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RESEARCH ARTICLE

Stress coping mechanisms practiced by medical undergraduates of a State Medical School in Sri Lanka

F. Noordeen[1], T. Jayathilaka[1], F. N. N. Pitchai[1], H. R. N. Yapa[2], I. M. N. M. K. Jayarathne[2], T. N. D. Nawarathne[2], I. R. N. Piyasena[2], M. L. S. P. Priyanka[2], J. V. P. G. Shivanka[2], T. Uden[2], S. Yeshi[2], R. R. Gurung[2], M. I. F. Ifla[2] and K. Dorji[2]

[1]*Department of Microbiology, Faculty of Medicine, University of Peradeniya, Peradeniya, Sri Lanka.*
[2]*Faculty of Medicine, University of Peradeniya, Peradeniya, Sri Lanka.*

Abstract: Identifying the coping mechanisms practiced by the medical students is of importance and must be explored to promote healthy stress coping methods. Hence, a descriptive cross-sectional study was undertaken with a sample of 410 medical students from a State Medical School in Sri Lanka. The research question of the study focused on identifying the different coping methods practiced by medical students. A questionnaire with 2 parts, A and B, was used to collect data on stress coping methods used by the study participants. The study also obtained data on the effectiveness of popular stress coping methods from the users. The responses for the questions in part A showed a trend of positive outlook in all general aspects of life except for one question, which directly questioned the ability of students to cope with stress imposed by the academic programme. Based on the results from part B of the questionnaire, the most common and widely used stress coping mechanisms included sleeping, listening to music and talking with friends and family. Effective coping strategies identified to minimize stress were religious activities like praying/worshiping and meditation. Moreover, seeking advice from lecturers, seniors, going home and engaging in sports and games were also found to be effective in lessening stress. In conclusion, facilities for students to involve in religious activities such as prayers and meditation shall be available in the Faculty. Getting counseling and involving in sports also appear to alleviate stress and these should be integrated into the life of medical students.

Keywords: Religious/spiritual activities, medical students, stressors, coping methods.

INTRODUCTION

Entering into a medical school is the first step in becoming a doctor. Medical career is a goal for many, as this is a well-respected, rather revered profession in Sri Lankan and many Asian societies. Candidates with the highest Z-scores in the Advanced Level (A/L) examination in the biology stream are selected for the medical faculties in Sri Lanka. In the Sri Lankan universities, the medical course is conducted in English medium. As English is neither the mother tongue nor the language used in pre-university education for most students, the majority selected for the medical training find it difficult to follow the course in a language that was not used for learning and communication at schools.

Medical course in Sri Lankan universities is a 5 year undergraduate course consisting of a non-clinical Scientific Basis of Medicine (SBM) part followed by clinical training. At the current study site, a State Medical School in the country, the SBM part is an integrated module based, credit valued, non-clinical course starting from Year 1 to 4, followed by the clinical training starting as the foundation at the beginning of Year 3 and then running with intense clinical training until the final MBBS examination at the end of Year 5.

In the non-clinical part of the medical course, there are subjects such as anatomy, physiology, biochemistry, growth and development and behaviour together with pathology, infection, defenses of the body and basic pharmacology. At the end of second year, the GPA is calculated. The GPA together with results of associated modular examinations is called 2nd MBBS. This is a bar, which must be passed before entering the clinical segment of the course. Similar GPA calculation format

*Corresponding author (faseehan@pdn.ac.lk; faseeha.noordeen12@gmail.com; https://orcid.org/0000-0002-2018-0606)

is used for all non-hospital based courses until the Year 4 examination.

Subsequently, the clinical training starts and it is an intensive, hospital-based training supplemented by lectures in general medicine, surgery, paediatrics, obstetrics and gynecology and psychiatry, which form the core of the training, while sub-specialties are also learned during this period. Due to the compulsory core contents in the medical course with an intensive clinical training, medical students experience a higher stress level than their parallel non-medical undergraduates. Furthermore, among the medical students, the level of depressive symptoms is found to be higher among female medical undergraduates compared to their male counterparts (Perera, 2011). Vastness of the academic content, frequency of examinations, dissatisfaction with academic activities, dealing with death and suffering, working with trainers such as consultants and lecturers including professors, the anxieties invoked during the ward rounds, high parental expectations, sleeping difficulties, financial issues, relationship problems and loneliness are among the most common stressors encountered by medical students (Firth, 1986; Johari & Hassim, 2009; Shah *et al*., 2010).

Stress is defined as a condition or feeling experienced when a person perceives that "demands exceed the personal and social resources the individual is able to mobilize" (Lazarus & Folkman, 1984). The level of stress a person experiences in exposure to a particular stressor depends on various factors such as the personality type and cultural factors. Interestingly, cumulative effect of frequently occurring relatively minor stressful events has been found to cause more psychological stress than major life events (Hamilton & Fagot, 1988).

A certain amount of stress is helpful for motivation and achieving goals and it is called eustress. But pathological levels of stress cause physical and mental health problems and reduced self-esteem and these may affect the academic performance of the students (Silver & Glicken, 1990; Niemi & Vainiomäki, 1999). Lazarus & Folkmann (1984) define coping as,

> "constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources available for a person" (Lazarus & Folkman, 1984).

Coping is, therefore, a process, which can be healthy or maladaptive and is learnt on past experiences of stressful situations. Moreover, a healthy coping does not require perfection (Curtis, 2000). Active coping, planning, suppression of competing activities, restraint coping, seeking social support, positive interpretation of life and growth, acceptance, turning to religion or spiritual reasoning, venting emotions, denial, behavioural and mental disengagement and engagement with alcohol and drugs are some types of coping strategies used by people at large (Weiten *et al*., 2009), which classify coping strategies into many folds: (1) Appraisal-focused mechanisms including rational thinking and positive re-interpretation used to see the positive side of the situation; (2) Problem-focused mechanisms with any coping behaviour directed at reducing or eliminating a stressor; (3) Emotion-focused mechanisms directed towards changing one's own emotional reaction to a stressor.

Identifying the coping mechanisms practiced by the medical students is of importance and must be explored to promote healthy stress coping methods. Thus, the research question of the current study was; what were the different stress coping methods practiced by the medical students in the study? The findings an expected to help the authorities to assist medical students to combat stress using healthy coping mechanisms. The current study also gathered data on the effectiveness of popular methods of stress coping from the users.

MATERIALS AND METHODS

Study design and selection of sample

The present study was a descriptive, cross-sectional study planned to identify different coping mechanisms used by the medical students in a State Medical School in Sri Lanka and the effectiveness of these mechanisms in coping stress. The participants were selected from the study site considering the convenience in collecting the data. As Bhutanese students have been studying in this Medical School from the regular foreign intake, Sri Lankan and Bhutanese students from Year 2 to 5 were included in the study. Moreover, male and female medical students of the school were included but the final year students who finished their course and were on study leave to do the final MBBS examination were excluded from the study. Data collection was done for the study from February to April 2013.

The study participants were randomly selected to meet the sample size chosen based on the formula for sample collection for health studies. The samples size calculated was 420.

$$N = \frac{Z_{1-\alpha}^{2} \; p(1-p)}{d^2}$$

$$n = \frac{(1.96)^2 \text{ x } 0.5(1-0.5)}{(0.05)^2}$$

$$n = 384$$

p = Predicted proportion of medical students using some kind of coping method when stressed

d = Level of precision; z = Confidence interval at 95% level

For possible dropouts 10% of the calculated sample size was added, as follows.

384+ (384x10/100) = 422.4 ~ 420; Sample size = 420

Data collection and data collection tools

Data was obtained using an anonymous self-administered questionnaire comprising the demographic data along with 2 parts; Parts A and B. Part A had 12 questions to get an individual opinion (positive or negative) towards the general, social and academic issues faced by a medical student. The responses were rated on a 5-point Likert scale in terms of agreement to each statement. Part B consisted of 20 common coping mechanisms used by medical students and these mechanisms were included in the questionnaire after discussing with a few groups of medical students. The questionnaires were distributed to the participants for the data collection. The participants rated the coping mechanisms used according to their preferences of use as never, seldom or frequently and whether or not a particular coping mechanism worked for them. Along with written instructions, additional space was provided for the participants to write if they had any other coping mechanisms, which were not in the pre-determined list and then to rate as indicated in the questionnaire. Part A was quoted from a study conducted by Kumar & Fernando (2009) for the agriculture students and Part B was developed for the current study.

The study questionnaire was originally prepared in English. Then it was translated to Sinhala and Tamil. The accuracy of the translations was assured by translating them back to English and comparing with the original English questionnaire. The questionnaires were given to participants based on the language they preferred. The study participants were asked to fill the questionnaires independently to maximize the accuracy of the data.

The questionnaires were presented to randomly selected medical students from the 2008/2009 batch and the pre-testing of the questionnaire was performed prior to the actual commencement of the study. Organisation of the questionnaire was changed based on the pre-testing comments and no other shortcomings were identified in the questionnaire.

Ethical clearance

The ethical clearance for the study was obtained from the Ethical Clearance Committee of the State Medical School under study on 14th of December 2012. Permission to conduct the study within the Medical School premises was obtained from the Dean of the School. Informed written consent was obtained from the study participants before administering the questionnaire. The identity of the study participants was not revealed and the confidentiality of their answers was assured. Questionnaires were administered at a convenient time to the participants without disturbing their academic work.

Data analysis

Data were entered into an Excel spreadsheet and the information was tabulated. A subsample of 10% of the total questionnaires was randomly checked against the data entered to ensure the accuracy of data entry.

The responses for Part A of the questionnaire were analyzed using the descriptive statistics and Part B was analyzed using the Kruskal Wallis and the binomial tests. The responses to the questions 1 to 12 (Part A) were marked on a Likert scale from 1 to 5. For the purpose of analysis, the scores 1 and 2 were considered negative, 3 neutral and 4 and 5 as positive values. Then, their frequencies with regard to the whole study group, gender and the batch (whether the students were from clinical or pre-clinical years of study) were also tabulated. The questions were classified into 3 groups: general, social and academic issues and then the pattern of distribution of these issues with gender, year of study (pre-clinical / clinical) and the whole group was determined. Questions 1, 8 and 9 were classified under general issues, questions 3, 6, 10, 11 and 12 under social issues and questions 2, 4, 5 and 7 under academic issues.

Part B of the questionnaire consisted of 20 questions and responses for these questions were given by the participants. Kruskal Wallis test was used to find out whether there was a significant difference in the coping mechanisms used by the students in different years of study (pre-clinical vs clinical), gender and nationality. The binomial test was used to find out any significant difference in the effectiveness of coping strategies between students in different years of study, gender and nationality. Of the 420 questionnaires distributed, 385

completed questionnaires were returned and thus the data analysis was done on data received from 385 students.

RESULTS

Majority of the study participants were between 22-25 years of age with an equal gender distribution (Table 1). Mean age of the responders were 23.49 years (SD =1) and the majority of them were from Buddhist backgrounds (Table 1). Irrespective of the gender or the stage of medical training (pre-clinical/ clinical), the study participants showed positive attitudes towards the general, social and academic aspects of their life (Table 2). Although the most commonly used coping strategies were sleeping and listening to music, the most effective coping strategies as claimed by the students were engaging in religious activities and getting advice from senior students and staff (Table 3). Talking with friends and parents was common among the participants and this means of stress coping was also found to be effective (Table 3). There was no significant difference noted in the effectiveness of coping strategies between males and females (Table 4) or the stage of the medical training, but a significant difference was noted between the coping methods used by Sri Lankan and Bhutanese students.

According to the results analyzed using the descriptive statistics for the Part A of the questionnaire, the students had more positive ideas about the general, social and academic aspect of life apart from the 11th question, which directly asked about stress, where they had expressed more negative ideas. The same trend was noted in the whole study population regardless of the gender. Analysis of responses by the students from the pre-clinical and clinical years of training indicated that both groups of students had positive responses except for question 11 for which there were more negative responses like what was expressed in the findings given in Table 2.

The stress coping strategies used by majority of students included sleeping, listening to music and talking to friends or parents. Drug abuse, smoking and alcohol use were practiced as coping strategies by the least number of students. Most effective coping strategies identified by the users were engaging in religious activities, getting advice from lecturers or seniors and talking with friends or parents. Most inefficient methods noted were showing anger over somebody, face-booking/computer/video games and eating (Table 3).

Based on the results obtained from the binomial test, it was evident that the female participants find planning and completing the task as an effective stress coping mechanism than males (Table 4). There is no other significant difference in effectiveness of stress coping mechanisms based on the gender or year of study of the students as pre-clinical and clinical.

Kruskal Wallis test was used to compare the difference of usage of each coping mechanism with gender and nationality. Females used positive thinking, talking with friends/parents, going home, crying and religious activities more frequently than males. In contrast, males preferred games/face-booking/computer games/video, sports/physical activities, alcohol, smoking, drug use and completing the task for coping stress. In the analysis based on nationality, there was a significant difference between some of the coping methods used by Sri Lankan and Bhutanese students. Bhutanese students used

Table 1: Distribution of gender, country of origin and religion of the study participants

Variable		Pre-clinical %	Clinical %		Total %
Gender	Male	14.00	32.90	47.00	
	Female	17.70	35.30	53.00	100
Nationality	Sri Lankan	30.10	66.20	96.40	
	Bhutanese	1.60	2.00	3.60	100
Religion	Buddhism	28.30	66.70	95.10	
	Hinduism	0.80	0	0.80	
	Islam	1.30	1.10	2.30	
	Christianity	1.30	0.50	1.80	100

Source: Part A of the questionnaire; Valid number of respondents - 385

Table 2: Gender differences in coping stress as expressed by the study participants

Question	Negative views %		Neutral views %		Positive views %	
	Male	Female	Male	Female	Male	Female
1. I feel satisfied and happy with my life	6.75	4.42	11.43	15.06	28.83	33.51
2. I have been keeping upto date with my academic activities	18.44	13.51	14.28	20.00	14.29	19.48
3. I have a good relationship with my colleagues and lecturers	13.77	11.95	15.06	23.12	18.18	17.92
4. I have been functioning well during examinations	12.73	8.31	15.84	19.49	18.44	25.19
5. I can cope up with my clinical appointments*	5.71	3.11	4.68	9.87	12.21	15.32
6. I am pleased to be in this State Medical School	5.97	3.38	6.75	4.42	34.29	45.19
7. Academic achievements (classes and distinctions) are very important to me	3.64	1.56	8.05	6.23	35.33	45.19
8. My appetite has been good lately	6.23	3.38	5.71	7.53	35.07	42.08
9. I have been feeling well and energetic lately	8.57	6.23	12.99	18.18	25.46	28.57
10.I have never had a feeling of dropping out from the medical school	13.77	15.06	9.61	8.31	23.64	29.61
11. I do not have any difficulty in coping with the stress imposed on me by the medical course	25.97	31.43	10.39	12.21	10.65	9.35
12. I feel confident that I will be able to deal with the future challenges in learning medicine	5.19	7.53	6.75	10.39	35.06	35.06

Source: Part A of the questionnaire; Valid number of respondents - 385

*49.1% of the participants did not give any view for question No.5

positive thinking (p=0.023), face-booking/computer or video games (p=0.003), sports/physical activities/ games (p=0.014) and alcohol (p=0.001) more than the Sri Lankan students. Sri Lankan students used going home (p=0.001) and crying (p=0.045) more often than the Bhutanese students.

DISCUSSION

Stress is a common issue experienced by medical students from the first year of their medical course (Abraham *et al*., 2009). A research on assessment of perception of stress and coping strategies in the Pakistan Medical School show that an inability to cope, helplessness, increased psychological pressure, mental tension and too much work load are the predominant stress factors for students (Shaikh *et al*., 2004). Stress symptoms are increasingly reported by the medical students during the course of the training (Niemi & Vainiomäki, 1999; Jayasinghe *et al*., 2011). Among the common stressors, inability to cope itself is an important factor contributing to high level of stress (Shaikh *et al*., 2004). A high prevalence of stress among medical students may impair behavior and learning abilities of students (Abdulghani *et al*., 2011). Thus it is important to find out how the students cope and how effective the coping mechanisms used by the students as it indicates their overall mental state including low level of emotional intelligence, which would directly or indirectly affect their academic performance and other aspects of life (Ranasinghe *et al*., 2017).

In contrast to the most commonly used coping methods, the most effective coping mechanism identified by the current study were engaging in religious activities, meditation and worshipping, and these findings were similar to those reported by Silva (2008), which showed a significant positive relationship between meditation and mental health. But only 70.9% of participants of this study used meditation and religious activities as coping mechanisms. This method of coping has been expressed by a significant proportion of study participants when a group of Sri Lankan adults were surveyed 11 months after 2004 Asian tsunami (Hollifield *et al*., 2008). In the light of the current and previous study findings, it appears that Sri Lankans prefer to use meditation and prayers as effective coping methods. These methods are used more by the females than the males. Although getting advice from relevant people was an effective stress

Table 3: Effectiveness of different coping mechanisms used by the participants

Coping strategy	*Non-users (%)	**Users (%)	Percentage of users expressing as effective (%)
1. Religious activities: meditation/worshiping	29.1	70.9	95.21
2. Getting advice from lecturers and seniors	26.2	73.8	94.31
3. Talking with friends or parents	11.7	88.3	94.11
4. Sports/physical activities/games	51.5	48.5	94.03
5. Smoking	93.2	6.8	92.54
6. Completing the task, which was the stressor	14	86	91.51
7. Going home	26	74	91.22
8. Listening to music	9.4	90.6	90.52
9. Positive thinking	24.7	75.3	89.92
10. Planning (thinking about what steps to take and try to come up with appropriate strategies)	13.2	86.8	88.35
11. Alcohol	87	13	87.79
12. Sleeping	7.8	92.2	85.90
13. Drug abuse	93.5	6.5	84.62
14. Thinking of something or someone you like other than the stressor	22.6	77.4	84.24
15. Watching a movie	18.2	81.8	83.25
16. Taking a shower	45.5	54.5	82.23
17. Crying	47	53	79.96
18. Eating	45.2	54.8	79.20
19. Face-booking/computer games/video games	34.5	65.5	78.13
20. Showing anger over somebody	42.1	57.9	53.79

Source:Part B of the questionnaire; Valid number of respondents- 385

Those who used a strategy frequently were defined as users** of a particular strategy and those who marked never for a strategy were defined as non-users*.

Table 4: Gender difference in stress coping methods as expressed by the participants

Stress coping mechanism	Total users (%)	Male users (%)	Female users (%)	Kruskal Wallis value(p)
Talking with friends/parents	88.30	38.50	49.90	0.000
Completing the task, which is stressing	86.00	38.20	47.80	0.000
Positive thinking	75.30	30.90	44.40	0.000
Going home	74.00	34.10	40.00	0.001
Religious activities/meditation/worshiping	70.90	28.80	42.10	0.000
Games/face-booking/video	65.50	35.90	29.60	0.000
Crying	53.00	11.40	41.60	0.000
Engage in sports / physical activity	48.50	31.10	17.40	0.000
Alcohol	13.00	12.70	0.30	0.000
Smoking	6.80	6.80	0.00	0.000
Drug abuse	6.50	6.20	0.30	0.000

Source: Part B of the questionnaire; Valid number of respondents- 385

coping method, it had been used least commonly. This could be due to the absence of a healthy relationship and trust between the study participants and their seniors or lecturers and such findings have been observed in a study conducted in a different medical faculty in Sri Lanka (Jayasinghe *et al*., 2011). Going home was another least commonly used method and the reason for this might be the distant locations of their homes and busy academic schedules. Thus most students stayed in campus even for the weekends.

Based on the current study, smoking was considered to be effective in coping stress among 6.80% of the users. Presence of only a few smokers in the study sample might be due to the awareness of the harmful consequences of smoking among the medical students. Religious and cultural impact in the Sri Lankan society on the negative aspects of smoking might be another reason for lesser number of students choosing smoking to cope stress despite the perception that smoking reduces the vulnerability of male undergraduates from developing depressive symptoms (Perera, 2011). A study done by University of Michigan shows that about 1 in 5 American college students frequently take prescription drugs to relieve stress (Esperas, 2008). In the current study only 6.5% out of the total participants used drugs but it was not mentioned specifically whether these drugs were used for medical or recreational purposes.

According to a Nepalese study, planning and tackling the academic issue is the most effective coping strategy used by medical students (Sreeramareddy *et al*., 2007). This finding is in agreement with the present study's findings in which also planning and completing the tasks (88.35%) was found to be one of the most commonly chosen effective methods of coping stress (Table 4). There is no significant difference in the effectiveness of the stress coping methods between genders, different years of study and different nationalities, except for the usage of planning and completing the tasks as stress coping strategies and these methods are used significantly by the female students. No gender difference was noted for problem solving strategies while gender difference was noted with respect to emotion-focused strategies as female students talk about the issues with family and friends when compared to males and this was noted by a previous study as well (Hamilton & Fagot, 1988). Moreover, based on a study done in Glasgow University Medical School, female students use emotional support and positive reframing significantly more than their male colleagues (Moffat *et al*., 2004). Similarly, in the current study, girls used more emotional and spiritual methods to cope with stress like crying, going home, talking with friends and engaging in religious activities. These results were compatible with the societal norms of Sri Lanka where girls rarely indulge in activities like drinking alcohol, smoking and using drugs. Some boys vented emotions through drinking alcohol, smoking and drugs but the numbers chosen these methods were not as high as males practicing these methods in other countries (Firth, 1986; Moffat *et al*., 2004). In the present study, there was a significant difference in alcohol consumption and the use of games/face-booking/computer games between the Sri Lankan and the Bhutanese students. This could be explained by the general acceptance of alcohol in the Bhutanese culture. Bhutanese students being away from home would have used internet based social networking to keep in touch with their family and friends.

The major limitation of this study was that the study sample represented the medical students from one State Medical School only. The sample size for the country and the region was not balanced. The sample size was 420 and the response rate was 91.67%. Since all the medical students could not be included in this study due to practical difficulties and thus the ability to generalize the results is slightly compromised. Despite the good response rate, another limitation of this study was the non-response bias of some questionnaires. It would have been advantageous to interview a sample of non-respondents to assess their experience and psychological status as based on a previous study non-responders tend to be more depressed than the responders (Firth, 1986). Anonymity and confidentiality of the respondents were ensured in the study so that the identity of these students was unknown and thus, it was not possible to interview the non-respondents. The questionnaire based data were used to get an idea about the attitude of students towards social, general and academic issues, which would indirectly give an idea about their stressors and stress levels. The principal stressors experienced during the medical course by the students are related to medical training rather than personal problems (Moffat *et al*., 2004; Shah *et al*., 2009). But the present study was unable to identify the causes of stress among medical students in detail so that it was not possible to compare whether the students experienced stress more due to academic or personal reasons.

The question related to clinical experience (Q5 in Table 2) was not applicable to the 2nd year students who were not familiar with clinical work and thus, only just over 50% of the study sample responded to that question. The most common coping mechanisms were identified prior to the study using a few group discussions. Masturbation and pornography were not among them, hence, these were not included in the questionnaire; nevertheless these were accepted as coping strategies

by a few male students. There may be other important but less commonly used coping mechanisms, which were not included in the questionnaire. Results obtained by comparing the Bhutanese students and Sri Lankan students as separate populations might not be strong to make conclusions as the number of Bhutanese students participated in the study was less (only 3.6% of the total sample). The same was true for selection of participants from different religious groups as number of participants from religions other than Buddhism was less and thus randomization for different religious groups was not done.

In conclusion, the study participants had a positive attitude towards the social, general and academic aspects of life. The most effective coping mechanism used by the medical students was engaging in religious activities, meditation and worshipping. Planning and completing the tasks and talking about the issues with family and friends were used as stress coping strategies significantly by females. A few boys vented emotions through drinking alcohol, smoking and drugs. The data on the commonly used coping methods and their effectiveness would be useful in establishing counselling services, improving student-teacher relationships and integration of mental health services in the faculty including providing facilities for meditation/other religious activities such as praying/worshiping and recreational activities to help medical students cope stress in a healthy way.

REFERENCES

Abdulghani, H., AlKanhal, A., Mahmoud, E., Ponnamperuma, G. and Alfaris, E. (2011) Stress and its effects on medical students: a cross-sectional study at a College of Medicine in Saudi Arabia, *Journal of Health, Population and Nutrition*, 29(5), p. 516.

DOI: https://doi.org/10.3329/jhpn.v29i5.8906

Abraham, R., Zulkifli, E., Fan, E., Xin, G. and Lim, J. (2009) A report on stress among first year students in an Indian medical school, *South East Asian Journal of Medical Education*, 3(2), pp: 78-81.

Curtis, A. (2000) *Health psychology*, London: Routledge, p. 133.

DOI: https://doi.org/10.4324/9780203260845

Esperas, F. (2008) When college students resort to vices - a coping mechanism or the road to perdition? [Online] Available from: http://ezinearticles.com/?When-College-Students-Resort-to-Vices---A-Coping-Mechanism-or-The-Road-to-Perdition?&id=1101493 [Accessed: 4th April 2013].

Firth, J. (1986) Levels and sources of stress in medical students, *British Medical Journal*, 292(6529), pp: 1177-1180.

DOI: https://doi.org/10.1136/bmj.292.6529.1177

Hamilton, S. and Fagot, B. (1988) Chronic stress and coping styles: a comparison of male and female undergraduates, *Journal of Personality and Social Psychology*, 55(5), pp: 819-823.

DOI: https://doi.org/10.1037/0022-3514.55.5.819

Hollifield, M., Hewage, C., Gunawardena, C. N., Kodituwakku, P., Bopagoda, K. and Weerarathnege, K. (2008) Symptoms and coping in Sri Lanka 20–21 months after the 2004 tsunami, *The British Journal of Psychiatry,*192(1), pp: 9-44.

DOI: https://doi.org/10.1192/bjp.bp.107.038422

Jayasinghe, S., de Silva, P. and de Silva, D. (2011) Unacceptable teacher behaviour or medical student abuse?, *Ceylon Medical Journal,* 49(2), p. 69.

DOI: https://doi.org/10.4038/cmj.v49i2.3271

Johari, A and Hassim, I. (2009) 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, *Journal of Community Health*, 15(2), pp: 106-115.

Kumar, S. and Fernando, M. (2009) Characteristics that contribute to university adjustment: first-year Agriculture undergraduate students of the University of Peradeniya, In: University of Peradeniya, *Peradeniya University Research Sessions, Peradeniya, Sri Lanka, 3rd December 2009, pp: 669-671* [Online] Available from: http://dlib.pdn.ac.lk/bitstream/1/5368/1/M.A.C.%20Fernando.pdf [Accessed: 4th April 2013].

Lazarus, R. and Folkman, S. (1984) *Stress, appraisal, and coping*, New York: Springer, p. 19.

Moffat, K., McConnachie, A., Ross, S. and Morrison, J. (2004) First year medical student stress and coping in a problem-based learning medical curriculum, *Medical Education*, 38(5), pp: 482-491.

DOI: https://doi.org/10.1046/j.1365-2929.2004.01814.x

Niemi, P. and Vainiomäki, P. (1999) Medical Students' Academic Distress, Coping, and Achievement Strategies During the Preclinical Years, *Teaching and Learning in Medicine*, 11(3), pp: 125-134.

DOI: https://doi.org/10.1207/S15328015TL110302

Official Website of Faculty of Medicine, University of Peradeniya (2010) *Introduction* [Online] Available from: http://med.pdn.ac.lk/curriculum/introduction.htm [Accessed: 30th March 2013].

Perera, B. (2011) Are medical undergraduates more vulnerable than their non-medical peers to develop depressive symptoms?, *Galle Medical Journal*, 16(1), pp: 1-5.

DOI: https://doi.org/10.4038/gmj.v16i1.2901

Ranasinghe, P., Wathurapath,a W. S., Mathangasinghe, Y. and Ponnamperuma, G. (2017) Emotional intelligence, perceived stress and academic performance of Sri Lankan medical undergraduates, *BMC Medical Education*, 17(1), p. 41.

DOI: https://doi.org/10.1186/s12909-017-0884-5

Shah, C., Trivedi, R., Diwan, J., Dixit, R. and Anand, A. (2009) Common stressors and coping of stress by medical students, *Journal of Clinical and Diagnostic Research*, 3, pp: 1621-1626.

Shah, M., Hasan, S., Malik, S. and Sreeramareddy, C. (2010) Perceived Stress, Sources and Severity of Stress among medical undergraduates in a Pakistani Medical School, *BMC Medical Education*, 10(2).

DOI: https://doi.org/10.1186/1472-6920-10-2

Shaikh, B., Kahloon, A., Kazmi, M., Khalid, H., Nawaz, K., Khan, N. and Khan, S. (2004) Students, Stress and Coping Strategies: A Case of Pakistani Medical School, *Education for Health: Change in Learning & Practice*, 17(3), pp: 346-353.

DOI: https://doi.org/10.1080/13576280400002585

Silva, J. (2008) Some characteristics of mental status among medical students practicing and not practicing meditation [Online] Available from: http://pgim.srilankahealthrepository.org/handle/123456789/18956?mode=full&submit_simple=Show+full+item+record [Accessed: 3rd April 2013].

Silver, H. and Glicken, A. (1990) Medical student abuse. Incidence, severity, and significance, *JAMA: The Journal of the American Medical Association*, 263(4), pp: 527-532.

DOI: https://doi.org/10.1001/jama.1990.03440040066030

Sreeramareddy, C., Shankar, P., Binu, V., Mukhopadhyay, C., Ray, B. and Menezes, R. (2007) Psychological morbidity, sources of stress and coping strategies among undergraduate medical students of Nepal, *BMC Medical Education*, 7(26).

DOI: https://doi.org/10.1186/1472-6920-7-26

Weiten, W., Lloyd, M., Dunn, D. and Hammer, E. (2009) *Psychology Applied to Modern Life: Adjustment in the 21st Century'*, 9th Ed., Wadsworth: Linda Schreiber-Ganster, pp: 86-100.