

Study of Association between Psychological Stress and Depression among Undergraduate Medical Students from Asia Metropolitan (Amu) in Johor Bahru

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Abstract

Background: Stress is a term that refers to the sum of physical, mental and emotional strains or tensions on a person. Depression is a common mental disorder that presents with depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or appetite, and poor concentration. Psychological Stress among medical students is common as compared to other professional courses. The aim of the study is to study the association between Psychological Stress and Depression among undergraduate medical students in Asia Metropolitan University.

Methods: A Cross sectional study was undertaken among 75 medical students in a private medical college, Johor Bahru. Validated questionnaires such as General Health Questionnaire (GHQ -12) and Beck depression Inventory (BDI) were used to screen Psychological Stress and Depression respectively.

Results: Prevalence of Psychological Stress was 39.7% and Depression was 38.2% among medical students. There was a significant association between Psychological stress and Depression among medical students because the p-value <0.01.

Conclusion: Emphasize should be laid on the importance of screening for Depression of medical students on a regular basis for early detection and rendering appropriate intervention like student Mentorship Program, group counseling, stress management training to protect the future professionals.

Introduction

Emotional disorder, one of the common human emotional states is defined as feelings of sadness and tiredness in response to life events, such as disappointments. It is one of the major problems among students and although it consists of more than half of all mental disorders, it is often left untreated each year worldwide. (Sidik, Rampal, & Kaneson, 2003).

Medical school is recognized as a stressful environment that often exerts a negative effect on the academic performance, physical health and psychological wellbeing of the student. Medical education across the globe is perceived as being inherently stressful.

According to World Health Organization (WHO), Depression is estimated to affect 350 million people. The World Mental Health Survey conducted in 17 countries found that on average about 1 in 20 people reported having an episode of Depression in the previous year.

Lifetime prevalence rates of Depression range from approximately 3% in Japan to 16.9 % in the United States, with most countries falling somewhere between 8 to 12 %. (World Federal for Mental Health, WHO, 2012). The prevalence of Depression in Malaysia was estimated to be between 8 to 12%. (Guan, N.G., 2014).

Background Information on study

Stress is a term that refers to the sum of physical, mental and emotional strains or tensions on a person. Depression is a common mental disorder that presents with depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or appetite, and poor concentration. Psychological stress among medical students is common as

compared to other professional courses. (Solanky, Desai, Kavishwar, & Kantharia, 2012; Kittu & Patil, 2013).

There are very few studies on stress among medical students in Malaysia. Therefore, it becomes important to study the overall mental health status and prevent the ill effects of Depression among medical students as these constitute neglected public health problem in Malaysia.

The aim of the study is to study the association between Psychological Stress and Depression among undergraduate medical students in Asia Metropolitan University.

General objective

To study the association between Psychological Stress and Depression among undergraduate medical students from Asia Metropolitan University (AMU), Johor Bahru.

Specific Objective

1. To determine the prevalence of Psychological Stress and Depression among medical students.
2. To determine the most common symptoms of Psychological Stress among medical students.
3. To determine the level of Depression among medical students.
4. To determine the correlation between Psychological Stress with Depression among
5. medical students.

Hypothesis

There is no significance association between Psychological Stress with Depression among medical students.

Literature Reviews

In this part, relationship of association between Psychological Stress, Depression and related factors reviewed to introduce an overview about mental status of medical students. Several previous studies in this field also reviewed and used as references.

Various stress factors reported in studies among medical students are academic demands, exams, inability to cope, helplessness, increased psychological pressure, mental tension and too much work load. The transition from pre-clinical to clinical training has also been identified as a crucial stage of medical school regarding student stress. Different studies conducted worldwide among medical students have reported prevalence of Stress ranging from 27-73%. (Solanky, Desai, Kavishwar, & Kantharia, 2012; Kittu & Patil, 2013; Basnet, Jaiswal, Adhikari, & Shyangwa, 2011 ; Sultana, 2011).

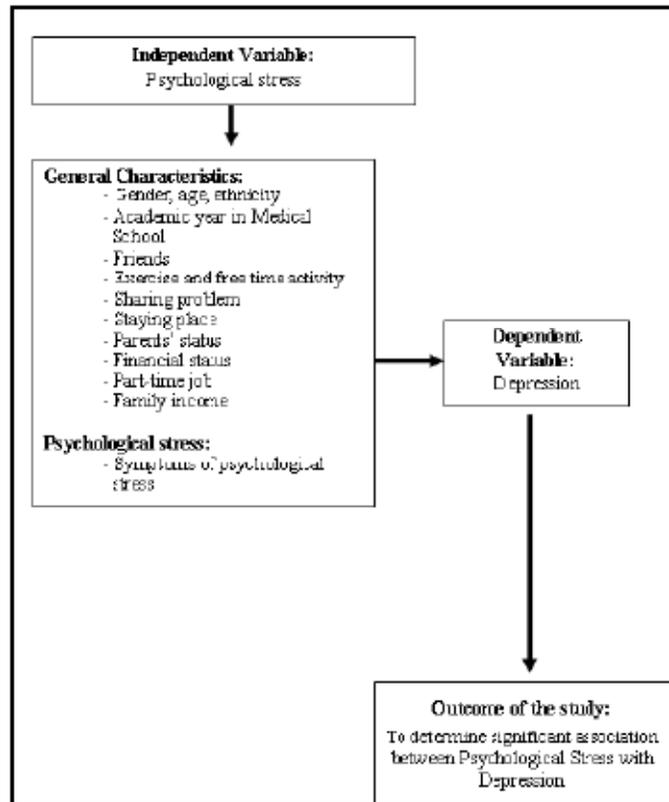
Most of studies used a self-administered instrument similar to the General Health Questionnaire (GHQ-12) to screen for symptoms of Psychological Stress. This instrument consists of 12 questions. Another questionnaire, the Beck Depression Inventory (BDI) was also used to screen for Depression among the respondents. The validated questionnaire consisted of 21 questions. It is a subjective scale used for screening purpose which has to be further evaluated to confirm the diagnosis. In its current version the questionnaire is designed for individuals aged 13 and over, and is composed of items relating to symptoms of Depression in last two weeks. (Kittu, D. & Patil, R. (2013); Solanky, Desai, Kavishwar, & Kantharia, 2012; Jourdan, & Mannix-McNamara, 2014)

There were also studies done in Malaysia from public and private universities. The studies were done to determine the prevalence of depression among medical students. The cross-sectional study design was used. The Beck Depression Inventory (BDI) was used as a screening Instrument among all medical students of University Putra Malaysia (UPM) and University of Malay at the Faculty of Medicine and Health Sciences. The prevalence of Depression among medical students was high. Early detection of this condition is important to prevent Psychological morbidity and its unwanted effects in medical students and young

doctors. (Sidik, Rampal, & Kaneson, 2003; Guan, 2014; Sherina, & Kaneson, 2003; Othman, Farooqui, Yusoff, & Adawiyah, 2013).

Apart from that, Community Medicine Department, International Medical School, Management and Science University (MSU) and International Medical University (IMU), Malaysia. These studies a significant difference was found between depressed with nondepressed and anxious with non-anxious students' experience of stressors due to frustration, change, and their emotional reaction to stressors. Overall, depressed and anxious students were found to experience more stress and react differently to stressors compared to non-depressed and non-anxious students. (Saravanan, & Wilks, 2014; Ahmed, & Hamoud, D, 2012).

Conceptual Framework



Methodology

Research Approach and Design

A quantitative approach was selected to conduct this study. One of the most common and well known study designs is the cross-sectional study design. In this type of research study, either the entire population or a subset population selected and from these individuals, data collected which helped to answer the research questions of interest (Olsen, C. & George, D.M., 2004).

Research Setting

This study involved students from two places:

1. Preclinical students (Year 1 and Year 2) at Masai, Johor Bahru.
2. Clinical students (Year 3 and Year 4) at Muar, Johor Bahru.

The Study Population and Sample

This study population consisted of medical students from Asia Metropolitan University (AMU). They were selected as subjects for this study.

The sample size used in data collection as below:

Year 1 : 21 students

Year 2: 17 students

Year 3: 22 students

Year 4: 15 students

The total sample size was 75 students.

Data Collection

A questionnaire used as data collection instrument. Data were collected with the aid of mailed questionnaires to determine the association between Psychological Stress and Depression among medical students:

Validated Questionnaires were used in this study:

General Health Questionnaire (GHQ-12):

Sensitivity (81.3%)

Specificity (75.3%)

Beck Depression Inventory (BDI):

Sensitivity (88.2%)

Specificity (92.1 %)

(Yusoff & Rahim, 2009; and Karen & Autum, 2011)

The questionnaires consisted of only closed-ended questions. The subjects required to answer only one option for each question. The questionnaires prepared in English language because all the medical students are well verse in English.

The questionnaires consisted of PART 1, PART 2 and PART 3 (APPENDIX A).

PART 1 aimed for gaining information on **General Characteristics of medical students such as:**

- Gender, age, ethnicity
- Academic year in Medical School
- Friends
- Exercise and free time activity
- Sharing problem
- Staying place
- Parents' status
- Financial status
- Part-time job
- Family income

PART 2 aimed to determine **Psychological Stress based on the General Health Questionnaire (GHQ-12)** to screen for common symptoms of Psychological Stress among medical students such as:

- Unable to concentrate
- Lost sleep over worry
- Unable to play useful part in things
- Not able to make decisions
- Unable to overcome difficulties
- Unable to enjoy normal activities
- Unable to face problems
- Feeling unhappy and depressed
- Losing confidence in once self
- Thinking of own self as worthless
- Unable to feel reasonably happy
- Constantly under strain

Classification Psychological Stress based on bimodal scale:

- 0 – No more than usual;
- 0 – Not at all;
- 1 – Rather more than usual;
- 1 – Much more than usual.

Total score ranges from 0 -12.

A score of 4 and above is considered positive for Psychological Stress.

PART 3 consists of 21 groups of statements **based on Beck Depression Inventory (BDI).**

The respondents are required to best describe their feeling during the past two weeks. This part is mainly to determine the level of Depression among medical students. Examples of groups of statement as below:

- Sadness
- Pessimism
- Past Failure
- Loss of Pleasure
- Guilty Feelings
- Punishment Feelings
- Self-Dislike
- Self-Criticalness
- Suicidal Thoughts or Wishes
- Crying
- Agitation
- Loss of interest
- Indecisiveness
- Worthlessness
- Loss of Energy
- Changes in Sleeping Pattern
- Irritability
- Changes in Appetite
- Concentration Difficulty
- Tiredness or Fatigue
- Loss of Interest in Sex

Classification of level of Depression based on scoring

- 1–10 Normal
- 11–16 Mild mood disturbances
- 16–20 Borderline depression
- 21–30 Moderate depression
- 31–40 Severe depression
- Over 40 Extreme depressions.

(Kittu & Patil, 2013)

Data Analysis

After data collection, all the data organized and analysed. For analysis of the questionnaires, Statistical Package using Micro Soft Excel and Computer Program called Statistical Package for Social Science (SPSS) Student Version 18 used. The data analysed by using descriptive statistics.

There were few tables prepared to analyse the results.

1. The prevalence of Psychological Stress and Depression among medical students
 - Using proportion (percentage)
2. General characteristics of medical students
 - Using proportion (percentage)
3. Common symptoms of Psychological Stress among medical students

- Using proportion (percentage)
- 4. Level of Depression among medical students
 - Using proportion (percentage)
- 5. Correlation between symptoms of Psychological stress with Depression
 - Using Pearson Correlation to determine significant p-value.

Ethical Consideration

Prior to data collection, permission were obtained from the concerned authorities of medical school to conduct the study. An informed consent was obtained from students.

Permission to conduct this study obtained from the Medical Research Ethical Consent Board of Asia Metropolitan University (AMU).

Results

The results were analyzed by using Statistical Package using Microsoft Excel and Computer Program called Statistical Package for Social Science (SPSS) Student Version 18. Through this programme, our results were schedule in tables.

Total respondent are as follows:

Table 1: The total number of respondents from data collection

Year of Medical school	Number of students
1	21
2	17
3	21
4	9
Total Number of students	68
Response rate	90.7%

There are six categories were used to analyze the results

Category 1:

Prevalence of Psychological Stress among medical students

Category 2:

Prevalence of Depression among medical students

Category 3:

Common Categories related to general characteristic of medical students.

Category 4:

Percentage of common Symptoms of Psychological Stress among medical students

Category 5:

Percentage of Level of Depression among medical students

Category 6:

Pearson correlation of Psychological stress and Depression among medical students

Out of 75 medical students, 68 students participated and completed the questionnaires. The overall response rate was 90.7%. Out of the 68 respondents, table 2 shows 27 students (39.7%) were positive for Psychological Stress and from these students table 3 shows 26 students (38.2%) were shown to be depressed.

Table 4 shows, out of the 27 students, 9 (33.3%) males and 18 (66.7%) were females. The overall age ranged from 20 to 30 years. Majority of respondents were Chinese 16 (59.3%) followed by Indians 8 (29.6%), Malays 2 (7.4%) and Sikh 1 (3.7%). The second year medical students were found to experienced Psychological Stress and Depression.

Table 2: Percentage of Prevalence of Psychological Stress among medical students

Category	Percentage (%)
Psychological Stress	27 (39.7%)
No Psychological Stress	41 (60.3%)

Table 3: Percentage of Prevalence of Depression among medical students

Category	Percentage (%)
Depression	26 (38.2%)
No Depression	

Table 4: Common Categories related to general characteristic of medical students

Characteristic	Categories	Psychological Stress	Depression
		(N=27, 39.7%)	(N=26, 38.2%)
Gender	Male	9 (33.3%)	9 (34.5%)
	Female	18 (66.7%)	17 (65.4%)
Ethnicity	Malay	2 (7.4%)	2 (7.7%)
	Chinese	16 (59.3%)	15 (57.7%)
	Indian	8 (29.6%)	8 (30.8%)
	Others (Sikh)	1 (3.7%)	1 (3.8%)
Academic in Medical School	First Year	8 (29.6%)	8 (30.7%)
	Second Year	10 (37.0%)	9 (34.6%)
	Third Year	7 (25.9%)	7 (26.9%)
	Fourth Year	2 (7.5%)	2 (7.8%)
Total household income per month	RM 499 and below	0 (0.0%)	0 (0.0%)
	RM 500-RM 999	0 (0.0%)	0 (0.0%)
	RM 1000-RM 1499	2 (7.4%)	1 (3.8%)
	RM 1500-RM 1999	1 (3.7%)	1 (3.8%)
	RM 2000-RM 2499	4 (14.8%)	4 (15.5%)
	RM 2500-RM 2999	3 (11.1%)	3 (11.5%)
	RM 3000-RM 3499	4 (14.9%)	4 (15.5%)
	RM 3500-RM 3999	1 (3.7%)	1 (3.8%)
	RM 4000-RM 4499	2 (7.4%)	2 (7.7%)
	RM 4500-RM 4999	3 (11.1%)	3 (11.5%)
RM 5000 and above	7 (25.9%)	7 (26.9%)	

Table 5 shows the most common symptoms of Psychological Stress among medical students. Majority of medical students were feeling not able to make decisions (32.4%), feeling unhappy and depressed (30.9%), unable to play useful part in things (29.4%), constantly under strain (29.4%), unable to concentrate (26.5%) and lost sleep over worry (26.5%)

Table 5: Percentage of common Psychological Stress symptoms among medical students

Common Symptoms of Psychological Stress	Percentage (%)
Not able to make decisions	22 (32.4%)
Feeling unhappy and depressed	21 (30.9%)
Unable to play useful part in things	20 (29.4%)
Constantly under strain	20 (29.4%)
Unable to concentrate	18 (26.5%)
Lost sleep over worry	18 (26.5%)
Losing confidence in once self	17 (25%)
Unable to enjoy normal activities	15 (22.1%)
Unable to overcome difficulties	13 (19.1%)

Unable to feel reasonably happy	13 (19.1%)
Unable to face problems	12 (17.6%)
Thinking ownself as worthless	12 (17.6%)

Table 6 shows the level of Depression among medical students according to their grade. The overall prevalence of Depression among medical students was 38.2%.

The prevalence of Depression includes borderline and moderate Depression. There was no severe and extreme Depression among medical students. However, 7.3% of students were in mild mood disturbance.

Table 6: Percentage of Level of Depression among medical students

Level of Depression	Percentage (%)
Normal	37 (54.5%)
Mild mood Disturbance	5 (7.3%)
Borderline Depression	10 (14.7%)
Moderate Depression	16 (23.5%)
Severe Depression	0.0
Extreme Depression	0.0

Based on Pearson Correlation, the p-value (<0.01) between Psychological Stress and Depression. Table 7 proved there was a significant association between Psychological Stress with Depression among medical students.

Table 7: Pearson Correlation of Psychological Stress and Depression among medical students

Correlations			
		Scoring Symptoms of Psychological Stress	Scoring for level of Depression
Scoring Symptoms of Psychological Stress	Pearson Correlation	1	.828**
	Sig. (2-tailed)		.000
	N	68	68
Scoring for level of Depression	Pearson Correlation	.828**	1
	Sig. (2-tailed)	.000	
	N	68	68

** Correlation is significant at the 0.01 level (2-tailed).

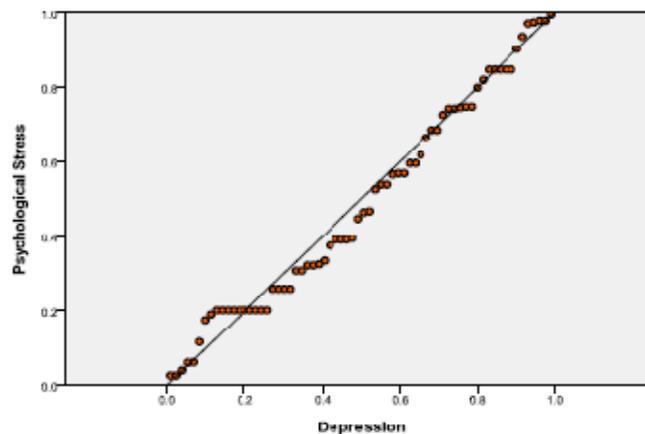


Figure 7: Pearson Correlation between Psychological Stress and Depression among medical students

Discussion

The academic atmosphere in medical colleges is very stressful which promotes competition among learners rather than co-operation. High level of stress among medical students has been reported in various studies. The personal and social sacrifice that the students have to make in order to maintain good academic results in a highly competitive environment puts them under a lot of stress which may end up in wide spectrum of psychological disorders like depression, anxiety, stress and many more. (Solanky, Desai, Kavishwar, & Kantharia, 2012; Sherina, Med, Rampal, & Kaneson, 2004).

The student experience of today is very different to that experienced in the 1960s, 1970s or 1980s. Recent research in United Kingdom indicates that mental health or psychological problems within student's populations are as high as 40%, with most students suffering from depression and 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.

Apart from that, a study done by Yusoff and Yee, 2013 on prevalence and sources of stress among medical students in University Sains Malaysia (USM) and University Malay had found that the prevalence of psychological stress among medical students of USM and UM was 25.9%. Where else, another study done by Kittu & Patil, 2013 on association of Psychological Stress and Depression among undergraduate medical college, Pondicherry shows the prevalence of Depression was 28.9% among medical student. (Yusoff and Yee, 2013; Kittu & Patil, 2013)

The present study found that the prevalence of Psychological stress was 39.7% and Depression was 38.2% among medical students which corresponds to other studies. (Mosley, Perrin & Neral, 1994; Ko, Kua, & Fones, 1999; Wolf & Kissling, 1984; Manjunath & Kulkarni, 2013)

This study found the most common symptoms the medical students complained of were feeling not able to make decisions (32.4%), feeling unhappy and depressed (30.9%), unable to play useful part in things (29.4%), constantly under strain (29.4%), unable to concentrate (26.5%) and lost sleep over worry (26.5%) were all significantly associated with depression. Our result where compared with study done by Kittu & Patil, 2013 on association of Psychological Stress and Depression among undergraduate medical college, Pondicherry. This study proved the most common symptoms the medical students complained of were unable to feel reasonably happy (81.7%), unable to face problems (80.9%), unable to enjoy normal activities (75.3%), not able to make decisions (62.6%), unable to concentrate (54.5%), and constantly under strain (54%). There were three symptoms found to be the most common which was not able to make decision, unable to concentrate and constantly under strain. (Kittu & Patil, 2013)

Our study proved the levels of Depression among medical students are under borderline Depression (14.7%) and moderate Depression (23.5%) where else if compared with another study done by Kittu & Patil, 2013, they confirmed that moderate Depression (25.1 %) and severe Depression (3.8%) were found to be under the level of Depression among medical students. (Kittu & Patil, 2013).

Our study confirmed the second year medical students to have more Psychological stress and Depression. This is due to their final year professional exam in one month time. The students are under constantly strain due to vast syllabus, fear of failure, tight schedule and tough topics.

Based on Pearson correlation, there is a significant association between symptoms of Psychological Stress and Depression among medical students because the p-value was <0.01. There were few studies supports this present study which shows significant association between Psychological stress and Depression. (Solanky, Desai, Kavishwar, & Kantharia, 2012; Kittu & Patil, 2013; Guan, 2014; Do, 2007; Sherina & Kaneson, 2003; Bataineh, 2013; Saravanan, & Wilks, 2014).

The reason for high percentage of symptoms being reported by medical students could be a result of the students' awareness of symptoms of stress. However, under reporting of these symptoms could be due to ignorance on the part of students that these symptoms are related to depression, and can be treated. A larger study can be undertaken to confirm these findings.

Conclusion

Prevalence of Psychological Stress was 39.7% and Depression was 38.2% among medical students.

The most common symptoms among medical students was feeling not able to make decisions (32.4%), Feeling unhappy and depressed (30.9%), and unable to play useful part in things (29.4%) constantly under strain (29.4%), unable to concentrate (26.5%) and lost sleep over worry (26.5%)

The levels of Depression among medical students are under Borderline Depression (14.7%) and Moderate Depression (23.5%).

There is a significant association between Psychological stress and Depression among medical students because the p-value <0.01.

Recommendation

Student Mentorship Program and counseling session:

- To offers consultation to students from academic staff and senior medical students.

Modifying the curriculum and study environment:

- The purpose of the modification in the curriculum is mainly to achieve a balance between the content and time distribution among medical students.

Limitation

This study is a cross-sectional study, so cause and effect relationship of Psychological morbidity with other factors could not be established. The scale we screened for Depression was a self reporting subjective scale; therefore the scores can be easily exaggerated or minimized by the person completing them. Therefore, it can be evaluated by further studies in depth by qualitative methods.

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