Students' Corner
Original Article

Measures used by medical students to reduce test anxiety

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Abstract

Objective: To determine test anxiety in medical students and to assess the measures used by them to reduce it.

Methods: The cross-sectional study was conducted in August 2009 at the Dow University of Health Sciences, Karachi, and involved 388 medical students who were voluntary participants. The 10-item Westside Test Anxiety Scale, was used to measure anxiety and the pre-designed questionnaire asked the students about the frequent measures used by them to overcome anxiety during exams and their past Grade Point Average. All data was coded and analysed using SPSS version 16 with a prior set alpha level of 0.05.

Results: Of the 450 students who were initially considered for the study, 388 fulfilled the inclusion criteria. Among them, 101 (25.3%) were male students with a mean anxiety level of 2.55 ± 1.27, and 287 (71.8%) were females with a mean anxiety level of 3.07 ± 1.43 ($p< 0.05$). Prayers and self-motivation (28.3%), sleep and relaxation (11%), television and music (10%), calling friends (8.5%) and revision (6.7%) were the frequent measures used by the medical students to overcome exam anxiety. Students in their fourth and final years of studies showed a higher level of anxiety compared to those in the 2nd and 3rd years.

Conclusion: The study indicated high levels of exam anxiety among the medical students, showing that there is a need for anxiety-reduction programmes in medical colleges.

Keywords: Exam anxiety, Medical students, Westside scale. (JPMA 62:982; 2012).

Introduction

Test anxiety, as a transitory emotional state, refers to the emotional reactions that occur in an individual who perceives a particular evaluative situation as personally harmful or threatening.[1] Test anxiety affects test performance depending upon the difficulty level of tests, testing environment and individual differences among the students.[2]

A number of factors can influence the level of anxiety among the students. These factors may arise due to problems in recalling information, difficulty in memorising key points, poor study techniques and lack of confidence and time management skills among the students.[3,4] Students' past experiences and beliefs have a key role in determining their unique reaction to a test situation.[2] Students who face difficulty in memorising key points and assimilating new information fail to achieve good scores in stressful exam situations and even home-based tests and non-evaluative stressful situations.[5]

The importance of getting good grades in tests, test preparation and the tests themselves are the most stressful events faced by medical students.[6] Test anxiety is directly proportional to the difficulty level of the tests and their importance in successful progress of the students.[7] Female students experience a greater level of test anxiety compared to their male counterparts but there is no significant difference in their academic performance.[8]

The demographic variables which may influence test anxiety levels include students' age, gender, ethnicity, area of residence, marital and employment status.[9] Medical students with low level of exam anxiety score better than the students with greater level of exam anxiety in MCQ examinations.[10] Grade Point Average (GPA) is widely used as a measure of academic performance, which is obtained by dividing the total amount of grade points scored by the total amount of credit hours attempted. A GPA equal to 3.0 or higher indicates good academic performance by the students.[11]

Test anxiety results in decreased academic performance.[12,13] The effect of anxiety on academic performance makes its pivotal to identify issues and develop a plan to overcome them. This study was conducted to do the groundwork for future studies that should aim at ascertaining other factors leading to test anxiety and at developing a specific anxiety-reduction plan.[14]

Subjects and Methods

This was a cross-sectional educational study done in August 2009 which was reviewed and approved by the Ethical Review Board of the Dow University of Health Sciences. Study participants were second year (P2) to final year (P5) medical students enrolled in the MBBS programme at the Dow Medical College, Sindh Medical College and Dow International Medical College which are all components of the Dow University of Health Sciences, Karachi. Students were asked to complete a pre-tested questionnaire. A sample size of 450 students was calculated using epi info calculator (open epi online calculator). Students were excluded from the study if they declined participation, or if the student was in the first year of MBBS with no prior medical exam experience, or if the questionnaire was returned incomplete. The questionnaire was divided in 4 parts. Part 1 was a written information sheet that explained the purpose of the study and an option was given to the students to accept or decline participation. The reason of the study and assurances of privacy were also offered verbally to the students, and it was made clear that there were no repercussions if they decided not to participate in the study.

Part 2 of the questionnaire comprised personal information on variables such as age, gender, race, nationality, residential area, year of enrollment, name of the institution and email addresses.

Part 3 was the Westside Test Anxiety Scale Questionnaire,[15] which is a ten-item instrument designed to identify students with anxiety impairments who could benefit from an anxiety-reduction intervention. All items were rated on a 5-point scale as follows: 1= not at all true, never true; 2 = slightly true; seldom true; 3 = moderately true, sometimes true; 4 = highly true, usually true; 5 =extremely true, always true. Upon completion of the questionnaire, the students were instructed not to modify the rating on the questionnaire.

In part 4, students were asked three separate questions to assess if test anxiety reduced their individual exam performance per se; the measures used to overcome anxiety during exams; and their cumulative GPA at the time. GPA was used to measure academic performance (dependant variable). The students were informed that their anxiety scale would be emailed to them.

Data were coded and analysed using the SPSS (version 16) with a prior set alpha level of 0.05.

Students' anxiety scale was analysed in several ways. First, each questionnaire item was analysed to determine the frequency of student selection for each anxiety level (ie,1.0-1.9 Comfortably low test anxiety; 2.0-2.5 Normal or average test anxiety; 2.5-2.9 High normal test anxiety; 3.0-3.4 Moderately high; 3.5-3.9 High test anxiety; 4.0-5.0 Extremely high anxiety). Responses for each item were added and the sum was divided by 10. This

represented the test anxiety score under Westside Test Anxiety Scale.

Results

A total of 450 medical students belonging to 2nd, 3rd, 4th and 5th years were approached for the study. Out of them 388 fulfilled the inclusion criterion. Within the study population, 361 (93%) were Pakistani nationals. The mean age of the students was 20.82 ± 1.17 years. Among them, 101 (25.3%) were males and 287 (71.8%) were females (Table-1).

The mean level of anxiety on the Westside Test Anxiety Scale was 2.55 ± 1.27 for male students and 3.07 ± 1.43 for female students ($p \leq 0.05$). Mean levels of anxiety in students of final year, 4th year, 3rd year and 2nd year were 3.34 ± 1.67; 2.97 ± 1.48; 2.92 ± 1.37; and 2.86 ± 1.33 respectively. Mean anxiety for the students of Dow Medical College was 2.89 ± 1.37, for the students of Sindh Medical College, it was 2.92 ± 1.37, while it was 3.19 ± 1.66 for the students of Dow International Medical College. Application of Mann-Whitney test showed a higher level of anxiety among female medical students (Table-2).

Responses to the questionnaire showed that 69.8% of the students believed that exam anxiety reduced their exam performance. To manage anxiety, the medical students, used various methods: prayers and self motivation (28.3%), sleep and relaxation (11%), watching TV and listening to music (10%), calling friends (8.5%) and revising more (6.7%).

Table-1: Distribution of variables of study sample (N=388).

Mean Age	**20.82 ± 1.17**	
Variable	**N**	**%**
Gender		
Male	101	26
Female	287	74
Academic year		
Second	151	38.9
Third	110	28.3
Fourth	101	26
Final	26	6.7
College		
Dow Medical College	175	45.1
Sindh Medical College	167	43
Dow International Medical College	46	11.85
Grade Point Average		
< 2.0	3	0.77
2.0-2.5	57	14.6
2.6-3.0	96	24.7
3.1-3.5	127	32.7
3.6-4.0	62	15.9
No Response	43	11
Measures to reduce test anxiety		
Prayers and Self motivation	110	28.3
No Response	45	11.5
Sleep and Relax	43	11
TV and Music	39	10
Others	35	9
Calling friends	33	8.5
Revising more	26	6.7
Caffeine	18	4.6
Drugs and Smoking	13	3.3
Over eating or Under eating	11	2.8
Sports and Exercise	8	2
Internet	7	1.8

Table-2: Relationship of anxiety with other variables.

Westside Test Anxiety Scale	**Comfortably low test anxiety**		**Normal or average test anxiety**		**High normal test anxiety**		**Moderately high**		**High test anxiety**		**Extremely high anxiety**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Gender (p-value = 0.030)												
Male	23	22.7	34	33.6	19	18.8	16	15.8	8	7.9	1	0.9
Female	42	14.6	69	24.0	71	24.7	54	18.8	32	11.1	19	6.6
Academic year (p-value = 0.345)												
Second Year	20	13.2	52	34.4	35	23.1	24	15.8	13	8.6	7	4.6
Third Year	19	17.2	27	24.5	26	23.6	24	21.8	9	8.1	5	4.5
Fourth Year	21	20.7	20	19.8	25	24.7	16	15.8	14	13.8	5	4.9
Final Year	5	19.2	4	15.3	4	15.3	6	23.0	4	15.3	3	11.5
College (p-value = 0.250)												
Dow Medical College	28	16.0	49	28	44	25.1	31	17.7	14	8.0	9	5.1
Sindh Medical College	30	17.9	40	23.9	40	23.9	32	19.1	20	11.9	5	2.9
Dow International Medical College	7	15.21	14	30.4	6	13.0	7	15.2	6	13.0	6	13.0
Grade Point Average (p-value = 0.004)												
<2.0	1	33.0	2	67.0	0	0	0	0	0	0	0	0
2.0-2.5	8	14.0	19	33.3	8	14.0	14	24.5	6	10.5	2	3.5
2.6-3.0	17	17.7	26	27.0	25	26.0	15	15.6	8	8.3	5	5.2
3.1-3.5	18	14.1	34	26.7	36	28.3	24	18.9	13	10.2	2	1.5
3.6-4.0	16	25.8	17	27.4	14	22.5	9	14.5	3	4.8	3	4.8
No Response	5	11.6	5	11.6	7	16.2	8	18.6	10	23.2	8	18.6

Discussion

Test anxiety is a serious problem for students because it interferes with their ability to think and perform during the tests. Medical students experience anxious and stressful environment throughout their stay at medical school.[16] Inability to cope with stressful situations leads to worrisome outcomes in personal and social lives of the students. According to our study, there was a negative relationship between test anxiety and educational performance - greater the anxiety level, greater the chances of decrease in educational performance. The results are in line with the findings of earlier studies.[12,13,17]

Our study showed that female medical students faced higher levels of anxiety. This positively correlates with many other studies.[18] On the contrary, a study conducted in a private-sector medical university in Karachi, Pakistan, showed no relation of anxiety with gender.[19] Variation in the level of anxiety with gender can be due to the differences in the behaviour of males and females. Some researchers have tried to explain this difference by stating that girls are more likely to be afraid of failure; males are more defensive about admitting anxiety as it may be a threat to their perceived masculinity; and females have a tendency to over-report their problems.

The prevalence of anxiety was higher among the senior students (4th and final year) compared to the junior students (2nd and 3rd year). It is in disagreement with previous studies that showed a higher prevalence of test anxiety in 1st and 2nd year students.[19-21] Another finding of the study was that anxiety levels of DIMC students were significantly higher than the students of SMC and DMC. DIMC accommodates overseas Pakistanis who are keen to acquire medical education in Pakistan. Higher levels of test anxiety among DIMC students indicate that they are uncertain of what is expected of them in the new learning environment.

The study showed that prayers and self-motivation, sleep and relaxation, TV and music, calling friends and revising more were the most common measures used by the students to reduce exam anxiety. Previous researches provide data to support the value of relaxation training and music in coping with stress.[20,22,23] Our study showed that some students used harmful measures such as drugs, smoking, excessive use of caffeine, overeating or under-eating while trying to combat test anxiety. This adds to the negative impacts of anxiety. Other significant measures reported were the use of internet, sports, exercise and talking to parents.

The study had a few limitations which should be considered before generalizing its results. The examination pattern, difficulty level and schedule across various medical schools are diverse and, therefore, these results may not be applicable to all medical schools. Moreover, there is lack of information about the mental status of these medical students before entering into medical school.

Mental illnesses cost high both to the individual and the society by impacting not only on the thought process and learning but by leading to loss of work-time, weakening of relationships and may lead to even suicide.[19] Some medical schools claim to have a "mentorship programme" to avoid any unfortunate situation, but such programmes seem to be present on paper alone, as they virtually show no effect. Therefore, it is time, to be practical. Medical schools should introduce effective programmes that may help the students to live calmly and become better doctors. Future studies should assess the effectiveness of anxiety reduction strategies and programmes.

Conclusion

The study highlighted the measures used by medical students to reduce exam anxiety. Female students showed higher levels of anxiety compared to the male students. Higher levels of anxiety were found in 4th and final year medical students compared to those in the 2nd and 3rd years. Prayers and self-motivation, sleep and relaxation, TV and music, calling friends and revision were the common measures used by the students to manage their pre-exam anxiety levels.

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