Psychological Distress and Sources of Stressors amongst Medical and Science Undergraduate Students in Malaysia

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Abstract

Background: This study aims to compare the prevalence of psychological distress between medical and science undergraduate students and to assess the sources of stressors that are attributing to it. **Methods:** A sample of 697 undergraduate students participated in this study, in which 501 were medical students and the remaining 196 were Science students. Psychological distress was assessed using the 12-item General Health Questionnaire. The students were given a list of possible sources of stress which were chosen depending on previous studies. **Results:** The overall prevalence of psychological distress was 32.6%. Science students showed a significantly higher rate and mean score of psychological distress than medical students, and the mean score was significantly higher during the clinical phase rather than the pre-clinical phase in medical students. Overall, female students had a significantly higher mean score than males, however although the mean score was higher in females it was only significant in the pre-clinical phase. In addition to academic and psychological stressors, factors such as reduced holidays, lack of time for relaxation, and limitation of leisure/entertainment time were among the top ten stressors reported by the students. **Conclusions**: Psychological distress is common among university students, and it is higher among science students than medical students. Academic and psychological factors can be considered as sources of stressors which may precipitate psychological distress among college students.

Keywords: Psychological, distress, stressors, undergraduate, Malaysia

Introduction

Psychological distress is the state of poor psychological well-being that is characterised by undifferentiated mixtures of symptoms extending from depression and anxiety symptoms to personality traits, functional disabilities, and behavioural problems.[1,2] Undergraduate students are subjected to different sources and levels of stressors during various stages of their study. The presence of stressors during education can affect the students in broad aspects, such as their learning process and functionality, their psychological well-being, and their physical health. A mentally healthy student is the one who thinks clearly and logically, is able to initiate proper social relationships, and is eager to learn with substantial ambition to implement his or her plans in the future. As students are at a crucial stage of development, being in the transition from adolescence to adult, they are more likely to experience mental illnesses.[2,3] Studies among undergraduate students in Malaysia have assessed the impact of stressors on the mental health of students, such as emotional

disturbances in the form of depression, anxiety, and stress, with variable results, using different tools.[4-8]

The General Health Questionnaire (GHQ) which was developed by Goldberg,[9] has been extensively used in various cultures as a screening tool to determine whether an individual is at risk of developing a psychiatric disorder. It was designed to assess psychological distress in population surveys and epidemiological studies, and to screen for non-psychotic mental disorders in clinical settings. It has been widely used by researchers and has been found to be reliable and well-validated.[9-11]

Studies on psychological well-being among students have found that these disorders are under diagnosed, which may lead to an increased probability of mental disorders and may have serious effects on their careers and social life.[12,13] Studies that compare psychological distress and sources of stressors between medical and non-medical students are limited. Moreover, the same above comparison between students of different phases

within the same medical college are also restricted. Therefore, this study aims to compare the prevalence of psychological distress between medical and non-medical undergraduate students at the International Islamic University of Malaysia (IIUM) using the General Health Questionnaire (GHQ-12), and to assess the sources of stressors that are attributing to the psychological distress.

Methods

This is a cross-sectional study which was conducted among undergraduate medical and science students at the IIUM during the period from April 2012 to June 2013. A research grant sponsored by the IIUM was obtained for conducting this research. Ethical approval was obtained from the Research Ethics Committee of the IIUM with the reference number IIUM/305/20/4/10 prior to conducting the study. The participation was entirely on a voluntary basis; the researchers introduced themselves to the students in each grade and informed them about the aims of the study, guaranteeing confidentiality.

Consent was obtained from the students. The study was conducted in the middle of the course, before the examination period, so as to minimise the extra stress symptoms. The inclusion criteria were students who agreed to participate in the study, and the students had to be registered as undergraduate students of the Kulliyyah (Faculty) of Medicine (KOM) or the Kulliyyah (Faculty) of Science (KOS), IIUM. Students who failed to give consent and those who were not conversant in English were excluded from the study. Regarding the curriculum of KOM, it consists of a five-year study program divided into two phases; the pre-clinical phase (years 1 and 2) and the clinical phase (years 3, 4, and 5). For the curriculum of KOS, it is semester based and students are required to complete at least 134 credit hours (CH) of course work for a duration of three and a half years. The socio-demographic characteristics of the participants were obtained including information about their nationality, age, marital status, gender, year of study, accommodation during their study, and household income.

The items on the GHQ-12 represent 12 manifestations of psychological distress, and respondents were asked to rate the presence of each of these manifestations in themselves during their study. Subjects responded to each question by choosing from four typical responses: 'not at all', 'no more than usual', 'rather more than usual', and 'much more than usual'. A binary scoring method was used to evaluate responses. This method assigns a score of zero to the two least symptomatic answers and a score of one to the two most symptomatic answers (i.e. 0-0-1-1). Thus, responses can only be scored as zero or one. The minimum GHQ-12 total score was 0, and the maximum GHQ-12 total score was 12. 'Caseness' was defined as a total questionnaire score of 4 or more. The students were also given a list of a possible source of stressors which were chosen depending on previous studies.[14-18]

Statistical Analysis: We used the statistical package for the social science program, version 22.0 (SPSS 22.0) for analysing the data. The analysis of the variables such as age group, gender, nationality, monthly household income, marital status, year of study, and type of accommodation were presented in numbers and percentages. Mann-Whitney U test and Kruskal-Wallis test were used to determine the effects of the socio-demographic characteristics on the psychological distress among undergraduate students. Mann-Whitney U test was also used to assess the association between the ten stressor factors and the psychological distress among medical and science students. A *p-value* of less than 0.05 was considered statistically significant.

Results

The overall response rate in this study was 72.3% (196 out of 333 science students and 501 out of 630 medical students). In KOM, out of 501 students, 117, 112, 106, 95, and 71 students were from year 1, year 2, year 3, year 4, and year 5 respectively. While out of 196 science students, 34, 102, and 60 were from year 1, year 2, and year 3 respectively. The overall prevalence of psychological distress among the students was 32.6%, 227 out of 697 students. Regarding faculty, the rate was significantly higher in the KOS (38.8%) than the KOM (30.1%) ($p = 0.029$). In the KOM the rate was higher among year 5 medical students (35.2% out of 71 students), but it was not statistically significant than other years of study. Regarding the KOS, the rate was higher among first-year students (41.2% out of 117 students), but it was also not significant (Table 1).

In assessing factors that determine psychological distress, it was found that the mean score of the KOS (3.25) is significantly higher ($p = 0.003$) than the mean score of the KOM (2.76). In terms of overall gender, the mean score of the female students (3.11) was significantly higher ($p = 0.003$) than the male students mean score (2.51), and when we compared the gender in the KOM, we found that although the mean score was higher in females, it was only significant in the pre-clinical phase ($p = 0.005$). Regarding the phases of study in the KOM, comparisons between mean scores in the pre-clinical (2.46) and clinical phases (3.01) were significantly higher in the clinical phase ($p = 0.018$). There were no significant differences in comparing mean scores of other factors such as age, monthly house income, marital status, getting family support, and accommodation (Table 2).

In assessing the association of features of psychological distress based on the GHQ items with the KOM & the KOS, we found that features including "lost much sleep over worry", "felt you could not overcome your difficulties

Table 1. The Prevalence of Psychological Distress among the Undergraduate Students

Kulliyyah (Faculty)	n	Positive No.	Positive %	Negative No.	Negative %	p-value
Medicine(KOM)	501	151	30.1	350	69.9	0.029
Science (KOS)	196	76	38.8	120	61.2	
Total	697	227	32.6	470	67.4	
Year of Study (KOM)						
Year 1	117	31	26.5	86	73.5	0.446
Year 2	112	29	25.9	83	74.1	
Year 3	106	37	34.9	69	65.1	
Year 4	95	29	30.5	66	69.5	
Year 5	71	25	35.2	46	64.8	
Year of study (KOS)						
Year1	34	14	41.2	20	58.8	0.951
Year2	102	39	38.2	63	61.8	
Year3	60	23	38.3	37	61.7	

Data was analysed using a Chi-squared test, *p-values* less than 0.05 were considered statistically significant

Table 2. Factors Determine Significant Psychological Distress Level

Factors	n	Mean Psychological Distress score	p-value
Kulliyyah			
Medicine	501	2.76	0.003
Science	196	3.25	
Phase of study (KOM)			
Pre-clinical (year 1,2)	229	2.46	0.018
Clinical (year 3, 4, 5)	272	3.01	
Gender(KOM &KOS)			
Male	247	2.51	0.003
Female	450	3.11	
Gender (KOM)			
Pre-clinical Phase			
Male	69	1.67	0.005
Female	160	2.80	
Clinical Phase			
Male	121	2.82	0.345
Female	151	3.17	
Age			
≤21	280	2.89	0.549
>21	417	2.90	
Household income			
≤RM1500	155	2.68	
RM 1501-5000	322	2.84	0.491
>RM 5000	220	3.14	
Marital status			
Single	653	2.87	0.335
Married	44	3.27	
Getting family support			
No	135	3.24	0.089
Yes	562	2.81	
Accommodation			
Hostel	614	2.90	0.901
Non-Hostel	83	2.89	

Data was analysed using Mann–Whitney U test for two independent variables and Kruskal–Wallis one-way analysis of variance for more than two independent variables, *p-values* less than 0.05 were considered statistically significant. Data was presented as mean

ties", "feeling unhappy and depressed", and "thinking of yourself as a worthless person" were significantly associated with the KOS (*p* < 0.05) (Table 3).

Whilst in assessing the association of features of psychological distress based on the GHQ items between the pre-clinical and clinical phases of the KOM, we found that features of "constantly felt under strain", "unable to enjoy your normal day-to-day activities", and "been unable to face up to your problems" were significantly

associated with the clinical phase rather than the pre-clinical phase (*p* < 0.05) (Table 4). In this study, all of the top ten stressors chosen by medical students were significantly associated with psychological distress (*p* < 0.05), while for science students, the following stressors were found to be significantly (*p* < 0.05) associated with psychological distress: "study pressure and obligations", "time management problems", "feeling of incompetence", "academic overload", "amount of assigned class work", and "lack of motivation to learn" (Table 5).

Table 3. Association of Features of Psychological Distress Based on GHQ Items with KOM & KOS

Features of Psychological distress based on General Health Questionnaire GHQ	KOM		KOS		*p-value*	OR	95% CI (lower-upper)
	Positive n(%)	Negative n(%)	Positive n(%)	Negative n(%)			
Problem with concentration	152 (30.3)	349 (69.7)	68 (34.7)	128 (65.3)	0.266	0.820	0.577–1.1640
Lost much sleep over worry	98 (19.6)	403 (80.4)	62 (31.6)	134 (68.4)	0.001	0.526	0.362–0.763
Felt that you are not playing a useful part in things	81 (16.2)	420 (83.8)	25 (12.8)	171 (87.2)	0.259	1.319	0.814–2.137
Felt incapable of making decisions about things	81 (16.2)	420 (83.8)	34 (17.3)	162 (82.7)	0.706	0.919	0.529–1.426
Felt constantly under strain	189 (37.7)	312 (62.3)	71 (36.2)	125 (63.8)	0.713	1.066	0.757–1.502
Felt you could not overcome your difficulties	120 (24.0)	381 (76.0)	65 (33.2)	131 (66.8)	0.013	0.635	0.442–0.911
Unable to enjoy your normal day-to-day activities	129 (25.7)	372 (74.3)	46 (23.5)	150 (76.5)	0.533	1.131	0.768–1.664
Been unable to face up to your problems	80 (16.0)	421 (84.0)	41 (20.9)	155 (79.1)	0.121	0.718	0.472–1.092
Feeling unhappy and depressed	147 (29.3)	354 (70.7)	79 (40.3)	117 (59.7)	0.005	0.615	0.436–0.868
Been losing confidence in your self	145 (28.9)	356 (71.1)	63 (32.1)	133 (67.9)	0.406	0.860	0.602–1.228
Thinking of yourself as a worthless person	83 (16.6)	418 (83.8)	49 (25.0)	147 (75.0)	0.011	0.596	0.399–0.889
Unable to feel reasonably happy	72 (14.4)	429 (85.6)	34 (17.3)	162 (82.7)	0.325	0.800	0.512–1.249

Data was analysed using a Chi-squared test, *p-values* less than 0.05 were considered statistically significant. OR: odd ratio 95% CI: 95% confident interval

Table 4. Association of Features of Psychological Distress Based on GHQ Items with Pre-clinical and Clinical Phases in Kulliyyah (Faculty) of Medicine

Features of Psychological distress based on General Health Questionnaire GHQ	KOM: Pre-clinical Phase		KOM: Clinical phase		*p-value*	OR	95% CI (lower-upper)
	Positive n(%)	Negative n(%)	Positive n(%)	Negative n(%)			
Problem with concentration	68(29.7)	161(70.3)	84(30.9)	188(69.1)	0.773	1.058	0.771 – 1.551
Lost much sleep over worry	46(20.1)	183(79.9)	52(19.1)	220(80.9)	0.785	0.940	0.604– 1.464
Felt that you are not playing a useful part in things	38(16.6)	191(83.4)	43(15.8)	229(84.2)	0.812	0.944	0.586-1.520
Felt incapable of making decisions about things	39(17.0)	190(83.0)	42(15.4)	230(84.6)	0.630	0.890	0.553-1.432
Felt constantly under strain	65(28.4)	164(71.6)	124(45.6)	148(54.4)	0.000	2.114	1.455-3.071
Felt you could not overcome your difficulties	50(21.8)	179(78.2)	70(25.7)	202(74.3)	0.308	1.241	0.819-1.879
Unable to enjoy your normal day-to-day activities	38(16.6)	191(83.4)	91(33.5)	181(66.5)	0.000	2.527	1.644-3.884
Been unable to face up to your problems	28(12.2)	201(87.8)	52(19.1)	220(80.9)	0.036	1.697	1.032-2.791
Feeling unhappy and depressed	60(26.2)	169(73.8)	87(32.0)	185(68.0)	0.157	1.325	0.897-1.955
Been losing confidence in your self	62(27.1)	167(72.9)	83(30.5)	189(69.5)	0.398	1.183	0.801-1.746
Thinking of yourself as a worthless person	37(16.2)	192(83.8)	46(16.9)	226(83.1)	0.821	1.056	0.658-1.696
Unable to feel reasonably happy	32(14.0)	197(86.0)	40(14.7)	232(85.3)	0.816	1.061	0.642-1.754

Data was analysed using a Chi-squared test, *p-values* less than 0.05 were considered statistically significant. OR: Odd ratio 95% CI: 95% confident interval

Table 5. Association of the Top Ten Stressors with Psychological Distress in KOM and KOS

(KOM)				(KOS)			
Stressor	n	Mean Distress Level	*p-value*	Stressor	n	Mean Distress Level	*p-value*
Fear of failing				Fear of failing			
Yes	401	2.95	0.001	Yes	179	3.35	0.171
No	100	2.01		No	17	2.18	
Study pressure and obligation				Examination and grades			
Yes	383	3.15	0.000	Yes	171	3.33	0.151
No	118	1.51		No	25	2.72	
Examination and grades				Study pressure and obligation			
Yes	368	3.01	0.000	Yes	159	3.58	0.001
No	133	2.08		No	37	1.84	
Time management problems				Time management problems			
Yes	367	3.22	0.000	Yes	158	3.44	0.049
No	134	1.50		No	38	2.45	
Academic overload				Fear of employment after graduation or unemployment			
Yes	351	3.08	0.000	Yes	152	3.32	0.769
No	150	2.01		No	44	3.0	
Reduced holidays				Feeling of incompetence			
Yes	352	2.94	0.005	Yes	149	3.68	0.000
No	149	2.34		No	47	1.89	
Lack of time for relaxation				Academic overload			
Yes	335	3.19	0.000	Yes	148	3.53	0.007
No	166	1.90		No	48	2.40	
Feeling of incompetence				Amount of assigned class work			
Yes	311	3.52	0. 000	Yes	146	3.56	0.024
No	190	1.52		No	50	2.34	
Lack of motivation to learn				Difficulty of class work			
Yes	302	3.44	0.000	Yes	140	3.42	0.174
No	199	1.73		No	56	2.82	
Limitation of leisure				Lack of motivation to learn			
Yes	291	3.12	0.000	Yes	139	3.72	0.000
No	210	2.26		No	57	2.11	

Data was analysed using Mann–Whitney U test. **p-values* less than 0.05 were considered statistically significant

Discussion

The overall rate of psychological distress in our study was higher than the rate in the general population, however it was very close to another study completed in the United Kingdom.[17] Previous studies have reported varying rates of psychological distress with some of these being higher than our results.[11,19,20] However, a study completed in Malaysia found the rate to be 29.6%.[14] These differences in rates may be due to differences in sample size, the course of study, and the method used to assess the distress; for example the type of questionnaire and the cutoff score used to indicate caseness, or conducting the study close to the period of examination.

In assessing the factors that may determine psychological distress, we found that both the rate and mean score of psychological distress were significantly higher among science students rather than medical students, this is inconsistent to a previous study done in India where the rate was higher among medical students rather than science and art students.[21] Another study completed in

Singapore revealed that although the rate was higher among medical students rather than non-medical (law) students, it was not statistically significant.[12] The higher rate and mean score in this study among science students compared to medical students may be explained by the possibility that medical students are more aware of stress and its sources, and are more capable of coping with it than science students as they are taught to identify it and are trained clinically from the first year of their study onward. Also in the KOS, a possible reason is the language that their study is completed in, both faculties study in English however it might be more stressful and difficult for the KOS students as they tend to come from a background of lower school grades as the requirements to study at the KOM requires higher grades.

Gender wise, this study revealed that female students had a significantly higher mean score on the GHQ-12 when compared to the male students. This result was similar to previous studies among college students.[4,7,22] One study in Malaysia revealed that the rate of psychological distress is slightly higher among female students, but it was not statistically significant,[23] while another Malaysian study stated that no differences were observed between the genders.[11,17] The reasons for the difference in gender can be hypothesised to involve hormonal differences, differing psychosocial stressors for women and men, and behavioural models of learned helplessness.

This study showed that the mean score of the GHQ-12 among medical students was significantly higher during the clinical phase over the pre-clinical phase of their study. Whilst other studies found there was no significant difference in the prevalence of psychological distress according to the phase of the study.[24] This higher rate during the clinical stage may be due to the beginning of exposure to patients and the hospital atmosphere, challenges in dealing with clinical cases, and implementing theory towards clinical practice. The pre-clinical phase is characterised by more theory and lecture oriented learning, whilst when the students move to the clinical phase, they need to depend more on themselves for the preparation of seminars, and obtaining patient history and examination for the preparation of case presentations. They also have to attend ward rounds and on-calls, where they shadow the medical officers in the ward. Moreover, the increased distress, especially in the final year, may be due to the pressures of academic achievements such as passing the final professional exam and thinking about the responsibilities of real life clinical practice. This is supported by our further analysis of the features of the GHQ-12 between the clinical and pre-clinical phases, whereby most of the features are higher in clinical phase students, with the following three features "constantly felt under strain", "unable to enjoy your normal day-to-day activities", and "been unable to face up to your problems" being significantly higher in clinical students that reflected higher psychological distress.

In assessing the response of different items of the GHQ-12 between medical and science students, statistical analysis using Chi-squared test showed that factors including "lost much sleep over worry", "felt you could not overcome your difficulties", "been feeling unhappy and depressed", and "been thinking of yourself as a worthless person" were significantly associated with science students rather than medical students.

Our study revealed five features of psychological distress, based on the GHQ-12, that can be considered as a mix of depressive and anxiety symptoms which were significantly causing psychological distress among science students over medical students. This may highlight the importance of assessment of depression and anxiety among psychologica-lly distressed science students.

Academic and psychological factors played an important role as a source of stressors as most of the top ten stressors chosen by both medical and science students were related to them. This finding is comparable with other studies, in which the academic related factors were considered as the main sources of stressors.[14, 15, 25, 26] In addition, three other important stressors were reported by medical students to be an important source of stressor namely "reduced holidays", "lack of time for relaxation", and "limitation of leisure and entertainment time".

In this study, the analysis shows a significant association between all of the top ten stressors and psychological distress among medical students. Whilst among science students, six factors had a statistically significant association with psychological distress.

The result of this study may aid in designing appropriate intervention strategies and planning modifications in the Medical and non-medical curriculum to enhance the students' learning abilities and their lifestyles.

Conclusions

Psychological distress is common among university students, and it is higher among non-medical (science) students rather than medical students. It is higher during the clinical phase rather than the pre-clinical phase of the medical study. Female students are at a higher risk for psychological distress. Academic, psychological, and other important factors such as reduced holidays, lack of time for relaxation, and limitation of leisure and entertainment time can be considered as sources of stressors that may precipitate psychological distress in both medical and science students. One of the ways to help the students to overcome these difficulties in their academic life is to improve the mentor/ mentee programs, and implement them on regular basis. Additionally, aims to thoroughly discuss students' prob-lems, which will help them to release the pressure applied to them and motivate them to

put a better effort into their study should be explored. To ensure better academic performance and the psychological wellbeing of the students, it is also worthy to highlight the importance of regular assessment and review of the academic curriculum, especially in the aspect of difficulty and frequency of assignments given to the students, so the students will not be overloaded leading to physical and mental exhaustion.

Conflict of Interest Statement

The authors declare no conflict of interest.

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