

Investigation on Relationship between Test Anxiety and Academic Performance of Nursing and Midwifery Students in Tabriz and Maragheh—Iran

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Abstract

Background and Aim: Given the dramatic decline in the ability of test due to test anxiety, the goal of this study was to evaluate the relationship between test anxiety and academic performances in students. **Materials and Methods:** This descriptive-analytical study was performed on 216 Iranian nursing and midwifery students in 2011-2012, utilizing Sarason Anxiety Inventory, demographic checklist and the average mark of students in the period of midterm and final exam. Multinomial logistic regression analyses by reporting odds ratios and their 95% confidence intervals were performed by SPSS17 software to assess the relationship between test anxiety and academic performances. **Results:** Mild, moderate and severe test anxiety was observed in 30.6, 43.1 and 26.4 percent of students respectively. Test anxiety was significantly related to academic performance (average), major and city. Also, there was 52.9% decrease for odds of having severe anxiety (compared to mild anxiety) with 1 point increase in average (OR = 0.471, 95% CI = (0.298 - 0.745) and p = 0.001). **Conclusions:** Due to inverse relationship between test anxiety and academic performance, performing preventive programs such as in time treatment of anxiety, empowering the students to deal with anxiety and conducting consulting services for how to studying are very important. Consequently it would be a big step in decreasing the test anxiety and therefore in improving the academic performance.

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Keywords

Test Anxiety, Academic Performance, Nursing, Midwifery, Students

1. Introduction

Anxiety is a part of every human life in all societies and is regarded as a suitable response. Balanced and constructive level of anxiety makes us do things timely and appropriately and have durable life.

On the other hand, there is morbid anxiety which is considered as a source of failures and lack of compromise and includes a range of both cognitive, physical disorders and unjustified fears and panic, so that the person is deprived of the possibility of a major part of the features [1]-[4].

Test anxiety is a common type of performance anxiety that 10 to 20 percent of students suffer from it. That is a kind of anxiety or social phobia which makes person doubt about his ability and it results in reduction of power to deal with test situations. So the person, who suffers from test anxiety, knows the answer, but anxiety prevents him from using his knowledge as a result; it is expected that there is an inverse relationship between anxiety scores and test scores [5].

Sarason and Mandler believed that in a test position, test-related information and learned anxiety cases come into practice. Some of anxiety cases are associated with tests in question and others are not associated with them.

Therefore, if motivated anxiety is associated with the test content, efficiency levels are increased; otherwise the level of efficiency is refused [1].

Also, Sarason realized that anxiety, as a form of employment, is identified with individual minimization, makes one doubt about his abilities and often leads to negative cognitive evaluation, decentralization, adverse physiological reactions and decline in academic performance. As a result, there is a significant inverse relationship between anxiety scores and scores of test [6] [7].

Test anxiety, as a common and important educational phenomenon, has a close relationship with educational performance and academic achievement. In some studies, this association was observed with less intensity and in one study no significant relationship was observed [8].

A research by the title of "test anxiety reasons in students" by Narimani *et al.* showed that between male and female students, there are significant differences in test anxiety ([7] [9] and [10]).

The researchers estimated each year about ten million high school students and 15 percent of university students in America are experiencing test anxiety [11].

In Iran, also afraid of getting poor grades and blame by family, ridicule by classmates and friends, fear of inability to continue studying, always puts the students about psychological harassment [12].

Experience of researchers shows that majority of the students ask about test anxiety and controlling it. On the other hand no research has been conducted for studying test anxiety in these faculties, plus the results of studies conducted in other national studies [12]; confirming test anxiety and its adverse effects on academic performance shows the necessity of this study.

This research with the aim of studying relationship between test anxiety and academic performance of nursing and midwifery students in Maragheh and Tabriz (west of Iran) was conducted.

2. Material and Method

This descriptive-analytical study was performed on 216 students of the Maragheh and Tabriz nursing and midwifery faculty in 2011-2012. Course of students includes nursing, midwifery, medical emergency and health. Preliminary study including 30 samples for assessment of relationship between test anxiety and academic performance (OR = 0/568) was conducted. Considering the amount of confidence level 95%, power of test 90%, two series of tests and using the software of G-Power, sample size was obtained 216 cases.

Simple random sampling was performed based on the available list in the education department of faculties so that samples selected randomly. In case if students had satisfaction, they have been participated in the study and if any student was not willing to do the study, another one randomly was selected. The data collection instrument included a Sarason 37-item questionnaire test anxiety [3], demographic characteristics checklist and the

average mark of students. Questionnaires completed by students in the interval between examinations of mid-term and end of the term.

Cronbach's alpha coefficient which was used to check the reliability of the data in this study was approved 0.746.

For accounting scale score Sarason test anxiety items 3, 15, 26, 27, 29 and 33 take incorrect responses and other items take correct responses. For calculating anxiety score first in the same direction with the correct responses and then incorrect responses are coded inversely then anxiety score is obtained by adding new items to each other. Accordingly, the scope of possible test anxiety score becomes (0 - 37). Scores less than or equal 12, 12.1 - 20 and higher than 20.1, respectively, show mild, moderate and intensive anxiety [3]. According to the available checklist, variables in demographic information include age, city of school location, sex, marital status, course, year of entry to the university. In addition current term average and past terms average obtained by referring to the educational department of faculties. Participants in this study are assured that personal information is kept confidential and their information is just used for study.

3. Statistical Analysis

Data of qualitative and quantitative variables, respectively, mean (SD) and frequency (percent) was reported. For studying the relationship between the variables: city (Maragheh-Tabriz), sex (female-male), marital status (single-married), course (nursing-midwifery-medical emergency, health), years of enter to university, age and average scours variables with test anxiety, in the form of a one-variable and multivariable, multi nominal logistic regression analysis was used (with considering three state anxiety conditions). Odds ratio (OR) index and it's 95% confidence interval of both unadjusted (one-variable analysis) and adjusted (multivariate analysis) was evaluated as a measure of its effect. Software (SPSS17) is used for data analysis and for all analyses $p < 0.05$ is considered as significant.

4. Results

157 students (72.7%) out of 216 participants in the study were female and 59 (27.3%) male and mean age of students 21/58 with a standard deviation of 2/95. Mean average was 17.05 with standard deviation 1.15 and mean test anxiety score of 15.65 with standard deviation, 5/94 was obtained. Based on study test anxiety results of 30.5% of students were mild, 43.1% moderate and 26.4% sever level (**Table 1**).

Based on one-variable analysis, city, the current semester score and course of study variables showed significant relationship with test anxiety (for all three variables $p < 0.05$). In this analysis it was observed that students of Maragheh compare with students of Tabriz had lower anxiety level (OR = 0.272 and OR = 0.137 respectively for moderate and sever level of anxiety compared with the reference category). Also level of student's anxiety decreased with increasing current semester average score (OR = 0.546 for high level of anxiety compared with the reference category of mild anxiety). In addition nursing courses (OR = 0.090 for high anxiety compared with the reference category, mild anxiety), medical emergency (OR = 0.083 for high anxiety compared with the reference category, mild anxiety) and health (OR = 0.125 and OR = 0.083 respectively, for medium and high levels of anxiety compared with the reference category, mild anxiety), had lower anxiety level compared with the field of midwifery (**Table 2**).

In this study significant variables candidate for entry into multivariable analysis and studied for relationship of these variables with test anxiety (**Table 3**). Based on multivariable analysis, city and current semester score variables showed significant relationship with test anxiety ($p < 0.05$ for both variables) and there was no significant relationship between course of study and test anxiety ($p > 0.05$).

In this analysis it was observed that the students of Maragha compare with students of Tabriz had lower test anxiety level (OR = 0.178 to high level of anxiety compare with mild anxiety as the reference category).

Also students test anxiety level decreased with increased the current semester score (OR = 0.471 to high level of anxiety compare with mild anxiety as the reference category). In addition health course automatically excluded by software due to lack of samples (**Table 3**).

5. Discussion

Test anxiety is a serious problem for many students it has been described as the most powerful obstacle to

Table 1. Abstract indexes for demographic characteristic of persons attended in the study.

Variables	Frequent	Percent
City:		
Maragheh	161	74.5
Tabriz	55	25.5
Sex:		
Female	157	72.7
Male	59	27.3
Marital status:		
Single	169	79.0
Married	45	21.0
Course of study:		
Nursing	121	56.0
Medical emergency	47	21.8
Health	19	8.8
Midwifery	29	13.4
Year of entry to the university:		
2011	84	38.9
2010	88	40.7
2009	6	2.8
2008	14	6.5
2007	24	11.1
Sarason anxiety:		
Mild	66	30.6
Moderate	93	43.1
Severe	57	26.4
Age [#]		21.58 (2.95)
Current semester average [#]		17.06 (1.15)
Mean of past semesters average [#]		16.69 (1.17)
Sarason anxiety score [#]		15.66 (5.94)

[#]: Mean and standard deviation (SD) of variables are reported.

learning in an educational setting [10]. Hambree [13] stated that it has been linked to fear of negative evaluation, dislike of testing and less effective study skills and has been identified as one of the factors that impair academic performance.

The effect of test anxiety on academic performance has been thoroughly investigated by many researchers [14]. Generally, the study of the relationship between test anxiety and academic achievement began in the early 1900's [11]. The comprehensive reviews by Hambree [13] studies showed that test anxiety caused poor performance. It implied that test anxiety had a negative relation with student's performance. Therefore, the high-test anxious students tended to score lower than low-test anxious students. This result was supported by the findings of various studies [10].

A review of current literature shows that test anxiety is a dynamic, progressive and sometimes controversial area for students. Hembree's [13] research findings suggest that test anxiety is a key factor in undermining student's academic performance. Chapell, Benjamin, Michael, Masami, Brian, Aaron *et al.* [15] investigated relationship between test anxiety and academic performance of the undergraduate and graduate students and found a significant but small in-verse relationship between test anxiety and grade point average in both groups. The

Table 2. Results of one-variable analyses of multinomial regression for studying relationship between on question variables and test anxiety.

Variables	Medium level anxiety compared with mild level				High level anxiety compared with mild level			
	OR	95% confidence interval OR		p-Value	OR	95% confidence interval OR		p-Value
		Low level	High level			Low level	High level	
City								
Tabriz	Reference category	-	-	-	Reference category	-	-	-
Maragheh	0.272	0.105	0.708	0.008	0.137	0.051	0.370	<0.001
Sex								
Male	Reference category	-	-	-	Reference category	-	-	-
Female	0.988	0.493	1.982	0.973	1.368	0.605	3.096	0.452
Age	1.022	0.907	1.152	0.721	1.078	0.953	1.219	0.234
Marital status								
Single	Reference category	-	-	-	Reference category	-	-	-
Married	0.811	0.365	1.801	0.607	0.718	0.297	1.735	0.462
Current semester average	0.831	0.587	1.176	0.295	0.546	0.362	0.823	0.004
Mean of past semesters average	0.964	0.649	1.432	0.855	0.837	0.541	1.295	0.424
Course of study								
Midwifery	Reference category	-	-	-	Reference category	-	-	-
Nursing	0.225	0.048	1.062	0.060	0.090	0.019	0.426	0.002
Medical emergency	0.219	0.043	1.119	0.068	0.083	0.016	0.444	0.004
Health	0.125	0.020	0.782	0.026	0.083	0.013	0.530	0.009
Year of entry to the university								
2007	Reference category	-	-	-	Reference category	-	-	-
2011	1.957	0.663	5.771	0.224	1.174	0.371	3.712	0.785
2010	1.800	0.614	5.277	0.284	1.183	0.379	3.693	0.773
2009	1.125	0.060	21.087	0.937	5.143	0.465	56.897	0.182
2008	0.563	0.122	2.603	0.462	0.321	0.051	2.019	0.226

OR: odds ratio. In these analyses, mild level anxiety is considered as a reference category.

Table 3. Results of multi-variable analyses for studying relationship between on question variables and test anxiety.

Variables	Moderate levels of anxiety compared with the mild				High levels of anxiety compared with the mild			
	OR	95% confidence interval OR		p-Value	OR	95% confidence interval OR		p-Value
		Low level	High level			Low level	High level	
City								
Tabriz	1	-	-	-	1	-	-	-
Maragheh	0.316	0.080	1.250	0.101	0.178	0.037	0.864	0.032
Mean of past semesters average	0.745	0.509	1.092	0.132	0.471	0.298	0.745	0.001
Course of study								
Midwifery	1	-	-	-	1	-	-	-
Nursing	0.381	0.034	4.261	0.433	0.231	0.019	2.856	0.254
Medical emergency	0.285	0.021	3.833	0.344	0.222	0.014	3.589	0.289

OR: odds ratio. In these analyses, mild level anxiety is considered as a reference category. Health course is omitted by software because of lack of samples.

purpose of this study was relationship between test anxiety and academic performance in nursing and midwifery students in Maragheh and Tabriz cities (west of Iran).

Sarason argues that test anxiety is a major devastating factor for all academic performance from the elementary level to the university level.

According Sarason questionnaire, if test anxiety score is more than 15, it shows that the students burden test anxiety. Based on research findings, 69/5% of students had moderate to severe test anxiety. Average of test anxiety was 15/65; therefore 60/5% of students has test anxiety [6]. Test anxiety score obtained from this study in compared with the study of Moaddeli *et al.* [16] is high.

Also in a study performed by Clark and colleagues [17], the majority of students had a high level of test anxiety that is consistent with the results of this study [17]. Test findings of this study showed an inverse relationship between test anxiety and academic performance. So that one score increases in average had 53% less chance for having severe test anxiety (compared with the level of mild anxiety). This finding is in line with the results of some studies in this field [18]-[20], but is inconsistent with results of Bahman Chraghyan and colleagues [21].

This study was performed in the of nursing and midwifery faculty of Tabriz University of Medical Sciences in Tabriz and Maragheh cities. In case of selecting other faculties obtained results of this study can be generalized all of the students of Tabriz University. Or even with wide selection of students, the results can be generalized to the whole of East Azarbaijan students (west of Iran), which it needs conducting the research in a broader level and recommended this subject is flowed by university.

Another limitation of this study was the lack of the samples of participants for the health course which excluded by multivariable analysis. For solving this problem recommended selection of the appropriate number of individuals through sampling with proportional allocation in future studies.

6. Conclusions

In this study, city of study (Tabriz compared Maragheh) and student's score variables were obtained as independents foresight in Sarason test anxiety and in a one-variable analysis, the course of study showed a significant relationship with this outcome.

Considering the obtained results, this recommended that using consulting methods, introducing appropriate strategies in study, creating a friendly relationship between professors and students, and conducting interventional studies and educational programs (including educational pamphlets or booklets) can reduce test anxiety level of students.

As test anxiety has negative effects on students' academic performance, identifying its causes and then planning solving those causes are recommended.

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