THE IMPACT OF ANXIETY ON UNDERGRADUATE STUDENTS' OUTCOMES DURING PROSTHETIC EXAM

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ABSTRACT

Introduction: Anxiety is a natural reaction to stress, and anxiety due to a test impair knowledge and negatively influence examination performance. The subject of prosthetic dentistry is vast and difficult, requiring a high level of specialized expertise in areas of clinical dentistry that involve very difficult processes.

Objectives: To evaluate the impact of exam's anxiety on students' experience and performance during prosthodontics exam.

Material and methods: There were 790 students enrolled into the study. Before opening the exam papers, all students completed a questionnaire. Likert scale, ranging 1 to 5, was used to assess the amount of anxiety. Link between student's degree and student's anxiety was determined with Kandall's tau test, and comparison between genders was determined using independent sample t-test. Level of significance was set at $p < 0.05$.

Results: Between student's degree and anxiety level, there was a significant link ($p < 0.05$). Male and female degrees differed significantly ($p < 0.05$); male degrees (16.45) were higher than female degrees (15.33). Males experienced normal levels of anxiety, whereas females experienced anxiousness.

Conclusions: Anxiety can affect dentistry students during prosthodontic exams. All pupils experienced anxiousness showing a mean level of anxiety. Male outcomes were better than females', and males experienced typical levels of anxiety, whereas females experienced anxiousness.

Key words: anxiety, dentistry students, prosthetic exam.

INTRODUCTION

Anxiety is a natural response for any stress, a feeling of apprehension or fear to anything may be sensed [1]. The stress response is arbitrated by a complex and cellular, inter-connected, and neuro-endocrine as well as molecular infrastructure. Stress effect location in the central and periphery nervous system [2, 3]. The reply for stress by catecholamines, such as adrenaline and noradrenaline, is delivered to different neural synapses. Free catecholamines cause sweeting, flashing, increased heart rate, and forcefully contracted myocardial muscle. The effect last for few seconds [4-8].

Test anxiety represent psychological condition of students in testing situations. Lots of students present with different degree of stress and anxiety before and through examination. Stress due to test impair knowledge and negatively influence examination performance [9]. Examination anxieties have behavioral and psychological concomitants. According to Spielberger and Vagg, skilled examining or evaluation status [10] depend on common anxieties that interfere

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with a performance in testing and academic current situation, with lesser scores gained in exams related to anxieties.

Anxiety cause the feeling of worries, nervousness, and fear, which affect students' learning in evaluated situation. In locations of exam, with the presence of pressure, the students become more anxious, which may lead to poor performance [11]. Students with appropriate level of skills, information, and knowledge can make the best of their abilities in the examination, but excessive anxieties impair their performance. The degree of anxiety during test differ among students, as some students may feel butterflies in the stomach, others cannot concentrate within the examination. However, the anxiety may be helpful in the examination to be mentally aware, standing by to take the challenge of the test.

Yerkes-Dodson law suggest that there is a link between performance and arousal levels. Fundamentally, the improved arousal level may cause students to perform best in testing up to a definite point. The experience of students' stress when the exam starts is one of the examples on Yerkes-Dodson law. The optimal levels of anxieties can help pupils to focus during the exam, remember the knowledge learned, while more stress can impair student's ability to deliberate information and concentrate as well as cause difficulty in recollecting the knowledge and recognizing correct answers [12]. All that lead to more struggling to focus attention on the exam [13]. The anxieties of dental students may pose large concern for dental education. Dental academic environment, program of study, and curriculum are identified as challenges and demands in education [14]. Psychological health makes students to identify their capability for maintaining a resemblance of control for the pressure of education [15].

Prosthodontics is a discipline within the main department of dental scholar course. Dental prosthesis are created by intricate and challenging processes of manufacture. For planning and preparation, the prosthodontics department expect the student to possess strong technical knowledge and skills [16].

The technologically improved prosthodontics' science lead to a lot of new materials and high-tech equipment to provide aesthetic and functional restoration. Generally, it is a wide field that require high level of special knowledge of clinical dentistry, and it is essential for dental community to understand the discipline of prosthetic dentistry [17-19].

OBJECTIVES

The aim of the study was to evaluate the effect of anxiety on students during the prosthodontics exam as well as the impact of anxiety on the exam's outcome, and whether gender influence anxiety.

MATERIAL AND METHODS

The study included a stratified sample of 790 students, 249 males and 541 females, aged between 19 and 23 years. Participants were enrolled from an undergraduate program at the Faculty of Dentistry, who were in their second through fifth year. Inclusion criteria were healthy and disease-free participants, not taking any medications during the test period. Exclusion criteria were individuals with cardiovascular problems, severe tachycardia, and additional conditions, such diabetes mellitus and hypertension. Prior to participating, all individuals were verbally informed about the nature and protocol of the study; then, they completed a questionnaire within the first five minutes of receiving the prosthesis exam paper. The questionnaire included essay and multiple-choice questions, with possible answers: strongly not anxious, not anxious, normal, anxious, and strongly anxious. With the help of a Likert scale, the level of anxiety was assessed (1 = strongly not anxious, 2 = not anxious, 3 = normal, 4 = anxious, and 5 = strongly anxious). The Council of Faculty of Dentistry at the University of Babylon served as the committee's representative that authorized the study protocol.

The link between student's degree and student's anxiety level was determined with Kandall's tau test, and the comparison between genders was determined using independent sample t-test. The level of significance was set at $p < 0.05$.

ETHICAL APPROVAL

In order to obtain this approval, a local ethics' committee examined and approved the study protocol, subject information, and consent form in accordance with document number 5467, issued on June 12, 2022.

RESULTS

Figure 1 shows that the majority of the participants were females (68.49%), while the proportion of male participants was 31.51%. Table 1 demonstrates that the average level of anxiety among all students was 3.63, and the average exam degree was 15.6836. Additionally, a p-value less than 0.05 was found to indicate an association between the degree of students and their anxiety level (Table 3).

According to Kandall's tau test, there was a positive correlation with a direction of less than 0.02 between degree and anxiety, indicating a weak link. Additionally, Table 1 shows that there were significant differences ($p < 0.05$) between degrees earned by men and women, with males having greater degrees (16.4570) compared with females (15.3321) (Table 4). Regarding the anxiety, males presented a normal degree of anxiety, whereas

females showed anxiety (Table 1), and at each step, females had a higher level of anxiety compared with males (Table 2). Because it was not anticipated that the variances for male and female subjects would be equal, an independent sample test was utilized (Table 4).

DISCUSSION

To the best of the authors' knowledge, the current study is the first to investigate the aspects related to prosthodontic examination in Iraq. One of the educational program parts is the exam, which is particularly stressful for the students. Anxiety can be defined as "the emotional response that a lot of students experience prior to exams, which could hinder their ability to earn good grades" [20].

In our study, all the students' average level of anxiety was described as anxious. This means that to complete the prosthetic exam, the students are under a large amount of pressure, they need to carry out the exam very well, and they will not be able to get pleasure nor joy from their academic life; the exam is a huge load for them. Across countries, exam-related anxiety is a persistent problem and must be identified in this context [21, 22].

Anxiety and student's degree are correlated ($p \leq 0.05$), and this agree with Moadeli and Ghazanfari study [23], who reported that various factors, such as complicated syllabus, items in test, exam frequency, and educational regulation may influence exam-related anxiety of university students. The results of Kandall's tau test indicated that there i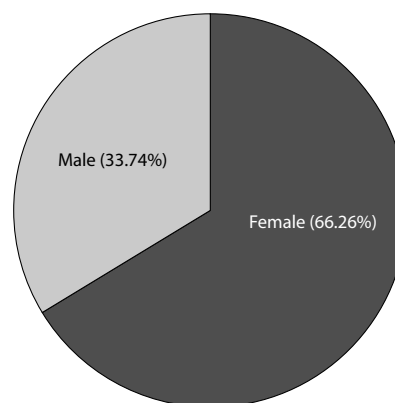s a slight link between students' anxiety and their degrees, which can be explained that the anxiety is not illogical, and extreme anxiety interferes with presentation.

FIGURE 1. Distribution of male and female students in study sample by percentage

TABLE 1. Descriptive statistic

Variable	Mean ± std. deviation	Std. error
Student degree	15.684 ± 6.285	0.224
Student anxiety	3.630 ± 1.171	0.042
Male degree	16.457 ± 6.940	0.440
Female degree	15.332 ± 5.932	0.255
Male anxiety	3.220 ± 1.192	0.760
Female anxiety	3.720 ± 1.146	0.049

TABLE 2. Male and female distribution with anxiety level and mean of degree in each stage

Stage (n = 738)	Sex (n, %)	Anxiety (n, %)	Mean of degree (20)
2nd stage (215)	Male (68, 27.309%)	Anxiety (47, 18.875%)	Anxiety = 17.20
		Non-anxiety (21, 8.507%)	Non-anxiety = 12.76
	Female (147, 30.067%)	Anxiety (103, 21.064%)	Anxiety = 16.20
		Non-anxiety (44, 8.998%)	Non-anxiety = 13.76
3rd stage (212)	Male (86, 34.538%)	Anxiety (50, 20.061%)	Anxiety = 16.21
		Non-anxiety (36, 14.457%)	Non-anxiety = 12.59
	Female (126, 25.767%)	Anxiety (91, 18.609%)	Anxiety = 15.73
		Non-anxiety (35, 7.158%)	Non-anxiety = 11.62
4th stage (168)	Male (58, 23.293%)	Anxiety (30, 12.048%)	Anxiety = 15.69
		Non-anxiety (28, 11.220%)	Non-anxiety = 13.34
	Female (110, 22.490%)	Anxiety (71, 14.519%)	Anxiety = 15.65
		Non-anxiety (39, 7.975%)	Non-anxiety = 12.48
5th stage (143)	Male (37, 14.859%)	Anxiety (19, 7.619%)	Anxiety = 15.75
		Non-anxiety (18, 7.209%)	Non-anxiety = 12.35
	Female (106, 21.676%)	Anxiety (67, 13.702%)	Anxiety = 17.74
		Non-anxiety (39, 7.975%)	Non-anxiety = 13.45

TABLE 3. Correlation according to Kandall's tau test between student's anxiety and student's degree

	Student's anxiety	Student's degree
Correlation coefficient Sig. (2-tailed) n	1.000 790	0.136[**] 0.000 790
Correlation coefficient Sig. (2-tailed) n	0.136[**] 0.000 790	1.000 790

TABLE 4. Comparison between genders using independent sample *t*-test

Variable	*t*-test	Sig.	Mean difference
Male anxiety	2.346	0.019	1.12492
Female anxiety	2.214	0.027	1.12492

According to several researchers, college students can tolerate a small amount of anxiety as long as it keeps them focused on their task. Alternatively, excessive anxiety may be very weakening, and interferes with outcomes if not handled properly. Since the percentage is so low, anxiety is not the primary factor influencing students' level of accomplishment [24].

In our research, we found that the degree of male anxiety was lower than that of female, and their outcome achievements were higher. This finding could be explained that compared with male students, females scored higher on the physiological anxiety test depending on the outcome of data, which may be due to females more likely to report their symptoms. This is in line with Feingold [25], who reported similar outcome.

Sex differences may be due to psychological variances, such as males had a stronger sense of personal control over the circumstances, which is a protective factor against anxiety disorders. Men could experience greater life pressure than women in order to confront their concerns and test hormones of women [26, 27]. However, in the following study, the number of female students was higher than male students, which could impact the results.

We recommend to educate dentistry undergrads on time management, studying, and life skills enhancement techniques to help coping with exam-related anxiety to overcome students' fears from prosthetic exam. Courses should emphasize test competency, programs, and perform formal examination test patterns as a step to enable students to deal with problems generated by anxiety from prosthetic exam and consequently, improve their academic performance. Also, the availability of counseling services at dentistry schools are required. Finally, more research is necessary to investigate and compare how exam-related anxiety affects students' grades and academic performance at various undergraduate educational levels.

CONCLUSIONS

The main objective of the study was fulfilled. This study focus on the occurrence of anxiety during prosthodontics exam among dental students and its impact on their academic performance. Anxiety and student's degree are correlated, with anxious students performing better. The degrees earned by men were greater than those by women. Males experienced normal levels of anxiety, whereas females experienced higher levels of anxiety. There are notable disparities in anxiety levels based on gender.

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CONFLICT OF INTEREST

The authors declare no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

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