



Relationship of Perceived Stress and Life Satisfaction among Medical Students: A Cross-sectional Study

Tan Xin Hui^{1*} and Umar Bin Mohd Ramzan¹

¹Department of Community Medicine, Melaka Manipal Medical College, 75150 Melaka, Malaysia.

Authors' contributions

This work was carried out in collaboration between both authors. Author TXH designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author UBMR managed the analyses of the study, the literature searches and wrote the final draft of the manuscript. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/BJMMR/2017/31693

Editor(s):

(1) Mari Nevas, Helsinki University, Finland.
(2) Nicolas Padilla-Raygoza, Department of Nursing and Obstetrics, Campus Celaya Salvatierra University of Guanajuato, Mexico.

Reviewers:

(1) Eze Ejike Daniel, Kampala International University, Uganda.
(2) Juandy Jo, Nutricia Research Singapore, Singapore.
(3) Nazan Bilgel, Uludag University Faculty of Medicine, Turkey.

Complete Peer review History: <http://www.sciencedomain.org/review-history/18554>

Original Research Article

Received 20th January 2017
Accepted 5th April 2017
Published 8th April 2017

ABSTRACT

Aims: To determine the relationship between stress and life satisfaction and also to correlate other factors that affect life satisfaction among medical students.

Study Design: Cross-sectional study.

Place and Duration of Study: This study was conducted in Melaka-Manipal Medical College, Muar, Johor, Malaysia from April to May 2016.

Methodology: 265 self-administered questionnaires were distributed to medical students of Melaka-Manipal Medical via universal sampling. The questionnaires consisted of socio-demographic characteristics, Quality of Life Enjoyment and Satisfaction Scale (14 items) and Perceived Stress Scale (4 items). Data were analysed using SPSS version 17.

Results: A total of 242 medical students participated in this study (a 91.3% response rate). There was a significant negative correlation between perceived stress and life satisfaction ($r = -0.366$, $P < 0.001$). Multiple linear regression analysis also showed a significant relationship between perceived stress and life satisfaction with regression coefficient of -1.445.

Conclusion: Intervention programs aimed at improving coping skills of the medical students in response to stress should be developed so that they enjoy greater satisfaction in life. This will lead to better academic performance, more efficient learning and reduce stress-related health problems.

Keywords: Life satisfaction; stress; medical students; coping; Malaysia.

1. INTRODUCTION

Life satisfaction is an overall assessment of feelings and attitudes about one's life at a particular point in time ranging from negative to positive [1]. In simple terms, it means how much a person likes the life they are living [2]. In Europe, a study found that nearly 80% of residents of EU were generally satisfied with their lives [3].

Stress is defined as the body's non-specific response in terms of personal, physiological, and emotional reactions to the demands made upon it or to disturbing events in the environment [4,5]. Many studies conducted previously have found that life satisfaction decreases as perceived stress increases [6-8]. A study conducted among American college students also found that life satisfaction was a useful predictor of life satisfaction [9]. Meanwhile, other studies have established that the prevalence of stress was significantly higher among medical students compared to students from different courses and the general population [10,11]. In Malaysia the stress prevalence among medical students obtained from two different studies was found to be higher than 40% [12,13].

With this background in mind, our rationale for this study is that we wanted to find out how the prevalent high stress levels among medical students affected their life satisfaction. However, there is a lack of literature that examines the relationship between stress and life satisfaction among medical students in Malaysia. Therefore, the objectives of this study were to determine the relationship between stress and life satisfaction and also to correlate other factors that affect life satisfaction among medical students. Our hypothesis would be that there is a correlation between stress and life satisfaction.

2. METHODOLOGY

2.1 Participants and Procedure

This cross-sectional study was conducted among medical students of Melaka-Manipal Medical

College (MMMM) from April to May 2016 at the campus in Muar, Johor, Malaysia. Approval to conduct the study was obtained and the medical students were informed that their participation was on voluntary basis. By participating, they were declaring their consent. We also informed the students that all the information would be kept confidential. We adopted universal sampling method by distributing a total of 265 self-administered questionnaires to batch 32 and batch 33 medical students. Students completed the questionnaire immediately after the lecture. We collected 242 completed questionnaires (a 91.3% response rate). Those who did not complete the questionnaire and those who were absent during the session were excluded from the study.

2.2 Measurement

Demographic data including information on gender, age, ethnicity, accommodation status and relationship status were collected in the first page of the questionnaire. We incorporated the measure of Quality of Life Enjoyment and Satisfaction and measure of Perceived Stress in the following pages.

2.2.1 Quality of life enjoyment and satisfaction questionnaire (Q-LES-Q-SF) [14]

The Q-LES-Q-SF is a 14-item scale which assesses degree of enjoyment and satisfaction of the participants during the past week in various areas of functioning such as relationships, work, mood and physical health. It was developed by Endicott et al. [14] and is a frequently used measure of life satisfaction showing sound internal consistency and is able to produce reliable, valid and sensitive assessments of life satisfaction [15]. Each item was rated on 5-point scale (very poor, poor, fair, good and very good) and each description was scored by 1, 2, 3, 4 and 5 respectively. The scores were summed up to obtain the mean value which ranged from 14 to 70. The Cronbach alpha coefficient obtained for this scale was 0.87 which indicates high reliability.

2.2.2 Perceived stress scale (PSS) [16]

The Perceived Stress Scale was originally developed as a 14-item measure along with a 4-item version by Cohen et al. [15] to measure the perception of stress and the degree to which situations in one’s life are appraised as stressful. The shorter 4-item version was used here. The questions are general in nature and relatively free of content specific to any subpopulation group and has been proven to possess substantial reliability and validity [16] while the Cronbach Alpha coefficient obtained was 0.89. Each item asks respondents to rate how frequent each situation has occurred in the past month. The scale has a 5-point Likert response format ranging from “never” to “very often”. The scores of the two positively stated items (question 2 and 3) were obtained by reversing the responses (0 = 4, 1 = 3, 2 =2, 3 =1, 4 = 0). The total score was calculated by summing the responses and a higher score represented a higher level of perceived stress. Sample items include: “In the last month, how often have you felt that you were unable to control the important things in your life?”; “In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?”.

2.3 Sample Size

The minimum number of participants needed to be recruited in order to carry out this study was 34. We estimated the sample size using the following formula [17].

$$N = \frac{[(Z\alpha + Z\beta)/C]^2 + 3}{r}$$

The standard normal deviate for $\alpha = Z_\alpha = 1.960$
 The standard normal deviate for $\beta = Z_\beta = 0.842$
 $C = 0.5 * \ln[(1+r)/(1-r)] = 0.502$
 $r = -0.464$ [7]

2.4 Data Analysis

Data were recorded and analysed using Microsoft Excel and SPSS version 17 software [18]. We presented socio-demographic characteristics using frequency and percentage, Perceived Stress Scale using mean and standard deviation. Pearson correlation coefficient test was used to analyse the association between quality of life satisfaction and perceived stress. We also explored the relationship between socio-demographic characteristics, perceived stress and life satisfaction by utilising multiple linear regression analysis. The level of significance was set as 95% ($P < 0.05$).

3. RESULTS AND DISCUSSION

Out of the 265 distributed and collected questionnaires, 242 were complete and hence used in the final data analysis. Using the Shapiro-Wilk Test, the scores for Quality of Life Satisfaction and Enjoyment were analysed and a p -value>0.05 was obtained indicating that the data was normally distributed.

Table 1 shows the socio-demographic characteristics of this study sample. Using A mean age of 22.77 years was obtained with a standard deviation of 0.85 years. In terms of gender, females were larger in number accounting for 59.9% of the sample. In terms of ethnicity, Malays were the largest in proportion at 40.7%, followed by Chinese and Indians accounting for 26.7% and 23.3% respectively. While various other ethnics made up the remaining 9.3%.

Table 1. Socio-demographic characteristics (n=242)

Variable	Frequency	(%)
Gender		
Male	95	40.1
Female	142	59.9
Age		
Mean ± SD	22.77 ± 0.85	
Min – Max	21 – 26	
Ethnicity		
Malay	96	40.7
Chinese	63	26.7
Indian	55	23.3
Others	22	9.3

Table 2. Perceived stress scale among students (n=242)

Variable	Mean*	SD
Total stress score (0-16)	7.12	2.35
Priority	2.14	0.84
Coping	2.14	0.92
Self-management	1.60	0.81
Confidence	1.25	0.84

*Higher score indicates higher stress

Table 2 shows the level of stress in our sample and the scores of each specific components. The total score ranges from 0 to 16 where a higher score indicates higher stress. The mean total score was 7.12 which is almost half of the total score. This may indicate that the total stress was not that high, however taking a closer look at

each component, the scores for ability to prioritize and coping were higher at 2.14 out of 4.

Next, Fig. 1 is a scatter plot of total stress score against quality of life satisfaction scores. The result of the correlation analysis using Pearson correlation coefficient is depicted here. Stress scores show a low negative correlation with Quality of Life Satisfaction scores which is significant. This means that as stress scores increase, the quality of life satisfaction scores decrease.

Furthermore, the results of the multiple regression analysis are also displayed in Table 3. For ethnicity, gender, relationship status and living accommodation, there was no significant association with life satisfaction. However, perceived stress after adjusting for confounding factors was found to have a significant association with life satisfaction. The regression coefficient was -1.445 which means that for every increase in 1 score of stress, life satisfaction decreases by 1.445 scores.



Fig. 1. Relationship between quality of life satisfaction and stress

Table 3. Multiple linear regression analysis of relationship between socio-demographic characteristics, perceived stress and life satisfaction

Variable	Coefficient	Standard error	P value
Ethnicity			
Malay	Reference		
Chinese	-2.403	1.496	.109
Indian	-3.232	1.657	.052
Others	-2.914	2.125	.172
Gender			
Female	Reference		
Male	0.229	1.174	.846
Relationship status			
In relationship	Reference		
Single	-1.397	1.306	.295
Hostelite			
No	Reference		
Yes	-1.476	1.406	.295
Perceived stress	-1.445	0.248	<.001*

*Significant value

The results of this study showed that perceived stress was correlated negatively life satisfaction. This is supported by many previous studies [7,9], including Chang et al. [8], and Kent et al. [19]. A study by Civitci [6] also found the same and concluded that life satisfaction decreases as perceived stress increases.

In terms of the multiple linear regression analysis between perceived stress and life satisfaction, the coefficient obtained was -1.445, suggesting that using PSS score, the life satisfaction could be predicted. Some studies support this finding in which perceived stress was described as a meaningful and useful predictor of life satisfaction [6,20]. However, a study by Matheny et al found that using perceived stress along with other measures such as coping resources provide a more accurate and reliable prediction of life satisfaction [9].

The linear regression analysis also adjusted for other factors which could affect life satisfaction such as ethnicity, gender and relationship status. In this study, there was no significant relationship between these factors and life satisfaction, which is similar to the findings of a study by de Vroome et al who concluded that there was no significant difference between majority or minority ethnic groups [21]. However, some studies have found significant differences across different ethnic groups especially among minorities who experience lower life satisfaction [22,23,24]. Gender on the other hand has been found to be significant in studies by Bugay et al. [25] and Joshi [26] while others like Tan et al. [27] and Kamal et al. [28] found no significant difference between gender and life satisfaction. This study found no significance between relationship status and life satisfaction which supported by the findings of Botha et al. [29] who determined there was no strong association between relationship status and life satisfaction. However, other previous studies contradict this finding, in which it was found that those in a relationship had higher life satisfaction [23,30].

Using the perceived stress scale in which four components were assessed for, coping and ability to prioritize were found to be higher than the other two. One explanation is that coping resources was particularly important for the understanding of stress as emphasized by Hobfoll [31]. In addition to coping, the ability to prioritise is also an important factor affecting stress in medical students as they are expected to learn and master a huge amount of

knowledge, attitudes and skills for which they have to work hard [32]. This makes the ability to prioritise essential and lacking this ability would definitely be more deleterious for medical students.

One of the limitations of this study is the narrow range of age of the study population. Another limitation is the fact that only medical students were part of this study. These factors limit the generalizability of this study. Another limitation is that this study being a cross-sectional study, the levels of stress as well as life satisfaction of the students could only be assessed at a single point of time, and a timeline showing the pattern of levels of stress along with life satisfaction among the students could not be assessed.

Through this study, we have been able to establish a significant relationship between perceived stress and life satisfaction. Hence, using this study as a preliminary understanding of the relationship between perceived stress and life satisfaction, future research should be aimed understanding the determinants of perceived stress which in turn affects life satisfaction.

4. CONCLUSION

This study shows that life satisfaction decreases as perceived stress increases as well as that perceived stress can be used as a predictor of life satisfaction. Hence, the findings of the present study indicate that there is a need to develop intervention programs aimed at improving coping skills of the medical students in response to stress so that they enjoy greater satisfaction in life. This will lead to better academic performance, more efficient learning and reduce stress-related health problems.

CONSENT

All authors declare that written informed consent was obtained from all participants.

ETHICAL APPROVAL

Approval to conduct the study was obtained from Melaka-Manipal Medical College Research Committee, Melaka-Manipal Medical College, Melaka, Malaysia.

ACKNOWLEDGEMENTS

We would like to acknowledge with gratitude Professor Dr Adinegara bin Lufti Abas, and

Associate Professor Dr Htoo Htoo Kyaw Soe for their full support and guidance. We would also like to express our appreciation to Federick Anak Tonen, Ooi Poh Yi, Nur Farisha Syuhada binti Harum, Susniaty binti Burhanuddin and Mohamed Mazlan bin Mohamed Musadiq for their help while conducting the study. Appreciation is also extended to forth year medical students of MMMC, Muar Campus for participating in our study.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Fareeda S. A study of life satisfaction and optimism in relation to psychological well-being among working and non-working women. *International Journal of Education and Psychological Research*. 2015;4(4): 81-85.
2. Veenhoven R. A comparative study of satisfaction with life in Europe. Budapest: Eötvös University Press; 1996.
3. Eurostat. Quality of life in Europe - facts and views - overall life satisfaction. (Accessed 20 July 2016)
Available:http://ec.europa.eu/eurostat/statistics-explained/index.php/Quality_of_life_in_Europe_-_facts_and_views_-_overall_life_satisfaction
4. Rosenham DL, Seligman ME. *Abnormal psychology* (2nd Ed.) New York: Norton; 1989.
5. Selye H. *Stress without distress*. New York: Harper & Row; 1974.
6. Civitci A. Perceived stress and life satisfaction in college students: Belonging and extracurricular participation as moderators. *Procedia - Social and Behavioral Sciences*. 2015;205:271–281.
7. Alleyne P, Greenidge D. Life satisfaction and perceived stress among university students in Barbados. *Journal of Psychology in Africa*. 2010;20(2):291-298.
8. Chang EC. Does dispositional optimism moderate the relation between perceived stress and psychological well being? A preliminary investigation. *Personality and Individual Differences*. 1998;25(2): 233–240.
9. Matheny KB, Roque-Tovar BE, Curlette WL. Perceived stress, coping resources, and life satisfaction among U. S. and Mexican college students: A cross-cultural study. *Annals of Psychology* 2008;24(1): 49-57.
10. Mehmet A. Anxiety, depression and stressful life events among medical students: A prospective study in Antalya, Turkey. *Med Educ*. 2001;35:12-17.
11. Firth J. Levels and sources of stress in medical students. *British Medical Journal*. 1986;292(6529):1177-1180.
12. Sami A. Stress and coping strategies of students in a medical faculty in Malaysia. *Malaysian Journal of Medical Science*. 2011;18(3):57-64.
13. Mohd Sidik S. Prevalence of emotional disorders among medical students in a Malaysian university. *Asia Pacific Family Medicine*. 2003;2(4):213-217.
14. Endicott J, Nee J, Harrison W, Blumenthal R. Quality of life enjoyment and satisfaction questionnaire: A new measure. *Psychopharmacology Bulletin*. 1993;29: 321-326.
15. Stevanovic D. Quality of life enjoyment and satisfaction questionnaire – short form for quality of life assessments in clinical practice: A psychometric study. *Journal of Psychiatric and Mental Health Nursing*. 2011;18(8):744-750.
16. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *Journal of Health and Social Behavior*. 1983;24:386-396.
17. Hulley SB, Cummings SR, Browner WS, Grady D, Newman TB. *Designing clinical research: An epidemiologic approach*. 4th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2013.
18. SPSS Inc. Released. *SPSS Statistics for Windows, Version 17.0*. Chicago: SPSS Inc; 2008.
19. Kent J, Gorenflo D, Forney M. Personal behavioral variables related to perceived stress of second year medical students. *Teaching and Learning in Medicine*. 1993; 5(2):90-95.
20. Abolghasemi A, Varaniyab ST. Resilience and perceived stress: Predictors of life satisfaction in the students of success and failure. *Procedia Social and Behavioral Sciences*. 2010;5:748–752.
21. de Vroome T, Hooghe M. Life satisfaction among ethnic minorities in the Netherlands: Immigration experience or adverse living conditions? *Journal of Happiness Studies*. 2014;15:1389-1406.

22. Knies G, Nandi A, Platt L. Life satisfaction, ethnicity and neighbourhoods: Is there an effect of neighbourhood ethnic composition on life satisfaction? *Social Science Research*. Forthcoming; 2016.
23. Eshkoo SA, Tengku AH, Chan YM, Suzana S. An investigation on predictors of life satisfaction among the elderly. *International E-Journal of Advances in Social Sciences*. 2015;1(2):207-212.
24. Clark M, Amar-Singh HS, Hashim L. The subjective well-being of Malaysian School children: Grade level, gender and ethnicity. *Psychology*. 2015;5:1453-1462.
25. Bugay A. Loneliness and life satisfaction of Turkish university students. *Education in a Changing Environment Conference*. Salford: University of Salford. 2007;371-376.
26. Joshi U. Subjective well-being by gender. *Journal of Economics and Behavioral Studies*. 2010;1:20-26.
27. Tan JP, Tan SA, Siti NY. Malaysian adolescents' life satisfaction. *Archives Des Sciences*. 2012;65(8):182-192.
28. Kamal A, Rehman A, Ahmad M, Nawaz S. The relationship of emotional expressivity and life satisfaction: A comparison of male and female university students. *Interdisciplinary Journal of Contemporary Research in Business*. 2013;4(11):661-669.
29. Botha F, Booysen F. The relationship between marital status and life satisfaction among South African adults. *Acta Academica*. 2013;45(2):150-178.
30. Demirtas S, Tezer E. Romantic relationship satisfaction, commitment to career choices and subjective well-being. *Procedia - Social and Behavioral Sciences*. 2012;46:2542-2549.
31. Hobfoll SE. Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*. 1989;44: 513-524.
32. Wolf TM, Kissling GE. Changes in life-style characteristics, health and mood of freshman medical students. *J Med Educ*. 1984;59:806-814.

© 2017 Tan and Ramzan; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<http://sciedomain.org/review-history/18554>