

Original Article

The Effects of Guided Imagery on Test Anxiety among the 1st-Year Nursing Students: A Randomized Clinical Trial

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ABSTRACT

Background: Many students suffer from test anxiety (TA). Some nonpharmacological therapies, such as cognitive behavioral therapy, have been proposed for TA management. **Objectives:** The aim of this study was to investigate the effects of guided imagery (GI) on TA among the 1st year nursing students. **Methods:** This randomized controlled trial was conducted on forty nursing students conveniently recruited from the Kashan University of Medical Sciences, Kashan, Iran. Participants were randomly allocated to either a control ($n = 20$) or an intervention ($n = 20$) group. In the intervention group, participants were provided with a 30-min GI audio file to listen to once daily in the evening for 1 week. Students' TA was measured both before and after the intervention, i.e., before their physiology midterm examination and before their physiology final examination. The data were analyzed through the Chi-square, paired-sample t , and independent sample t -tests. **Results:** The study was completed with 38 students. The intervention and the control groups did not differ significantly from each other respecting the pretest mean score of TA (50.50 ± 13.90 vs. 44.94 ± 7.34 ; $P = 0.13$). However, the posttest mean score of TA in the intervention group was significantly less than the control group (33.90 ± 14.39 vs. 42.83 ± 13.56 ; $P = 0.05$). Although the mean score of TA did not significantly change in the control group ($P = 0.55$), it significantly reduced in the intervention group ($P = 0.003$). **Conclusion:** Thirty-minute GI performed once daily for 1 week is effective in reducing TA among nursing students.

KEYWORDS: Anxiety, Guided imagery, Nursing students, Test

INTRODUCTION

Test anxiety (TA) refers to significant emotional, physiological, and cognitive reactions to evaluative situations.^[1] Around 20%–40% of students suffer from TA.^[2] Studies showed that the prevalence of TA among medical students is 29% in Germany^[3] and 22% in the United States.^[4]

TA has many different negative outcomes. It negatively affects students' psychological well-being^[1] and academic performance,^[1,5] impairs their emotional working memory,^[2] and increases the rates of dropout, substance abuse, and suicide.^[5] Moreover, it negatively affects different aspects of students' lives, learning,

career advancement,^[6] examination performance, and academic achievement.^[7]

Pharmacological therapies are the first-line treatment for different types of anxiety such as TA. However, they have no significant effects on some people and cause side effects, especially in long-term

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use.^[8] Therefore, nonpharmacological therapies for TA management have received great attention in recent years. These therapies include, but are not limited to, yoga, meditation, biofeedback-assisted relaxation, counseling, cognitive behavioral therapy, and guided imagery (GI).^[1,9-11]

GI is a cognitive behavioral technique and a focused concentration strategy. During GI, images, sounds, and words are used to create feelings of empowerment and relaxation and thereby, reducing stress and anxiety.^[12] GI is a cost-effective client-centered approach.^[13]

Cognitive behavioral techniques, such as GI, have been recommended for TA management.^[14-16] Previous studies reported the effectiveness of GI in significantly reducing TA among secondary school students^[17] and nursing students.^[18,19] However, a study reported the insignificant effects of this technique on TA.^[20] Because of such contradictory results, limited empirical evidence still exists regarding GI effects on TA. Moreover, no study had yet evaluated its effects on TA among Iranian nursing students. Therefore, the question still remains that can GI affect TA among Iranian nursing students?

Objectives

The aim of this study was to investigate the effects of GI on TA among the 1st-year nursing students.

METHODS

Design and participants

This randomized controlled trial was conducted from August to September 2016, in the Faculty of Nursing and Midwifery of Kashan University of Medical Sciences, Kashan, Iran. The study population consisted of 92 1st year nursing students who had already been divided into two classes by the authorities of the study setting. Participants for the study included forty students who were conveniently selected from both classes. Students were included if they had passed the basic medical science courses, obtained a TA score of 25 or more, and had no history of known psychological disorders. Exclusion criteria were failure to regularly listen to the GI audio file and voluntary withdrawal from the study. Using an online number generator (i.e., <https://www.randomizer.org/>), the participants were randomly allocated to either a control or an intervention group.

The sample size was calculated using the results of a previous study^[9] which reported that the mean scores of anxiety in two groups were 27.72 ± 10.09 and 36.48 ± 9.34 . Accordingly, with type I and II errors of, respectively, 0.05 and 0.20, the number of students for each group was estimated to be twenty. Accordingly, twenty students were recruited to each group.

Instrument

Data were collected using a demographic questionnaire and Abolghasemi *et al.* TA Inventory.^[21] The demographic questionnaire contained four items on participants' age, gender, marital status, and residence. The TA inventory consisted of 25 multiple-choice questions rated on a four-point scale from 0 to 3 (as "Never," "Seldom," "Sometimes," and "Often," respectively). Thus, the lowest and the highest possible total scores of the inventory were, respectively, 0 and 75, with higher scores showing higher levels of TA. The reliability and the validity of the TA inventory had been evaluated in earlier studies which reported a test-retest correlation coefficient of 0.88, a Cronbach's alpha of 0.95, and a criterion validity index of 0.72.^[9,21]

Intervention

Initially, all participants filled out the TA inventory before their physiology midterm examination. Then, 1 week before their physiology final examination, we provided participants in the intervention group with a 30-min GI audio file and asked them to listen to it once daily in the evening (between 20:00 and 21:00) for 1 week. The GI audio file consisted of three 10-min parts, namely relaxation and deep breathing training, creating a mental image of a beautiful, peaceful natural scene, and focusing on personal strengths and abilities. They were trained to listen to the file using a headphone while lying in a comfortable position with eyes closed in a quiet room. The GI audio file had commercially been produced by Dr. Farhang.^[22] Each evening during the study intervention, one of the authors telephoned each participant to remind him/her of performing GI. The study intervention ended 1 day before the physiology final examination. Participants in the control group did not receive GI during the study. Finally, all participants in both groups filled out the TA inventory 15 min before their physiology final examination. At the end of the study, participants in the control group were also provided with the GI audio file for personal use.

Ethical considerations

This study was approved by the Ethics Committee of Kashan University of Medical Sciences, Kashan, Iran (code: IR. KAUMS. REC.1395.44) and was registered in the Iranian Registry of Clinical Trials (code: IRCT2016110230654N1). Participation in the study was voluntary, and data management was performed confidentially. All questionnaires were anonymous, and all participants signed a written informed consent at the entry to the study.

Data analysis

We analyzed the data using SPSS software v. 16.0 (SPSS Inc., Chicago, IL, USA). Normality of the data was

examined through the Kolmogorov–Smirnov test. Then, the paired sample *t*-test was used for within-group comparison, whereas the Chi-square and the independent sample *t*-tests were used for between-group comparisons. Data were presented through frequency tables. $P < 0.05$ was considered statistically significant.

RESULTS

Two participants in the control group withdrew from the study, and the study was completed with 38 students [Figure 1]. Age means in the control and the intervention groups were 20.60 ± 5.01 and 22.05 ± 6.82 , respectively. Most participants were female (63.16%), single (84.21%), and lived in student dormitory (71.05%). No statistically significant differences were found between the groups in terms of participants' demographic characteristics [$P > 0.05$; Table 1].

The results of the independent sample *t*-test revealed no significant difference between the groups respecting the pretest mean scores of TA ($P = 0.13$). However, the posttest mean score of TA in the intervention group was significantly less than the control group ($P = 0.05$). The paired sample *t*-test revealed a significant decrease in TA mean score in the intervention group ($P = 0.003$) and no significant change in TA mean score in the control group [$P = 0.55$; Table 2].

DISCUSSION

Findings revealed that 30-min GI performed once daily for 1 week significantly reduced TA in nursing

students. To the best of our knowledge, this was the first study in its kind into the effects of GI on TA among the Iranian nursing students. In line with our

Table 1: Comparison of the study groups in terms of participants' demographic characteristics

Characteristics	Groups ^a		P
	Intervention (n=20)	Control (n=18)	
Age (years)	20.60 ± 5.01	22.05 ± 6.82	0.45 ^b
Gender			
Female	11 (55.00)	13 (72.22)	0.22 ^c
Male	9 (45.00)	5 (27.78)	
Marital status			
Single	16 (80.00)	16 (88.89)	0.38 ^c
Married	4 (20.00)	2 (11.11)	
Residence			
Dormitory	13 (65.00)	14 (77.78)	0.30 ^c
Home	7 (35.00)	4 (22.22)	

^aValues are presented as mean ± SD or n (%), ^bThe results of the independent sample *t*-test, ^cThe results of the Chi-square test. SD: Standard deviation

Table 2: Within- and between-group comparisons in terms of the test anxiety mean scores

Group ^a	Time		P ^c
	Pretest	Posttest	
Intervention	50.50 ± 13.90	33.90 ± 14.39	0.003
Control	44.94 ± 7.34	42.83 ± 13.56	0.55
P ^b	0.13	0.05	—

^aValues are presented as mean ± SD, ^bThe results of the independent sample *t*-test, ^cThe results of the paired sample *t*-test. SD: Standard deviation

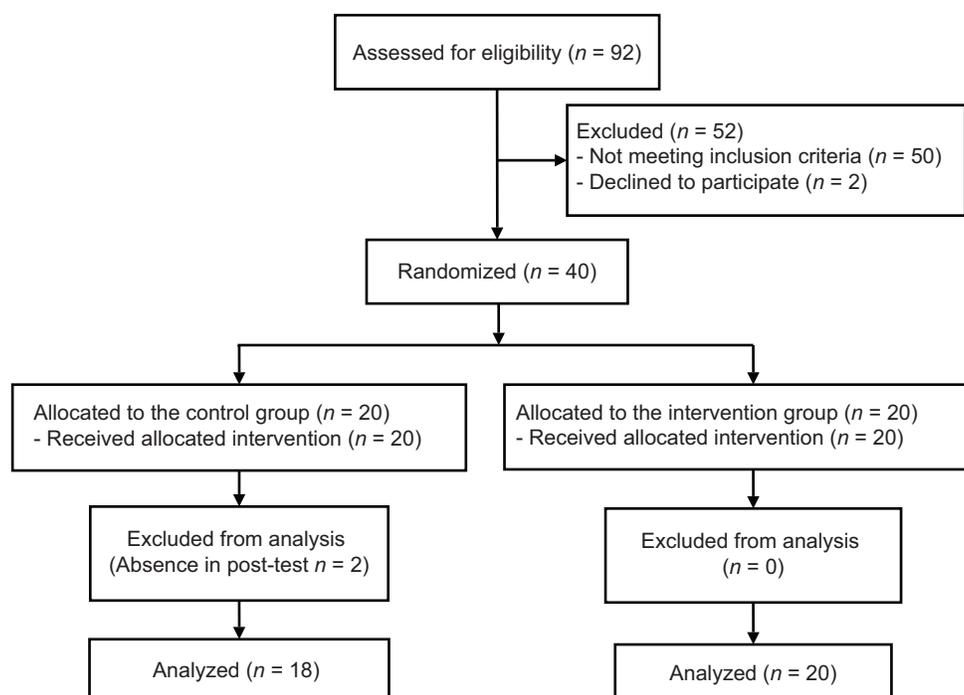


Figure 1: Consort flow diagram of the study

findings, some earlier studies reported that GI had positive effects on TA among different students,^[14-16] including secondary school students,^[17] nursing students,^[18,19] and physiotherapy students.^[23] However, a study which compared the effects of emotional freedom technique and GI reported that while emotional freedom technique significantly reduced TA, GI had no significant effects on it. This insignificant effect is attributable to the short period of GI and the type of TA in that study.^[23]

GI involves progressive mental exercises which aim to enable the mind to affect health and well-being.^[24] It can empty students' mind of worries and negative thoughts and instead, helps them focus on their strengths and pleasant things such as future achievements. Anxiety reduction through GI can improve students' academic performance, promote their learning,^[25] and enable them to make better use of their limited time during examination period. It is noteworthy that GI needs a shorter amount of time compared with other anxiety-reducing techniques; thus, students can easily use it during examination period when they are usually under time pressure. University authorities can also use this technique together with other techniques, such as counseling, in order to reduce students' TA and improve their academic performance.

One of the study limitations was that we taught participants to use the GI audio file at home or in a private and comfortable setting, and hence, we had limited control over their appropriate use of this technique. Future studies are recommended to apply this technique to students in academic settings and under direct supervision. Moreover, participants in the intervention group and the researchers were not blind to the study groups and hence, between-group information leakage might have affected the study findings.

CONCLUSION

GI is a potentially effective technique for reducing TA among the nursing students. It is a simple, safe, and inexpensive technique which is easier than yoga and other types of physical exercise and hence can be used by people with physical limitations. Nursing education authorities, including teachers, can teach this technique to students in order to enable them to manage their TA. Future studies are recommended to investigate the effects of directly supervised GI on larger samples of students.

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Conflicts of interest

There are no conflicts of interest.

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