PREVALENCE AND DETERMINANTS OF PERCEIVED STRESS AMONG UNDERGRADUATE STUDENTS IN A MALAYSIAN UNIVERSITY

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Abstract

Introduction: Studying in a university can be stressful for any undergraduate student, and the excessive stress is associated with physical and mental health problems. The purpose of the study was to examine the prevalence and determinants of perceived stress among undergraduate students in a Malaysian university.

Methods: 456 undergraduate students participated in this study. The Perceived Stress Scale and the Student Stress Survey (SSS) were implemented as indicators; PSS as a global measure of perceived stress, and the SSS for the identification of the sources of stress.

Results: The prevalence rate of perceived stress among the undergraduate students was 37.7%. The overall PSS mean score was 27.5 (SD 4.763), with a cut-off value of perceived stress at 28. Multivariate logistic regression model identified that the female student (OR 1.995, 95% CI 1.313-3.031) and the first year student (OR = 2.383, 95% CI 1.047-5.422) perceived more stress than the others.

Conclusion: The present study demonstrated a high prevalence rate of perceived stress among undergraduate students in general, and the female and the first year undergraduate students in particular. There is a need for further studies on the borderline stress of the undergraduate students and the sources of stress.

Keywords: Prevalence, Stress, Students, Logistic Regression

Introduction

Research on perceived stress is common in health psychology, as stress may have a potentially detrimental impact on the individual. Traditionally, the term *stress* is defined as the physiological response and adaptation of the body to any demand for change. The responses include the secretion of hormones and the physiological changes associated with the hormonal changes including an increased heart rate (1). In general, stress can be classified into two broad categories of eustress and distress. Eustress is often labeled as positive stress, with health and behavioural benefits (1, 2). Research has demonstrated that a moderate level of stress can improve performance and contribute to positive feelings, showing that the experience of stress does not always lead to negative outcomes (3). In contrast, distress, or negative stress, is elevated when demands exceed the ability of the individual to cope (4). The symptoms of excessive stress overlap with mental health disorders of anxiety and depression (5). Hence, stress is often seen as a contributor in problematic disorders, with a decrease in health behaviour (6) and an elevation in depression (7).

Epidemiological studies have been conducted to examine the prevalence rate of stress across the age groups from the adolescent (8, 9) to the elderly (10), in both clinical (11) and non-clinical settings (12). From the various studies, one group received increased attention, that of the undergraduate students. The stress of a transition from high school to university is well-documented in the literature, with remarkably elevated levels of overwhelming

stress (13, 14) during the switch of the environment with new responsibilities as university students, with the increased academic workloads, and the involvement in public speaking (15). Four major sources of stress among university students, the interpersonal, the intrapersonal, the academic, and the environmental have been suggested (16). Other determinants were the gender (17) and the year of study (18). These studies were contradictory and inconclusive. The unique nature of university life signalled a need to identify the prevalence rate and determinants of perceived stress among undergraduate students.

A high prevalence rate of stress among undergraduate students was found, with psychological stress as high as 30%, in a study, which involved 7800 Canadian undergraduates from 16 universities (19). A similar but smaller local study, by Phang and colleagues (20) found a the prevalence rate of stress of 49.3% in a sample of 306 undergraduates. The studies were focused on medical students (21-24). The studies suggested that medical students experienced more stress compared to students of other faculties (25), However, many of the stressors experienced by medical students were common stressors for other students from other faculties. For instance, in a study on 400 medical students, the major stressors to them were the worry about their future (78.2%) and the interpersonal conflicts (57.1%) (26). These stressors were not exclusive to medical students, as the students from other faculties might equally be vulnerable.

In the light of this consideration, the primary aim of the study was to investigate the prevalence rate of perceived stress among undergraduate students in general. The secondary aim was to identify the determinants of perceived stress among undergraduate students, which included the gender, the year of study, and the four sources of stress, of the interpersonal, the intrapersonal, the academic, and the environmental sources.

Methods

The participants of the study were identified through cluster sampling in the Universiti Putra Malaysia (UPM). With permission from the Students' Affair Division, potential participants from eight faculties in UPM were approached. Questionnaires were distributed to the classes from each of the selected faculties. The participants were required to be Malaysians who were enrolled in the undergraduate studies provided by UPM during the study period. Post-graduate students were excluded from the study. Students who met the selection criteria were invited to participate in the study by filling the questionnaire, attached with a consent form. The questionnaires were collected on the spot upon completion.

The study applied the formula provided by Israel (27) to estimate the target sample size. With 18,772 students enrolled in UPM during the data collection period, the target sample size was estimated at 392 respondents. A further 20% was added to the target as a-buffer for incomplete and invalid data. A total of 470 questionnaires

were distributed and there was a participation of 456 undergraduate students, which exceeded the target.

The Perceived Stress Scale (PSS). The PSS is a global measure of perceived stress (28). It consisted of 14 items that were designed on a five-point Likert scale, from 0 (never) to 4 (very often). The participants were required to rate the degree to which their lives had been unpredictable, uncontrollable, and overloading. The score ranged from 0 to 56, and the higher the total score, the higher the perceived stress. The operational cut-off value to discriminate between the "stressed " and the "non-stressed" was 28 (29,30). Undergraduate students who scored 28 and above were classified as "stressed", while those who scored below 28 were "non-stressed". The PSS demonstrated good internal consistency with Cronbach's alpha from 0.84 to 0.86 and had been found to be a reliable psychometric measure of perceived stress in a review by Lee (31).

The Student Stress Survey (SSS). The SSS (16) was used to measure sources of stress among the participants. The SSS consisted of 40 potentially stressful situations from four sources; the interpersonal with six items, the intrapersonal with sixteen items, the academic with eight items, and the environmental with ten items. The participants were required to reflect on situations they had experienced in the current year of the study. The total checked items were summed up, with the higher total indicating more common sources of stress. The SSS had been utilised to evaluate sources of stress among university students, including Malaysian students, in various studies (32-35).

Data Analysis

All analyses in this study were performed using SPSS 21. Descriptive analysis was conducted to examine the characteristics of each variable regarding frequency, percentage, mean, and standard deviation. A multivariate logistic regression model was performed to identify the determinants of perceived stress among undergraduate students: where the potential determinants included the age; the gender; the year of study; the race; and the sources of stress, the interpersonal, the intrapersonal, the academic, and the environmental sources.

Results

The profile of the participants by perceived stress are presented in Table I. Participants of the study were 456 undergraduate students, aged between 18 to 27 years old (mean 22.87, SD 1.761). The gender distribution was 175 males (38.4%) and 281 females (61.6%). Around one-third of the participants were in their fourth-year (37.9%), followed by third-year students (28.1%), second-year students (18.0%), and first-year students (16.0%). More than half of the participants were Malays (52.2%), while the rest were Chinese (40.4%), Indians (4.4%), and other races (3.1%). The prevalence of perceived stress in the study was 37.7% (N 172/456). The overall PSS mean score was 27.5 (SD 4.763), which was on the borderline of "stressed".

Table I: Profile of the Participants by Perceived Stress

Variable	n (%)		
	Total	Non-stressed	Stressed
Age (M ± SD)	22.87 ± 1.761	22.96 ± 1.639	22.71 ± 1.940
Gender			
Male	175 (38.4)	125 (44.0)	50 (29.1)
Female	281 (61.6)	159 (56.0)	122 (70.9)
Year of study			
First year	73 (16.0)	37 (13.0)	36 (20.9)
Second year	82 (18.0)	46 (16.2)	36 (20.9)
Third year	128 (28.1)	87 (30.6)	41 (23.9)
Forth year	173 (37.9)	114 (40.2)	59 (34.3)
Race			
Malay	238 (52.2)	149 (52.5)	89 (51.8)
Chinese	184 (40.4)	116 (40.8)	68 (39.5)
Indian	20 (4.4)	11 (3.9)	9 (5.2)
Other	14 (3.0)	8 (2.8)	6 (3.5)

Sources of Stress

The sources of stress among the participants are presented in Table II. In general, the students of both groups, the stressed and the non-stressed, reported similar patterns of sources. Both groups reported the intrapersonal sources as the most common source of stress ($M_{sources}$ 2.94, $M_{Non-stressed}$ 2.96), followed by the environmental sources ($M_{Non-stressed}$ 1.41, $M_{Stressed}$ 1.56), the interpersonal sources ($M_{Non-stressed}$ 1.23, $M_{Stressed}$ 1.44), and the academic sources ($M_{Non-stressed}$ 1.16, $M_{Stressed}$ 1.15) (36).

Table II: Sources of Stress in by Perceived Stress

Variable	Mean (SD)			Skew	Kurtosis
	Total	Non-stressed	Stressed		
Interpersonal sources	1.31 (1.189)	1.23 (1.156)	1.44 (1.234)	0.762	0.205
Intrapersonal sources	2.95 (2.053)	2.94 (1.965)	2.96 (2.196)	0.847	0.678
Academic sources	1.16 (1.091)	1.16 (1.131)	1.15 (1.026)	1.124	1.654
Environmental sources	1.47 (1.567)	1.41 (1.583)	1.56 (1.541)	1.223	0.926

Note. *SD* Standard Deviation; *Skew* Skewness

Determinants of Perceived Stress

A multivariate logistic regression model was conducted to identify the determinants of perceived stress (see Table III). These results revealed that the gender and the year of the study were significant determinants of perceived stress among the participants. Specifically, the female undergraduate (OR 1.995, 95% CI 1.313-3.031) and the first year undergraduate (OR 2.383, 95% CI 1.047-5.422) were more likely to be in the stressed group. The results showed that the race and the four major sources of stress were not significant determinants of perceived stress among the undergraduate students.

Table III: Determinants of perceived stress by multivariate logistic regression model

Variable	OR	95% CI	p
Age	1.090	0.946-1.255	0.234
Gender			
Male	1.000		
Female	1.995	1.313-3.031	0.001
Year of study			
First year	2.383	1.047-5.422	0.039
Second year	1.754	0.960-3.203	0.068
Third year	1.010	0.577-1.765	0.973
Forth year	1.000		
Race			
Malay	0.619	0.191-2.004	0.423
Chinese	0.750	0.224-2.511	0.641
Indian	0.776	0.175-3.435	0.738
Other	1.000		
Interpersonal stressors	1.146	0.954-1.376	0.145
Intrapersonal stressors	0.941	0.838-1.057	0.306
Academic stressors	0.999	0.815-1.223	0.989
Environment stressors	1.047	0.901-1.216	0.548

Discussion

The study aimed at identifying the prevalence rate and the determinants of perceived stress among undergraduate students in general. 37.7% of the undergraduate students experienced stress, with one in three experiencing heavy stress. The rate was lower than the prevalence rate of medical students in India (42.5%) (30) and in Pakistan (58.9%) (37), showing the higher stress among medical students. The rate was higher than the students' in the secondary school, who had a prevalence rate of 26.1% (38). This was an evidence of the elevation of stress in the transition to the university.

The study also found that the gender and the year of study were significant determinants of perceived stress. The female students were almost twice more likely to be stressed compared to the male students. This gender difference was consistent with many of the past studies (17, 39), which suggested that the female undergraduates were more vulnerable to stress than their male fellow students. The findings also supported a previous study which suggested that first-year students were exposed to higher stress than the students in the other years of study. (40). The first year students were 2.383 times more likely to be stressed than the fourth year students.

None of the sources of stress in the study significantly predicted perceived stress among the participants. This unexpected result might be due to the SSS being a measure of the number of stressors, but not the degree of severity of the stressors. The experience of parental divorce is more stressful than the wait in a long line, and yet both

these events were counted as one stressor in SSS. Because of this, there is a need to expand the study to include other validated instruments to address the severity of the stressors.

The strength of the study was the inclusion of undergraduate students from numerous faculties. Given the high prevalence rate of perceived stress of 37.7%, it is evident that the undergraduate students are at risk for stress-related disorders. Student service departments should organise workshops and programmes to educate undergraduate students about the various choices of coping strategy. For instance, the mind/body interventions have been found to be effective in reducing psychological distress and perceived stress among college students. The students join a six-week training programme in relaxation response and cognitive behavioural skills (41). The first-year undergraduate students should also be exposed to student-led stress management programmes (42), where groups of the students are required to meet with the second-year student co-leaders for seven consecutive weeks, to facilitate successful adjustment to university.

The limitation of the study was the enrolment of the participants from a single site. Future research should include students from other universities, in both public and private sectors. The study failed to take into consideration the degree of severity of the stressors. Further research should take the issue into account for a better understanding of the determinants of stress among the undergraduate students. There might be other potential determinants of perceived stress that were not accounted for in the study, such as the coping strategy. The choice of a coping strategy could greatly affect the outcomes of stressful experiences (43). Research to examine the role of coping strategy as a determinant of perceived stress among Malaysian undergraduate students is recommended.

Conclusion

While previous epidemiological studies on stress among undergraduate students were mainly focused on medical students, our study provided evidence of the high prevalence rate of perceived stress among undergraduate students in general. One in three undergraduate students would experience heavy stress, and interventions similar to the mind/body intervention, are needed for the students to effectively cope with stress. The female undergraduate student and the first-year undergraduate student are more likely to be stressed than the others and interventions designed specifically for these vulnerable groups should be implemented.

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