

## Stress among First and Third Year Medical Students at University Kebangsaan Malaysia

Abdus Salam<sup>1</sup>, Raynuha Mahadevan<sup>2</sup>, Amir Abdul Rahman<sup>3</sup>, Norsyafiqah Abdullah<sup>4</sup>, Aimi Aqilah Abd Harith<sup>5</sup>, Chu Pei Shan<sup>6</sup>

### ABSTRACT

**Objective:** To identify the stress-prevalence and coping-strategies among University Kebangsaan Malaysia (UKM) medical students.

**Methods:** This was an observational study conducted among 234 UKM first and third year medical students. Standardized questionnaire on stress and coping strategies was used. Stress data was related to subjective experiences on some positive and negative adjectives such as tense, relaxed etc. Positive adjectives were measured by sign “++” and “+” scoring “1” while stress-negative adjectives were measured by sign “?” and “-” scoring “0”. Forty-eight coping items under task, emotion and avoidance strategies were measured using 5-point Likert-scale.

**Results:** Overall stress-prevalence was 49%. Female and Malay respondents were more stressed. Significant differences of stress-level was observed between Malays and non Malays in first year ( $p=0.04$ ) and in third year ( $p=0.01$ ). Most common strategies used to cope stress was task-oriented while emotion oriented was least.

**Conclusion:** Stress-prevalence and stress-level in UKM medical students was high. Most of the respondents coped stress using task-oriented strategies. Stressor and its effective management must be ensured. Educational institutions should act as a creative designer of learning environment to get relieve from educational stressor.

**KEY WORDS:** Coping strategies, Medical students, Stress prevalence.

doi: <http://dx.doi.org/10.12669/pjms.311.6473>

### How to cite this:

Salam A, Raynuha M, Amir AR, Norsyafiqah A, Aimi Aqilah AH, Pei Shan C. Stress among First and Third Year Medical Students at University Kebangsaan Malaysia. *Pak J Med Sci* 2015;31(1):169-173. doi: <http://dx.doi.org/10.12669/pjms.311.6473>

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

1. Abdus Salam, MBBS; MPH; PgDipMedEd, MMedEd. Associate Professor, Medical Education Department,
2. Raynuha Mahadevan, BA Hons; MA. Lecturer and Clinical Psychologist, Department of Psychiatry,
3. Amir Abdul Rahman,
4. Norsyafiqah Abdullah,
5. Aimi Aqilah Abd Harith,
6. Chu Pei Shan,
- 3-6: Final Year Medical Students, Medical Education Department, Special Study Module Research Group-47, Session 2013/2014,
- 1-6: University Kebangsaan Malaysia (UKM) Medical Centre, Kuala Lumpur, Malaysia.

### Correspondence:

Abdus Salam,  
Associate Professor, Department of Medical Education,  
Faculty of Medicine, UKM Medical Centre, Jalan Yaacob Latif,  
Bandar Tun Razak, Cheras, 56000 Kuala Lumpur, Malaysia.  
E-mail: [salabdus@gmail.com](mailto:salabdus@gmail.com)  
[salam@ppukm.ukm.edu.my](mailto:salam@ppukm.ukm.edu.my)

- \* Received for Publication: September 18, 2014
- \* Corrected and Edited: November 7, 2014
- \* Accepted for Publication: November 18, 2014

### INTRODUCTION

Stress is a condition which upsets an individual both mentally and physically, results from the dealings of the individual with the environment and perceived as threat to the well-being of the individual.<sup>1</sup> It is well documented that higher education is very stressful and medical education is even more stressful as compared to other professional students.<sup>1,2</sup> Study reported that 56% of Malaysian medical students are stressed<sup>1</sup> and the transition from pre-clinical to clinical year is a crucial stage for level or severity of stress<sup>3</sup> as the students are more prone to become exhausted due to new environment when entering clinical year. Stress among Universiti Kebangsaan Malaysia (UKM) medical students was found 50% compared to students of Universiti Malaysia Sabah and Royal

College of Medicine Perak, which were 42% and 43% respectively.<sup>4</sup> There is greater risk of stress in women compared to men.<sup>5</sup> Malay students have significantly high academic stress compared to Chinese and Indian students; while Chinese students have higher stress compared to Malay students for financial stress.<sup>6</sup> Stress is one of the important factors that affect academic performance of the students.<sup>7</sup>

Medical students are exposed to regular pressure with overwork of academic burden and examination that brings various changes in their daily routine such as lack of sleep, irregular diet, smoking and substance abuse in order to cope with stress.<sup>1,8</sup> Coping is a way that a person reacts or responds towards stressors. Failing to cope with stress effectively causes deterioration of academic and professional performances and increases the psychological distress.<sup>1,9</sup> Coping strategies, if used effectively, may prevent the unwanted consequences of stressful situation.<sup>1,4</sup>

The objective of this study was to determine the prevalence of stress and coping strategies among UKM first and third year medical students aimed to propose remedial measures.

## METHODS

This was an observational study conducted among first and third year UKM medical students of academic session 2013/2014. Sample size comprised of 234 students, 99 of whom were from first year and 132 from third year, selected

Table-I: Demographic profile of the respondents, n=231.

| Variables           |                      | First Year,<br>n=99<br>n (%) | Third Year,<br>n=99<br>n (%) |
|---------------------|----------------------|------------------------------|------------------------------|
| Gender              | Male                 | 33 (33.3)                    | 44 (33.3)                    |
|                     | Female               | 66 (66.7)                    | 88 (66.7)                    |
| Ethnicity           | Malay                | 69 (69.7)                    | 78 (59.1)                    |
|                     | Chinese              | 15 (15.2)                    | 49 (37.1)                    |
|                     | Indian               | 15 (15.2)                    | 5 (3.8)                      |
| Residency           | Hostel               | 97 (98)                      | 126 (95.5)                   |
|                     | Parental Home        | 2 (2.0)                      | 0 (0.0)                      |
|                     | Rented Accommodation | 0 (0.0)                      | 6 (5.5)                      |
| Marital Status      | Single               | 98 (99)                      | 126 (95.5)                   |
|                     | Married              | 1 (1)                        | 6 (4.5)                      |
| Motivation to Study | Own Interest         | 83 (83.8)                    | 81 (61.4)                    |
|                     | Family Influence     | 8 (8.1)                      | 19 (14.4)                    |
| Medicine            | Randomly Choose      | 8 (8.1)                      | 32 (24.2)                    |

using stratified random sampling technique. Data was collected using a stress arousal check list<sup>10</sup> and a coping inventory for stressful situations.<sup>11</sup> Stress dimensions in the check list referred to the subjective perceptions of the current situation as unpleasant in response to the external environment through some positive and negative adjectives such as tense, relaxed, apprehensive and worried. Arousal means someone is having a generalized state of increased somatic or autonomic ongoing physiological activities, measured through similar adjectives such as energetic, drowsy, stimulated and activated.

There were 30 adjectives of which 18 were for stress and 12 were for arousal identification. The stress-positive adjectives were measured by sign “++” and “+” scored as “1” while stress-negative adjectives were measured by sign “?” and “-” scored as “0”. The coping inventory used 48 items, categorized under task, emotion, and avoidance strategies which were measured using 5-point Likert-scale. The questionnaire also contained socio-demographic data of the respondents. Written consent was obtained from the participants before administering the questionnaire, and participants were assured that participation would not affect them anyway. Data was analyzed using SPSS version 20.

## RESULTS

Out of 234 participants 231 responded giving a response rate of 99%. Table-I shows the demographic profile of the respondents which showed that, an average of 66.67% of the respondents were female, 64.4% were Malays and 96.75% were resided in the hostel and 97% were single. Most of the respondents were motivated to study medicine as their own interest.

Table-II showed the prevalence of stress and arousal among the respondents where an average of 48.6% were stressed and 51.4% were aroused.

Table-II: Distributions of prevalence of stress and arousal among the respondents.

| Variables     |                    | Stress prevalence<br>n (%) | Arousal prevalence<br>n (%) |
|---------------|--------------------|----------------------------|-----------------------------|
| Year of study | First Year (n=99)  | 49 (49.5)                  | 50 (50.5)                   |
|               | Third Year (n=132) | 64 (47.7)                  | 69 (52.3)                   |
| Gender        | Male (n=77)        | 35 (45.5)                  | 42 (54.5)                   |
|               | Female (n=154)     | 77 (50)                    | 77 (50)                     |
| Ethnicity     | Malay (n=147)      | 76 (51)                    | 72 (49)                     |
|               | Non Malay (n=84)   | 37 (44)                    | 47 (56)                     |
| Total (n=231) |                    | 112 (48.5)                 | 119 (51.5)                  |

Table-III: Distribution of stress and arousal level in terms of their mean score  $\pm$  SD among the respondents.

| Variables |           | First Year            |         |                        |         | Third Year            |         |                        |         |
|-----------|-----------|-----------------------|---------|------------------------|---------|-----------------------|---------|------------------------|---------|
|           |           | Stress score $\pm$ SD | p value | Arousal score $\pm$ SD | p value | Stress score $\pm$ SD | p value | Arousal score $\pm$ SD | p value |
| Gender    | Male      | 4.55 $\pm$ 2.75       | 0.73    | 5.30 $\pm$ 2.02        | 0.70    | 6.41 $\pm$ 3.69       | 0.41    | 7.43 $\pm$ 2.14        | 0.24    |
|           | Female    | 4.74 $\pm$ 2.53       |         | 5.14 $\pm$ 1.94        |         | 7.00 $\pm$ 4.12       |         | 6.94 $\pm$ 2.46        |         |
| Ethnicity | Malay     | 5.00 $\pm$ 2.72       | *0.04   | 5.19 $\pm$ 2.10        | 0.98    | 7.43 $\pm$ 2.14       | *0.01   | 7.37 $\pm$ 2.33        | 0.12    |
|           | Non Malay | 3.93 $\pm$ 2.13       |         | 5.20 $\pm$ 1.63        |         | 5.76 $\pm$ 3.31       |         | 6.72 $\pm$ 2.38        |         |

Females and Malays were more stressed compared to male and non Malays while males and non Malays were more aroused than female and Malays.

Table-III shows there was no significant differences of stress and arousal scores between males and females both in first and third year medical students; however, significant differences of stress scores between Malays and Non Malays both in 1<sup>st</sup> year (p=0.04) and in 3<sup>rd</sup> year (p=0.01) students were observed with insignificant differences in arousal.

Table-IV shows the distribution of coping strategies among the respondents. The most commonly used coping strategies among the respondents were task oriented followed by avoidance and then emotion oriented coping with insignificant differences in regards to study-year, gender and ethnicity.

## DISCUSSION

People suffer from stress for many reasons;<sup>12</sup> a student can be stressed due to educational, financial, health related, loss of close family member or friend, relationship problems and so on.<sup>7</sup> This study focused on medical students during transitional periods; notably first year where students have to adjust a different environment in the university and third year where students have to adopt a hospital environment where they undergo clinical examinations on patients. The overall prevalence rate of stress in the present study was 49% which was higher compared to 43% in earlier study.<sup>4</sup> Medical students' stress prevalence ranged from 30% to 50%,<sup>3,13</sup> which is higher from other disciplines.<sup>14,15</sup> Although 89% respondents in first year and 61% in third year were motivated to study medicine because of

Table-IV: Distribution of coping strategies among the respondents.

| Variables | Coping strategies         | First year Mean score $\pm$ SD | p value | Third year Mean score $\pm$ SD | p value |
|-----------|---------------------------|--------------------------------|---------|--------------------------------|---------|
| Gender    | <b>Task-oriented</b>      |                                |         |                                |         |
|           | Male                      | 63.21 $\pm$ 8.44               | 0.65    | 58.66 $\pm$ 9.01               | 0.30    |
|           | Female                    | 62.38 $\pm$ 8.81               |         | 60.47 $\pm$ 9.97               |         |
|           | <b>Avoidance-oriented</b> |                                |         |                                |         |
|           | Male                      | 51.12 $\pm$ 11.89              | 0.39    | 51.14 $\pm$ 9.89               | 0.37    |
|           | Female                    | 53.30 $\pm$ 11.75              |         | 52.81 $\pm$ 10.40              |         |
| Ethnicity | <b>Emotion-oriented</b>   |                                |         |                                |         |
|           | Male                      | 44.09 $\pm$ 11.38              | 0.58    | 42.27 $\pm$ 10.21              | 0.85    |
|           | Female                    | 42.76 $\pm$ 11.33              |         | 42.61 $\pm$ 9.20               |         |
|           | <b>Task-oriented</b>      |                                |         |                                |         |
|           | Malay                     | 62.38 $\pm$ 9.25               |         | 59.83 $\pm$ 10.45              |         |
|           | Chinese                   | 61.60 $\pm$ 5.57               | 0.50    | 59.29 $\pm$ 8.52               | 0.34    |
| Ethnicity | <b>Avoidance-oriented</b> |                                |         |                                |         |
|           | Indian                    | 65.00 $\pm$ 8.38               |         | 66.00 $\pm$ 5.88               |         |
|           | Malay                     | 51.97 $\pm$ 12.16              |         | 52.18 $\pm$ 11.17              |         |
|           | Chinese                   | 53.53 $\pm$ 9.39               | 0.73    | 52.24 $\pm$ 8.83               | 0.968   |
|           | Indian                    | 54.40 $\pm$ 12.65              |         | 53.40 $\pm$ 9.29               |         |
|           | <b>Emotion-oriented</b>   |                                |         |                                |         |
|           | Malay                     | 44.00 $\pm$ 11.11              |         | 42.59 $\pm$ 10.31              |         |
|           | Chinese                   | 39.80 $\pm$ 10.69              | 0.43    | 41.55 $\pm$ 8.14               | 0.14    |
|           | Indian                    | 52.93 $\pm$ 12.86              |         | 50.40 $\pm$ 5.73               |         |

their own interest (Table-I), the stress prevalence was still high.

Stress prevalence in first year students was higher compared to third year while prevalence of arousal was more in third year (Table-II). High prevalence of stress in first year may be due to the introduction of taking more responsibility for their learning and a shift from the traditional teacher-centered teaching methodology<sup>16</sup> to self-directed student-centred teaching methodology. Increased prevalence of arousal in third year students may be due to some sorts of adaptability by them. However, the result differs from a previous study done at Universiti Sains Malaysia students where stress-prevalence in third year found higher compared to first year students.<sup>17</sup> Stress and arousal prevalence were higher in female students compared to males (Table-II), which is consistent with findings of Johari et al.<sup>4</sup> and Abdulghani et al.<sup>18</sup> Malay students have higher prevalence of stress compared to non-Malays which were also consistent with the findings of Johari et al.,<sup>4</sup> but Malays were found with less prevalence of arousal.

Based on level or mean stress score, female students were also shown more mean stressed scores than males but male students were more aroused than females with insignificant differences (Table-III). It may be due to their higher self expectation, feeling less competent, and tendency to over-report symptoms.<sup>19</sup> Students were stressed both in first and third year, but third year students were more stressed than first year. Supe<sup>20</sup> showed that stress were high in third year medical students than first year, and this supports our study findings. Malay students were significantly more stressed than non-Malays both in first ( $p=0.04$ ) and third ( $p=0.01$ ) year (Table-III) and this findings is consistent with findings of Johari et al.<sup>4</sup> It is however different from the findings of Sherina et al.<sup>3</sup> where Indians were more stressed followed by Malays, Chinese and others.

It is the persons' ability to cope with day to day challenges which determine whether he/she will be stressed or not and at what level.<sup>6</sup> Most common coping strategies used by the respondents was task oriented followed by avoidance and emotion (Table-IV). Task-oriented coping is describes as purposeful task effort aimed at solving the problem, or attempts to alter the situation while avoidance-oriented coping describes activities and cognitive changes aims at avoiding the stressful situation. This finding is consistent with findings of Wan Salwina et al.<sup>21</sup> Students used a combination of both emotion

and problem oriented coping. Emotion oriented coping describes turning to religion, positive reinterpretation, acceptance and seeking of socio-emotional support and problem-oriented coping describes active coping and planning; but most preferred emotion-oriented coping strategies.<sup>22</sup>

Medical students at UKM found to be highly resourceful to manage stress through exposure of various activities such as decision making in a tough situation, reflective writings, managing diversity, breaking bad news, interfaith discussion, spiritual development and so many other personal and professional development activities over the whole period of five year curriculum.<sup>7</sup> Even then, stress prevalence and its level among UKM medical students in the present study is higher. Stressors need to be identified and managed effectively. Educational environment exerts an unintentional negative effect with increase stress among medical students.<sup>1,23</sup> Students needs a non-threatening supportive learning environment to get relief from academic and examination related stress<sup>1</sup> Time is changing and teachers' role is changing from being a knowledge dispenser to a creative designer and facilitator of learning experiences.<sup>24</sup> Effective educational program with joint collaborative efforts are important.<sup>25</sup> Educators must address these issues, and ensure a supportive learning environment aimed to develop confidence and better adjustment of students in classroom, group and in society.

## CONCLUSION

The overall prevalence of stress is high among UKM medical students. Female and Malay students are more stressed. Main coping strategies used by respondents are task oriented followed by avoidance and emotion. To get relieve of academic related stress from students, teachers need to ensure a stress free supportive learning environment and act as a creative designer and facilitator of learning experiences rather than act as information provider. Further research should aim to identify the stressors, specific ways to cope and effectiveness of coping among the students aimed to propose appropriate remedial actions.

## ACKNOWLEDGEMENT

The authors gratefully acknowledged all those first and third year medical students of UKM Medical Centre who participated in this study. Thanks to Associate Professor Dr. Najib Mahmood Rafee, Experimental Design & Analyst, UKM for

helping in statistical analysis. Thanks are also due to Research and Ethics Committee of the UKM Medical Centre to approve this research with Project Code: FF-2014-057.

**Conflict of interest:** None.

## REFERENCES

- Salam A, Rabeya Y, Sheikh Muhammad AB, Mainul H. Stress among Medical Students in Malaysia: A Systematic Review of Literatures. *Int Med J.* 2013;20(6):649-655.
- Habeeb KA. Prevalence of stressors among female medical students Taibah University. *J Taibah Univ Med Sci.* 2010;5:110-119.
- Sherina MS, Rampal L, Kaneson N. Prevalence of emotional disorders among medical students in a Malaysian university. *Asia Pac Fam Med.* 2003;2:213-217.
- Johari AB, Hassim IN. Stress and coping strategies among medical students in National University of Malaysia, Malaysia University of Sabah and University Kuala Lumpur Royal College of Medicine Perak. *J Com Health.* 2009;15:106-115.
- Bhatia MS, Garg K, Chandra S, Malik SC. Neurotic symptoms in first year medical students. *Annals Nat Acad Med Sci.* 1995;28(1&2):49-52.
- Sidhu JK. Effect of stress on medical students *International e-J Sci Med Edu.* 2007;1:52-53.
- Harlina HS, Salam A, Roslan R, Hasan NA, Jin TH, Othman MN. Stress and its association with the academic performance of undergraduate fourth year medical students at Universiti Kebangsaan Malaysia. *Int Med J Malaysia.* 2014;13(1):17-22.
- Sahraian A, Javadpour A. Sleep disruption and its correlation to psychological distress among medical students. *SEM J.* 2010;1:12-17.
- Paro HB, Morales NM, Silva CH, Razende CH, Pinto RM, Morales RR, et al. Health related quality of life of medical students. *Med Educ.* 2010;44:227-235.
- Cox T, Mackay CJ. The measurement of self-reported stress and arousal. *Br J Psychol.* 1985;76:183-186.
- Endler S, Parker DA. Coping Inventory for Stressful Situations (CISS) Manual. Multi Health Systems, Inc. 1990.
- Raheel H. Coping strategies for stress used by adolescent girls. *Pak J Med Sci.* 2014;30(5):958-962. doi: 10.12669/pjms.305.5014 (Accessed on 17 September 2014)
- Zaid ZA, Chan SC, Ho JJ. Emotional disorders among medical students in a Malaysian private medical school. *Singapore Med J.* 2007;48(10):895-899.
- Guthrie EA, Black D, Bagalkote H, Shaw C, Campbell M, Creed F. Psychological Stress and Burnout in Medical Students: A Five-year Prospective Longitudinal Study. *J R Soc Med.* 1998;91(5):237-243.
- Aktekin M, Karaman T, Senol YY, Erdem S, Erengin H, Akaydin M. Anxiety, Depression and Stressful Life Events among Medical Students: A Prospective Study in Antalya, Turkey. *Med Educ.* 2001;35(1):12-17.
- Bazmilnam SN. Anxiety and depression among students of a Medical College in Saudi Arabia. *Int J Health Sci.* 2007;1(2):295-300.
- Yusoff MSB, Rahim AFA, Yaacob MJ. Prevalence and Sources of Stress among Universiti Sains Malaysia Medical Students. *Malaysian J Med Sci.* 2010;17:30-37.
- Abdulghani HM, AlKanhil AA, Mahmoud ES, Ponnampereuma GG, Alfaris EA. Stress and its effects on medical students: a cross-sectional study at a college of medicine in Saudi Arabia. *J Health Popul Nutr.* 2011;29:516-522.
- Bayram N, Bilgel N. The prevalence and socio-demographic correlations of depression, anxiety and stress among a group of university students. *Soc Psychiatry Psychiatr Epidemiol.* 2008;43:667-672.
- Supe AN. A study of stress in medical students at Seth G.S. Medical College. *J Postgrad Med.* 1998;44(1):1-6.
- Wan Salwina WI, Raynuha M, Ainsah O, Idayu BI, Aniza I. Stress and Coping Styles: The Experience of Nursing Staff Working At Two Public Hospitals in Klang Valley, Malaysia. *Med & Health.* 2009;4(2):101-107.
- Nikmat AW, Mariam M, Ainsah O, Salmi R. Psychological well being, stress and coping style among pre clinical medical students. Res management in state, University Teknol 2010. Available online at: [http://eprints.ptar.uitm.edu.my/3218/1/LP\\_AZLINA\\_WATI\\_NIKMAT\\_10\\_24.pdf](http://eprints.ptar.uitm.edu.my/3218/1/LP_AZLINA_WATI_NIKMAT_10_24.pdf) (Accessed on 30 November 2013).
- Dyrbye LN, Thomas MR, Shanafelt TD. Systematic review of depression anxiety, and other indicators of psychological distress among U.S. and Canadian medical students. *Acad Med.* 2006;81:354-373.
- Salam A, Norlinah MI, Mohamad AK, Mohd NAB, Harlina HS, Nabishah M, et al. Technology enhanced global online collaborative networking using MedEdWorld Wimba: UKM medical centres' experience. *Int Med J.* 2011;18(2):107-109.
- Salam MM, Uddin MS, Ahmad Khan MF, Mazumdar PK, Huq ME, Rabeya Y, et al. Maternal Awareness on Under-5 Child Immunization in a Rural Community of Bangladesh. *Int Med J.* 2013;20(6):681-684.

## Authors' Contribution:

**Abdus Salam:** Conceived, designed and supervised the complete study in its each and every step, from starting to ending including manuscript writing, critiques and editing

**Raynuha Mahadevan:** Conceived, designed and co-supervised.

**Amir Abdul Rahman, Norsyafiqah binti Abdullah, Aimi Aqilah binti Abd Harith and Chu Pei Shan:** Each individually did literature search initially, later jointly transformed search findings and produced a single draft proposal; performed the complete study through data collection and analysis; wrote the manuscript and refined it on critiques.