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.

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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[6,7,8]. 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 relationship 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 (MMMC) 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.

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]. 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 222. We estimated the sample size using the following formula:

$$n = \frac{z^2_{1-\alpha/2} \times p(1-p)}{d^2}$$

$$z_{1-\alpha/2} = 1.96$$ (95% confidence level; two-sided comparison)

$$p$$, prevalence of stress = 29.6%[17]

$$d$$, precision of proportion = 6%

Comment [NPR3]: What is the reliability of the questionnaire?

Comment [NPR4]: What is the reliability of the questionnaire?

Comment [NPR5]: Your sample size was calculated as categorical variable but the statistical analysis was quantitative. If you search a correlation the sample size should calculated in base on Pearson’s r
Data were recorded and analysed using Microsoft Excel and SPSS version 17 software. 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

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

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

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 2. Perceived Stress Scale among Students (n=242)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean*</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Stress Score (0-16)</td>
<td>7.12</td>
<td>2.35</td>
</tr>
<tr>
<td>Priority</td>
<td>2.14</td>
<td>0.84</td>
</tr>
<tr>
<td>Coping</td>
<td>2.14</td>
<td>0.92</td>
</tr>
<tr>
<td>Self-management</td>
<td>1.60</td>
<td>0.81</td>
</tr>
<tr>
<td>Confidence</td>
<td>1.25</td>
<td>0.84</td>
</tr>
</tbody>
</table>

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, Figure 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.

Table 3. Multiple Linear Regression Analysis of Relationship between Socio-demographic Characteristics, Perceived Stress and Life Satisfaction

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard error</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese</td>
<td>-2.403</td>
<td>1.496</td>
<td>.109</td>
</tr>
<tr>
<td>Indian</td>
<td>-3.232</td>
<td>1.657</td>
<td>.052</td>
</tr>
<tr>
<td>Others</td>
<td>-2.914</td>
<td>2.125</td>
<td>.172</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>0.229</td>
<td>1.174</td>
<td>.846</td>
</tr>
<tr>
<td>Relationship status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In relationship</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>-1.397</td>
<td>1.306</td>
<td>.295</td>
</tr>
<tr>
<td>Hostelite</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>-1.476</td>
<td>1.406</td>
<td>.295</td>
</tr>
<tr>
<td>Perceived Stress</td>
<td>-1.445</td>
<td>0.248</td>
<td>&lt;.001*</td>
</tr>
</tbody>
</table>
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.

The results of this study showed that perceived stress was correlated negatively with life satisfaction. This is supported by many previous studies[7,9], including Chang et al[8], and Kent et al[19]. A study by Civitic[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 prioritize 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 prioritize 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.

REFERENCES


