

The Anatomy Practice Exam Anxiety Levels Medical School Students' General And Beforehand

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Abstract

AIM: Anxiety affects academic achievement. In this study, anxiety on the students of the anatomy practical examination was investigated.

MATERIAL AND METHODS: Two exam anxiety inventory were performed in medical school grade 2 students prior to anatomy practice exam.

RESULTS: Acar Baltas (AB) general exam anxiety rate was found higher in female but not statistically significant. Anxiety score of AB exam anxiety inventory inquiring how the others see them, was found significantly higher among males. No significant difference was found between the other subscales. AB anxiety score was significantly lower among the students who were graduates of private high schools. State (SS) anxiety score was found to be higher among boys significantly, however no significant difference trait (ST) anxiety score was found between boys and girls. ST score was significantly higher among the students who were staying at home and it was significantly lower among the students who were staying with their families. The place where they come from did not influence their anxiety level. Ratio of compatible personality trait was found to be significantly higher among girls and ratio of nervous personality trait was found to be significantly higher among boys. Scores of SS and ST Anxiety Inventory was higher among the students whose AB general exam anxiety scores were higher.

CONCLUSION: According to AB Inventory tests, female students are not statistically significant more stressed than male students. 74.4% of female students and 71.4% of male students are under moderate stress level. Anxiety score of SS was significantly lower among females. According to SS anxiety score, female students are under low stress level, male students are under moderate stress level. No difference was found between male and female with regard to mean anxiety score of ST. According to ST anxiety score, both gender are under moderate stress level.

Key Words: Anatomy, practice exam, anxiety level

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I. Introduction

Anxiety is the emotional stress which is felt due to the thoughts that essential values would subject to danger or misfortune (1). Increased frequency and severity of anxiety negatively influences academic performance, willingness to work and work performance (2). Anxiety is known to be more frequent among medical students compared to general population and the students of the other faculties, anxiety is also known to increase during the last year of medical education (3, 4).

A study conducted with medical faculty senior students has shown that they felt severe anxiety about their vocational training and post-graduate professional life. While receiving a qualified education and gaining sufficient knowledge and skills are the main rights of the students, severe problems exist for performing their profession at the best environment and with high quality due to medical education system and health policies (5). Anxiety level of medical students was investigated in a study. The Student Life Stress Inventory was used to measure stress and reaction to stressors and the Depression, Anxiety, and Stress Scale was used to measure depression and anxiety. The results showed that 44% of the students were anxious and 34.9% were depressed. More female medical students exhibited anxiety compared to male students (6). Anxiety level was investigated during their gross anatomy education at the first year of medical school, thirty medical students per year, for 2 years, completed the Beck Anxiety Inventory (BAI) 10 times during a 13-week gross anatomy course. The mean BAI was 2.19 ± 3.76 , 93% of the scores indicated minimal anxiety (BAI 0–7). In addition, behavioral observations were performed by a psychiatrist during laboratory work, face-to-face interviews were performed

with some subjects and anxiety level was found to be higher among those who were performed face-to-face interviews. Anatomy practice exam is applied in grade 1 and 2 at medical school (7).

The present study investigates the general anxiety status and anxiety level of grade 2 medical students before anatomy practice exam for respiratory and circulatory systems. Despite the presence of the studies investigating anxiety levels of medical students before various exams, no studies are available investigating anxiety levels of the medical students before anatomy practice exam. Is the anxiety related to the anatomy practice exam or is the continuation of existing anxiety? We hope our study will expose these issues.

II. Material And Methods

Grade 2 medical students who would undergo anatomy practice exam constitute the study group. Grade 2 students who were receiving anatomy class as the second time were excluded from the study considering that they were accustomed to the exam. Ethics committee approval was obtained from Abant Izzet Baysal University prior to the study (2018/285).

While a total of 145 volunteers (82 females and 63 males) medical Grade 2 students were included in the study (35 students did not participate in the study). The students were asked to fill out Acar Baltas (AB) exam anxiety inventory, State & Trait Anxiety Inventory (STAI) for measurement of anxiety levels before practice exam for circulatory and respiratory systems. AB inventory was composed of 50 questions which would be answered as true or false. Evaluation of the scale, 1 for the correct answer, 0 for the wrong answer is given. Height of score represents negative situation, the low represents the positive situation. The inventory has seven sub-scales and investigates the opinion of the others, opinion of the subject him/herself, future anxiety, anxiety for preparing for the exam, bodily reactions, mental reactions and exam anxiety (8). Cronbach's alpha coefficient of the inventory is 0.87.

The State-Trait Anxiety Inventory (STAI) is a commonly used measure of trait (ST) and state (SS) anxiety. ST and SS anxiety inventory are composed of 20 questions each other, would be answered as never (1), some (2), much (3), completely (4) and investigates anxiety level just before the exam. The total score for each scale ranges from 20 to 80. Higher scores denote higher levels of anxiety (20-39 indicate low anxiety, 40-59 indicate moderate anxiety and 60-80 indicate high anxiety). State & Trait Anxiety Inventory was developed by Spielberg et al. and Turkish validity and reliability was tested by Oner and Le Compte 1985 (9). State & Trait Anxiety Inventory of this study's Cronbach's Alpha result, respectively 0.94 and 0.83.

The students were also questioned for their residence (big city, abroad, provincial center, others), high school, residence (student residence, at home, with family) and which personality type (open-minded, responsible, extrovert, compatible, nervous) and the influence of these factors on anxiety level was investigated.

Data were analyzed using SPSS Ver. 15 statistical package program. Student's t test and one-way ANOVA were used for analysis of constant variables with normality distribution, Mann Whitney U test and Kruskal Wallis test were used for analysis of constant variables which did not distribute normally. The correlation between two constant variables was analyzed using Spearman correlation analysis. Categorical variables were tested with chi-square test. A p level of <0.05 was taken as statistically significance.

III. Results

82 females (56.6%) and 63 males (43.4%) were included in the study and mean age was 19.21 ± 0.87 (range 18-21). Mean scores for AB inventory exam anxiety was found as 27.66 ± 9.21 (median 28) among girls and 26.28 ± 9.758 (median 26) among boys as moderate level. Negative situation score range are 8-45 both female and male students. No significant difference was detected between boys and girls with regard to Acar Baltas general exam anxiety scores.

Results of AB anxiety inventory are presented in Table 1. Anxiety about how others see the subject was found to be significantly higher among males ($p=0.029$). No significant difference was found between the other subscales. Anxiety about how you see yourself the subject was found to be higher among females. Bodily reactions were higher among females and lower among males. Future anxiety, anxiety for insufficient preparation for the exam, mental reactions and anxiety scores were found to be higher in females than males. According to AB anxiety inventory, general exam anxiety rate was found 74.4% in females and 71.4% in males. Among all subgroups, the highest stress score was found in the subgroup of mental reactions (Table 1).

SS anxiety score was found 37.93 ± 4.90 in female (low level) and 40.66 ± 6.16 in male (moderate level). Female students were feeling low level anxiety, male students were feeling moderate level anxiety. ST anxiety score was found 45.84 ± 6.38 in female and 45.96 ± 5.86 in male as moderate level. Female and male students were feeling moderate level anxiety (Table 2). While mean state anxiety score of SS was significantly low among girls and significantly high among boys ($p=0.004$), no difference was found between boys and girls with regard to mean anxiety score of ST.

STAI scores were found higher among the students whose AB exam anxiety scores were higher. A weak and very weak correlation was found between them respectively. ST anxiety score was higher among the students whose SS anxiety score was higher and there was a weak correlation between them (Table 3).

Of the girls, 41.5% were graduates of science high school, 35.4% were graduates of Anadolu high school, 15.9% were graduates of private high school, 7.2% were graduates of religious vocational high school and graduates of schools abroad. No difference was found between students with regard to SS and ST anxiety scores. According to AB exam anxiety inventory, mean scores of exam anxiety were found to be 3.89 ± 1.42 among graduates of science high school, 3.45 ± 1.39 among graduates of Anadolu high school, 3.05 ± 1.05 among graduates of private high school and 4.00 ± 1.07 among graduates of the other schools. Anxiety scores were the lowest among graduates of private school and a significant difference was found when compared to the graduates of the other schools ($p=0.040$). Anxiety score was the highest among graduates of the other schools.

Of the girls, 54.9% were coming from big cities and abroad, 34.1% from provincial centers and 11% were coming from the other places (county, village, sub-district). Of the boys, 39.7% were coming from big cities and abroad, 42.9% from provincial centers and 17.4% were coming from the other places (county, village, sub-district). No significant difference was found between SS and ST anxiety scores of the subjects with regard to the places where they come from. According to AB exam anxiety inventory, mean scores of exam anxiety were found to be 3.70 ± 1.31 among the students who come from big cities and abroad, 3.55 ± 1.52 among the students who come from provincial centers, 3.30 ± 1.08 among the students who come from the other places. A significant difference was not detected between AB exam anxiety inventory with regard to the places the students come from.

Of the girls, 73.2% were staying at student residence, 23.2% at home alone and 3.6% with the family. Of the boys, 50.8% were staying at student residence, 41.3% at home alone and 7.9% with the family. While no significant difference was found between SS anxiety inventory scores of the students, there was a significant difference between ST anxiety inventory scores when they were compared with regard to their residence ($p=0.039$). Anxiety level was the highest among the students who were staying at home and the lowest among the students who were staying with the family. According to AB exam anxiety inventory, mean exam anxiety score was 3.61 ± 1.37 in students who were staying at student residence, 3.47 ± 1.36 in students who were staying at home and 4.00 ± 1.51 in students who were staying with the family. A significant difference was not detected between groups with regard to AB exam anxiety scores when they were evaluated according to residence. However there was a significant difference with regard to future anxiety. Future anxiety was found to be lower than expected and when compared to the others among students who were staying at home ($p=0.022$).

While of the girls, 14.6% defined themselves as open-minded, 17.1% as responsible, 14.6% as extrovert, 47.6% as compatible and 6.1% as nervous; 27% of the boys defined themselves as open-minded, 22.2% as responsible, 11.1% as extrovert, 22.2% as compatible and 17.5% as nervous. There was a significant difference between both gender with regard to personality types ($p=0.007$). While ratio of compatible personality was higher among girls, ratio of nervous personality type was higher among boys. A significant difference was not detected between personality types with regard to STAI scores. On the other hand, a significant difference was found between personality types with regard to future anxiety and how the students see themselves according to AB anxiety inventory. The difference has arisen from the students who define themselves as nervous. Anxiety about how they see themselves was found to be higher among nervous personality type compared to the other personality types ($p=0.027$), future anxiety was also found higher in this personality type ($p=0.006$).

IV. Discussion

Anxiety is a mood disorder which may influence the motivation to study for the exam and also daily activities like sleep, eating and social relations. Excessive anxiety may impair the performance not only before the exam but also during the exam. The subjects who have a high level of exam anxiety may feel that their self is under threat during the exam and may be nervous. Negative thoughts about themselves may lead to loss of concentration and thereby these subjects may fail to read the questions, give correct answers, concentrate, select proper words and express appropriately (10). Family has a great impact on development of anxiety and to cope with anxiety. Family is an environment which form the mental development and behaviors of the child and the adolescent in physiologic, economic, cultural and social manner, which begins before birth and maintains its effect until the end of life. Attitudes and behaviors of the parents influence the future life of the child and are essential for adaptation to the community (11). The importance of family and peer support in psychological and academic life of the students is known well (12). In our study, ST anxiety scores were found lower among the students who were staying with their families. Future anxiety was found lower than expected among the students who were staying at home. This may be explained with their taking responsibility at an early age or their families' having a better economic status and thereby their feeling better.

Multiple linear regression analysis showed that the trait anxiety and laboratory anxiety of students has been found to be effective on the state anxiety of Electric-Electronic Engineering students on High Voltage Laboratory students (13). In a study performed in students during the course of science education laboratory practices, it was observed that the expectations and anxieties of students related with science laboratory are focused mostly on the level of success (14). In a study conducted at a faculty of education, anxiety was detected to influence hopelessness, automatic thought and exam anxiety and impair success. Senior students are considered to feel exam anxiety, develop negative thoughts due to the negative life events and thereby feel hopelessness and anxiety (15). SS anxiety was detected to reduce with clinical practice and ST anxiety was detected not to change significantly in a study conducted with the first graders of Health College before, during and at the end of clinical practice. A significant difference was detected between SS anxiety levels before-mid clinical practice and before-after clinical practice ($p<0.001$) (16). Half of the senior students of medical faculty stated that they felt anxiety for professional future and half of these students stated that they felt anxiety for being a specialist. Medicine, particularly general practice is considered to increase future anxiety among medical students in our country (4).

AB exam anxiety inventory is used widely in Turkey. There was a significant inverse relationship between the general harmony of students' personality and exam anxiety (17). Students with fearful, indifferent and obsessive attachment style, experienced more anxiety level than students with safe attachment style (18).

According to the results of our study, scores of AB exam anxiety inventory were found to be as expected among grade 2 medical students. SS anxiety was found significantly higher among boys. SS anxiety was found significantly lower among the students who were staying with their families and who were graduates of private schools. Nervous subjects feel significant future anxiety.

Main causes of stress which impairs motivation and work performance should be revealed and effective measures should be taken. Support services can be provided for medical students to manage anxiety and improve their capacity to cope with problems. School management, lecturers and family should work together to cope with exam anxiety. A good guidance may gain the students responsibility and problem solving ability. Interventions may also be done to reduce anxiety before exams.

MAIN POINTS

Student's AB exam anxiety score is moderate level. SS anxiety score is low level in female students, moderate level in male students. ST anxiety score is moderate level in female and male students.

Student's ST anxiety found higher among boys, who were staying home alone. Student's AB anxiety score found lower who were graduates of private schools.

School management, lecturers and family should work together to cope with exam anxiety.

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Table 1. Results of Acar Baltas (AB) anxiety inventory

| Subscales | Female | | Male | | p value for female-male difference |
|---|------------|---------|------------|---------|------------------------------------|
| | No anxiety | Anxiety | No anxiety | Anxiety | |
| Anxiety about how others see you | 70.7% | 29.3% | 54% | 46% | 0.029* |
| Anxiety about how you see yourself | 47.6% | 52.4% | 63.5% | 36.5% | 0.056 |
| Future anxiety | 35.4% | 64.6% | 34.9% | 65.1% | 0.549 |
| Anxiety about insufficient preparation for the exam | 22% | 78% | 22.2% | 77.8% | 0.568 |
| Bodily reactions | 40.2% | 59.8% | 49.2% | 50.8% | 0.182 |
| Mental reactions | 17.1% | 82.9% | 19% | 81% | 0.462 |
| General exam anxiety | 25.6% | 74.4% | 28.6% | 71.4% | 0.432 |

*: p< 0.05

TABLE 2. Results of STAI tests

| Gender | N | Mean | Std. Dev. | F-M Difference |
|--------|----|-------|-----------|----------------|
| SS F | 82 | 37.93 | 4.90 | p=0.004 |
| M | 63 | 40.66 | 6.16 | |
| ST F | 82 | 45.84 | 6.38 | p=0.901 |
| M | 63 | 45.96 | 5.86 | |

F: Female M: Male Std. Dev: Standard deviation SS: State Anxiety Inventory ST: Trait Anxiety Inventory

TABLE 3. Comparison of anxiety inventories

| Inventory | Anxiety about how others see them | Anxiety about how they see themselves | Future anxiety | Anxiety for insufficient preparation for the exam | Bodily reactions | Mental reactions | SS | ST |
|-------------------------|-----------------------------------|---------------------------------------|--------------------|---|--------------------|--------------------|--------------------|--------------------|
| AB general exam anxiety | r=0.387 p=0.000 | r=0.536 p=0.000 | r=0.341 p=0.000 | r=0.535 p=0.000 | r=0.540 p=0.000 | r=0.563 p=0.000 | r=0.291 p=0.000 | r=0.240 p=0.004 |
| SS | | | | | | | | r=0.202 p=0.014 |

AB: Acar Baltas

SS: State Anxiety Inventory

ST: Trait Anxiety Inventory

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