Original article

Inter -relationships between life satisfaction, self-esteem and perceived stress and their influence on academic achievements among medical and dental students at a Malaysian private university

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Abstract

Background: Life satisfaction, perceived stress and self-esteem have been found to be related to academic achievements of medical and dental students. However, the inter-relation of these three factors among medical and dental students has not been established.

Materials & Methods: This was a cross-sectional study carried out on 239 pre-clinical medical and dental students at a Malaysian private University using the Satisfaction with Life Scale (SWLS), Rosenberg Self-Esteem Scale (RSES) and the Perceived Stress Scale (PSS). Data was analysed using the Statistical Package for Social Sciences (SSPSS) version 22. The SWLS, RSES and PSS scores are expressed as mean ± standard deviation. Comparison of means was carried out using the independent t test. Correlation

of variables was carried out using Pearson's Correlation. A p value ≤ 0.05 is considered statistically significant and a p value of ≤ 0.001 is considered highly significant.

Results: Overall, medical and dental students showed an average level of life satisfaction (*M*=23.46, *SD*=5.52), moderate level of stress (*M*=20.49, *SD*=5.85) and normal self-esteem (*M*=17.61, *SD*=4.7). Among the three factors, only perceived stress had a significant effect on their academic achievements ($p<0.05$). All three factors also showed a significant correlation with one another ($p<0.05$).

Conclusions: Findings from this study suggest that stress management is important to medical and dental students as this helps with their academic performance and has an influence on their self-esteem, as well as life satisfaction.

Keywords: Life satisfaction; self-esteem; perceived stress; medical students; dental students

Introduction

Life of a medical or dental student is stressful due the heavy workload and the many challenges one has to endure throughout one's academic pursuit. Several studies have shown that medical students experience stress levels that are higher than the general population.[1-3] On the other hand, a study has demonstrated some considerable degree or severe stress among dental students.[4] While stress is not necessary a bad thing all the time, and may act as a motivating factor to some, chronic stress often has many negative and harmful effects on one's physical health.[5,6] Some

factors contributing to stress among medical students have been identified. These include environmental factors, new college environment, student abuse, tough study routines and personal factors.[7]

Not only can stress have an impact on one's physical health, it has also been shown to have an effect on one's mental health.[8, 9] Hence, it is not uncommon that medical and dental students experience depression. In a meta-analysis, it was reported that the global prevalence of depression among medical students was 28.0%.[10] On the other hand, burnout, depression and suicidal thoughts have also been reported among dental students.[11] Besides, the stress level of dental students has been shown to increase over the academic years with detrimental effects on both their health and academic performance[12] whereas stress has been negatively correlated to the academic performance of medical students.[13]

Life satisfaction refers to a positive cognitive evaluation of one's life, which is an important indicator of one's subjective well-being.[14] As life in medical and dental schools is very demanding and stressful - both mentally and physically, medical and dental students may be restricted from activities that are more life satisfying. As such several studies have been carried out to investigate the life satisfaction of medical and dental students in the past.[15,16] It is important to understand the life satisfaction of these students because a relationship between positive well-being and academic performance has been demonstrated among dental

students[17] whereas quality of life has been correlated to academic performance among medical students.[18]

Self-esteem may be defined as the positive or negative evaluations of oneself and how one feels about it.[19] According to Rosenberg, [20] self-esteem can be viewed as an attitude that raises one's sense of worthiness. It is important for medical and dental students to have appropriate views of themselves as self-awareness and self-directed learning are important elements of medical and dental education. Some factors that play a role in the self-esteem of a person include gender[21] and socioeconomic status.[22] Just like stress and life satisfaction, self-esteem has also been related to learning outcomes of students. In one study, those with a higher self-esteem were more successful in their academic achievements.[23] In another study, it has been demonstrated that self-esteem was a more significant contributor of academic performance among medical and health sciences students, when compared to stress or body image.[24] However, there have been contradictory views on the effects of self-esteem on academic performance. For example, Baumeister *et al* believe that a high self-esteem is the result rather than the cause of good academic performance.[25]

Although many studies have looked into the life satisfaction, perceived stress and self-esteem of medical students and dental students individually, there are not many studies that explore the inter-relationships between these three aspects in a single study. This study aimed to investigate the interplay between the life satisfaction, self-esteem and perceived stress of medical and

dental students at a private university in Malaysia. It also investigated their effects on the academic performance of these students.

Materials & Methods

This was a cross sectional study carried out at a private university in Malaysia to investigate the relationship between life satisfaction, self-esteem and perceived stress among medical and dental students.

Participants

The study was conducted on pre-clinical medical and dental students in a Malaysian private university. A total of 239 students (comprising of 104 Year 1 medical students, 44 Year 2 medical students, 49 Year 1 dental students and 42 Year 2 dental students) took part in the study.

Instruments

Three questionnaires were used in this study, namely, the Satisfaction with Life Scale (SWLS), the Rosenberg's Self-Esteem Scale (RSES) and the Perceived Stress Scale (PSS). All three instruments have been widely used in the published literature. Before attempting the questionnaires, the students filled in their demographic data and sign a consent form.

Satisfaction with Life Scale (SWLS)

The SWLS is commonly used to measure global life satisfaction. Life satisfaction is assessed by a 5-item Likert scale. Responses for all five items were on a 7-point scale, with 1 indicating

"strongly disagree" and 7 indicating "strongly agree". A higher overall score indicates a high level of life satisfaction.

Rosenberg's Self-Esteem Scale (RSES)

The RSES is a tool for assessing global self-esteem. It consists of 10 items. Items are anchored with a 4-point scale, ranging from 0 (strongly disagree) to 3 (strongly agree). However, 5 items are reversely scored (items 2,5,6,8 and 9). In general, the higher the score, the higher the self-esteem.

Perceived Stress Scale

The PSS questionnaire consists of 10 questions related to the participant's feelings and thoughts in the previous month. The participants were required to rate how often they felt or thought a certain way using a 5-point scale, where 0 indicates that they never experienced the condition mentioned in the question and 4 means that they experienced it often. The higher the overall score, the higher the level of perceived stress.

Consent and confidentiality

The students' participation in the study was voluntary. The participants signed a consent form prior to attempting the questionnaires, which were anonymous.

Statistical analysis

Data was analysed using the Statistical Package for Social Sciences (SSPSS) version 22. The SWLS, RSES and PSS scores are expressed as mean ± standard deviation. Comparison of means was carried out using either the independent t test.

Correlation of variables was carried out using Pearson's Correlation. A p value ≤ 0.05 is considered statistically significant and a p value of ≤ 0.001 is considered highly significant.

Results

Demographic data

The demographic data of the participants is summarised in Table 1.

Table 1 Demographic data of participants

Demographic factor		**Frequency**
Age (years)	Minimum	18
	Maximum	29
	Mean	20.95
	SD	1.27
BMI (kg/m^2)	Minimum	13
	Maximum	37
	Mean	21.97
	SD	4.11
Gender (n, %)	Male	85 (35.56%)
	Female	151 (63.18%)
	Unspecified	3 (1.26%)
Race (n, %)	Malay	85 (35.56%)
	Chinese	89 (37.24%)
	Indians	38 (15.90%)
	Others	22 (9.21%)
	Unspecified	3 (1.26%)
Family income (n, %)	Lower income group (< RM 10000)	144 (60.25%)
	Higher income group (>RM 10000)	75 (31.38%)
	Unspecified	20 (8.37%)
Academic achievement	High achievers	76 (29.29%)
	Non-high achievers	158 (66.12%)

	Unspecified	5(2.09%)

Mean SWLS, RSES and PSS scores among medical and dental students

The mean SWLS, RSES and PSS scores of medical and dental students are summarised in Table 2. A statistical significant difference in the mean RSES score was observed between the medical (*M*=18.13, *SD*=4.15) and dental students (*M*=16.78, *SD*=5.37; *p*=0.042). However, differences in mean SWLS and PSS scores between the medical and dental students were statistically not significant (p>0.05).

Table 2 Mean SWLS, RSES and PSS scores of medical and dental students

Course	**Score**	**Mean**	**SD**	**Significance (p value)**
Medical	SWLS	23.55	5.69	0.738
Dental		23.31	5.25	
Overall (medical & dental)		23.46	5.52	
Medical	RSES	18.13	4.15	0.042
Dental		16.78	5.37	
Overall (medical & dental)		17.61	4.70	
Medical	PSS	20.28	5.89	0.499
Dental		20.81	5.80	
Overall (medical & dental)		20.49	5.85	

Relationship between academic achievement and mean (i) SWLS, (ii) RSES and (iii) PSS scores

In this study, high achievers refer to the students who achieved the highest grades in the exams. There was a statistical significant difference in the mean PSS score in which the high achievers (*M*= 19.41, *SD*=5.89) scored significantly lower than the non-high achievers (*M*=21.07, *SD*=5.72; *p*=0.041). Differences in the mean SWLS and RSES scores were, on the other hand, statistically not significant (*p*>0.05) between the high achievers and non-high achievers. (Table 3).

Table 3 Relationship between academic achievements and mean (i) SWLS, (ii) RSES and (iii) PSS scores

	Achievement	Mean	SD	**Significance (p value)**
SWLS score	Non-high achiever	23.01	5.474	0.079
	High achiever	24.36	5.477	
RSES score	Non-high achiever	17.35	4.345	0.248
	High achiever	18.11	5.204	
PSS score	Non-high achiever	21.07	5.721	0.041
	High achiever	19.41	5.886	

Correlation between SWLS, RSES and PSS scores

The RSES score was moderately, positively, and significantly correlated with the SWLS score (*r*=0.49, *p*= 0.000) and was moderately, negatively and significantly correlated to the PSS score (*r*=-0.54, *p*=0.000). The SWLS score was moderately, negatively, and significantly correlated to the PSS score (*r*=-0.47, *p*=0.000) (Table 4).

Table 4 Correlation between SWLS, RSES and PSS scores

		RSES score	SWLS score	PSS score
RSES score	Pearson Correlation	1	0.490**	-0.536**
	Sig. (2-tailed)		0.000	0.000
SWLS score	Pearson Correlation	0.490**	1	-0.468**
	Sig. (2-tailed)	0.000		0.000
PSS score	Pearson Correlation	-0.536**	-0.468**	1
	Sig. (2-tailed)	0.000	0.000	

Discussion

In this study, medical students (*M*=23.55, *SD*=5.69) had a higher mean SWLS score than dental students (*M*=23.31, *SD*=5.25) but the difference was statistically not significant. A score between 20 and 24 implies that a person is generally satisfied with most areas of his or her life but would like some improvement in each area.[26] The findings suggest that both medical and dental students were in general satisfied with their life and these findings are in tandem with those from a previous study, which reported similar SWLS scores.[16]

Overall, the mean RSES scores of medical and dental students were in the range of normal (i.e. between 15 and 25). Medical students (*M*=18.13, *SD*= 4.15) also had a higher mean RSES score when compared to that of dental students (*M*=16.78, *SD*= 5.37), and the difference was statistically significant (*p*=0.042). Although literature comparing the RSES scores of medical and dental students is scarce, a significant

interdisciplinary difference in the RSES score has been reported in one study comparing medical, midwifery and nursing.[27]

Medical (*M*=20.28, *SD*= 5.89) and dental students (*M*= 20.81, *SD*= 5.80) in this study reported a moderate level of stress (i.e. between 14 and 26), which was comparable with finding in a study carried out on medical students in India (*M*=24.91, *SD* 7.31),[28] and lower than that in a study carried out on Pakistani medical students (*M*=30.84, *SD* = 7.01). [29] However, this may be due to the different settings of the medical schools in these studies. The difference in the mean PSS score was statically not significant between medical and dental students.

Life satisfaction of medical and dental students did not have a significant effect on academic achievement. Although the high achievers had a higher mean SWLS score, there was no statistical significant difference in the score between the high achievers (*M*=23.01, *SD*=5.47) and non-high achievers (*M*=24.36, *SD*=5.48). This finding contradicts that in a study conducted on dental students in which academic performance was related to the positive well-being, [17] and that in a study on medical students, which showed a relationship between academic performance and quality of life.[18] Other studies have also reported a significant relationship between academic achievement and life satisfaction. For example adolescent students' GPA has been shown to significantly correlate to life satisfaction ($p<0.01$)[30] and a positive reciprocal causal relations between students' life satisfaction and grades has been reported in another study.[31]

In addition, although the mean RSES score of the high achievers (*M*=18.11, *SD*=5.20) was higher than that of the non-high achievers (*M*=17.35, *SD*=4.35), the difference was statistically not significant (p>0.05) which contradicted the findings of several other studies in which students with high self-esteem had better academic performance.[23, 24] However, it is not sure whether good academic achievements is the cause or the result of a high self-esteem. Some researchers believe that good performances lead to a high self-esteem but not the other way round. Bowles specifically measured the self-esteem of students right after they obtained their exam grades and the positive correlation between the two was consistent with the view that self-esteem is a result, rather than the cause of doing well in school.[32] On the other hand, other researchers "have not found evidence that boosting self-esteem (by therapeutic interventions or school programs) causes benefits" and their findings "do not support continued widespread efforts to boost self-esteem in the hope that it will by itself foster improved outcomes."[25]

Interestingly, the perceived stress of the students was the only factor that had a statistical significant relationship with their academic achievements. The high achievers (*M*=19.41, *SD*=5.89) significantly perceived a lower level of stress when compared with the non-high achievers (*M*=21.07, *SD*=5.721; *p*=0.041). This finding is in tandem with those from other studies in which a negative relationship between stress and academic performance has been reported. [12, 13, 33]

The relationship between life satisfaction, self-esteem and perceived stress is interesting in this study in that all three factors were found to be inter-related to each other. The SWLS score demonstrated a moderate, positive and significant correlation with the RSES score (r=0.49, p= 0.000) but a moderate, negative and significant correlation with the PSS scores(r=-0.47, p=0.000). On the other hand, the PSS score was moderately, negatively and significantly correlated to the RSES score(r=-0.54, p=0.000).

A significant positive relationship between life satisfaction and self-esteem in the present study coincides with findings in previous studies.[34, 35] This is because self-esteem is an important predictor of happiness, and that a high self-esteem predicts lower levels of depression.[36] Results of previous studies, as well as the current study are in agreement with earlier research by Diener and Diener, in which self-esteem was found to be a strong predictor of life satisfaction.[37]

The relationship between life satisfaction and stress was negative and significant in this study. This is consistent with the findings from previous studies[38-40] which suggest that perceived stress is a useful predictor of life satisfaction. However, Matheny, Roque-Tovar and Curlette reported that the use of perceived stress together with coping resources give a more accurate prediction of life satisfaction.[41]

The negative relationship between stress and self-esteem also coincides with findings from previous studies.[42, 43] However,

the causal relationship between the two is complex. Perception appears to be the point of interaction between self-esteem and stress. Generally, a low self-esteem makes a person vulnerable to stressful situations. On the other hand, a high self-esteem is protective against stressful events as those who have a high self-esteem generally have a positive approach in their perception of things.[44] However, increasing levels of stress may be detrimental to one's self-esteem especially with time.[45]

The present study has established the effects of (i) life satisfaction, (ii) self-esteem and (iii) perceived stress on the academic achievements and the inter-relation between these three factors among medical and dental students at a Malaysian private university. However, there were some limitations in this study which include a small sample size limited to only first and second year medical and dental students, and that the study was a cross-sectional study that explored the three factors at a single point of time.

Conclusions

Several points can be concluded from this study. Firstly, medical, and dental students who took part in the study were in general having (i) an average level of satisfaction with their lives, (ii) a self-esteem within normal range and (iii) a moderate level of perceived stress. Secondly, among the three factors, only perceived stress had a significant effect on their academic achievements. Last but not least, significant correlation existed between (i) life satisfaction and stress, (ii) stress and self-esteem

and (iii) life satisfaction and self-esteem, suggesting that these three factors are inter-related among medical and dental students.

This implies that stress management plays an important role among these students as it may help improve their academic achievements. Given the relationship with life satisfaction and self-esteem, a less stressed student may also have an improved life satisfaction and a higher self-esteem. Therefore, it may be beneficial if medical and dental schools help their students to develop coping strategies to combat stress throughout their academic pursuit. Based on the current study, it is recommended that future studies should include (i) a bigger sample size, (ii) students from different levels of study, and (iii) exploration of the effectiveness of various coping strategies with regards to academic achievements.

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