



Original Article

The effect of self-regulation-oriented training on mental health and anxiety of female high school students

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Abstract

Introduction: Mental illnesses have created many problems in modern societies, especially in the school age group. Therefore, this research aimed to assess the effect of self-regulation-oriented training on anxiety and mental health of female high school students.

Materials and Methods: In this clinical trial, 103 female students in the 10th grade of high schools of Mashhad city (47 students in control group and 56 students in experimental group) were selected through multi-stage random cluster sampling. Mental Health Questionnaire (GHQ-28), Beck Anxiety Inventory, and Self-Regulatory Learning Strategies questionnaires were used. The experimental group received a training program for four sessions, while the control group received no training program. At the end of the training program, a post-test was conducted. Three months after the last training session, questionnaires were filled in two groups. The data were analyzed using SPSS software version 24, Kolmogrov-Smirnov test, independent t-test, repeated measure, and Pearson correlation.

Results: The results indicated that the scores of anxiety and mental health were different significantly in post-test phase between the two groups ($P=0.01$). While, the mentioned variables were not statistically different after three months ($P=0.07$, $P=0.08$, respectively).

Conclusion: It seems that self-regulated learning can be useful to reduce anxiety and mental health of students.

Keywords: Anxiety, Mental health, Self-regulation, Students.

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Introduction

Anxiety is a concept that has studied in many researches (1). Anxiety means an unpleasant emotional feeling or mood along with specific behavioral and psychological consequences. According to research, high outbreaks and the

inability are induced by psychic matters; infamous research called "global burden", psychological matters were the fifth cause among the first ten causes. It is predicted that psychological and neurological lesions will be increased by about 50%, which is pretty

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remarkable in this field (2). About the explanations mentioned above, efforts shall be made to train people, especially young children who are about to enter the community (3). WHO recommends for all countries to teach people about mental health (2).

On the other hand, it should be noted that stress and anxiety are the most severe problems of high school students. These disorders are more common in women than men, according to researches. As noted, schools are the best place to run comprehensive mental health programs (4). According to experts, self-regulated learning is one of the essential factors that may directly play an essential role in mental health. Zimmerman defines "self-regulated learning" as a learner's belief in his/her abilities, engaging in actions, thoughts, feelings, and the pursuit of worthwhile educational goals (5).

Muntago believes that self-regulated learning includes self-study skills, self-questioning, self-evaluating, and boosting oneself (5). So, self-regulated learning strategies are to be taught to students so they could learn that their behavior is teachable, and they can check their behavioral effects and change the learning environment so that their efforts will be more effective (6).

Self-regulations strategies function as a guide for students and teachers, and they are based on three broad categories: cognitive strategies, metacognitive strategies, and resource management strategies. Most experts and researchers have stated the importance of these items in educational progress. In this field, Narimani et al. showed that training self-regulation strategies help students handle target-setting processes, self-control, self-assessment, and self-motivation (5). Gholami Lavasani et al. found that self-regulation strategies teaching can improve students' academic achievement significantly (6). According to some evidences, self-regulation strategies can enhance students' self-efficiency and motivation, directly related to their mental health (7).

Also, it is indicated that negligent students will also have motivational problems and they use self-regulation strategies less than others (8). Generally, it can be concluded that there are many types of research regarding self-regulation strategies and academic achievement. So far, no significant studies have been conducted

regarding this subject and its impact on students' mental health which can have a crucial effect on students' academic progress. This research aimed to assess the impact of self-regulation model on students' anxiety and mental health.

Materials and Methods

The statistical community of this clinical trial (code IRCT20160710028863N27) consisted of all female students in tenth grade of high school in Mashhad city (the second populous city in Iran). The sample size was calculated based on the formula equal to 103 cases (9).

The sampling method of the present study was multi-stage random cluster sampling. Among seven regions of the Education Department of Mashhad, the 5th region was selected randomly. Afterward, two schools were selected randomly, and finally, permission was given from the Education Department regarding the selected schools.

Inclusion criteria included tendency to participate, being a high school female student, not having mental illness, and residence in Mashhad. The exclusion criteria included refuse to continue cooperation, absence for more than two sessions, and incomplete questions more than 10% of the total questionnaire.

The students were divided into 56 students as the experimental group and 47 students as the controls.

Research instrument

A) *Pintrich and Digros learning scale (Motivate Strategies for Learning Questionnaire)*: This scale includes 47 phrases in two parts of motivational beliefs and self-regulation strategies. To calculate its validity, an analytical method consisting of three factors of self-efficacy, internal value, and test anxiety was used to analyze motivational beliefs scale and analyze self-regulated learning strategies scale. Two factors of cognitive, metacognitive strategies and management were used.

Also, the validity and reliability of this scale assessed in a study by Dortaj. Also, in Pintrich and Smith study, the reliability coefficient for cognitive strategies has been obtained 0.85, metacognitive strategies 0.74, motivational strategies 0.86, and resources management strategies 0.67 (10,11).

B) General Health Questionnaire (GHQ-28): This questionnaire is one of the most useful and well-known psychiatry tools, was used to assess mental health. This questionnaire is in forms of 12, 20, 28, 30, and 60-question. For this research, a 28-question form was used, consisting of four subscales of physical signs, anxiety, social dysfunction, and depression. The conducted studies showed its high reliability and validity(12).

C) Beck Anxiety Inventory: This questionnaire was used to examine the anxiety level of the students. In Rafiei study, reliability was calculated at 0.90 and Cronbach's alpha equal to 0.92 (13).

All questionnaires used in this study are standard, which has already been confirmed in other studies (14-16). Before distributing questionnaires, all students were introduced to the subject of research, its goals, and its

importance. Also, everyone was assured that the information would be kept confidential by the researcher. The experimental group received a training program for four sessions, while the control group received no training program. At the end of the training program, a post-test was given in each group.

Three months after the last training session, questionnaires were filled in two groups to understand the impact of training.

The data were analyzed using SPSS software version 24, Kolmogrov-Smirnov test, independent t-test, repeated measure, and Pearson correlation.

Results

In the present study, 103 female students in 10th grade were participated. The demographic characteristics were presented in Table 1.

Table 1. Demographic characteristics of the participants

Demographic variables		Number (%)
Major	Experimental	56 (54.4)
	Mathematical	47 (45.6)
Father's employment	Employed	100 (97.1)
	Unemployed	2 (1.9)
Mother's employment	Dead	1 (1.0)
	Employed	40 (38.8)
Father's education	Unemployed	62 (60.0)
	Under the diploma	24 (23.3)
	Bachelor	50 (48.5)
Mother's education	Master or higher	29 (28.2)
	Under the diploma	18(17.5)
	Bachelor	57(55.3)
Income (Rial)	Master	28(27.2)
	< 5 million	3 (2.9)
	5-10 million	10 (9.7)
	10-20 million	28 (27.2)
	> 20 million	57 (55.3)

Table 2 shows the effect of training on two groups within three intervals. Concerning the results, the scores of anxiety and mental health were different significantly in post-test phase

between the two groups. In contrast, the mentioned variables were not statistically different after three months.

Table 2. Repeated data test before, after and 3 months after intervention

Groups	Variable	Before	After	Follow up	Difference of repeated measure		Result of repeated measure	
		Mean±SD	Mean±SD	Mean±SD	First time	Second time	F	P
Experimental	Mental health	26.83± 15.53	19.3±9.14	23.96±9.6	-7.53	-2.87	242.51	>0.001
	Anxiety	15.21±11.55	10.12±6.17	13.26±7.94	-5.08	-1.94	131.83	>0.001
Control	Mental health	23.65±11.71	25.14±11.76	27.61±11.76	1.48	3.95	221.1	>0.001
	Anxiety	14.57±9.8	15.04±9.9	16.8±9.86	0.46	2.23	116.17	>0.001
Independent T-test result	Mental health	Z= -0.74 P= 0.45	Z= -2.53 P= 0.01	Z= -1.72 P= 0.08				
	Anxiety	Z= -0.12 P= 0.9	Z= -2.4 P= 0.01	Z= -1.79 P= 0.07				

According to Table 3, the only correlation with the variable of anxiety had been motivational component with coefficient -0.29, the existing positive correlation with mental health variable

had been anxiety variable with coefficient 0.5, and negative correlation had been motivational variable with coefficient -0.21.

Table 3. Matrix of correlation coefficients between research variables

Variables	Motivation	Cognitive	Metacognition	Anxiety	Mental health
	P	P	P	P	P
Motivation	1				
Cognitive	0.49 >0.001	1			
Metacognition	0.57 >0.001	0.68 >0.001	1		
Anxiety	-0.29 0.004	0.004 0.69	-0.11 0.24	1	
Mental health	-0.21 0.02	0.05 0.57	-0.13 0.19	0.5 >0.001	1

Discussion

The purpose of the present study was to investigate the effect of self-regulation-oriented teaching on anxiety and mental health in female high school students. The results indicate that this intervention can positively impact students' mental health and anxiety. This result is concordant to the studies regarding the positive effect of self-regulation interventions on some aspects of mental health such as self-compliance (17), impulse control (18), and mental health problems such as bulimia nervosa (19), smoking (20) and learning disability, and mental health (21,22). In explaining the reduction of anxiety through the teaching of self-regulation strategies, it can be said that anxiety has cognitive and emotional dimensions in a variety of irrelevant anxieties and emotions. Hence, training these strategies, which target individuals' cognition and meta-cognition, can play a key role in reducing

stress by correcting these infrastructural processes. According to statistical analysis, there was a significant difference observed in mental health and anxiety scores in controls and the experimental group. This finding shows the effectiveness of research model-oriented teaching, which was inconsistent with studies conducted by Tavakolizadeh et al. (4), Rosnedal et al. (23), Zahra Kar et al. (24), and Kadivar et al. (11). In explaining this finding, it can be said that anxiety occurs when a person is not aware of the situation and problems ahead; but, if one is aware, no anxiety will occur. Self-regulation is the ability to think and deal with problems without others' help. In self-regulation teaching, student plans arrange, decides, and executes him/her-self instead of emphasizing teachers and parents. So we can conclude that teaching self-regulation skills to people helps them be aware of probable situations and deal with problems

without help from others, and ultimately, they will be less anxious and confused. In the present study, mental health and anxiety scores were not statistically different between two groups in follow-up. In explaining this finding, one can say that intervention was adequate for significant statistical impact I post-test phase. However, due to the execution of the third stage of completion of the questionnaire during students' exams and the limited opportunity of the test group to practice and apply learning strategies in everyday life, the mean scores of the variables were not statistically significant. Therefore, about the results of this research, self-regulation strategies, which include motivational, cognitive, and meta-cognitive-management components, significantly impact students' mental health, anxiety, and ultimately on students' academic performance. This finding is consistent with the results of the conducted researches (25-30).

Students who use more self-regulation strategies can better engage in school activities and achieve more academic success (25). These students try to make information meaningful and create a logical relationship between them; subsequently, their academic performance will be improved, their self-efficacy and mental health will be improved and anxiety will be reduced. On the other hand, Peake and Cervone (31) suggest that high self-efficacy leads to motivation creation for progress. Also, according to Pintrich and Zusho research findings, many students who can set up their cognitive-motivational aspects will be considered highly successful learners. These students set up their academic success using self-regulation strategies, and they have higher level of mental health and lower level of anxiety than peers (32).

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In addition, people's behavior can be predicted through their beliefs in their capabilities. Therefore, motivational beliefs determine what people can do using their knowledge and skills. Paris and Oka also suggested that students, who consider themselves self-efficient, use more cognitive and meta-cognitive strategies and they are more persistent in doing their homework (33).

The correlation studied in the research between the variables indicated a strong correlation between motivational and anxiety variables so that students can reduce their anxiety by reinforcing motivational issues (32).

Like other conducted studies, this study also had some limitations, including female samples. It is recommended that this study be conducted for both sexes to be assured of the validity of findings and their generalization. Other limitations include lack of communication between the researcher and parents of the experimental group, lack of educational sessions due to schools' existing constraints, and self-report research instrument.

Conclusion

Self-regulated learning can be useful for the academic performance and mental health of students. Teachers and instructors are taught to provide the proper environment to increase self-efficacy and reduce anxiety in students through teaching self-regulation strategies.

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