

## Evaluation of causative factors leading to anxiety during examination among the dental undergraduate students

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**Abstract:** Globally anxiety during examination is a psychological problem which has been associated with fear of failing an exam or evaluation, commonly seen among the dental students. A cross sectional study was conducted amongst the 453 dental students studying at different dental schools across Pakistan. Questionnaire used to gather data was adapted and improved from a recently conducted study by Al-Sahman LA et al. For condensing the raw data, frequency and percentage were determined. In order to assess the relationship between two categorical variables, Chi-square testing was used. Out of 453 students, there were 81% females, and 19 % males. Majority of the females and males agreed being afraid of being unsuccessful in exams. Regarding awareness of pattern of exam n=273 females and n=51 males agreed. Many of the 2nd year students agreed about being stressed from the high-grade students. Majority of the 2nd year students disagreed about having sufficient time to revise before the examination. Concerning the ability to manage time for studies, 1st years agreed, while some of the 2nd year students disagreed. In response to recalling before the exam, n=81 2nd students found difficulty to recall, while many of the 1st and 2nd years gave neutral response. With reference to fear of failing exams and knowledge of exam pattern majority of the students from all the years agreed. Almost majority of the students agreed regarding studying full night before exam. From the current study it can be concluded that anxiety affects the efficiency and the level of concentration of students during the period of examination. Females generally get more worried regarding the consequences of failing of exam. Main facts that led to increase in anxiety were lack of adequate sleep and nutrition, difficulty in recalling, and managing time for studies.

**Index Terms-:** Anxiety, Dental, Examination, Students, Stress

### Introduction

Test anxiety is a collection of psychological and behavioural responses associated with fear of failing an exam or similar evaluation [1]. Test anxiety can further be described as a situational trait that refers to the state of anxiety and worries, which may occur during tests or earlier. The phase of exam anxiety manifested itself either suddenly and progressively. Occasionally, it is constant, and or sometimes, it subsides within a few hours [2].

There are four major sources of documented stress that can lead to exam anxiety: lifestyle problems, a lack of necessary knowledge, study habits, and psychological factors [3]. According to numerous authors, lifestyle problems such as sleep disturbances, sedentary lifestyle, poor eating habits, and a lack of self-discipline all contribute towards exam anxiety [4-5]. Furthermore, a study by Sujit et al concluded that lack of pragmatic learning that can be described as an unsuccessful studying style due to inconsistent study pattern and studying whole night prior to examinations due to lack of revision of previously studied course material, are significant factors contributing towards exam-related depression [6].

Numerous authors have identified psychological factors that greatly contribute to exam anxiety, including negative and irrational thoughts regarding the process of examination, exam results, and feelings of having no control over exam situations [7-8].

The curriculum formulated for dental students is quite challenging in nature.<sup>[9]</sup> This is mainly because of the clinical posting at various dental departments and the way of academic training that several institutes implement,

with demanding academic competences are essential thorough out the duration of the course [10-11-12].

Another significant challenge that students generally face during their period of schooling is arrangement of adequate funding for their educational opportunities. The prospect of additional financial burden in the event of exam failure heightens the levels of anxiety. Additionally, inability to control or manage nervousness or anxiety during the tests is a specific type of clinical anxiety commonly referred as test anxiety [13]. A little increased in the levels of student anxiety during examination is encouraged in order to increase the students' motivation and learning. However, accumulating this level of fear will not assist the student in performing well; rather, it will have a detrimental effect on their academic success [14]. The psychological sign that may occur includes restlessness, irregular physical movements, difficulty in focusing before an exam, insomnia, tiredness, muscle contracting, stomach pain and palpitations [15].

When these repercussions arise, students and professionals are prevented from achieving their potential, and they face setbacks. Even well-performing students that have received decent grades during the

## Methodology

This cross-sectional study was conducted among the dental students studying at various dental colleges of Pakistan. The study was initiated in September 2020 and lasted till March 2021. This research was carried out in accordance with the Declaration of Helsinki.

Both males and females students enrolled in various public and private dental colleges in Pakistan were included, while students who did not gave consent to participate in this research, were excluded. It was made abundantly clear that there was no obligation to participate in this research and that participation was entirely voluntary. It required five to seven minutes to completely fill up the survey form. The questionnaire was distributed to 500 students, amongst which 453 completely filled it up, providing a response rate of 91%.

Questionnaire that was used to gather data was adapted and modified from a recently conducted study by Al-Sahman LA et al [20]. The questionnaire was formulated on Google forms and link of the survey form was distributed to students through different social media platforms like WhatsApp. All participants had to first fill

session, face high levels of stress prior to the final exam [15].

Compared to the general population and high school students, dental students have nearly twice the prevalence of moderate to severe exam anxiety [16]. Health services may be considered as a high-stress environment. It is especially stressful for these students to be taking exams in school and in a clinical setting. Dental students have to undergo various clinical examinations, which are quite difficult and necessitate further training before treating the patients [17]. The majority of research on anxiety and depression in health care students has been conducted on western populations [18-19].

However, there is a dearth of research on test anxiety among the Pakistani students. In order to find the effect of test anxiety on academic achievement among the medical and dental students in Pakistan, this field of study needs to be explored more closely [16]. The findings of this study will be useful in determining the prevalence of fear amongst the dental students. It is important to determine the prevalence of risk and correlations between students to incorporate adequate intervention programs within this community.

the informed consent form outlining the purpose and aims of the study.

The first part of the survey consisted of questions related to demographic information such as age, gender, year of study and the field of education. The next part of the questionnaire consisted of questions on a 3-point Likert scale. Questions comprised of finding adequate time to study, being afraid of failing exam, parental pressure, pressure from A grade students, any distraction during exam, studying whole night before exams, regarding diet and COVID-19.

## Data Analysis

Using SPS Program, Version 23.0, the parameters were all statistically studied at the subject level (SPSS Inc., Chicago, IL, USA). For condensing the raw data, frequency and percentage were determined as summary measures. In order to assess the relationship between two categorical variables, Chi-square testing was used. Statistical significance is defined as a measured p value of less than 0.05.

**Results**

Out of 453 students, 81% (n=372) were females, with 17.9% (n=81) males. About 45% students were in age group of 18-20 years, 50% were in 21-23 years, and 4.4% from 24-26 years. Majority of students (44.2%) belonged to 2nd year, with 35% from 1st year and 9.7% and 11% from 3rd and 4th year respectively. (Table 1)

Table 1: Demographic characteristics of the participants

Table 2 demonstrates association of responses by dental students with gender. Majority of the females n=268 and

Variable	N	%
<b>Gender</b>		
Female	372	82.1
Male	81	17.9
<b>Age</b>		
18-20	204	45.0
21-23	229	50.6
24-26	20	4.4
<b>Year of Study</b>		
1 <sup>st</sup> year	159	35.1
2 <sup>nd</sup> year	200	44.2
3 <sup>rd</sup> year	44	9.7
4 <sup>th</sup> year	50	11

males n= 63 agreed regarding having fear of being unsuccessful in exams. Regarding the awareness of pattern of exam n=273 females and n=51 males agreed.

Table 3 shows that many of the 2nd year students (n=100) agreed about being stressed from the high-grade students. Majority of the 2nd year students (n=104) disagreed about having sufficient time to revise before the examination. In response to managing time for studies, n=77 1st years agreed, while n=76 2nd year students disagreed. In response to recalling before the exam, n=81 2nd students found difficulty to recall, while n=86 and n=71 2nd and 1st years neither agreed nor disagreed. Regarding fear of failing exams and knowledge of exam pattern majority of the students from all the years agreed. Almost majority of

With regards to timing of exam n=182 females and n=36 males responded positively while n=126 females gave a neutral response. Regarding memorizing the course without understanding n=261 females and n=48 males disagreed. (Table2)

Table 2: Factors associated with the level of anxiety between genders

		MALES	FEMALES	P-VALUE
Do you experience fear of failing the exams?	Agree	63	268	0.039
	Disagree	13	42	
	Neutral	5	62	
Are you aware of the pattern of the exam?	Agree	51	273	0.024
	Disagree	18	41	
	Neutral	12	58	
Do you find the time of examination convenient?	Agree	36	182	0.032
	Disagree	24	64	
	Neutral	21	126	
Do you memorize the course without understanding it?	Agree	22	43	0.001
	Disagree	48	261	
	Neutral	11	68	

the students agreed regarding studying full night before exam. Regarding healthy eating habits during exams, majority of the second years disagreed (n=113) while n=84 first years agreed. Most of the students informed regarding facing distractions during their exams. Regarding the difficulty levels of dental vocabulary and difficulty in studying when a family member contacted COVID-19 majority of students agreed. (Table 3).

Table 3: Factors causing anxiety among undergraduate students of different year

	Year of study	Agree	Disagree	Neutral	p-value
Pressure from A grade students to perform well	1st year 2nd year 3rd year 4th year	54 100 22 25	54 62 10 18	51 38 12 7	0.012
Do you have enough time to revise before the exam?	1st year 2nd year 3rd year 4th year	56 30 19 12	47 104 16 29	56 66 9 10	0.000
Are you able to manage time for your studies?	1st year 2nd year 3rd year 4th year	77 54 23 14	32 76 7 11	50 70 14 24	0.000
Are you able to easily recall before the exam?	1st year 2nd year 3rd year 4th year	53 30 15 9	32 81 8 21	71 86 19 20	0.00
Do you experience fear of failing the exams?	1st year 2nd year 3rd year 4th year	92 165 35 39	39 10 4 2	28 25 5 9	0.000
Are you aware of the pattern of the exam?	1st year 2nd year 3rd year 4th year	99 154 35 35	35 14 5 5	25 32 4 10	0.008
Do you study the whole night before the day of your exam?	1st year 2nd year 3rd year 4th year	67 117 29 31	53 49 9 5	39 34 6 14	0.002
Do you feel you're eating habit is healthy during the examination?	1st year 2nd year 3rd year 4th year	84 59 21 14	52 113 15 26	23 28 8 10	0.000
Are there any distractions during the study; like Mobile, Internet, Netflix	1st year 2nd year 3rd year 4th year	86 124 31 33	44 24 4 9	29 52 9 8	0.002
do you find dental/Medical vocabulary difficult?	1st year 2nd year 3rd year 4th year	55 85 16 12	41 38 11 21	63 77 17 17	0.053
Do you find it difficult to study and concentrate when someone in your house is not well due to COVID-19?	1st year 2nd year 3rd year 4th year	111 175 36 38	28 14 3 3	20 11 5 9	0.004

**Discussion:**

Apprehension before or during the examination is an emotional response faced by students before the

examination. This distress is not irrational, but presence of undue fear impedes the performance. Authors advocate that being a little worried is beneficial for the students as it keeps them focused; conversely worrying too much can be quite draining and may impede the grades if not dealt properly [21].

Findings from the current study state that majority of females and male students had fear of failing in exams. These findings are in agreement with the previously conducted research [22-23]. This can be because females in general worry too much regarding the extensive course load and are more concerned regarding their grades.

Almost majority of the females and male students had awareness regarding the pattern of exam. These findings are in contrast from the previously conducted research in India on 1<sup>st</sup> year medical students where about 68% of the student demonstrated lack of knowledge about the pattern of exam [24]. This can be attributed to the fact that the newly inducted first years would be appearing for the first time in medical exams and are quite new to the system and hence require time in understanding the pattern. Furthermore, research by Alcalá recommends that instructors must familiarize the students regarding the format of exam and the how the rating of questions is being done [25].

Another important factor leading to apprehension during examination is failure of undergraduates to assign adequate time to their studies. This can cause difficulty in managing time for numerous subjects and not having sufficient time to revise before the exams. Likewise, findings from the current study reveals that majority of the 1<sup>st</sup> and 3<sup>rd</sup> year students agreed, also many of the second-year students responded finding insufficient time to revise before the exams. Comparable results have been reported by Patil and Aithala, where majority of the medical students from different years in India found time management to be a contributory factor in causing anxiety [26]. Researchers have suggested that actions must be taken to support the well-being of the students.<sup>27</sup> This can be done by providing small group sessions, moral support and counselling services to students which can be beneficial in the long term [28-29].

Finding from the study have identified that most of the second-year students had trouble in recalling the content before the exam. This can be due to extensive study course that dental students generally have to follow. A

study by Hashmat et al reported extensive course load as a major factor causing anxiety among students [21]. Hence, it is advisable to students to equally divide their course over period of time in order to be prepared before the exams.

In the current study majority of the students confirmed staying up all night studying prior to exam. These findings are in agreement with the previously conducted research [20-26]. It is crucial for students to strategically plan their study, take out time for physical health and must understand the importance of sleeping well before the exam.

Almost half of the second-year dental students confirmed about acquiring unhealthy eating habits during the period of examination. Similar findings have been reported by previously conducted researches where unhealthy diet, lack of sleep and exercise effected the general well-being of students during examination [24]. These findings suggest that students must receive proper counselling regarding the importance of adequate sleep and nutrition, however this can also be attributed to fact that many students in Karachi are from other cities of Pakistan and are living in Hostels where facilities may not be up to the mark.

Interestingly most of the students answered finding difficult in studying and concentrating when a family member contacts COVID-19. These results are in agreement with the study led by Son C et al, where 43% of the participated showed concern regarding a family member contacting COVID-19 either due to their occupation or those being more vulnerable in getting exposed to the virus [30].

There is a dire need for universities to implement a systematic approach to monitor the mental health of students. This sort of monitoring would let institution of higher education to assess the mental health needs of their students and improve the effectiveness of the prevailing counselling programs.

### **Conclusion:**

From the current study it can be concluded that anxiety affects the efficiency and the level of concentration of students during the period of examination. Females generally get more worried regarding the consequences of failing of exam. Main facts that led to increase in anxiety were lack of adequate sleep and nutrition, difficulty in

recalling, and managing time for studies. Hence counselling and moral support must be provided to students.

## References

- [1] Rajiah K, Coumaravelou S, Ying OW. Relationship of test anxiety, psychological distress and academic motivation among first year undergraduate pharmacy students. *Int J Appl Psychol.* 2014;4(2):68–72.
- [2] Arbabisarjou A, Zare S, Shahrakipour M, Ghoreishinia G. Analyzing test anxiety among medical sciences students of Zahedan in 2015. *Int J Med Res Health Sci.* 2016;5(7):334–7.
- [3] Frischenschlaeger O, Haidinger G, Mitterauer L. Factors associated with academic success at Vienna Medical School: prospective survey. *Croat Med J* 2005; 46: 58-5.
- [4] Parkerson GR Jr, Broadhead WE, Tse CK. The Health status and life satisfaction of first year medical students. *Acad Med* 1990; 65: 586-8.
- [5] Acharya S. Factors affecting stress among Indian dental students. *J Dent Educ* 2003; 67: 1140-8.
- [6] Sangsiry SS, Bhosle M, Sail K. Factors that affect Academic Performance among Pharmacy students. *Am J Pharm Educ* 2006; 70: 104-16.
- [7] Alexander DA, Haldane JD. Medical education: a student perspective. *J Med Educ* 1979; 13: 336-41.
- [8] Miller PM, Surtees PG. Psychological symptoms and their course in first year medical students as assessed by Interval General Health Questionnaire (IGHQ). *Br J Psychiatr* 1991; 159:199-207
- [9] Al-Samadani KH, Al-Dharrab A. The perception of stress among clinical dental students. *World J Dentistry.* 2013;4:24-28.
- [10] Divaris K, Barlow PJ, Chendea SA, Cheong WS, Dounis A, Dragan IF, et al. The academic environment: the students' perspective. *Eur J Dent Educ.* 2008;12:120-130.
- [11] Gorter R, Freeman R, Hammen S, Murtomaa H, Blinkhorn A, Humphris G. Psychological stress and health in undergraduate dental students: fifth year outcomes compared with first year baseline results from five European dental schools. *Eur J Dent Educ.* 2008;12:61-68.
- [12] Humphris G, Blinkhorn A, Freeman R, Gorter R, Hoad-Reddick G, Murtomaa H, et al. Psychological stress in undergraduate dental students: baseline results from seven European dental schools. *Eur J Dent Educ.* 2002;6:22-29.
- [13] Khosravi, M. & Bigdeli, I. (2008). The relationship between personality factors and test anxiety among university students. *Journal of Behavioral Sciences.* 2 (1), 13–24.
- [14] Coon, D. & Mitterer, J. (2009). *Psychology of Test anxiety.* Journey of Cengage Learning. 28(3), 48-53.
- [15] Porto, A. (2013). Definitions and classification of NANDA nursing diagnoses. *NANDA International.* 68 (4), 603-609.
- [16] Dawood, E., Al Ghadeer, H., Mitsu, R., Almutary, N., & Alenezi, B. (2016). Relationship between Test Anxiety and Academic Achievement among Undergraduate Nursing Students. *Journal of Education and Practice,* 7(2), 57-65.
- [17] Mohamad, N. E., Sidik, S. M., Akhtari-Zavare, M., & Gani, N. A. (2021). The prevalence risk of anxiety and its associated factors among university students in Malaysia: a national cross-sectional study. *BMC public health,* 21(1), 1-12.
- [18] Barbería E, Fernández-Frías C, Suárez-Clúa C, Saavedra D. Analysis of anxiety variables in dental students. *International dental journal.* 2004 Dec 1;54(6):445-9.
- [19] Laurence B, Williams C, Eiland D. Depressive symptoms, stress, and social support among dental students at a historically black college and university. *Journal of American College Health.* 2009 Jul 1;58(1):56-63.
- [20] Al-Sahman LA, Al-Sahman RA, Joseph B, Javali MA. Major factors causing examination anxiety in undergraduate dental students-a questionnaire based cross-sectional study. *Annals of Medical and Health Sciences Research.* 2019;9(6).
- [21] Hashmat S, Hashmat M, Amanullah F, Aziz S. Factors causing exam anxiety in medical students. *Journal-Pakistan Medical Association.* 2008 Apr 1;58(4):167.
- [22] Baldassin S, Alves TC, de Andrade AG, Nogueira Martins LA. The characteristics of depressive symptoms in medical students during medical education and training: a cross-sectional study. *BMC Med Educ.* 2008;8:60. [PMC free article] [PubMed] [Google Scholar]
- [23] Alvi T, Assad F, Ramzan M, Khan FA. Depression, anxiety and their associated factors among medical students. *J Coll Physicians Surg Pak.* 2010;20:122–126. [PubMed] [Google Scholar]
- [24] Sangeeta N, Simran G, Lily W, Vishavdeep K. A study to access the exam stress in medical college and various stressors contributing to exam stress. *Scholars Journal of Applied Medical Sciences.* 2015;3(7C):2615-0.
- [25] Alcalá, F. R. (2002). Making oral tests more human and less anxiety generating. *Humanising Language Teaching.* 4 (4):1–3.
- [26] Patil SG, Aithala MR. Exam anxiety: Its prevalence and causative factors among indian medical students. *National Journal of Physiology, Pharmacy and Pharmacology.* 2017;7(12):1323-8.
- [27] Yusoff MSB, Mat Pa MN, Esa AR, Abdul Rahim AF. 2013b. Mental health of medical students before and during medical education: a pro-spective study. *J Taibah Univ Med Sci.* 8:86–92
- [28] Guraya SY, Almaramhy HH. 2012. Small group teaching improves students' acquisition of knowledge and skills. *Saudi Med J.* 33:1304–1309
- [29] Alexander DA, Haldane JD. 1979. Medical education: a student perspective. *Med Educ.* 13:336–341.
- [30] Son C, Hegde S, Smith A, Wang X, Sasangohar F. Effects of COVID-19 on college students' mental health in the United States: Interview survey study. *Journal of medical internet research.* 2020;22(9):e21279.

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