

# Test Anxiety amongst University Students: A Cross-Sectional Study

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## Abstract

**Introduction:** Anxiety is widespread amongst university students. One of the most common anxiety types considered to be present among students, as one of the most pervasive reactions that individuals have to stress, is test anxiety. Prevalence exists amongst the students in UAE, Middle East, and other parts of the world. Demographic characteristics of this disorder include age, gender, program, social status, income, parental pressure, competition, time management, study skills, receiving good grades, lifestyle and behavioral factors.

**Materials & Methods:** A cross sectional study of 614 participants of Gulf Medical University in Ajman, UAE was performed. A standardized questionnaire will be used to assess the level of anxiety among the students. To determine the factors, another questionnaire will be prepared after a thorough literature review. After getting the ethical approval, validation will be done by three experts in the field.

**Results:** Overall out of the 614 participants in the research, 82.6% of the students have test anxiety and 17.4% do not have test anxiety. The difference in self-esteem is significant with increase in age. More students who are over the age of 20 have a higher level of test anxiety compared to those under the age of 20 (88.6% and 11.4% respectively). We also found significant results in relating test anxiety to various factors like age, gender, nationality, program, year of study, hostel living, factors, and coping mechanisms. Ranking of medical fields in order of importance as perceived by society is from highest to lowest with Phar.D. (ranked 1), DMD (ranked 2), BBMS (ranked 3), ADPCS (ranked 4), MBBS (ranked 5), and BPT (ranked 6).

**Conclusion:** We found out that students with high test anxiety accounted for majority of our sample size (82.6%), with 17.4% of the students having no test anxiety. The students over the age of 20 have a higher test anxiety than students under the age of 20. More than 50% of students don't have concerns about how others will view them if they did poorly on exams. 65.1% of students don't have concerns regarding their own self-image. The majority of the students (61.7%) don't have concerns about their future security. More than 50% don't have concerns about not being prepared for a test. 64.2% of students don't have bodily reactions when they experience test anxiety. More than 50% of students don't have thought disruptions during exams. The majority of students (57.5%) don't have general anxiety about taking a test. Low percentage of students are finding the hostel as an uncomfortable place for studying. However, higher percentage of students are having problems with roommate. There is no significant association between feeling homesick and test anxiety. High percentage of students are finding the distance from hostel to the university as a factors for test anxiety. More students think that procrastination does not correlate with test anxiety while others feel that lack of money plays a huge factor in test anxiety. Coping strategies used by the students to reduce test anxiety.

Above 80% of students tend to avoid thinking before exams (83.2). 73.2% of students try to get a good night sleep before the exam while 26.7% don't do that. 79.1% of students are developing good study habits and only 76.5% are reviewing past papers. Other ways were used to reduce anxiety such as having positive mental attitude (76.2%), not comparing to others (72.3%), having nutritious snack before exam (67.1%), making study schedule (69.7%), Practice questions (78.8%) and engage in relaxation techniques (65.3%). According to the factors students who don't give the exams great importance have a higher percentage of test anxiety, students who don't think that nervousness prevents good performance have a higher percentage of test anxiety, students who experience blanking of mind during exams have a higher percentage of test anxiety.

Students who organize well have a lesser percentage of test anxiety, difficult questions

don't cause the students to get higher levels of test anxiety, surprise exams cause the majority of students to experience test anxiety, there is insufficient family income doesn't cause test anxiety and family pressure doesn't cause test anxiety. High levels of test anxiety aren't caused by negative thoughts, concerns about own self-image isn't a cause for test anxiety, high levels of test anxiety aren't caused by fear of failure, when students compare themselves to others it doesn't increase their test anxiety and family responsibilities don't cause test anxiety.

**Keywords:** Anxiety • Corticotropin-releasing factor • Endorphins • Behavioral sciences

## Introduction

Anxiety is widespread amongst university students. One of the most common anxiety types considered to be present among students is test anxiety as one of the most pervasive reactions that individuals have to stress [1].

Test Anxiety is defined as feeling an emotional state or condition characterized by subjective feelings of tension, apprehension, and worry and by activation or arousal of the autonomic nervous system when about to give an examination [2].

Anxiety is a physical and psychological response to treat a self-concept. The anxiety will interfere with concentration and memory, which are vital for academic purposes, thus holding students back. Anxiety causes students to get nervous before important exams and tests. Even though they studied and might know the answers, they might forget it due to anxiety. Many students claim to go 'blank' before an exam, even after reviewing. This leads to a chain reaction, thus making them more nervous for the next exam. People tend to feel nauseous and get an upset stomach, sweaty palms and increase heart rate [3].

Study anxiety is not only due to the lack of study motivation or insufficient skills. Still, it is also due to a misperception about courses and negative experiences in previous study classes. High-level anxiety is more closely associated with lowered performance in low-ability students than in high-ability counterparts [4]. At the global level, anxiety is viewed as a permanent trait, as some people are predisposed to be anxious. Previous studies found anxiety disorders among students, such as exam anxiety, but no studies about potential study anxiety sources among university students. Generally, study anxiety aimed individuals perceive any anxiety symptoms because of the difficult situation during the study process. Anxious students have experience of cognitive deficits like misapprehension of information or blocking of memory and recall [4].

Spielberger reported two forms of anxiety: state anxiety – a response to a particular stimulation or set of circumstances, and trait anxiety – an intrinsic characteristic. Previous anxiety research suggests that there are roughly two types that can be experienced at different psychological levels [5]. Calming and relaxation techniques can help the student manage anxiety. The technique uses to help students will overcome part of social anxiety and given class situations.

Prevalence exists amongst the students in the UAE, Middle East, and other parts of the world. For gender studies have found that women are more sensitive to low levels of Corticotropin-Releasing Factor (CRF), a hormone that organizes stress responses in mammals, making them twice as vulnerable as men to stress-related disorders such as anxiety [5]. Different programs also play a role in anxiety as it has been proven that students studying courses such as engineering, MBBS, and most mathematical courses have higher levels of anxiety than those studying subjects such as art, etc. This disorder's demographic characteristics include age, gender, program, social status, income, parental pressure, competition, time management, study skills, receiving good grades, lifestyle, and behavioral factors. Anxiety starts around the age of 11 but becomes more prevalent around the age of 16-19. This time period is where hormone levels are mostly elevated, thus playing a more emotional effect on the student [6-8]. In terms of income, students who do not have any loans and are financially stable have less anxiety than others because money isn't a problem.

We have touched upon the countries prevalence, but we should also

see what gender is affected by test anxiety the most. In research done with 426 students, it was found that 48% of the student was suffering from test anxiety based on the questionnaires given. 40.3% of them were males, whereas 55.8% were females [5]. In other research done on test anxiety amongst sophomores and college students, it was found that 54% of the students were female. From this, we can conclude that females have a higher prevalence of test anxiety. Another factor that we can touch upon is the type of institution the students are in and their family types, in which they suffer from test anxiety. Thorough research was done on this. The results showed that students in private schools were more prone to test anxiety than in government schools. People living in joint families had higher test anxiety levels than nuclear and extended types [6].

From the perspective of lifestyle, more active students are also less anxious about playing sports and working out release endorphins' happy hormones', which reduces anxiety levels. Test Anxiety is a double-edged sword as very social people have less anxiety as they are 'socially acceptable.' However, they need to please everyone around them more often than not, which sometimes causes anxiety. The opposite applies to those who are not that social. The countries China, India, and the U.S are mostly affected by anxiety and depression [7]. In China, it is mostly due to the pressure put on students by their parents and family, and the outside world. Suppose you are not academically skilled in China. In that case, people sometimes refer to you as 'dumb.' India also has similar issues, but the main ones are lack of healthcare, sanitation, and income. The U.S has recently adopted a new norm to be soft, what we would also call 'snowflakes,' where students are especially affected by even the smallest bit of criticism. Even if it may be constructive criticism, students take it to heart and start feeling depressed and anxious.

## Rationale

Exams period is a very stressful time for students. Most students experience anxiety during exams, especially if their parents are paying for tuition fee. The fear of wasting their parents' money and letting them down puts students under a lot of stress and anxiety.

Anxiety affects students in many ways such as overthinking, sleep deprivation, bad performance on exams, and if severe causes panic attacks. Our study population includes medical students because medical education is difficult and requires a lot of hard work which causes students to be stressed most of the time and have anxiety, especially during exams due to high expectations and pressure. The research will help to determine the factors associated with anxiety amongst students and the suitable measures to be taken in order to counter anxiety and prevent its frequent occurrence.

Anxiety ranges from stress due to tests, assignments, social environment, and pressure from parents. Few to none studies have been done on this in the UAE, thus we will be properly researching the effects that test anxiety has on students. We have chosen this topic as it affects university students worldwide and anxiety levels keep rising. We will be conducting a survey to test the effects that anxiety will have on these students.

## Research Objectives

Primary objective:

- To determine the level of anxiety among the students during examination period.

Secondary objectives:

- To determine the factors associated with test anxiety amongst students
- To identify the coping strategies for the managing test anxiety.

## Review of literature

Anxiety is widespread among university students. One of the most common type of anxieties that has become widespread amongst students is called test anxiety [8].

One of the most common anxiety types considered to be present among students, is test anxiety. This ranges from stress due to tests, assignments, social environment, and pressure from parents. Few to none studies have been done on this. Thus we will be adequately researching the effects that anxiety has on students. We have chosen this topic as it affects university students worldwide, and anxiety levels keep rising. We

will be conducting a survey to test the effects that anxiety will have on these students.

We suspect that anxiety is a physical and psychological response to treat a self- concept and that the anxiety will interfere with concentration and memory, which are vital needs for academic purposes, thus will hold students back. Anxiety causes students to get nervous before important exams and tests even though they studied and might know the answers they might forget it due to anxiety. Many students claim to go 'blank' before an exam even after studying. This leads to a chain reaction, thus making them more nervous for the next exam. Also, people tend to feel nauseous and get an upset stomach, sweaty palms, and increase heart rate [5, 8].

There is a direct link with anxiety and depression, as almost half of all people with major depression suffer from anxiety even though they are two different disorders. With it comes symptoms of nervousness, irritability, problems with sleeping, and concentration. Anxiety leads to a lack of motivation, which in turn leads to depression. In our survey, we will show the relationship between depression and anxiety despite their different causes and behavioral symptoms.

Lack of motivation to study and possessing insufficient skills are not the only factors causing study anxiety, but misperception about courses and previous class negative experiences can also play a role. An increased level of anxiety is related closely to students that have low-abilities in comparison to high-ability counterparts. Some people have a predisposition to anxiety and is viewed to be as a permanent trait on a global level. Past studies have done in-depth researches in relation to anxiety disorders but no such thing has been done sources that may lead to the influence of anxiety. During the process of the study the researchers were able to perceive symptoms of anxiety. The main goal of the study was to identify specific sources that were the cause of the text anxiety amongst students. Students who are anxious tend to experiences deficits in cognition including misapprehension of information or recalling and blocking memory [9].

Papachristou, Aresti, & Panayiotou (2019) explained that two types of anxiety exist: state anxiety - a response caused by a type of stimulation due to a set of circumstances, and trait anxiety - the intrinsic characteristic of a person [10] According to previous researches, it is found that two types of anxiety can be experienced at different psychological levels. Calming and relaxation techniques can help the student manage anxiety. The method uses to improve students will overcome in part of social anxiety and given class situations.

## Factors influencing test anxiety among students

Many students experience test anxiety daily, and thus many are affected by it academically.

### Motivation

One of the significant factors influencing anxiety amongst students is motivation. It is found that motivation tends to play a vital role as well as has a significant impact on student achievements in tests. It has been noted that those students that are continually being encouraged by peers, teachers, and parents have an overall better academic performance as well as a healthier lifestyle. Some students also imply 'self' motivation, which further reduces stress and is linked to behavior, which will be talked about further down.

### Behavioral factors

These factors depend on the individual's upbringing as well as their mental fortitude. Some people are more 'laid back' than others, as opposed to so-called 'perfectionists' who tend to be stressed and anxious due to various circumstances. Furthering on the theoretical work of Nicholls (2017), he states that anxious children tend to more sensitive to failure and produce more of a reaction when adults criticize them compared to less anxious children. Furthermore, children with a higher level of anxiety tend to have stronger reasons to avoid criticism and failure due to being overly judged.

On the other hand, children with less anxiety tend to be more motivated and reach their goals more quickly as they don't have a fear of failure. The differences between these motivational patterns have respective behavioral consequences.

### Academic competence

Students who are more organized and manage the given course load

have less tension. Also, students who understand the course material will have a better understanding of the work and thus less stress when nearing closer to tests or exams. Some subjects may be more appealing to others, as well. So this leads back to motivation as students who are interested in the item will be more motivated to study for it, therefore reducing their levels of anxiety. A reduced workload thus lowers stress levels for all students in the same class; however, the amount it is reduced varies from individual to individual.

#### Time management

Time management plays a significant role in academic performance; however, it plays a massive part in anxiety in students as well. According to Russell (2013), students who went through certain strategies related to time management had an overall low level of anxiety during tests. Other students reviewed the relationship between time management and test anxiety and results showed that good time management skills reduce test anxiety.

#### Performance on previous exams

Students who have previously performed well on exams have a sense of calmness and provides a sort of chain reaction giving a mental fortitude and positive mindset during future exams. A recent study in by Liaqat, Choudry and Altaf (2017), found that mental toughness is a crucial factor in determining success, and thus low-stress levels in high-pressure situations such as exams are optimal [10].

#### Pressure from peers and family

Research studies show that over half of many students that sit exams say that the pressure put on them to do well by their parents causes them anxiety and hence leads to less optimal outcomes. This is especially prevalent in the Asian community, such as Chinese, Japanese, etc., as some of them perceive poor grades as being a 'failure' to the family. Daniela Raccanello, a developmental and educational psychologist from the University of Verona in Italy, has said that test-anxiety can prove to be one of the most emotionally disruptive factors in test-taking anxiety. Those who have a healthy relationship with their parents and are not urged always to get 100% tend to have an overall better lifestyle with less stress. They also have better grades academically overall.

The problem of causality in the relationship of anxiety in relation to performance is difficult as well as important. A way to assess the subject of the relationship between increased levels of anxiety and student performance can be made better. If children who are anxious, do better immediately under good testing conditions, that it can be said that their anxiety is the reason of them doing badly as they do have the knowledge. If performance does not increase that it could be the cause of them not knowing the information rather than the anxiety.

#### Financial aid

This is another factor, especially among foreigners. Most low-income individuals have to worry about their finance and so cannot fully concentrate on the task at hand, such as exams, thus elevating stress levels. Some students also find part-time jobs and, when combined with studying, may overwork them decreasing sleep, thus further enhancing their worries towards their exams.

#### Confidence

Again this differs depending on the individual and the environment he grew up in. Most confident students have the 'self-motivation' to work and do well on exams without increasing their anxiety. In contrast, students who are less social and always in fear of doing wrong will, in turn, lead to elevated levels of anxiety. A study done in by Zaman et.al (2016) in The European Journal of Social and Behavioral sciences shows that the following factors increase and decrease test anxiety.

#### Anxiety reduction

Receiving poor good grades. This leads to a sort of chain reaction which further fuels the student to strive and do well in the following exams due to an increase in motivation.

#### Lack of preparation unsatisfactory grades fear of failing

This may be a constant stigma lurking around them and constantly worrying about failing leads to a decrease in moral.

#### Lack of confidence

Again this differs depending on the individual and the environment he

grew up in. Most confident students have the 'self-motivation' to work and do well on exams without increasing their anxiety whereas students who are less social and always in fear of doing bad will in turn leads to elevated levels of anxiety.

#### Financial instability

This mainly lies in individuals who are foreigners and have to focus their time and effort into other jobs in order to sustain them thus reducing sleep and time for studies which may make them do poorly in exams, thus aiding in anxiety.

#### Unable to adapt to new challenges

Some students generally are better at overcoming obstacles than others varying from a change in modules to a new environment and hence ensures a safe place for them giving them a sense of belonging opposed to some people who tend to fear the thought of studying in new subject they might be bad at instead of embracing it.

#### Bad time management

Students who have a fixed schedule and follow a certain time plan are more centrally focused at the goal in sight instead of being all over the place not knowing what to do when, thus aiding the sense of composure and being stress free.

#### Lack of study skills

Comparatively those who are able to study efficiently and learn to focus on important information are generally less stressed than those who try to cram all the information which most likely leads them to going 'blank' in an exam due to anxiety of not remembering all in the information.

#### Test anxiety in hostel students

Anxiety can be defined as a mental agitation found in human mentality which is composed of fear and continuous worry with no proper motive for harassment in daily life.

People who suffer from anxiety anticipate disaster and are in constant worry for health, family, education, etc. Eventually, that state of feeling anxious is eventually overcome. People having anxiety always anticipate disaster and cannot stop worrying about everything.

Test anxiety is very common among university students especially those staying in the hostels. A cross-sectional study on test anxiety was done among 150 randomly selected medical students in 2016. The research shows that out of the 39 students that live in the hostels, 26 of them experience test anxiety and often feel uneasy before taking an exam.

The students in the hostel come from different cultures, socio-economical backgrounds, and re-side together. The process of adjustment with each other exerts an excellent level of change on the mental makeup of every student. A comparative cross-sectional study was done on 211 students from 3 medical colleges of Pakistan following a curriculum of Dow University of Health Sciences. An assessment was done using a questionnaire developed on the DASS-42 scale. Out of the 211 students, 89 lived in the hostels. Depression was more prevalent in hostel students than students living with their families.

A study carried out in the Department of Physiology, Medical College, Baroda, Gujarat, India targeted the population of first-year MBBS students who were facing their first credit examination. In the results, it was found that students face a large amount of stress and was found to be doubled in students who live in hostels in comparison to those who live at home.

#### Coping methods to reduce test anxiety

Many university students tend to experience anxiety and stress before exams which are thought to be reasonable and a helpful way to drive the students to keep up the hard work and motivate them to perform their best, however according to The Yerkes-Dodson law, when this stress becomes so excessive. Beyond the standard limit, it hinders the students from doing well and interferes with their performance by causing difficulty in concentration and prevent them from recalling material that they have learned. Therefore, test anxiety has the power to derail weeks and months of hard work ultimately [11-13].

Test anxiety can create a bad spiral, just like other forms of anxiety: the more a student thinks about the negative things that might happen, the higher the anxiety feeling becomes. This makes the student feel worse and can raise the chances that he or she will perform poorly on the exam, with a mind full of distracting thoughts and fears.

It does not only impacts student's productivity, but it also disrupts their health and well-being [14-25]. Symptoms of test anxiety can be physical, behavioral, cognitive, and emotional, according to the Anxiety and Depression Association of America [11].

Physical symptoms include Headache, nausea, diarrhea, excessive sweating, shortness of breath, rapid heartbeat and if it is serious enough it can cause a panic attack. Those physical symptoms are a result of activation of the sympathetic system of our body which will then cause the release of the hormone adrenaline in response to stress. This type of response is referred to as the fight and flight response.

Cognitive and behavioral symptoms may involve fidgeting or avoiding test circumstances directly.

Depression, low self-esteem, anger, and a sense of hopelessness are the emotional symptoms of test anxiety. Almost everything in our life requires time and practice, and the same applies to learn how to overcome test anxiety. Although it will not go away immediately, meeting and coping with test anxiety can assist the students in learning to control stress, which can prove to be a beneficial skill in many circumstances apart from taking exams. There are lots of strategies that can help the students to cope and lower their test anxiety levels. Being well prepared for the test is the best and most effective way to reduce test-taking anxiety. Those preparations include:

- You are giving yourself enough time to study.
- Using flow charts and diagrams.
- Practicing on old exams.
- Organizing study groups with friends.
- Making an organized studying schedule and sticking to it [26].

A study was done at Urmia University of Medical Sciences, Urmia, Iran, in the academic year 2016–2017, and the results showed that students who prepare for exams are less anxious than those who are delaying studying and just studying the night before. It also shows that the performance of students who prepare was higher than in the other group of students. This point makes sense because when the student is well prepared, this will help in building their confidence. Moreover, as their confidence increases, the test anxiety will decrease. Positive thinking also has a significant influence on the reduction of test anxiety. Student's anxiety is usually a consequence of falling into thinking traps. Thinking traps are considered as an overly negative way of observing things. Hence, challenging these anxious thoughts and not allowing yourself to get overly pessimistic will help in lowering the stress levels and performing better. Because our thoughts are often merely assumptions, not facts and thinking about something like failing the test does not mean it is true or it is going to occur. Also, it is essential to use positive reinforcement for yourself and acknowledge that you have done and are doing your best. A 2005 study of 140 medical students at the University of Hong Kong found that optimism and positive outlook had the strongest negative correlations with depression and anxiety.

Studies have shown that stress can be reduced by exercising a few days before the test. Maintaining regular exercise can lead to physiological changes and positive adaptations of the human body. Continuing a regular healthy aerobic exercise leads to an increase in lower sympathetic nervous system and Hypothalamic-Pituitary-Adrenal (HPA) axis reactivity [3].

Another study where done in 89 subjects randomly showed that following the 12-week training period, exercising subjects showed more favorable responses than control subjects. These outcomes demonstrate that a fitness-oriented exercise schedule has anxiolytic properties. They also contribute a shred of primary evidence that visible behavioral anxiety may be influenced by exercise [4].

Asking for help when needed is an advantageous way that helps in reducing anxiety [10], but unfortunately, many students seem to neglect this option. The results of a survey from the University of Pennsylvania revealed that only 22% of students who identified themselves as being depressed, actually made an effort to seek help from mental help services. The cause could be due to lack of time, fear of lack of confidentiality, the stigma associated with the use of mental health services, expense, fear of documentation in academic records and fear of unwanted interference.

Avoid Perfectionism and expect Setbacks. A study was done to explore the relationship between test anxiety and positive and negative

Perfectionism. The results showed a positive correlation between test anxiety and negative Perfectionism, but no correlation between test anxiety and positive Perfectionism. Positive Perfectionism was positively related to grade importance and self-satisfaction as a student, while negative Perfectionism was positively associated with grade importance, but negatively related to self-satisfaction as a student. A negative relationship was found between test anxiety and all tested measures of academic achievement, which may indicate adverse consequences of its occurrence on academic achievement. Furthermore, the results indicate that non-adaptive perfectionists had higher levels of test anxiety than adaptive perfectionists and non-perfectionists.

Other vital things students have to keep them in mind before entering the test to avoid stress include:

Get a good night's sleep before the test. When students do not get enough sleep before an exam, they will get tired and exhausted, they will be less able to concentrate, they will not be able to recall anything, and more stressed.

Do not worry about how fast other people finish their tests; focus on your test and try not to hurry in answering the questions, instead work at a comfortable pace.

Skim through the test so that you have a good idea of how to pace yourself.

Get a notorious snack before entering the exam. Never take an exam on a starving stomach.

Not only do you need the nutrients required for appropriate brain function and physical energy, taking a test on an empty, grumbling stomach can also make it harder for you to focus on the test [27].

Some students can deal with stress the wrong way and use unhealthy means to reduce and relieve their stress like smoking. A research was done in 2009 at the Dow University of Health Sciences in Karachi which proved that students tend to rely on harmful substances such as drugs, smoking, excessive use of caffeine, overeating or under-eating while trying to combat test anxiety [27-30].

Another study was done in 2015 at the University of Cyprus to compare the number of cigarettes smoked in an exam-free period and during exams, and the results displayed that the higher levels of test anxiety were linked to heavier smoking than lower levels of test anxiety. It also showed that test anxiety alone could not cause a significant increase in smoking. However, test anxiety predicts more smoking during exams when combined with specific maladaptive coping styles.

According to a study conducted in Pakistan 2017, a remarkably high finding of stress levels in medical students was found in comparison to non-medical professional students. Therefore, universities should provide the appropriate counselling and stress-relieving activities for the medical students to prevent the long term adverse effects of high-stress levels on their health [30-36].

## Material and Methods

### Research design

This study includes a cross-sectional study that focused on the self-esteem of the chosen sample and the factors that affect self-esteem at one point in time.

### Study population

Our target population in this study were the students of Gulf Medical University - years 1 to 3 from the following programs: Bachelor of Health Science in Anesthesia and Surgical Technology (BHS-AST), Bachelor of Medicine and Bachelor of Surgery (MBBS), Doctor of Dental Medicine (DMD), Doctor of Pharmacy (Pharm.D), Bachelor of Physiotherapy (BPT), Bachelor of Science in Nursing (BSN) and Bachelor of Biomedical Sciences (BBMS).

### Sample size calculation

$$4pq / L^2$$

$$\text{Prevalence (p)} = 50\% (0.5) \quad (q) = 50\% (0.5)$$

$$\text{Error (L)} = 0.0456$$

$$480$$

Our sample size included a total of 480 students, however we only had a response rate of 468.

### Study settings

Our study was conducted in Gulf Medical University in Ajman, UAE.

### Duration of study

The length of our study was 6 months.

### Study instrument & validation procedure

Data collected during our study was done using a self-administered questionnaire which includes the following instruments:

1- Self-esteem: This will be evaluated using the Rosenberg Self-esteem Scale. The Rosenberg Self-esteem Scale, Rosenberg, (1965) will be used to examine the study populations general self-esteem. It consists of 10 standardized questions from the Rosenberg Self-Esteem questionnaire and they were scored as follows:

For items 1, 3, 4, 7, and 10 (positive questions):

Strongly agree = 3

Agree = 2

Disagree = 1

Strongly disagree = 0

For items 2, 5, 6, 8, and 9 (negative questions):

Strongly agree = 0

Agree = 1

Disagree = 2

Strongly disagree = 3

The scale ranges from 0-30. Scores between 15 and 25 are within normal range; scores below 15 suggest low self-esteem.

2- Moreover, we compiled our own set of questions that helped determine the factors that influence a person's self-esteem along with the assessment of the perceived self-esteem of the students in the other medical courses. In addition to that we used the established set of questions to also determine the self-esteem in relation to their specific field of study.

The questionnaire was validated by three experts in the field and the suggestions were incorporated.

### Ethical issues

Before we began collecting data, we submitted our protocol to the ethics committee of Gulf Medical University, so we could obtain consent allowing us to approach the study participants. This type of study carried a very low risk of ethical problems to the participants. After submitting our proposal to the ethics committee, we received the necessary approval for us to begin compiling our data, and we commenced with a pilot study. Again, any suggestions we received from feedback of the pilot were incorporated. The data is accessible only to the Community Medicine department faculty members, statisticians, and ethics committee members.

### Methodology

After the validation of the questionnaire from the ethics committee, the proposal and questionnaire were sent to the Deans of the following Colleges: College of Medicine, College of Pharmacology, College of Nursing, College of Physiotherapy, College of Biomedical Sciences, College of Health Science in Anesthesia and Surgical Technology and College of Dental Medicine. Once the deans from the various colleges gave their approval, we initiated a pilot study. The pilot study included distributing eight sets of the self-administered questionnaire to eight random subjects from the same target population. We distributed the questionnaires to the students from each college. We made sure that the participants knew that their participation in the research was completely confidential and anonymous, and made sure that they signed the consent form if they are over the age of 18. Once the questionnaires were filled in we made sure that all of the questions were answered before accepting it back so that we may ask the students to complete it in the unlikely event that certain questions have not been answered.

### Details of data storage

The information collected during our study will be stored in community medicine department of Gulf Medical University for three years and will only be accessed by participants of the ethics committee, faculty of statistical support and fellow researchers.

### Data analysis

The data collected during our study was entered into to excel spreadsheet and SPSS (version 24) where a descriptive and inferential statistics was administered, which included the chi squared test which was done to determine any association between variables. Other inferential statistical tests will also be used accordingly.

## Results

The (Table 1) below shows the socio-demographics of students in GMU: More than 60% of students are less than 20 years old. 62.7% of students are females. The highest percentage of nationality are from the Mediterranean region with a percentage of more than 50. 38.6% of students are in the MBBS program and the highest percentage of students are in first year with a percentage of 43.3%. More than 90% of students are single and 50.7% of students live in the hostel.

The (Figure 1) below shows the distribution of test anxiety among students. We analyzed the factors and classified them into 2 groups: 1) main sources of test anxiety which included the concerns of students 2) main expressions of test anxiety. Majority of students are having test anxiety (82.6 %) in GMU.

## Factors

### Main sources of test anxiety

The (Figure 2) below shows the main sources of test anxiety More than 50% of students don't have concerns about how others will view them if they did poorly on exams. 65.1% of students don't have concerns regarding their own self-image. The majority of the students (61.7%) don't have concerns about their future security. More than 50% don't have concerns about not being prepared for a test.

The (Table 2) gives the association between the concerns about how others will view if you do poorly and different socio-demographic

Table 1. Distribution of Socio-demographic variables.

Variable	Frequency	Percentage	Total	
Age	<20	377	61.4	614
	>=20	237	38.6	-100
Gender	Male	229	37.3	614
	Female	385	62.7	-100
Nationality	African Regions	94	15.3	614
	Regions of America	22	3.6	-100
	South-East Asia Region	157	25.6	
	European Region	13	2.1	
	Eastern			
	Mediterranean Region	327	53.3	
Western Pacific Region	1	2		
Program	MBBS	237	38.6	614
	DMD	128	20.8	-100
	BBMS	83	13.5	
	ADPCS	30	4.9	
	BPT	81	13.2	
	Phar.D.	55	9	
Year of study	First	266	43.3	614
	Second	175	28.5	-100
	Third	173	28.2	
Marital state	Single	591	96.3	614
	Married	23	3.7	-100
Hostel	Yes	311	50.7	614
	No	303	49.3	-100

variables. Only year of study shows a statistical significance. As the year of study increases, the concern increases. About 54.9% of the third year students showed concern when compared to the second (47.4%) and first years (42.5%).

Though not statistically significant, males (50.7%) showed more concern than females (45.5%). More than half of ADPCS, Pharm D and DMD students have concerns than the other program students.

The (Table 3) gives the association between the concerns about your

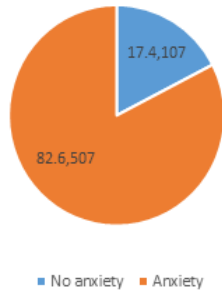


Figure 1. Distribution of test anxiety among students

own self-image and different socio-demographic variables. It could be seen gender, year of study and staying in hostel are statistically significant.

About 41.5 % males are concerned in compared to the 30.9% females. 42.9% of the second years are more concerned about the self-image than their counter parts and students who are staying in the hostel are more concerned (38.9%) than others.

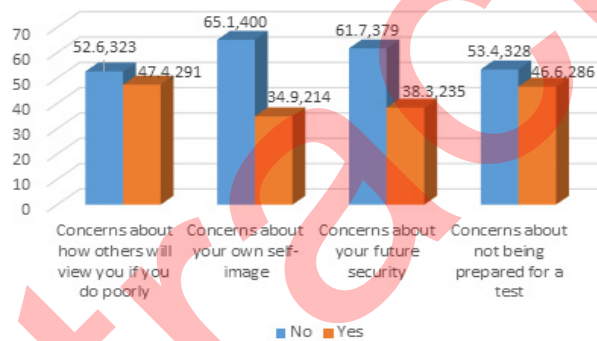


Figure 2. Distribution of Main Sources of Test Anxiety

Gender did not show any statistical significance in association with the concerns about future security. 47.3 % of the MBBS students were concerned about the future security than other programs, which is statistically significant. Also, the third-year students have more concerns (50%) than other, which is also statistically significant. About 43% of the students who stay in the hostel were concerned than their counter parts, which is also statistically significant (Table 4).

None of the factors showed statistical significant association with concerns about not being prepared for the test. However, ADPCS program students, third year students and those who stay in the hostel exhibited more concerns when compared to their counterparts (Table 5).

### Main Expressions of Test Anxiety

The (Figure 3) shows the main expressions of test anxiety: 64.2% of students don't have bodily reactions when they experience test anxiety. More than 50% of students don't have thought disruptions during exams. The majority of students (57.5%) don't have general anxiety about taking a test.

One of the expressions that determine the test anxiety is bodily reactions. About 40.3 % students had bodily reactions when compared to others, which is statistically significant. Also, students who stay in the hostel has less bodily reaction than other, which is also statistically significant (Table 6).

Another expression that determines the test anxiety is thought disruptions. About 52% of the year 3 students were more prone to thought disruptions than others, which again is statistically significant. About 46%

Table 2. Association between the concerns about 'how others will view you if you do poorly' and Socio-demographic variables

Variable		No concern	Concern	P-value
Gender	Male	49.3(113)	50.7(116)	NS
	Female	54.5 (210)	45.5 (175)	
Program	MBBS	51.5 (122)	48.5 (115)	NS
	DMD	50 (64)	50 (64)	
	BBMS	59.0 (49)	41.0 (34)	
	ADPCS	46.7 (14)	53.3 (16)	
	BPT	59.3 (48)	40.7 (33)	
	Pharm D	47.3 (26)	52.7 (29)	
Year of study	Year 1	57.5 (153)	42.5 (113)	<0.05
	Year 2	52.6 (92)	47.4 (83)	
	Year 3	45.1 (78)	54.9 (95)	
Hostel	Yes	52.4 (163)	47.6 (148)	NS
	No	52.8 (160)	47.2 (143)	

Table 3. Association between Concerns about your own self-image and Socio-demographic variables

Variable		No concern	Concern	P-value
Gender	Male	58.5 (134)	41.5 (95)	<0.01
	Female	69.1 (266)	30.9 (119)	
Program	MBBS	61.6 (146)	38.4 (91)	NS
	DMD	62.5 (80)	37.5 (48)	
	BBMS	66.3 (55)	33.7 (28)	
	ADPCS	80.0 (24)	20.0 (6)	

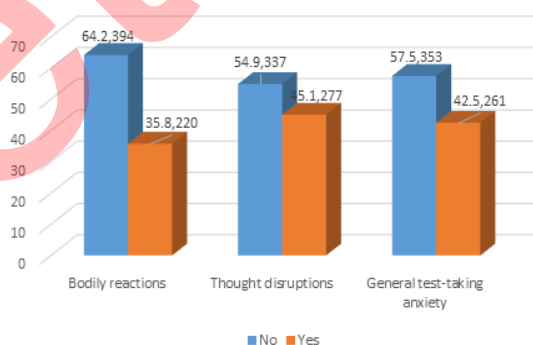
	BPT	69.1 (24)	30.9 (25)	
	Pharm D	70.9 (39)	29.1 (16)	
Year of study	Year 1	71.4 (190)	28.6 (76)	<0.01
	Year 2	57.1 (100)	42.9 (75)	
	Year 3	63.6 (110)	36.4 (63)	
Hostel	Yes	61.1 (190)	38.9 (121)	<0.05
	No	69.3 (210)	30.7 (93)	

**Table 4.** Association between Concerns about future security and Socio-demographic variables.

Variable		No concern	Concern	P-value
Gender	Male	61.6 (141)	38.4 (88)	NS
	Female	61.8 (238)	38.2 (147)	
Program	MBBS	52.7 (125)	47.3 (112)	<=0.001
	DMD	59.4 (76)	40.6 (52)	
	BBMS	69.9 (58)	30.1 (25)	
	ADPCS	63.3 (19)	36.7 (11)	
	BPT	76.5 (62)	23.5 (19)	
	Pharm D	70.9 (39)	29.1 (16)	
Year of study	Year 1	69.9 (186)	30.1 (980)	<0.001
	Year 2	61.7 (108)	38.3 (67)	
	Year 3	49.1 (85)	50.9 (88)	
Hostel	Yes	66.2 (206)	33.8 (105)	<0.05
	No	57.1 (173)	42.9 (130)	

**Table 5.** Association between Concerns about not being prepared for test and Socio-demographic variables

Variable		No concern	Concern	P-value
Gender	Male	53.7 (123)	46.3 (106)	NS
	Female	53.2 (205)	46.8 (180)	
Program	MBBS	50.2 (119)	49.8 (118)	NS
	DMD	50.8 (65)	49.2 (63)	
	BBMS	60.2 (50)	39.8 (33)	
	ADPCS	50.0 (15)	50.0 (15)	
	BPT	59.3 (48)	40.7 (33)	
	Pharm D	56.4 (31)	43.6 (24)	
Year of study	Year 1	56.8 (151)	43.2 (115)	NS
	Year 2	53.7 (94)	46.3 (81)	
	Year 3	48.0 (83)	52.0 (90)	
Hostel	Yes	53.1 (165)	46.9 (146)	NS
	No	53.8 (163)	46.2 (140)	



**Figure 3.** Distribution of Main Expressions of Test Anxiety

of the students who stay in the hostel had thought disruption then their counterparts, which is statistically significant (Table 7).

When general test anxiety is compared with different socio-demographic variables, only year of study showed statistical significance. More than 50% of the third-year students showed general test anxiety than others (Table 8).

This (Table 9) shows the association between the demographic variables and test anxiety: Age and gender are the two variables that have the most significant association with test anxiety. Test anxiety is found to be higher with ages older than 20, and it is higher in males than females. Even though nationality and other variables aren't significant but it could be seen that students from the Western pacific region have higher percentage of test anxiety than other regions. Phar.D. students have the most anxiety

compared to the students from other programs. Third year students have higher percentage of anxiety than first and second year students. Test anxiety is more with single people than married people. Students that live with their families' experience anxiety more than students that live in the hostel.

The (Table 10) shows the association between staying in the hostels and test anxiety. Low percentage of students are finding the hostel as an uncomfortable place for studying. However, higher percentage of students are having problems with roommate. There is no significant association between feeling homesick and test anxiety. High percentage of students are finding the distance from hostel to the university as a factors for test anxiety. More students think that procrastination does not correlate with test anxiety while others feel that lack of money plays a huge factor in test anxiety.

**Table 6.** Association between Bodily reactions and Socio-demographic variables.

Variable		No	Yes	P-value
Gender	Male	64.2 (147)	35.8 (82)	NS
	Female	64.2 (247)	34.8 (138)	
Program	MBBS	61.2 (145)	38.8 (92)	NS
	DMD	63.3 (81)	36.7 (47)	
	BBMS	65.1(54)	34.9 (29)	
	ADPCS	73.3 (22)	26.7 (8)	
	BPT	74.1 (60)	25.9 (21)	
Year of study	Pharm D	58.2 (32)	41.8 (23)	<0.05
	Year 1	69.2 (184)	30.8 (82)	
	Year 2	65.1 (114)	34.9 (61)	
Hostel	Year 3	55.5 (96)	44.5 (77)	<0.05
	Yes	68.5 (213)	31.5 (98)	
	No	59.7 (181)	40.3 (122)	

**Table 7.** Association between Thought disruptions and Socio-demographic variables

Variable		No	Yes	P-value
Gender	Male	54.1 (124)	45.9 (105)	NS
	Female	59.5 (229)	40.5 (156)	
Program	MBBS	51.5 (122)	48.5 (115)	NS
	DMD	51.6 (66)	48.4 (62)	
	BBMS	54.2 (45)	45.8 (38)	
	ADPCS	53.3 (16)	46.7 (14)	
	BPT	64.2 (52)	35.8 (29)	
Year of study	Pharm D	65.5 (36)	34.5 (19)	<0.05
	Year 1	60.9 (162)	39.1 (104)	
	Year 2	52.6 (92)	47.3 (83)	
Hostel	Year 3	48.0 (83)	52.0 (90)	<0.05
	Yes	54.0 (168)	46.0 (143)	
	No	55.8 (169)	44.2 (134)	

**Table 8.** Association between General Test anxiety and Socio-demographic variables

Variable		No	Yes	P-value
Gender	Male	50.7 (116)	49.3 (113)	NS
	Female	57.4 (221)	42.6 (164)	
Program	MBBS	58.2 (138)	41.9 (99)	NS
	DMD	60.9 (78)	39.1 (50)	
	BBMS	54.2 (45)	45.8 (38)	
	ADPCS	46.7 (14)	53.3 (16)	
	BPT	60.5 (49)	39.5 (32)	
Year of study	Pharm D	52.7 (29)	47.3 (26)	<0.01
	Year 1	65.0 (173)	35.0 (93)	
	Year 2	54.9 (96)	45.1 (79)	
Hostel	Year 3	48.6 (84)	51.4 (89)	NS
	Yes	55.9 (174)	44.1 (137)	
	No	59.1 (179)	40.9 (124)	

The (Table 11) shows the coping strategies used by the students to reduce test anxiety. Above 80% of students tend to avoid thinking before exams (83.2). 73.2% of students try to get a good night sleep before the exam while 26.7% don't do that. 79.1% of students are developing good study habits and only 76.5% are reviewing past papers. Other ways were used to reduce anxiety such as having positive mental attitude (76.2%), not comparing to others (72.3%), having nutritious snack before exam (67.1%), making study schedule (69.7%), Practice questions (78.8%) and engage in relaxation techniques (65.3%).

The (Table 12) shows that students who don't give the exams great importance have a higher percentage of test anxiety.

The (Table 13) above shows that students who don't think that nervousness prevents good performance have a higher percentage of test anxiety.

**Table 9.** Association between test anxiety and socio-demographic characters

Variable	No Anxiety	Anxiety	P value
<b>Age</b>			
<20	(80) 21.2	78.8 (297)	0.002
>=20	(27) 11.4	88.6 (210)	
<b>Gender</b>			
Male	(26) 11.4	88.6 (203)	0.002
Female	(81) 21.0	79.0 (304)	
<b>Nationality</b>			
African Regions	(18) 19.1	80.6 (76)	—
Regions of America	(3) 13.6	86.4 (19)	
South-East Asia Region	(29) 18.5	81.5 (128)	
European Region	(2) 15.4	84.6 (11)	
Mediterranean Region	(55) 16.8	83.2 (272)	
Western Pacific Region	(0) 0	100 (1)	
<b>Program</b>			
MBBS	(47) 19.8	(190) 80.2	0.083
DMD	(15) 11.7	(113) 88.3	
BBMS	(13) 15.7	(70) 84.3	
ADPCS	(5) 16.7	(25) 83.3	
BPT	(21) 25.9	(60) 74.1	
PharmD	(6) 10.9	(49) 89.1	
<b>Year of study</b>			
First	(55) 20.7	(211) 79.3	0.099
Second	(30) 17.1	(145) 82.9	
Third	(22) 12.7	(151) 87.3	
<b>Marital state</b>			
Single	(102) 17.3	(489) 82.7	0.372
Married	(5) 21.7	(18) 78.3	
<b>Hostels</b>			
Yes	(56) 18.0	(255) 82.0	0.701
No	(51) 16.8	(252) 83.2	

**Table 10.** Distribution of test anxiety among students in the hostels

Factors for students in the hostels				
Uncomfortable to study	No	24.1(19)	75.9(60)	0.128
	Yes	16.4(38)	83.6(194)	
Problems with roommate	No	22.1(27)	77.9(95)	0.17
	Yes	16.0(30)	84.0(158)	
Homesick	No	17.7(25)	82.3(116)	0.785
	Yes	18.9(32)	81.1(137)	
Distance from hostel to the university	No	20.4(29)	79.6(113)	0.395
	Yes	16.7(28)	83.3(140)	
Procrastination	No	17.5(25)	82.5(118)	0.704
	Yes	19.2(32)	80.8(135)	
Lack of money	No	19.6(31)	80.4(127)	0.568
	Yes	17.1(26)	82.9(126)	

The (Table 14) above shows that students who experience blanking of mind during exams have a higher percentage of test anxiety.

The (Table 15) shows that students who over worry about exams have a lesser percentage of test anxiety.

The (Table 16) shows that students who experience time pressure have a lesser percentage of test anxiety.

The (Table 17) shows that students who organize well have a lesser percentage of test anxiety.

The (Table 18) above shows that difficult questions don't cause the students to get higher levels of test anxiety.

The (Table 19) above shows that surprise exams cause the majority of students to experience test anxiety.

The (Table 20) above shows that there is insufficient family income doesn't cause test anxiety.



**Table 11.** Distribution of coping strategies among students

Variable		Frequency	Percentage	Total
Avoid thinking before exams	Yes	511	83.2	614
	No	103	16.8	-100
Good night's sleep	Yes	450	73.2	614
	No	164	26.7	-100
Developing good study habits	Yes	489	79.1	614
	No	125	20.4	-100
Reviewing past performance	Yes	470	76.5	614
	No	144	23.5	-100
Positive mental attitude	Yes	468	76.2	614
	No	146	23.8	-100
Not comparing to others	Yes	444	72.3	614
	No	170	27.7	-100
Nutritious snack before exam	Yes	412	67.1	614
	No	202	32.9	-100
Study schedule	Yes	428	69.7	614
	No	186	30.3	-100
Practice questions	Yes	484	78.8	614
	No	130	21.2	-100
Relaxation techniques	Yes	401	65.3	614
	No	213	34.7	-100

**Table 12.** Association between test anxiety and Importance of examination

Variable	No Anxiety	Anxiety	P value
<b>Factor</b>			
Importance of examination	No	13.1(35)	0.013
	Yes	20.7(72)	

**Table 13.** Association between test anxiety and Nervousness prevents good performance

Variable	No Anxiety	Anxiety	P value
<b>Factor</b>			
Nervousness prevents good performance	No	4.9(11)	0.000
	Yes	24.6(96)	

**Table 14.** Association between test anxiety and blanking of mind

Variable	No Anxiety	Anxiety	P value
<b>Factor</b>			
Mind goes blank	No	8.8(20)	0.000
	Yes	22.5(87)	

**Table 15.** Association between test anxiety and Over-worrying

Variable	No Anxiety	Anxiety	P value
<b>Factor</b>			
Over-worrying	No	13.9(34)	0.064
	Yes	19.7(73)	

The (Table 21) above shows that family pressure doesn't cause test anxiety.

The (Table 22) above shows that high levels of test anxiety aren't caused by negative thoughts.

The (Table 23) above shows that concerns about own self-image isn't a cause for test anxiety.

The (Table 24) above shows that high levels of test anxiety aren't caused by fear of failure.

The (Table 25) above shows that when students compare themselves to others it doesn't increase their test anxiety.

The (Table 26) above shows that family responsibilities don't cause test anxiety.

## Discussions and Limitations

### Test anxiety of students in general

Test anxiety is widespread among university students [37]. It hinders

the students from doing well and interferes with their performance by causing difficulty concentrating and preventing them from recalling material that they have learned. Therefore, test anxiety has the power to derail weeks and months of hard work ultimately [38]. According to our results, students with high test anxiety accounted for a majority of our sample size (82.6%). This is similar to other studies elsewhere that have reported such findings. [38-40] We analyzed the factors and classified them into two groups: 1) primary sources of test anxiety, which included students' concerns, 2) primary expressions of test anxiety. However, 17.4% of students expressed no signs of test- anxiety. Anxiety associated with

**Table 16.** Association between test anxiety and Time pressure.

Variable	No Anxiety	Anxiety	P value
<b>Factor</b>			
Time pressure	No	10.1(26)	0.000
	Yes	22.8(81)	

**Table 17.** Association between test anxiety and organizing well

Variable	No Anxiety	Anxiety	P value
<b>Factor</b>			
Organizing well	No	16.0(43)	0.406
	Yes	18.6(64)	

**Table 18.** Association between test anxiety and difficult questions

Variable	No Anxiety	Anxiety	P value
<b>Factor</b>			
Difficult questions	No	15.9(39)	0.401
	Yes	18.5(68)	

**Table 19.** Association between test anxiety and Surprise exam

Variable	No Anxiety	Anxiety	P value
<b>Factor</b>			
Surprise exam	No	11.2(26)	0.001
	Yes	21.3(81)	

**Table 20.** Association between test anxiety and insufficient family income.

Variable	No Anxiety	Anxiety	P value
<b>Factor</b>			
Insufficient family income	No	15.1(44)	0.142
	Yes	19.6(63)	

**Table 21.** Association between test anxiety and family pressure.

Variable	No Anxiety	Anxiety	P value
<b>Factor</b>			
Family pressure	No	11.9(25)	0.009
	Yes	20.3(82)	

**Table 22.** Association between test anxiety and negative thoughts.

Variable	No Anxiety	Anxiety	P value
<b>Factor</b>			
Negative thoughts	No	11.9(38)	0
	Yes	23.4(69)	

**Table 23.** Association between test anxiety and concerns about own self-image.

Variable	No Anxiety	Anxiety	P value
<b>Factor</b>			
Concerns about own self image	No	12.1(33)	0.002
	Yes	21.7(74)	

**Table 24.** Association between test anxiety and fear of failure.

Variable	No Anxiety	Anxiety	P value
<b>Factor</b>			
Fear of failure	No	8.8(22)	0
	Yes	23.3(85)	

**Table 25.** Association between test anxiety and comparing to others.

Variable	No Anxiety	Anxiety	P value	
<b>Factor</b>				
<b>Comparing to others</b>	No	14.1(40)	85.9(244)	0.043
	Yes	20.3(67)	79.7(263)	

**Table 26.** Association between test anxiety and family responsibilities.

Variable	No Anxiety	Anxiety	P value	
<b>Factor</b>				
<b>Family responsibilities hinders students from preparing</b>	No	14.3(43)	85.7(257)	0.048
	Yes	20.4(64)	79.6(250)	

the exam can influence eating habits and sleep quality, impacting daily life [41-43].

### Socio-demographic characters and association with test anxiety

**Age and gender:** When carrying out our research, we conducted it at Gulf Medical University amongst university students. Hence the range of age for students was from 18-26 years of age. This is why the age ranges were divided below (<20) and more than or equal to 20 (>=20). The majority of students (61.4%) were less than the age of 20, and above 35% of students were above or equal to 20 (38.6%). Amongst all the students sampled, 37.3 % of them were males, and 62.7% females.

Age and gender are the two variables that have the most significant association with test anxiety. Our results showed that test anxiety is higher with ages older than 20 (78.8%) which is similar to the results found by research that showed that older students feel more stressed than younger students [44-46]. Also, our results showed that test anxiety is higher in males than females (88.6%). This result is contrasting the results which have been found in many other studies [47-49] Males tend to care less about preparing for exams and do not always organize themselves; therefore, they tend to get anxious and worried more when the exam period becomes close. The research was done at the University of Peshawar proved that female students are more studios than male students, so without a doubt, if you study more regularly, the level of anxiety will be less [50].

We found one study that supports our result, which was done to identify the various sources of anxiety among university students in Malaysia, showing that males were more anxious than females when it comes to the exam, social, and library anxieties. Females were more anxious in language, mathematics, family, and presentation [51].

**Nationality:** Based on the WHO region distribution scale, we arranged students into African Regions, Regions of America, South-East Asia Region, European Region Eastern, Mediterranean Region, and the Western Pacific Region. According to the results found, all regions excluding Western Pacific Regions, which had a single person, had similar percentages of students exhibiting test anxiety. The results were African Regions (80.6%), Regions of America (86.4), South-East Asia Region (81.5%), European Region Eastern (84.6%), Mediterranean Region (83.2%), with a mean average of 83.26%. These numbers might show a bit of a bias as Gulf Medical University is located in the Mediterranean Regions, with students attending from close by countries, including South-East Asia Region and African Regions. Hence, this factor is not taken into consideration.

**Program and Year of Study:** The research was carried out through six different health programs and had a span across first, second, and third-year students only. The programs included in the study were Bachelor of Medicine and Bachelor of Surgery (MBBS), Doctor of Dental Medicine (DMD), Bachelor of Biomedical Sciences (BBMS), Associate Degree in Pre-Clinical Sciences (ADPCS), Bachelor of Physiotherapy (BPT), and Doctor of Pharmacy (Pharma.D.). The results show a similar percentage of anxiety across all the courses, Bachelor of Medicine and Bachelor of Surgery (80.2%), Doctor of Dental Medicine (88.3%), Bachelor of Biomedical Sciences (84.3%), Associate Degree in Pre- Clinical Sciences (83.3%), Bachelor of Physiotherapy (74.1%) and Doctor of Pharmacy (89.1%). Physiotherapy showed the lowest percentage of students exhibiting test anxiety, while Phar.D. had the highest amongst all.

All years also showed similar results throughout program years, one (79.3%), two (82.9%), and three (87.3%). The third and second year showed a slightly higher percentage than the first year because as the year's increase, the programs' difficulty also tends to get more complicated. This

study supports many of the findings of previous studies [39, 51]. In 2017, research conducted in north Indian Medical University showed that stress was steadily increasing with the year of curricula with the VIII semester's highest rating (final year) [52,53]. Other similar results have been found in studies on Indian medical students where academic-related stressors have been rated higher than interpersonal stressors [54, 55].

### Factors that account for test anxiety for hostel students

During our research, we took into account the students who live in the University's hostels as they can also play a major role in impacting the outcome of test anxiety. We recognized six main factors for the hostel students, which include: 1) Comfortableness, 2) Issues with roommates, 3) Homesickness, 4) Distance from the University to the Hostels, 5) Procrastination, and 6) lack of money. Overall all factors had higher percentages evident in having test anxiety compared to not having it. The majority agreed with the factor and having test anxiety except for feeling homesick and procrastination.

A high percentage of students are having test anxiety because they don't find the hostel a comfortable place to study (84.2%) and have problems with their roommate (84.9%). These findings were similar to those reported by other authors [56, 49]. There is no significant association between feeling homesick and test anxiety. These findings disagree with previous studies, which showed feeling homesick as one of the major causes of exam anxiety [57-61]. This may be due to some students' ability to use those feelings to motivate and even to calm themselves whenever they are anxious. They also may use this to remind them of the true reason that made them come all the way here and their dreams.

Our results also showed that above 80% of students find the distance from the hostel to the university as a factor for test anxiety. More students think that procrastination does not correlate with test anxiety, while others feel that lack of money plays a huge factor in test anxiety.

### Coping strategies used to reduce test anxiety

Avoid thinking before exams, developing good study habits, practicing past questions were reported by the majority of the students to reduce test anxiety.

A study was done at Urmia University of Medical Sciences, Iran, in the academic year 2016– 2017 showed that students who prepare and develop good studying habits or skills for exams are less anxious than those who are delaying studying and just studying the night before. It also shows that students who prepare were higher than in the other group of students [62].

Other coping methods were used, such as maintaining a positive mental attitude, which has a really good influence on the reduction of test anxiety. A 2005 study of 140 medical students at the University of Hong Kong found that optimism and positive outlook had the strongest negative correlations with depression and anxiety [63].

65.3% of students tend to engage in relaxation techniques which include exercise. Exercising for a few days before the test will help reduce stress. Broadly, regular exercise results in physiological changes and adaptations in the human body. Studies have shown that regular aerobic exercise is associated with the lower sympathetic nervous system and hypothalamic-pituitary-adrenal (HPA) axis reactivity (Crews and Landers, 1987; Åstrand, 2003; Jackson and Dishman, 2006; Rimmel et al., 2007) [64-67]. Another study where and demonstrated that a fitness-oriented exercise schedule has anxiolytic properties. They also contribute a shred of primary evidence that obvious behavioral anxiety may be influenced by exercise [68].

73.2% of students try to get a good night's sleep before the exam, while 26.7% don't do that. A study confirmed that test anxiety is associated with self-reported sleep disturbance. Moreover, the same study results showed that sleep disturbance is also associated with increased state test anxiety. Finally, it was found that sleep disturbance was not related to the actual test performance, nevertheless, can lead to high anxiety levels, which can then influence the students' performance [69].

67.1% of people prefer to do so, and scientifically it should optimize brain capabilities and help to be more alert during the exam. Studies showed that there is no significant change in results between the two.

### Limitations

The limitations that we found in this study are the following:

**1. Generalization:** Considering that our sample size was only that of 614 students of a single university, the results of our study cannot be used to generalize a large population.

**2. Sample size:** We were unable to reach our calculated sample size of 614 students. We only managed to get 614 students to participate. The reason for this is some students did not return the questionnaire and we had to eliminate questionnaires from students who are under the age of 18.

**3. Self-administered questionnaire:** Seeing as the questionnaire was self-administered, this decreases the reliability of the data obtained from the students.

**4. Race and religion:** There is a lack of variability in terms of race because the majority of the sample population comprises of Arabs and South Asians, and with regards to religion the major religion is Hindu and Muslim.

**5. Factors not included in the study:** Physical activity have a big impact on self-esteem and we neglected to include them in our study.

**6. Incomplete questionnaires:** Some questionnaires were not complete as some questions were not answered.

## Conclusion

We found that most students are having test anxiety (82.6 %) in GMU compared to the 17.4% that don't. We tested the dimensions of the source of anxiety by stressing factors such as self-image and family issues, hostel living situations, and coping mechanisms. Age and gender are the two variables that have the most significant association with test anxiety. Test anxiety is found to be higher with ages older than 20, and it is higher in males than females. Even though nationality and other variables aren't significant, but it could be seen that students from the Western Pacific region have a higher percentage of test anxiety than other regions. Phar.D. students have the most anxiety compared to the students from other programs. Third-year students have a higher percentage of anxiety than first and second-year students. Test anxiety is more with single people than married people. Students that live with their families' experience anxiety more than students that live in the hostel. Based on the factors, more than 50% of students don't have concerns about how others will view them if they did poorly on exams. 65.1% of students don't have concerns regarding their self-image. The majority of the students (61.7%) don't have concerns about their future security. More than 50% don't have concerns about not being prepared for a test. 64.2% of students don't have bodily reactions when they experience test anxiety. More than 50% of students don't have thought disruptions during exams. The majority of students (57.5%) don't have general anxiety about taking a test. A low percentage of students find the hostel as an uncomfortable place for studying based on the hostels. However, a higher percentage of students are having problems with a roommate. There is no significant association between feeling homesick and test anxiety. A high percentage of students find the distance from the hostel to the university as a factor for test anxiety. More students think that procrastination does not correlate with test anxiety, while others feel that lack of money plays a huge factor in test anxiety. In terms of coping strategies, 80% of students tend to avoid thinking before exams (83.2). 73.2% of students try to get a good night's sleep before the exam, while 26.7% don't do that. 79.1% of students are developing good study habits, and only 76.5% are reviewing past papers. Other ways we're used to reducing anxiety such as having a positive mental attitude (76.2%), not comparing to others (72.3%), having a nutritious snack before the exam (67.1%), making study schedule (69.7%), Practice questions (78.8%) and engage in relaxation techniques (65.3%).

## Recommendations

These are the following recommendations we have after completing our study:

- Our research was conducted at one medical University, targeting only a few fields of medicine. Other studies tend to look at this issue with a broader view lens targeting more than one medical university.
- After seeing the prevalence of students facing test anxiety compared to those not facing it, counselling should be established for these students to overcome and better their anxiety levels for an overall improvement in grades.
- After conducting the research, we found that a sense of

awareness should be created for this disorder as it may cause problems to occur for students taking a toll on their marks.

- Factors that are more prevalent in the contribution of test anxiety, such as the distance of hostels to the University, should be taken into account and eradicated to some extent to reduce total test anxiety levels.
- This sort of issue tends to be waved as a regular aspect of a medical student career, but it should not be taken lightly and should be attended to with medical schools creating programs or therapies that help students reduce and overcome this disorder.

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