

Prevalence of Generalized Anxiety Disorder (GAD) Among Saudi Medical Students and Associated Risk Factors

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ABSTRACT

Background: The prevalence of Generalized Anxiety Disorder (GAD) among university students represents an important and growing mental health concern for which epidemiological data are needed.

Objectives: This study aims to estimate the prevalence of Generalized Anxiety Disorder among undergraduate students at the University of Tabuk and evaluate the related social risk factors.

Materials and Methods: We conducted a cross-sectional study from September to October 2019 among students at the University of Tabuk Faculty of Applied Medical Sciences (FAMS), which consists of three major departments (nursing, physical therapy, and medical laboratory technology) and has 550 male and female students. Participants were assessed for GAD using an electronic self-administered questionnaire consisting of two sections: demographic information (gender, age, marital status, university department, academic year, living standards, employment status, grade point average (GPA), and medical history) and the Generalized Anxiety Disorder Questionnaire (GAD-7).

Results: A total of 231 (42%) responses were returned. More than half 146 (63.2%) of the respondents were male and 85 (36.8%) were female. The mean age of participants was 20.87 ± 1.5 years. About 68% of total respondents reported feeling nervous, anxious, or on edge to some degree; 10.4% said that they experience this feeling nearly every day. Female students reported higher anxiety levels, with a mean score of 8.06 compared to 6.67 among male students. Smokers, low-income, and higher-GPA students were more anxious than other groups.

Conclusion: These findings highlight the need to design treatment plans to manage anxiety symptoms and lower GAD prevalence among students.

Keywords: Anxiety disorder, university students, Saudi Arabia

INTRODUCTION

Anxiety disorders, including panic disorder with or without agoraphobia, generalized anxiety disorder, social anxiety disorder, specific phobias, and separation anxiety disorder, are prevalent in the general population and constitute a major health problem (1–3). About 50% of those who suffer from anxiety disorders report that their symptoms began during childhood (3). Studies have indicated that one third of the population experience an anxiety disorder during their lifetimes (3). Individuals with anxiety disorder typically report having nervousness, intense fear, worry, or uneasiness

that lasts for a long period of time and significantly affects their daily activities (4). It is more likely to occur among those with a family history of an anxiety disorder (5).

GAD is one of the most common anxiety disorders, characterized by persistent and excessive worry, anxiety symptoms, and tension (6). It is an extraordinarily serious condition if left untreated, and it may lead to other disorders such as depression (7). GAD is one of the most prevalent anxiety disorders among college students worldwide (8) and is more common among females than males (8). It can negatively affect students' academic performance, dropout

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rates, and professional development (9). This demonstrates the need to raise awareness of GAD among students.

Some common factors are associated with GAD, such as gender, marital status, poor health, low educational achievement, and the presence of stressors (10). Several scales are used to evaluate and diagnose GAD. The GAD-7 has been validated as a diagnostic and assessment tool (10). Al-Sughayr and Ferwana (11) found that the prevalence of psychiatric disorders in high school students was 48% and was higher in females (51%) than in males (41%). However, the study found no association between psychiatric disorders and other social variables (family size, polygamous family, or birth order) or smoking (11). A study conducted in the United Arab Emirates indicated that the prevalence rate for anxiety (56%) was higher than that of other disorders such as depression (12). Nevertheless, little attention has been given to anxiety disorders by the medical community in Middle Eastern countries.

While health researchers have devoted significant attention to depression in recent years, relatively little focus has been placed on GAD. Therefore, our research investigates the prevalence of GAD among Saudi students in the Faculty of Applied Medical Sciences at Tabuk University and considers the associated social risk factors.

METHODOLOGY

Description of Participants

We conducted a cross-sectional study from September to October 2019 among the students at the University of Tabuk Faculty of Applied Medical Sciences (FAMS), which consists of three major departments (nursing, physical therapy, and medical laboratory technology) with 550 male and female students.

Data Collection

The data were collected with the participants' consent using an electronic self-administered questionnaire consisting of two sections: demographic information (gender, age, marital status, university department, academic year, living standards, employment status, grade point average (GPA), and medical history) and the Generalized Anxiety Disorder Questionnaire (GAD-7).

Generalized Anxiety Disorder Questionnaire (GAD-7)

The GAD-7 is a 7-item self-reported scale developed to test for the defining symptoms of

GAD. Items are rated on a 4-point Likert-type scale by how frequently they are experienced, ranging from 0 (not at all) to 3 (nearly every day). GAD-7 items assess some of the most salient diagnostic features of GAD (feeling nervous, anxious, on edge, or excessively worried). Scores range from 0 to 21, with a greater score indicating more severe GAD symptoms. Studies have shown that the GAD-7 is a reliable screening test for assessing the severity of GAD in research and clinical settings (13). Total scores on the GAD-7 are interpreted as follows: <5 (normal), 5-9 (mild anxiety), 10-14 (moderate anxiety), and 15-21 (severe anxiety).

Data Analysis

We analysed the questionnaire results using the statistical software SPSS version 22.0 (IBM Corp, Armonk, New York). The distribution of students was determined according to demographic, social, and academic information across departments; data were expressed as the mean (\pm STD). The statistical analysis was performed using SPSS to determine whether there are statistically significant differences in response patterns between student groups. We used one-way Analysis of Variance (ANOVA) at $p=0.05$ to determine the relationship between GAD-7 score and sociodemographic characteristics.

Ethical Approval

Ethical approval was obtained from the Tabuk University Local Research Ethical Committee (LREC) (reference number UT-94-16-2019). Participants were informed that they had the right to refuse participation in the study or withdraw at any time. To maintain students' privacy, data were kept confidential and used for study purposes only. All students understood and signed an electronic consent before participation in this study.

RESULTS

Description of Participants

The online questionnaire was distributed to 550 students in the Faculty of Applied Medical Sciences at the University of Tabuk in September and October 2019. A total of 231 responses (42%) were returned. More than half of respondents ($n=146$, 63.2%) were male and 85 (36.8%) were female.

Demographic and academic information provided the distribution of participants

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according to their gender, age, department, academic year, marital status, GPA, English proficiency, income, employment status (Table 1), and frequency of physical activity (Fig. 1). The mean age of participants was 20.87 ± 1.5 years. The largest group was students from the nursing department ($n=106$, 45.9 %), followed

by physical therapy ($n=63$, 27.3 %) and medical laboratory technology ($n=62$, 26.8 %). Families were classified as low-income ($n=22$, 9.5%), middle-income ($n=157$, 68%) or high income ($n=29$, 12.6%). Only 12.6% of students were employed in a part-time job.

Table1. Distribution of students according to demographic, social, and academic information.

Variable		Mean \pm SD or n (%)
Age (years)		20.87 \pm 1.5
Gender	Male	146 (63.2 %)
	Female	85 (36.8%)
Department	Nursing	106 (45.9 %)
	Physical Therapy	63 (27.3 %)
	MLT*	62 (26.8 %)
Academic Year	First year	35 (15.2 %)
	Second year	68 (29.4 %)
	Third year	49 (21.2 %)
	Fourth year	79 (34.2 %)
GPA out of (5)	4 – 5	107 (46.3 %)
	3 – 4	75 (32.5 %)
	2 – 3	47 (20.3 %)
	1 – 2	2 (0.2 %)
English level	Beginner	33 (14.3 %)
	Intermediate	157 (68 %)
	Advanced	41 (17.7 %)
Income	Low	22 (9.5 %)
	Middle	180 (77.9 %)
	High	29 (12.6 %)
Employment status	Not Employed	202 (87.4 %)
	Employed part-time	29 (12.6 %)

*MLT: Medical Laboratory Technology

The distribution of students according to their number of weekly physical activities is shown in Figure 1. The largest group of students ($n=94$, 41%) exercised once a week while only 10 (4%) exercised every day.

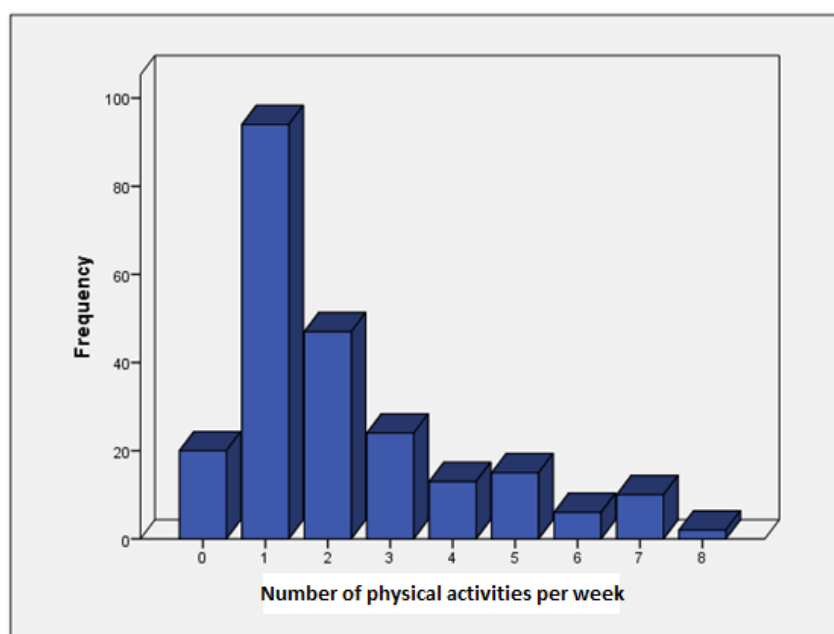


Figure1. Distribution of students according to their number of weekly physical activities

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Table 2. shows the distribution of students in each GAD-7 question. About 68% of total respondents reported feeling nervous, anxious, or on edge to some degree, with 10.4% saying that they experience this feeling nearly every day. “Worrying too much about different things” was the symptom that students most commonly reported experiencing every day, at 19.5%, while “being so restless that it’s hard to sit still” was the least common at 4.3%.

	Not at all	Several days	More than half of days	Nearly every day
Feeling nervous, anxious, or on edge	74 (32%)	97 (42%)	36 (15.6%)	24 (10.4%)
Not being able to stop or control worrying	89 (38.5%)	94 (40.7%)	31 (13.4%)	17 (7.4%)
Worrying too much about different things	54 (23.4%)	80 (34.6%)	52 (22.5%)	45 (19.5%)
Trouble relaxing	87 (37.7%)	85 (36.8%)	36 (15.6%)	23 (10%)
Being so restless that it’s hard to sit still	111 (48.1%)	79 (34.2%)	31 (13.4%)	10 (4.3%)
Becoming easily annoyed or irritable	81 (35.1)	85 (36.8%)	36 (15.6%)	29 (12.6%)
Feeling afraid as if something awful might happen	86 (37.2%)	73 (31.6%)	38 (16.5%)	34 (14.7%)
If you checked off any problems, how difficult have these made it for you to do your work, take care of things at home, or get along with other people?	73 (31.6%)	132 (57.1%)	26 (11.3%)	

Distribution of GAD-7 scores

Overall, the mean GAD-7 score among participants was 7.18 ± 4.8 . Distribution of scores falling within GAD-7 severity cut-offs was as follows: no anxiety (32.5%), mild

anxiety (36.4%), moderate anxiety (23.8%), and severe anxiety (7.4%). Based on the results, the prevalence of GAD was 67.5 % (n=156) ranging from mild to severe anxiety (Fig. 2).

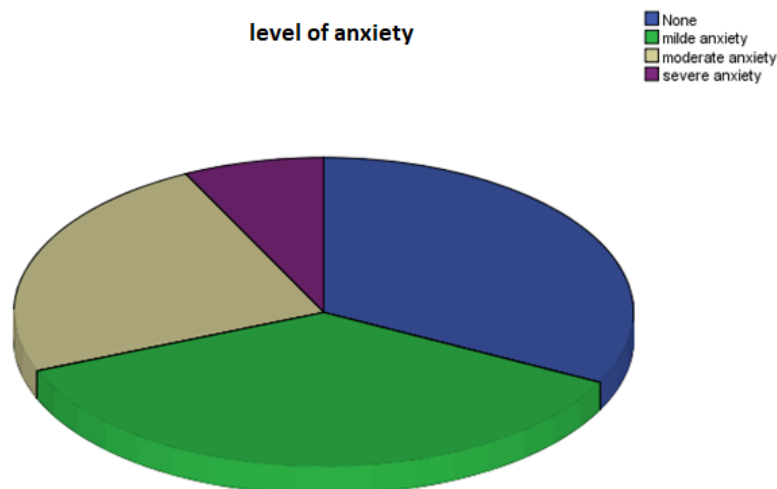


Figure 2. Distribution of students according to level of anxiety.

When participants were asked, “If you checked off any problems, how difficult have these made it for you to do your work, take care of things at home, or get along with other people?”, 73

students (31.6 %) reported that it is not difficult at all, 132 (57.1 %) said it is somewhat difficult, and 26 (11.3 %) said that it is very difficult (Fig. 3).

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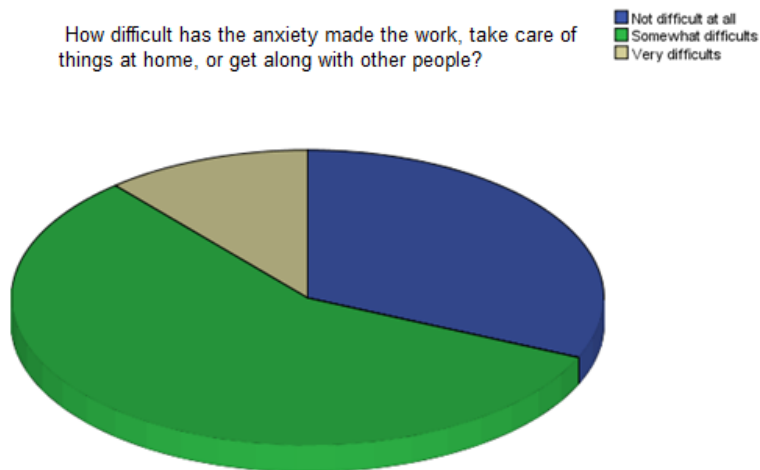


Figure3. Distribution of students according to reported difficulty in working, taking care of things, or getting along with other people due to anxiety.

Factors Associated with GAD

A t-test was used to investigate the effect of gender on total GAD-7 score. Generally, female students were more anxious than their male counterparts. The mean score for female students was 8.06, compared to 6.67 in male students, with no significant difference $p > 0.05$.

Anxiety appears to increase with GPA – students with the highest GPAs were the most anxious group. However, an ANOVA test showed no significant correlation ($p > 0.05$) between GAD-7 score and GPA. Table 3 shows the mean score and severity of anxiety associated with each variable.

Table3. The mean score and severity of anxiety associated with each variable.

Variable	Mean score	STD ±	Severity	P-value
Marital status				
Single	7.1390	4.7	Mild	
Married	8.3750	6.8	Mild	.475
Department	7.0943	4.5	Mild	.251
Nursing	6.5556	4.8	Mild	
Physical therapy	7.9677	5.1	Mild	
MLT				
Academic year	6.7714	4.5	Mild	
First year				
Second year	7.8382	4.4	Mild	
Third year	7.7143	4.5	Mild	
Fourth year	6.4684	5.2	Mild	.276
GPA				
4 – 5	7.8972	5.1	Mild	.182
3 – 4	6.6800	4.6	Mild	
2 – 3	6.4681	4.1	Mild	
1 – 2	4.5000	.70711	Normal	
English level				
Beginner	6.2727	3.94709	Mild	.051
Intermediate	6.9618	4.89097	Mild	
Advanced	8.7561	4.81550	Mild	
English difficulty	7.7638	4.87699	Mild	.041
Yes				
No	6.4712	4.62361	Mild	
Family income	8.3182	4.89301	Mild	
Low				
Middle	7.1500	4.72184	Mild	.409
High	6.5172	5.20728	Mild	

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Employed? No Yes (part-time)	7.1535	4.80062	Mild	.813
	7.3793	4.85808	Mild	
Smoker	8.4000	4.99641	Mild	.077
Non-smoker	6.9267	4.72896	Mild	
Chronic disease Yes No	9.0000	4.53557	Mild	.029
	6.9208	4.78843	Mild	
Physical activity Walk Run Lift weights Swim Play a team sport	7.2256	4.63128	Mild	.016
	8.4783	3.71569	Mild	
	5.3500	4.76031	Mild	
	10.9000	5.82046	Moderate	
	7.1034	5.65272	Mild	

Surprisingly, students with the highest English proficiency showed the highest levels of anxiety, trending to significance at $p=0.051$. For example, students with advanced English proficiency reported a mean score of 8.76 ± 4.8 , followed by those with intermediate proficiency (6.96 ± 4.8) and beginners (6.27 ± 3.9). Interestingly, level of anxiety increased significantly in students with advanced English skills, compared to those with intermediate skills and beginners ($p=.033$ and $p=.027$, respectively).

However, more than half of students 127 (55%) said that they had academic difficulties due to studying subjects in English (a second language), while 104 (45%) stated that they had no difficulties. Those who complained of English difficulties were more anxious, with a mean score of 7.7 compared to 6.5 among students having no English difficulties ($p=.041$).

In addition, we noticed that smokers (17%) had higher mean anxiety scores (8.4) than non-smokers (83%), who were less anxious (mean score 6.9). This indicates higher anxiety levels among smokers ($p=.077$). Of total respondents, 8.7% had chronic diseases; these students were more anxious (mean score 9.0) than the remaining 91.3% of students, who were healthy (mean score 6.9, $p=.029$).

Regarding physical activities, students who lifted weights were the least anxious group (mean score 5.4), followed by those who played a team sport such as football (mean 7.1), walkers (mean 7.2), and runners (mean 8.2); the most anxious group were those practicing swimming (mean=10.9, $p=0.016$).

DISCUSSION

GAD is one of the most common anxiety disorders and can lead to other major problems, such as severe depression. Early detection is

crucial to overcoming this problem and improving quality of life. The GAD-7 scale, developed by Spritzer and colleagues in 2006, is highly regarded as a valid tool for screening GAD and measuring its severity (13,14) in various disciplines. Because the GAD-7 scale has been utilised in several previous publications (13,15–18), we selected it as our tool to evaluate GAD and determine its prevalence in a sample of FAMS students at the University of Tabuk. To our knowledge, this is the first paper from Saudi Arabia, and Tabuk in particular, to assess the prevalence of GAD among students using this version of the questionnaire.

Previous research has shown that an increased prevalence of anxiety among medical and health sciences students is to be expected (19–22). There are many factors that can explain this, such as sociodemographic factors. This study found a high prevalence of mild-to-severe GAD among these students ($n=156$, 67.5%); this is similar to the anxiety prevalence (54.5%) that another study reported among medical students (23). The mean total score on the GAD-7 was 7.18 ± 4.8 (mild anxiety), which was also consistent with previous studies (23,24). Our results indicate the following distribution of scores according to GAD-7 severity cut-offs: no anxiety (32.5%), mild anxiety (36.4%), moderate anxiety (23.8%), and severe anxiety (7.4%).

In our sample, female students were more anxious than their male counterparts. The mean score for female students was 8.06 compared to 6.67 in male students, with no significant difference ($p> 0.05$). These findings were similar to those reported by previous studies performed in Egypt (25), Turkey, and Hong Kong that found high levels of anxiety and stress among women (24,26,27). In contrast, other researchers have found no significant

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association between psychological disorders and gender (28).

In our study, there was no significant association between academic year and level of anxiety. This contrasts with a previous study, which reported that upperclassmen in a sample of college students scored the highest on anxiety and depression (29). Another study on university students found that first-year students were the most anxious and anxiety then decreased until the sixth year (24).

Notably, we found that anxiety increases with GPA. Students with the highest GPAs were the most anxious group, although an ANOVA test showed no significant association ($p > 0.05$) between GAD score and GPA. One possible explanation for this finding is that these students were excessively concerned about earning high grades, which heightened their anxiety levels. This is consistent with a previous study that reported a positive correlation between GPA and anxiety (23). In contrast, another study examined the relationship between academic achievement and anxiety using a different scale and found no significant association (30).

In addition, students with higher levels of English proficiency reported more anxiety (mean score 8.7) than beginners (6.2) or students with intermediate skills (6.9). This is perhaps because students with greater English proficiency had higher GPAs and were consequently more anxious about maintaining them.

Employed and non-employed students had almost the same mean GAD-7 scores – 7.2 and 7.4, respectively. Smokers reported a higher level of anxiety (mean score 8.4) than non-smokers (6.9, $p=0.077$). This prompts the question of what comes first: Are anxious students more likely to smoke to cope with their anxiety or does smoking increase anxiety levels? Interestingly, a previous study (31) found that smokers with anxiety disorders had more severe physical and mental symptoms than non-smokers; however, smokers with GAD had significantly lower levels of social anxiety than non-smokers.

Students with known chronic diseases such as diabetes, hypertension, and hypothyroidism reported higher anxiety levels (mean score 9) than healthy students (6.9). This is unsurprising, as these students may be overwhelmed by their disease follow-ups at clinics.

There was no significant association between the number of physical activities per week and anxiety. However, the type of activity was significantly associated with anxiety levels ($p=0.016$). Specifically, students who lifted weights were the least anxious group (mean score 5.4) followed by students who participated in a team sport such as football or basketball (7.1). Students who participated in swimming were the most anxious group, with a mean score of 10.9 – the highest score of all groups. Further study is needed to analyse the relationship between anxiety and the type of sport in which students engage.

In our study, it was obvious that anxiety levels increase as family income decreases. Low-income students were more anxious (mean score 8.3) than students with middle (7.1) or high income (6.5) ($p > 0.05$). Other studies have shown that low income is correlated with psychological disorders such as depression (32,33). In addition, previous research has reported that academic level, place of residence, and perceived economic status are associated with anxiety symptoms (34).

We found alarming anxiety levels among students, regardless of the variables tested, which may assist the university or other authorities in considering measures to address this concern to prevent the progression of GAD to more severe levels. This study paves the way for conducting larger-scale investigations at other colleges or on a national scale so that comprehensive solutions can be established and implemented. Larger sample sizes and cohort studies are needed to assess this situation.

CONCLUSION

This study has demonstrated that generalised anxiety disorder is highly prevalent among students in the Faculty of Applied Medical Sciences at the University of Tabuk. It is important to detect anxiety among university students at its early stages to prevent its progression and increase quality of life. Female students, smokers, and those with a high GPA or low income reported high levels of anxiety. Our results reveal the need for prevention and treatment plans to manage anxiety symptoms and to lower the rate of affected students.

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