference was obtained in between the groups (p < 0.001). This may be due to the lecturing activities that have been conducted daily. Dendle *et al*. in 2018 has obtained that 126 subjects of medical students experienced psychological distress also experience implication of the distress to their academic performance in the beginning year of their study [15]. However, our study has identified that psychological distress was more profound in the 1st year group due to a lot of clinical assignments which fortunately did not affect their academic performance.

Another study in 2008 has reported that stress and depression among medical students were accounted to have higher percentage (based on the K-10 assessment) in the 1st year for 74.2% rather than that in the 3rd year (48.6%). A significant correlation could have statistically emerged in between the research subjects and the stress level as the longer time for study would have decreased the stress prevalence. Thus, 1st-year students tend to experience much more profound stress compared to that in the 3rd-year [16].

Our findings also are in accordance by a study conducted by Saravanan *et al*. in 2014 who have studied anxiety among medical students. Using the K-10 questionnaire, psychological pressure is commonly experienced by the 1st-year students (53.9%), and their anxiety significantly was higher than those found in general population. Their study revealed that 83 medical students have experienced psychological pressure, while the other 71 students have reported no pressure [17]. On the other hand, the K-10 scores of subjects which are based on the housing have shown no significant differences in psychological distress. This finding is similar to those found by Saeed *et al*., 2016 [18].

Hometown may have also become one of the most common factors that can induce psychological distress. As the 1st-year students have to study in a new environment, changes require adaptation. Furthermore, common neighborhood means acceptable traditions and cultures, which are originated from the ethnicity. Thus, our findings have concluded that ethnicity and hometown contributed to no significant differences in term of psychological distress both in the 1st- and 3rd-year groups. Al Saadi *et al*. have reported that the p value for the 1st and 3rd-year were, respectively, 0.084 and 0.668, and Dendle *et al*. have concluded exact p <0.01 of hometown factors for both 1st- and 3rd-year students [4], [15]. Meanwhile, our statistical analysis results for ethnicity were p = 0.828 (for Bataknese) and 0.344 (non-Bataknese); students who are not from Medan had p = 0.823 and the others accounted for p = 0.771.

Conclusion

In this study, the psychological distress assessment was performed through validated Indonesian K-10 questionnaire that has acceptable sensitivity and specificity. Moreover, the probability with systematic sampling contributed to selective and controllable validations. However, due to the self-reporting questionnaire, it could have resulted in subjective perspective as the subjects were asked to fill the questionnaires without being monitored as well as expressing the real personalities of themselves. Thus, further investigation related to personal characteristics to the level of psychological distress is required for further studies.

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