ORIGINAL ARTICLE

Psychological Stress Among Undergraduate Medical Students

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Summary

The aim of this study was to determine the prevalence of psychological stress among medical students and to identify its symptoms and association with depression. A cross-sectional study design was used. Three-hundred and ninety-six medical students at a university in Malaysia were included in the study. Tools similar to the General Health Questionnaire (GHQ -12) and Beck Depression Inventory (BDI) were used to screen for psychological stress and depression, respectively. 41.9% of the medical students were found to have psychological stress, which was significantly associated with depression (χ^2=4.636, df=1, p<0.05). Psychological stress is common among medical students and is associated with depression.

Key Words: Psychological stress, Undergraduate Medical Students, Depression

Introduction

Medical school is recognized as a stressful environment that often exerts a negative effect on the academic performance, physical health and psychological well-being of the student. A study among undergraduate medical students in the United States of America found that 23% had clinical depression and 57% were under psychological stress[1].

Stress is often reported in students studying for examinations. Medical students are expected to learn and master a huge amount of knowledge and skills. The personal and social sacrifice they have to make in order to maintain good academic results in a highly competitive environment puts them under a lot of stress[2]. Undergraduate medical students have been the most distressed group of students compared to any other course undergraduates. This stress has serious consequences which may lead to the development of depression and anxiety[3].

Studies on psychological problems such as stress, depression and anxiety among medical students have found that these disorders are under diagnosed and under treated. Failure to detect these disorders unfortunately leads to increase psychological morbidity with unwanted effects through out their careers and lives[3,4]. There have also been reports of significant psychological morbidity in young doctors[4,5]. Early detection of psychological problems shortens the duration of an episode and results in far less social impairment in the long term[6]. It is therefore important to be aware of the symptoms of psychological stress in medical students, especially those which are significantly associated with depression in order to facilitate early detection and treatment of these problems.

There are very few studies on stress among medical students or doctors in Malaysia. The objective of this study was to determine the prevalence of psychological stress among medical students, to identify its symptoms and to determine the association with depression.

This article was accepted: 5 September 2003

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Materials and Methods

A cross sectional study was conducted in the Faculty of Medicine at a local university in Malaysia, from June to August 2002. All medical students were selected as respondents.

A self-administered instrument similar to the General Health Questionnaire (GHQ -12)[7] was used to screen for symptoms of psychological stress. This instrument has been validated in Malaysia[8] and consists of 12 questions. Each question had 4 responses which were scored as 0-0-1-1. Total scores of 4 and above were considered to be positive for psychological stress[9].

Another questionnaire similar to the Beck Depression Inventory (BDI) was also used to screen for depression in the respondents[10]. The validated questionnaire consisted of 21 questions. Scores of 11 and above were considered to be positive for depression.

Data was analyzed using the Statistical Package for Social Sciences programme version 10.0. Further analysis using logistic regression was done to determine the association of each symptom with depression.

Results

Out of 414 medical students, 396 students participated and completed the questionnaires giving a response rate of 95.6%.

Table I shows the distribution of respondents by age and sex. Out of the 396 respondents 244 (61.6%) were females and 152 (38.4%) males. The overall mean age was 21.55 years (95% Confidence interval 21.36 – 21.74 years). The overall age ranged from 18 to 29 years. The mean age for the males (21.66 years) was higher as compared to the females (21.48 years). However, this difference was not statistically significant ($t = 0.92$, $df = 394$, $p>0.05$). Majority of the respondents were Malays (53.0%) followed by Chinese (36.1%) and Indians (6.8%) (Table II).

Based on the GHQ-12 scores, the prevalence of psychological stress among the respondents was 41.9%. The mean score was 1.03, SD 0.178. Table III shows the prevalence of psychological stress by sex, race and year of study in medical school. The prevalence of psychological stress was only slightly higher among the females (42.2%) compared to the males (41.4%). However, this was not statistically significant ($p>0.05$). The difference in the prevalence among the ethnic groups was also not statistically significant ($p>0.05$). Analysis of psychological stress with the year of study in medical school showed no statistical difference ($p>0.05$).

Table IV shows the 12 symptoms of psychological stress as experienced by the medical students. Majority of the students were not feeling reasonably happy (78.8%) and had problems in sleeping when worried (71.0%). Other common symptoms were feeling constantly under strain (38.9%), unhappy and depressed (33.6%), unable to concentrate (27.5%), unable to enjoy normal activities (27.3%) and losing self-confidence (27.0%).

There was significant association between psychological stress and depression among the respondents ($\chi^2=4.636$, $df=1$, $p<0.05$). Ten out of the 12 symptoms of psychological stress were found to be significantly associated with depression ($p<0.05$). However, the most frequent symptoms "not feeling reasonably happy" and "problems with sleeping when worried" were not found to be significantly associated with depression. (Table V)

Table I: Distribution of the 396 Respondents by Age and Sex

Age (Years)	Sex		Total
	Male	Female	
Less than 20	47 (33.8%)	92 (66.2%)	139
20.00 -22.00	39 (41.0%)	56 (59.0%)	95
22.01 -23.00	37 (39.7%)	56 (60.3%)	93
23.01 -24.00	25 (43.8%)	32 (56.2%)	57
24.01 -29.00	4 (33.3%)	8 (66.7%)	12
TOTAL	**152 (38.4%)**	**244 (61.6%)**	**396**

Table II: Percentage Distribution of Respondents by Race

Race	Percentage
Malay	53.0
Chinese	36.1
Indians	6.8
Others	4.1
Total	**100.0**

Table III: Association of Psychological Stress with Sex, Race and Year of Study among the Respondents (n = 396)

Associated Factors	Psychological Stress (n=166)	No Psychological Stress (n=230)	p value
Gender			
Female	103 (42.2%)	141 (57.8%)	p>0.05
Male	63 (41.4%)	89 (58.6%)	
Total	166 (41.9%)	230 (58.1)	
Ethnicity			
Indians	13 (48.1%)	14 (51.9%)	p>0.05
Malays	90 (42.9%)	120 (57.1%)	
Chinese	60 (42.0%)	83 (58.0%)	
Others	3 (18.8%)	13 (81.3%)	
Year of study in medical school			
First	51 (48.6%)	54 (51.4%)	p>0.05
Second	29 (39.7%)	44 (60.3%)	
Third	25 (29.8%)	59 (70.2%)	
Fourth	37 (48.7%)	39 (51.3%)	
Fifth	24 (41.4%)	34 (58.6%)	

* $p < 0.05$ = significant

Table IV: Symptoms of Psychological Stress among the 396 respondents

	Symptoms of Psychological Stress	Number	Percentage	Mean / SD
1	Unable to feel reasonably happy	312	78.8	0.79 ± 0.41
2	Lose sleep over worry	281	71.0	0.71 ± 0.46
3	Constantly under strain	154	38.9	0.39 ± 0.49
4	Feeling unhappy and depressed	133	33.6	0.34 ± 0.47
5	Unable to concentrate	109	27.5	0.28 ± 0.44
6	Unable to enjoy normal activities	108	27.3	0.27±0.45
7	Losing confidence in own self	107	27.0	0.27±0.45
8	Unable to overcome difficulties	103	26.0	0.26 ± 0.44
9	Unable to face up to problems	81	20.5	0.20 ± 0.40
10	Not capable of making decisions	67	16.9	0.17 ± 0.38
11	Unable to play a useful part in things	66	16.7	0.17 ± 0.37
12	Thinking of own self as worthless	63	15.9	0.16 ± 0.37

Table V: Association of Symptoms of Psychological Stress with Depression among the 396 respondents

Symptoms of Psychological Stress	Depression Present	Depression Absent	Total	p-value	Confidence Interval	Odds Ratio
Unable to feel reasonably happy	112	200	312	0.975	0.90,1.11	1.00
Lose sleep over worry	89	192	281	*0.07	+0.72,0.96	+0.83
Constantly under strain	77	77	154	*0.00	1.41,2.27	1.79
Feeling unhappy and depressed	76	57	133	*0.00	1.81,3.14	2.39
Unable to concentrate	57	52	109	*0.00	1.43,2.69	1.96
Unable to enjoy normal activities	57	51	108	*0.00	1.46,2.75	2.00
Losing confidence in own self	59	48	107	*0.00	1.56,3.03	2.20
Unable to overcome difficulties	61	42	103	*0.00	1.86,3.63	2.60
Unable to face up to problems	49	32	81	*0.00	1.85,4.07	2.74
Not capable of making decisions	40	27	67	*0.00	1.70,4.13	2.65
Unable to play a useful part in things	38	28	66	*0.00	1.56,3.78	2.43
Thinking of own self as worthless	38	25	63	*0.00	1.72,4.31	2.72

* $p<0.05$ = significant
+0.83 = inverse association with depression

Discussion

The student experience of today is very different to that experienced in the 1960's, 70's or 80's. Factors include: student debt, greater material expectations, greater pressure on academic institutions and staff, and expansion of student numbers. Leaving one's family and making a new start elsewhere also contributes to stress. As many students place great value on social and familial support, a change in environment can disrupt this support and it may take some time to find adequate substitutes[11].

Recent research in the UK indicates that mental health or psychological problems within student populations are as high as 40%, with most students suffering from depression or anxiety, or both. Many respondents expressed the opinion that the number of students with mental health problems was increasing and that the severity of their problems was also increasing. There was also widespread agreement that the levels of stress were very high in the student population[11].

This study found that the prevalence of psychological stress among medical students was high (41.9%), which corresponds to other studies among medical students[1,2,3]. There was also a significant association between psychological stress and depression among medical students in this study. A study among Norwegian medical students by Tyssen et al found that suicidal ideation in medical school was significantly predicted by mental distress and depression[4].

The most common symptoms the medical students complained of were not feeling reasonably happy (78.8%) and problems in sleeping when worried (71.0%). However, it was interesting to find that the two most common symptoms were not associated with depression. In fact the symptom "problems in sleeping when worried" had a significant inverse association with depression (odds ratio = 0.83). This means that among the students who complained of the above symptom, those without depression were 1.2 times more as compared to those with depression. Where as the other ten symptoms of psychological stress "feeling constantly under strain", "feeling unhappy and depressed", "unable to concentrate", "unable to enjoy normal activities", "losing self-confidence", "unable to face up to problems", "not capable of making decisions", "unable to play a useful part in things", "thinking of own self as worthless" and "unable to overcome difficulties" were all significantly associated with depression. In fact the results found that students complaining of these symptoms had almost 2 to 3 times higher risk of having depression.

The reason for the high percentage of symptoms being reported by medical students could be a result of the students' awareness of symptoms of stress and

therefore resulting in suggestibility. However, under-reporting of these symptoms could be due to ignorance on the part of the students that these symptoms are related to depression, and can be treated. A larger study should be done to confirm these findings. It is also important for academic staff especially lecturers to be aware of the presence of these symptoms in their students.

When examining the stress of medical education, the General Professional Education of Physician (GPEP) Report, Association of American Medical Colleges, suggested placing a greater emphasis on health programmes including stress management to help students cope with the stress of tertiary education[12]. These programmes should in fact be implemented in all universities including Malaysia. Students who are prepared with more realistic expectation in their academic pursuits, coupled with stress management techniques and good social support would have an advantage in coping. The ultimate aim is to help medical students understand what is required of them and to adapt as quickly as possible.

Conclusion

The prevalence of psychological stress among medical students was high in this study. Psychological stress was also significantly associated with depression. By identifying its symptoms and association with depression, hopefully these conditions among medical students can be identified at an early stage to prevent psychological morbidity among our medical students and young doctors.

Acknowledgements

We thank Professor Dr Azhar Md Zain, Dean of Faculty of Medicine and Health Sciences, University Putra Malaysia, Malaysia for his encouragement and permission to publish.

References

1. Mosley TH Jr, Perrin SG, Neral SM, et al. Stress, coping and well-being among third year medical students. Acad Med 1994; 69: 765-7.
2. Wolf TM, Kissling GE. Changes in life-style characteristics, health and mood of freshman medical students. J Med Edu 1984; 59: 806-14.
3. Ko SM, Kua EH, Fones CSL. Stress and the Undergraduates. Singapore Med J 1999; 40(10): 627-30.
4. Tyssen R, Vaglum P, Gronvold NT, Ekeberg O. Suicidal ideation among medical students and young physicians: a nationwide and prospective study of prevalence and predictors. Journal of Affective Disorders 2001; 64(1): 69-79.
5. Firth-Cozens J. Emotional Distress in junior house officers. British Medical Journal 1987; 295: 533-36.
6. Finlay-Jones RA, Burvill PW. The prevalence of minor psychiatric morbidity in the community. Psychological Medicine 1971; 475-89.
7. Goldberg DP. The General Health Questionnaire (GHQ). Companion to Psychiatric studies. 1972; 172-73.
8. Quek KF, Low WY, Azad HR, Loh CS. Reliability and validity of the GHQ-12 among urological patients: A Malaysian study. Psychiatry and Clinical Neurosciences 2001; 55: 509-13.
9. Newbury-Birch D, White M, Kamali F. Factors influencing alcohol and illicit drug use amongst medical students. Drug and Alcohol Dependence 2000; 59(2): 125-30.
10. Beck AT, Ward CH, Mendelson M, et al. An inventory for measuring depression. Archives of General Psychiatry 1961; 4: 561-71.
11. A Brief Report on the Findings of the First Year's Research. The OSMHN Interviews. http://www.brookes.ac.uk/student/services/osmhn/about-osmhn/year1.html
12. Wolf TM, Faucett JM, Randall HM. A health promotion program for medical students: Louisiana State University Medical Centre. Am J Health Promotion 1990; 4: 193-202.