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Stress scores association with self-regulated learning perception in dental students

Sidra Aamer[a], Fizza Sahar Anwar[b], Abdul Qadir[c], Khudija Bint e Nawaz[d], Anoosha Usman[e], Maria Nawaz Khan[f]

Abstract

Introduction: Stress is one of the prime factors that can sabotage a student's physical ability and mental sanity. The biggest challenge for any medical student is to cope with academic stress along with high societal pressure and keeping up with the fast-paced world. A productive approach that can be fruitful for coping is self-regulation which requires use of metacognitive strategies and time management skills. The objective was to investigate the perceptions of undergraduate dental students regarding self-regulated learning and to identify relevant role of stress which influences such skills at Foundation University College of Dentistry.

Material and methods: The quantitative correlational study was conducted in June 2022 at the Foundation University College of Dentistry, Islamabad, Pakistan, and comprised regular dental students enrolled in first to fourth year. Data was collected using Perceived stress scale-14 and Self-regulated learning perception scale questionnaires to identify the levels of stress and self-regulated learning skills. Data was collected at one point of time and analyzed using SPSS 2.0.

Results: Of the 184 students approached, 163(88%) filled in the questionnaire. Of them, 149(91.4%) were females and 14(8.6%) were males. No significant differences were found between the scores of male and female students ($p>0.05$). There was a moderate positive correlation between stress and self-regulated learning skills ($p<0.05$).

Conclusions: Self-regulated learning skills can play a vital role in coping with stress and identifying a goal.

Keywords: Dental education; self-regulation; strategies; stress; students

Introduction

University students and that too particularly medical students have become an area of prime concern worldwide because of their mental health as this populace has been proven to be at the risk of stress, anxiety and depression due to certain reasons such as educational pressure, facing hurdles in accomplishing their goals and other challenges of life.[1] According to WHO "Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity" (WHO, 1948). Not being able to discern any of these issues may lead to multiple psychological and physical morbidities thus disturbing the quality of life in all aspects.[2] The students of medical schools get to encounter various tests and trials throughout their study period and in professional lives as well. The biggest challenge for any medical student to cope with is academic stress. Academic stress is the product of a combination of academic related demands that exceeds the adaptive resources available to an individual[3] Stress is one of the prime factors that can sabotage a student's physical stability and mental sanity. Today, the students find themselves under immense pressure because of societal expectations. High societal pressure on today's generation

[a] BDS, MSc, MHPE; Professor, Dental Materials, Foundation University College of Dentistry.

[b] Corresponding Author. BDS. MSc; Assistant Professor, Dental Materials, Foundation University College of Dentistry.
Email: fizz.saharanwar@gmail.com

[c] BDS, MHPE; Assistant Professor, Dental Education & Research, Foundation University College of Dentistry.

[d,e,f] 2nd year student, Foundation University College of Dentistry.

of constantly keeping up with this fast-paced world and maintaining grades in school at the same time has burdened the students. As a result current generation is under a lot of stress compared to previous ones.[1] In Pakistan, the students of medical schools have a huge academic stress because of the immense workload and enough resources are also not provided by the government and institutions.[4] A productive approach that can be fruitful for medical students to cope with stress is self-regulation.[5] Self-regulated learning is a way of learning using meta cognitive strategies, evaluating and planning.[6] Self-regulation skills involve good time management, setting goals and constantly monitoring performances. Hence, it is a remarkable way of dealing with stress that medical students go through throughout their academic sessions.[7] The following study was planned to evaluate the correlation between stress levels and self-regulated learning skills in medical students of FUCD (Foundation University College of Dentistry).

Material and Methods

This quantitative correlational study was conducted in May 2022 at Foundation University College of Dentistry (FUCD) Islamabad, Pakistan, and comprised regular undergraduate dental students enrolled in first to fourth year. FUCD is affiliated with the Fauji Foundation University. After gaining approval from the institutional ethical review Committee, a pilot study was done on a group of 10 students representing all four years to address any issue related to "item language and its understanding" and "time taken to complete the questionnaire". The data from the pilot study was not included in the results. The sample size was calculated through Open Epi online software,[9] using confidence interval (CI) of 95% and margin of error 5%. Any threats towards internal validity of the study were identified and handled accordingly. Data was collected by using two pre-validated instruments which were Perceived Stress Scale-14 (PSS-14)[10] and Self-regulated Learning Perception Scale (SRLPS).[11] The questionnaire consisted of three sections designed on Google forms (Annexure 1). Students gave informed consent before they completed the questionnaire.

The PSS-14 scale consists of 14 questions with a range of options (never, almost never, sometimes, often, very often) on Likert scale from 0 to 4 for each item. These items inquire about the events that occurred one month prior to the survey. Items number 4,5,6,7,9,10 and 13 are positively stated questions. Therefore, their score is calculated as reversed (0=4, 1=3, 2=2, 3=1, and 4=0). The final score ranges between 0 and 56. High scores signify high level of stress, while low scores indicate lower level of stress. The range of PSS-14 scores were divided into stratified quartiles. The upper two and lower two quartiles were combined (28 being the operational cutoff value for the upper bound) and were labelled as severe stress, moderate stress, mild stress and no stress respectively. This cut-off value was set in accordance with similar studies in the region.[12-14] The SRLPS incorporates 41 items with a range of options (never, almost never, sometimes, often, very often) on Likert scale from 1 to 5 for each item. The minimum possible score for SRLPS is 41 and the maximum 205. Data was collected at one point of time and analyzed using SPSS 25. Pearson's correlation was used in order to determine the relationship between the students' stress levels and the self-regulated learning skills. $P< 0.05$ was taken as significant.

Results

Of the 184 students approached, 163(88%) filled in the questionnaire. Of them, 14(8.6%) were males and 149(91.4%) were females. No significant differences were found between the scores of male and female students ($p>0.05$). Mean PSS-14 score was 32.08±6.5 in females and 27.0±9.4 in males, whereas the

mean SRLPS score was 139.2+16.3 in females and 136.7±31.2 in males. On the important factor of motivation to study BDS, SRLPS score was highest in students 141.7±17.3 studying BDS as 2nd choice after MBBS, mean SRLPS score was lowest in students 134.2±25.6 who were studying BDS due to parental pressure and SRLPS score was 139.9±18.1 of students studying out of personal interest. However, the mean PSS-14 score of students with personal interest 30.8±7.8, those under parental pressure 32.6±5.5 was the highest and those studying BDS as 2nd choice after MBBS was 32.1±5.3. The highest SRLPS score was seen in first year students 142.8 ±17.1 followed by third year 140.9 ±14.3, second year 135.5 ±15.0, fourth year 135.3±25.4. (Table I). The highest PSS-14 is 32±7.3 for students living with parents, lowest is 30.27±6.8 for students residing in hostels, while those with relatives have 30.7±4.9 score, however the SRLPS is also highest 140±17.4 for students living with parents, while the lowest 133±23.8 is of students residing with relatives and for students in hostel the score is 139.9±18.1.

Table I: Mean PSS-14 scores

Variable	n%		PSS-14 Mean SD	SRLPS Mean SD
Gender				
Female	149(91.4%)		32.08±6.5	139.2±16.3
Male	14(8.6%)		27.0±9.4	36.7±31.2
Age (Years)				
18-20 Y	69(42.3%)		32.3±7.6	139.4±15.4
21-23 Y	94(57.7%)		31.1±6.4	138.6±20.4
24-26 Y	---		---	---
Year Of Study				
1st Year	54(33.1%)		32.6±7.7	142.8±17.1
2nd Year	43(26.4%)		32.0±6.8	135.5±15.0
3rd Year	32(19.6%)		30±6.1	140.9±14.3
4th Year	34(20.9%)		31±7.0	135.3±25.4
Residence				
Hostel	11(6.7%)		30.27±6.8	139±15.6
With Parents	125(76.7%)		32±7.3	140±17.4
With Relatives	26(16.0%)		30.7±4.9	133±23.8
Rental House	---		---	---
Motivation to Study BDS				
Personal Interest	87(53.4%)		30.8±7.8	139.9±18.1
Parental Pressure	18(11.0%)		32.6±5.5	134.2±25.6
2nd Choice After MBBS	38(23.3%)		32.1±5.3	141.7±17.3
Random	20(12.3%)		33.1±7.2	133.7±13.0

Table II: Stress levels and PSS-14 scores

SCORE OF PSS-14	STRESS LEVEL	n%	MEAN SRLPS
Up to 14	no stress	2(1.2%)	2(1.2)
Up to 28	mild	53(32.5%)	11(6.7)
Up to 42	moderate	99(60.7%)	133(81.6)
Up to 56	severe	9(5.5%)	17(10.4)

Discussion

The fact that a statistically significant difference was found between PSS-14 scores of female and male students was unexpected as the result deviated from the original study.[8-10] It is however consistent with the results reported in other research [11-15] regarding stress scores difference between the genders which is hypothesized as being due to different perceptions of stressors between the two groups and different coping mechanisms equipped along with more exposure to stressors by women.[13] The alteration of results may also be due to the small number of questionnaires filled by males as opposed to the female population. The SRLPS scores are also of the same variation.

A marked difference was in the stress as well as SRLPS scores of 1st-year students which were the highest as opposed to that of the final year in the original study.[8] An explanation for that may be e-learning experienced mostly by the first years during the pandemic which makes the student the main author of their learning processes and provides greater perceived capacity for self-regulated learning.[16] The final year students equipped with the more directed learning experience and clinical rotations in the curriculum have the least SPSS and SRLPS. A consistency observed was with third-year

students with high SRLPS scores despite having the lowest stress as their experience with the integrated system mounts to being most.[8,17-20] The age of students also corresponds with the year of study.

Residence with parents corresponds to the highest levels of stress and self-regulated learning. This may be due to the constant parental scrutiny and the pressure to perform influences the development of metacognitive skills.[12,21-23] There was no significant difference in PSS-14 scores of students residing in hostels and those in relatives' homes. The SRLPS scores, however, showed a significant change with those in hostels having scores almost close to students living with parents. The lack of any distracting factors and proximity with extrinsic motivation in form of other students is likely to be the cause of that.[24-26]

Personal interest is an inherent motivation that aids in defining objectives and creating methods to reach them. It was therefore not surprising that students who were pursuing BDS because of personal interest had lower PSS-14 scores and higher SRLPS scores.[8] An unexpected outcome nonetheless was students opting for BDS as the second choice after MBBS with the highest SRLPS scores which may be due to overcompensation for the failure of attaining the desired outcome. The unwanted dental students had high levels of stress, which may be related to their negative attitude and outlook toward the dental program and its future.[27-29]

In the study, a positive correlation between stress and self-regulated learning perception was obtained following the previous study.[8] However, the majority of the students fall not in the lower quartile of stress but more than half report mild to moderate stress and similarly high SRLPS scores. One explanation for this may be the inherent stress of dental education acts as a motivator for students and directs them toward self-regulation.

The study's scope is limited since it was limited to a single center. Additionally, the number of responses between the two genders was not equally leading to selection bias. Another drawback is that the PSS-14 can only assess the level of stress experienced in the previous month. It is best to employ longitudinal surveys to gauge stress levels for an academic year. The total ratings were collected from the questionnaires where it is also possible that pupils underestimated or overestimated how well they could manage their stress. It will be wise to compare the self-regulated learning scores of two medical colleges in the future—one with a traditional curriculum and the other with an integrated one.

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