

The relationship between gender, age, anxiety, depression, and academic achievement among teenagers

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ABSTRACT

Background: Researchers have shown that the anxiety and depression have an important role in academic achievement. **Objectives:** This study is designed to identify the impact of anxiety and depression on academic achievement in students living in North of Iran. **Patients and Methods:** In this study 666 secondary school students (13–19 years old) were involved in North of Iran, were involved in this study. We used two instruments for data collection, The Beck Anxiety Inventory and The Beck Depression Inventory. **Results:** The results indicate that girls with 21.8% were more anxious than boys with 11.6% ($F = 21.448$, $t = 5.420$), while boys with 29.5% are more depressed than girls with 17.8% ($F = 25.530$, $t = 4.847$). Additionally, there were a significantly negative correlation between academic achievement with anxiety and depression. There was no statistically significant difference in the mean of anxiety and age between teenagers, but a significant depression level of respondents who are 18 and 19 years old was significantly different from other ages. **Conclusions:** It is recommended that along with academic performance, mental health be developed in school settings using support strategies such as educational guidance and counseling, teaching life skill programs, and psychotherapy. It was concluded that there is an urgent need to pay more attention to the anxiety and depression of adolescents in Iran. The findings of the study will be useful in assisting educators, counselors, and psychologists to develop strategies to enhance students' psychological well-being.

Keywords: Academic performance, anxiety, depression, Iranian adolescents

Introduction

Education has an essential role in every country, and Iran is not an exception. However, academic failure is one of the major problems of the families. Many factors affect academic achievement.^[1,2] Researchers have indicated that depressed and anxiety mood are negatively related to academic achievement.^[3] In addition, depressed and anxiety youth are at risk for many comorbidities, including conduct problems, personality disorders, substance abuse,

obesity, interpersonal conflict, unfulfilling social relationships, and educational and occupational underachievement.^[4,5] Literatures have shown that performance in school was found to be affected by many symptoms of anxiety and depression, such as difficulties in concentration, lack of interest and motivation, preoccupations, fatigability, and poor attendance.^[6]

Mood disorders are psychological problems that are common among students. According to Porter (1990), up to 60% of students left school without finishing their degrees. Depression and anxiety were found to be interrelated to each other. The overlapping symptoms of these two psychological problems can

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lead to all sorts of academic problems that can give impact to academic achievement among students. For example, researchers have found that students' performance in school, college, and university is influenced by the symptoms of depression,^[7,8] anxiety^[9] that could lead to difficulties in concentration, lack of motivation and interest, poor attendance, and physical health such as headache and fatigability. These conditions will influence students' academic achievement.^[5]

The findings indicate that lots of students endured from psychological problems, which in turn affected their academic performance. Many studies were conducted to deal with this matter and it absolutely was found that psychological problems such as depression and anxiety do have influence on the academic achievement of the students^[10] and, for instance, reported that stressful life events are significantly elevated in anxious and depressed youths and thus could cause low performance in academic achievement. A study by Safree and his colleague (2010) also indicated the exactly same results. They found that anxiety and depression negatively correlate with academic achievement.^[11]

There are some reasons for doing this research. Less research on mental health and academic achievement may lead to difficulty to know the psychological conditions with regards to academic achievement and education among students in Iran and another reason is that this study also hopes to donate to the research on how to help and manage students who have low academic achievement. By having better understanding and information about psychological condition of the students on anxiety and depression, it could help us to design an idea to help them. Simply speaking, it is essential to obtain details about students' psychological conditions and psychological growth in the school because it is definitely related to their academic achievement.

Anxiety and Depression among Students

Anxiety is a feeling of nervousness, apprehension, fear, or worry. Some fears and worries are justified, such as worry about a loved one or in anticipation of taking a quiz, test, or other examination. Problem anxiety interferes with the sufferer's ability to sleep or otherwise function. It is remarkable that teenagers are particularly at risk to having irritability as a symptom of a number of emotional problems, including anxiety.^[12–14]

Gullotta in his book cited that anxiety becomes positive when it is used to respond to a tense situation. For instance, when a teenager is preparing for a test, a dose of anxiety spurs them on to greater effort and they study hard to excel. Anxiety becomes a serious concern when it is in excess and irrational, and the individual is so affected as to be unable to focus. It can also happen that anxiety in a teenager can become a barrier between him/her and friends and peers, and they begin to avoid them just because they are under stress or in a state of panic. This panic may affect their academic performance.^[15] About 20% of young people will experience anxiety problems of one kind or

another. In addition, 5% of children and adolescents experience such disorders, which are more prevalent among adolescents than children and more common among girls than boys.^[16] It has also been found that 13% of all youth suffer an anxiety problem. At the prepuberty stage, depressed adolescents tend to be introverted or rebellious.^[14]

A depressed mood is the experience of unhappiness or distress. Depression may involve feelings of being sad, weak, disappointed, frustrated, despairing, helpless, and hopeless.^[17] Many depressed individuals may be struggling to perform well in academic life because they do not have courage in what they are doing. They may feel that they are not reaching the standard of performance set for them. As a result, they continuously feel disappointed and despairing. They perceive things negatively and consider themselves as failures. This problem can definitely contribute too many serious problems in their academic life such as poor grades.^[3,14,18]

The result of the studies showed that there was an inverse relationship between academic achievement and depression.

Materials and Methods

Participants

The samples of this study were 666 adolescent students who live in North of Iran, Guilan, 2015–2016. The population in this study comprised two numbers of subgroups, particularly gender and age, given the possibility that they may have differed in the traits being studied, so, as it is often recommended to utilize stratified random sampling.

The procedure for choosing the total number involved two stages:

- (1) Thirty-six guidance school, high schools, and pre-university schools were selected from among a number of total schools having adolescence students in North of Iran (Guilan) by simple random sampling.
- (2) The total number of students according to their age and gender was determined and then by ratio formula (in arithmetic, proportion is the equality of ratios; ratio is the division of one number by another) in each of the guidance school, high schools, and preuniversity schools, the number of samples was selected. Then, the actual respondents were selected by simple random sampling.

Instruments

Two instruments were used in this study to measure anxiety and depression:

1. Beck Anxiety Inventory

The Beck Anxiety Inventory (BAI), created by Aaron T. Beck, and colleagues, is a 21-item multiple-choice self-reporting inventory that measures the severity of anxiety in adults and adolescents. The age range for the measure is from 17 to 80; it

has been used in peer-reviewed studies with younger adolescents aged 12 and older. The BAI was adapted for Iranian culture. Kaviani and Mosavi (2007), in their study, found that their results support the applicability of BAI in Iranian adults and suggest the use of this inventory for clinical and research purposes. The Persian version of BAI was able to assist clinicians in assessing and diagnosis, as well as help researchers to assess anxiety levels when necessary.^[19]

- Low anxiety (0–21)
- Moderate anxiety (22–35)
- High anxiety (+35)

2. Beck Depression Inventory

The Beck Depression Inventory (BDI, BDI-II), created by Dr. Aaron T. Beck, is a 21-question multiple-choice self-reporting inventory, which is one of the most widely used instruments for measuring the severity of depression. In its current version, the questionnaire is designed for individuals aged 13 and over, and is composed of items relating to symptoms of depression such as hopelessness and irritability, cognitions such as guilt or feelings of being punished, as well as physical symptoms such as fatigue, weight loss, and lack of interest in sex.^[20] The BDI is used in Iran for many studies, and it has been proven to have suitable reliability and validity.^[3] The BDI was adapted for Iranian culture. According to Modabber-Nia *et al.* (2007) and Beck *et al.* (1988), standardized questionnaire scores are defined as follows:

- Symptom-free or normal (0–15)
- Mild depression (16–30)
- Moderate depression (31–46)
- Severe depression (47–63)

Based on the rules of the Ministry of Education in Iran, the range of academic achievement (GPA) is from 0 to 20 and includes four parts. From 0 to 9 is considered fail that is if an Iranian student gets this range of score in any of the courses, she/he fails. A score of 10–14.99 is considered weak while score of 15–16.99 is considered moderate and a score of 17–20 is considered excellent. Students were also asked about this year cumulative academic achievement (0.00–20.00).

A descriptive statistical analysis (frequency, percentage, means, and standard deviations) was done to characterize the depression, academic achievement, and gender. A Pearson correlation was calculated to evaluate the level of significance of the relationship between the anxiety and depression score with academic achievement and also the Pearson correlation was used to determine the significance of the relationship between age and academic achievement. In addition, a *t*-test was done to test the relationship between gender and academic achievement, which means that academic achievement was used as an interval variable not a category and also *t*-test was conducted to test gender with anxiety and depression; finally, ANOVA was done to test age with anxiety and depression. The software used for data analysis was SPSS-21.

Table 1: Demographic characteristics in this study

Variables	Data	N	Percentage
Gender	Male	348	52.3%
	Female	318	47.7%
Age range	13	114	17.1%
	14	98	14.7%
	15	112	16.8%
	16	115	17.3%
	17	100	15%
	18	62	9.3%
Location	19	65	9.8%
	Urban	385	57.8%
	Rural	281	42.2%
	Total	666	100%

Results

Table 1 shows that the number of respondents in this study includes 666 students.

The respondents consisted of 348 (47.7%) boys and 318 (52.3%) girls. Teenagers were aged 13–19 years, with mean age of 16.37 years and SD = 1.73. The mean age of male was 16.78 and SD = 1.07, and the mean age of female was 15.87 and SD = 1.07. The location of the sampling in this study shows that 385 (57.8%) live in urban areas and 381 (42.2%) live in rural areas.

Table 2 shows that the 2.3% of the respondents reported their academic achievement being less than 10, while 33.2%, 54.2%, and 10.4% of them reported their academic achievement to be 18–19 and more than 13–17. According to the results, 39.4% of the participants were reported symptom–low anxiety, while 45.7% and 14.7% were reported moderate and high anxiety. In addition, to display the significant difference between the factors of gender, age, and the respondents' academic achievement, a *t*-test and ANOVA were run. There was significant difference between females and males in anxiety scores. The Sig. (2-tailed = 0.000) value was $F = 21.448$, $t = 5.420$, and $df = 664$; girls were more anxious than boys, but there were no statistically significant difference in the mean of anxiety between the age of teenagers.

Table 3 shows that 57.2% of the respondents were normal, while 33.6% were mildly depressed, 6.3% were moderately depressed, and 2.9% had severe depression. Additionally, *t*-test and ANOVA display that there were significant difference in depression scores between females and males and the Sig. (2-tailed = 0.000) value is $F = 25.530$, $t = 4.847$, and $df = 664$. In fact, boys were more depressed than girls, and there were statistically significant difference in the mean of depression between ages too. We used *post hoc* tests (turkey) and found that the participants who are 18 and 19 years showed significant depression level.

Table 4 displays the significant relationship between anxiety, depression, and the respondents' academic achievement. The Pearson correlation formula was used to analyze academic achievement as the dependent variable, and anxiety and

Table 2: Academic achievement and anxiety by target variables among respondents

Academic achievement levels										
Anxiety levels		1-10		11-15		16-17		18-20		Total (%)
		N	Percentage	N	Percentage	N	Percentage	N	Percentage	
Low	(0-21)	6	2.2	84	31.9	151	57.4	22	8.3	263 (39.4%)
Moderate	(22-35)	7	2.2	109	35.7	155	50.8	34	11.15	305 (45.7%)
High	(+35)	2	2	28	28.5	55	56.2	13	13.3	98 (14.7%)
Age										
13		8	7	98	85.97	8	7	0	0	114
14		2	2	76	77.55	20	20.4	0	0	98
15		0	0	27	24.1	85	75.89	0	0	112
16		2	1.7	6	5.2	107	93	0	0	115
17		2	2	6	6	91	91	1	1	100
18		0	0	4	6.5	39	62.9	19	30.6	62
19		1	1.5	4	6.2	11	16.92	49	75.4	65
Gender										
Males		7	2	106	30.5	172	49.4	33	9.5	348 (52.3)
Females		8	2.5	115	36.2	189	59.4	36	11.3	318 (47.7)
Total		15	2.3	221	33.2	361	54.2	69	10.4	666 (100%)

Table 3: Academic achievement and depression by target variables among respondents

Academic achievement levels										
Depression levels		<10		11-15		16-17		>17		Total
		N	Percentage	N	Percentage	N	Percentage	N	Percentage	
Normal	(0-15)	6	1.6	133	34.9	202	53	40	10.5	381 (57.2)
Mild	(16-30)	9	4	63	28.1	124	55.4	28	12.5	224 (33.6)
Moderate	(31-46)	0	0	18	42.9	23	54.8	1	2.4	42 (6.3)
Severe	(47-63)	0	0	7	36.8	12	63.2	0	0	19 (2.9)
Age										
13		8	7	98	85.9	8	7	0	0	114
14		2	2	76	77.5	20	20.4	0	0	98
15		0	0	27	24.1	85	75.8	0	0	112
16		2	1.7	6	5.2	107	93	0	0	115
17		2	2	6	6	91	91	1	1	100
18		0	0	4	6.5	39	62.9	19	30.6	62
19		1	1.5	4	6.2	11	16.92	49	75.4	65
Gender										
Males		8		115		189		36		348 (52.3)
Females		7		106		179		33		318 (47.7)
Total		15	2.3	221	33.2	361	54.2	69	10.4	666 (100%)

Table 4: Pearson Correlation between anxiety, depression and academic achievement

Academic achievement		
Variables	R	P
Anxiety	-0.34**	0.000
Age	0.25	
Depression	-0.23**	0.000
Age	0.22	

depression as the independent variable. The results are summarized in Table 4. Anxiety and depression with academic achievement were found to be significantly correlated ($r = -0.34$ and $r = 0.23$, $P \leq 0.000$); therefore, there was a negative significant relationship between depression and academic achievement.

Discussion

The finding supports these results that expected the female teenagers to have higher anxiety levels than males. For example, Dorn *et al.* (2009) indicated associated increases in anxiety among adolescent girls who report greater levels of fearfulness and anxiety symptoms than boys.^[21] In fact, two out of every three teenagers with general anxiety disorder are girls.^[22] In Iran, Hossinefard, Birashk, and Atef (2005) in their study found that the prevalence of anxiety in adolescents was 8.4%, and there was a significant correlation between some demographic variables such as gender.^[23] Teenager years go through stress and conflict. Most of the time, teenagers often do not know how to handle their stress and anxiety. For example, teenagers in 11–12 years show signs such as low moods and emotions; they are irritable

between 13 and 14 years, withdrawn in their 15th year and often have problems about adults' patterns in their long life. In their teens, children grow more quickly than usual and tend to get very emotional. They believe that no one understands how they feel. The kinds of symptom of anxiety are different between teenagers, but teenager's years are always associated with anxiety. This can be a reason for why there is no statistically significant difference in the mean of anxiety between ages.

These days, most teenagers are very worried about not being able to find employment in the future. Some of them believe that education is not useful, because many graduated people couldn't find an appropriate job. It is possible that this could be the common factor that brings about an almost similar prevalence level of anxiety among secondary students.^[24] The finding does not support the results that expect female teenagers to have higher depression levels than males. For example, Modabber-Nia *et al.* (2007) studied the prevalence of depression in Iranian teenagers and found that teenagers, especially girls, have many problems with depression. They reported in their literature and indicated that there were significant differences between males and females in depression. They found, in their study, that depression in girls was higher than in boys. Our results were different from those of Modabber-Nia *et al.* (2007) indicated in their study.

In this study, 18–19-year-olds were significantly different from those who were 13, 14, 15, 16 and 17 years old. In fact, adolescents who were above 17-year-olds had the highest mean score for depression among teenagers. Makaremi (1992), in her study, in Shiraz found that students above 17 years had the highest mean score of depression among adolescents, and there was no difference between girls and boys in the level of depression.^[25] This result absolutely differs from our results.

The results from this study showed that anxiety and depression affected academic achievement. These findings confirm other findings reported in the literature that shows adolescents with anxiety and depression being vulnerable to educational underachievement. In addition, based on a resource allocation model of the effect of depressed mood on cognition, it has been found that students with symptoms of anxiety and depression are predisposed to focusing their attention on interfering, irrelevant thoughts, leaving little sustained attention available for cognitive tasks, which then leads to academic failure.^[4,5,18]

As many of the school activities and homework depend on the ability to sustain attention and concentration, depression, which disrupts concentration and attention in school, is likely to undermine academic performance. In addition, research has indicated that mood is negatively related to academic achievement.^[4,5,26]

Depression and anxiety are emotional disorders that cause many problems for society, especially depression in high school students.

The current study showed that around 60% of respondents had anxiety and 45% of respondents were depressed. This result, however, is not different from the results of other research, for example, according to the study of Modabber-Nia *et al.* (2006); Hosseini and Mousavi (2004); Masood Zadeh (2002), Fallahi (2012) who showed that 34%, 44.3%, and 39.1% of high schools' students in Iran had depression.^[24,27,28] It is important to pay attention to rate of anxiety and depression among secondary school students, because based on the Beck *et al.* (1988) depression theory, a negative view about oneself, the future and the world leads to low self-esteem, hopelessness, and depression.^[5]

The results from this study indicated that age and academic achievement were significantly correlated ($r = 0.25$, $r = 0.22$, $P \leq 0.000$) in anxiety and depression swings, respectively, and this finding is in agreement with the Anne-Rampacher and Peterson (1999), who reported that there is a significant difference between age subgroups and academic achievement.^[29] Data from this study showed that there is a significant difference between gender and academic achievement. This finding confirms with Fergusson and Horwood (1997), Linver *et al.* (2002), and Yousefi *et al.* (2010). They indicated gender impact on academic achievement among respondents.^[5,30,31]

The high rates of depression and anxiety among students have major implications, not only with psychological morbidity that will have adverse effects on students' health, development, educational attainment, and quality of life, but also the deteriorating influence on their own families, institutions, and even on other people's lives.

School counselors could play an important preventative role by considering anxiety symptoms as a potential warning sign for depression. In addition, if students have already begun to experience symptoms of depression, the counselor may want to explore whether extended periods of anxiety might have precipitated the depression. Furthermore, the gender differences reported in previous research could be a result of students' cultural background and the socialization process both genders go through. Therefore, it is important to study international students from different ethnicities to see if gender is related to their experiences of anxiety and depression.

Conclusion

Anxiety and depression were found to have an impact on academic achievement among teenagers. It decreased academic achievement. It could also decrease motivation in ability attention, concentration and leads to academic failure. These data have provided evidence of a relationship between anxiety, depression, and academic achievement among high school adolescents in response; it is proposed that selective preventive activities be introduced at high schools for students with academic problems. Mental health can be developed in school settings with the aid of support strategies such as counseling, teach life skill programs, and psychotherapy.

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Authors Contribution

Study design, data analysis, drafting of the manuscript, critical revision of the manuscript for intellectual content, and statistical analysis were done by corresponding author.

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Conflicts of interest

There are no conflicts of interest.

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