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Original research

The effectiveness of parenting training based on schema therapy on emotion regulation, children's behavioral symptoms and academic performance in children with attention deficit/hyperactivity disorder in Amol city

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Abstract

Introduction: Children with attention deficit and hyperactivity disorder often have problems in emotional regulation, behavioral symptoms, and academic performance, and face rejection by peers and social isolation. However, the defect in the social functions of these children is still doubtful. The purpose of this research was the effectiveness of parenting education based on therapy-schema on regulation-excitement, children's behavioral symptoms and academic performance in children with attention deficit/hyperactivity disorder in Amol city.

Research method: The present study was a semi-experimental design of pre-test-post-test and follow-up with control group. The statistical population of the current research included all primary school children aged 7 to 11 years with ADHD along with their mothers in Amol city in 2019-2020, and 30 people from this population were selected purposefully and randomly. In the experimental group of parenting training based on schema therapy (15 people) and the control group (15 people) were replaced. The sample subjects completed the questionnaires of Garenfsky's emotion regulation (Garnefsky et al., 2001), children's behavioral symptoms (Connors, 1999) and academic performance (Pham and Taylor, 1990). To analyze the data, multivariate and univariate analysis of covariance, Benferoni's follow-up test were used in SPSS-24 software.

Findings: The results showed that the parenting education based on therapeutic schema improved emotion regulation methods, academic performance and reduced behavioral symptoms in children with attention deficit/hyperactivity disorder.

Conclusion: Considering the effectiveness of parenting training based on therapeutic schema on emotion regulation, behavioral symptoms and academic performance, psychologists and counselors of psychotherapy and counseling service centers can use these approaches to reduce hyperactive disorder. Use attention deficit disorder.

Keywords: academic performance, emotion regulation, children's behavioral symptoms, children with attention deficit/hyperactivity disorder, parenting training based on schema therapy

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Introduction:

Attention Deficit/Hyperactivity Disorder (ADHD) is one of the most common diagnostic disorders in the field of neurodevelopmental disorders. The characteristics of this disorder include symptoms of inattention, hyperactivity, impulsivity and a number of cognitive deficits (1). The presence of these symptoms leads to functional, emotional and cognitive defects in different areas of life (2). Attention Deficit/Hyperactivity Disorder is the pervasive pattern of attention deficit, hyperactivity and impulsivity, which is more severe than its pattern in children with the same developmental level; So that its prevalence is 4 to 12% and three times more in boys than in girls (3). This disorder is a developmental and neurological disorder that begins in childhood (4), whose three main characteristics include attention deficit (inability to continue performing an activity and difficulty in maintaining attention), hyperactivity (restlessness and excessive and inappropriate movement activity) and has impulsivity (rushing to perform an activity) (5). Despite the basic assumption in the early years of studies in this field, that there are symptoms in childhood, recent studies show the continuation of symptoms in adulthood or even the onset of the disorder in older ages (6). However, the type of problems created during adolescence and adulthood can be different and more debilitating. Because adulthood is a period when a person faces many responsibilities and more real job and social situations, and all the responsibilities are the responsibility of the person himself, so the inability to control the symptoms can be much more annoying than childhood. The child's caregivers somehow compensate for the problems that have occurred to the child (7).

One of the most important skills that causes more problems in adulthood than in childhood is emotional regulation disorder, which is abundantly seen in people with this disorder (8). Emotion regulation can be defined as processes through which people can influence what emotions they have, when they have them, and how they experience and express them (9). Emotion regulation is a set of hidden and overt skills that can be used to monitor, evaluate and modify emotional responses according to the individual's goals (10). When a person faces emotional situations, he needs the best cognitive functions to regulate his emotions and tries to control his emotions (11-12). Emotion regulation includes adaptive strategies (focusing on planning, acceptance, perspective development, positive refocusing, and positive reappraisal) and maladaptive strategies (self-blame, other-blame, rumination, and exaggeration), each of which has specific consequences (13).). On the other hand, difficulty in emotion regulation, as a transdiagnostic factor such as non-acceptance of emotional responses or anxiety, difficulty in participating in targeted behaviors and strategies and lack of emotional awareness, difficulty in controlling impulses, lack of emotional clarity and limited access to emotion regulation strategies is defined (14).

Academic performance is one of the issues that is of particular importance for educational managers. What factors affect the academic performance of students, or what is the contribution and participation of each factor, has always been one of the areas of interest of researchers and educational psychologists (15). The ability of learners to control the learning process is becoming an essential prerequisite for learning (16). Therefore, today academic performance is known as one of the important indicators in the education system. The growth and improvement of the functional status of people in educational environments has always been a clear concern (17). In other words, the efforts made to

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improve the academic performance of individuals have led to the creation of solutions in this regard (18), however, the efforts to improve the academic performance according to these solutions have not always been in a positive direction, and the basic problems in this especially in some groups (19). Academic performance of students is a phenomenon that is related to educational, psychological and sociological factors; therefore, academic performance can be increased by identifying and manipulating each of these variables (20).

Behavioral problems are among the issues related to the problems that exist in children with attention deficit hyperactivity disorder (21). In a study, it was concluded that children who had disruptive behavior problems also reported symptoms of attention deficit hyperactivity disorder (22). Children with attention-deficit-hyperactivity disorder show behavioral problems, including behavior, and this behavioral disorder is more problematic when the resilience of the family is low (23). These children experience emotional-behavioral problems such as anxiety, depression, low self-confidence, aggression, and antisocial behaviors (24) and have little awareness of other people's emotions, behaviors, and intentions, which can cause damage to their social functioning and communicate with peers (25). According to the results of a research, more than 50% of children near the age of adolescence show significant impulsive aggression, which causes serious lifelong functional deficits in a wide range of areas, delinquency/crime and antisocial behavior in adulthood (26). In the field of etiology of behavioral problems of attention deficit/hyperactivity disorder, many causes have been suggested, including the relationship between behavioral problems with sleep (27), with sensory problems (28), with psychological problems of parents (29).

Parenting style and raising children is one of the most important duties of parents. Among their children, their duty is to build, create and organize the child in order to reach a complete, dynamic and effective human being so that he is prepared for survival, self-preservation and fulfilling parental and social duties (30). Parenting styles are special behaviors and procedures that affect the development of children separately and in interaction with each other. The family environment and the type of performance style play an important role in determining the personality and behavior of children (31). Parenting is another term for raising children. Raising a child is a socialization process that depends on the type of style and determines the type of participation of the child in social life. Each of the types of parenting styles (authoritarian, domineering and permissive) reflects different patterns originating from the accepted values of parents, methods and behaviors of parents and a different balance between responsiveness and demandingness (32). Parenting styles can be defined as a set or system of behavior that describes the interaction of parents and children in a wide range of situations and creates an atmosphere of effective interaction (33). These interventions involve caregivers and parents, especially mothers, in educational programs and teach them ways to change the way they interact with children. In these interventions, the first task is to create a therapeutic bond with the child and the family while understanding the child's anger and frustration. The second important component is the use of rewards and positive reinforcement for appropriate behaviors. Rewards and reinforcements have various

purposes, such as building self-esteem in the child and strengthening the relationship between the child and the parent. To be more effective in this approach, rewards should be given to the child after doing a certain task in real terms (34).

Hyperactivity affects various aspects of children's lives, factors such as emotion regulation, children's behavioral symptoms and academic performance that can affect children's academic life and interpersonal relationships. On the other hand, according to the successful experiences that have been obtained from the implementation of the parenting education approach based on schema therapy in different countries and Iran, the investigation of this approach in the country to examine its consequences in regulating emotions, children's behavioral symptoms and academic performance in children with Hyperactivity becomes necessary. On the other hand, few researches have been conducted on the effectiveness of parenting training based on mothers' schema therapy on influencing variables such as emotion regulation, children's behavioral symptoms and academic performance in children with hyperactivity, or at least researches have included all the above variables at once. They are not covered together. The present research is an effort to solve the mentioned deficiency. The result of this research can be considered as a basic effort to improve emotion regulation, children's behavioral symptoms and academic performance in children with hyperactivity. Paying more attention to this issue and conducting numerous researches in this field can be an effective step in reducing hyperactivity problems in children. Therefore, according to the importance of the subject, the present research was carried out. In this way, with regard to the mentioned materials and studies, the present research seeks to find answers to these questions whether parenting education based on schema therapy and therapy based on acceptance and adherence on emotion regulation, children's behavioral symptoms and academic performance in children with Is Shahr Amol effective for hyperactivity disorder/attention deficit? And is there a difference between the effectiveness of parenting education based on schema therapy and therapy based on acceptance and adherence on emotion regulation, children's behavioral symptoms and academic performance in children with attention deficit/hyperactivity disorder in Amol city?

Research Method:

The current research is of applied type and an experimental design of pre-test-post-test and follow-up with a control group, in which two separate experimental groups and a control group were used. The follow-up phase was implemented one and a half months after the post-test. The statistical population of this research includes all primary school children aged 7 to 11 years with ADHD along with their mothers in Amol city in 2019-1400, and 30 people from this population were selected purposefully. Of these, 30 students and their mothers were selected as a statistical sample and were randomly replaced in the experimental group of parenting training based on schema therapy (15 people) and the control group (15 people). In this way, from the children referred to the psychological centers of Amel city, those whose criteria for entering the research include the diagnosis of children with ADHD by a psychologist and according to DSM-5 criteria, doctors can classify the severity of ADHD as "mild", "moderate" or " determine "severe" In order to get information about the severity of the disorder, the medical records available in the

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target medical centers were used. Mild: There are slightly more symptoms than needed for a diagnosis, and the symptoms lead to minor disruption in social, school, or work settings. Moderate: Symptoms or dysfunction between "mild" and "severe" are present. Severe: Many symptoms exceed the number needed for diagnosis. Several symptoms are particularly severe or the symptoms result in impaired functioning in the social, school, or work environment; Mothers' satisfaction with participating in the research, minimum literacy to understand the items of the questionnaire by mothers, was chosen randomly. To analyze the data, multivariate and univariate analysis of covariance, Benferroni's post hoc test were used in SPSS version 24 software environment. In this research, the level of significance will be considered as p=0.05. Research tool:

1- Garnevsky Emotion Regulation Questionnaire: The cognitive regulation of emotion questionnaire was developed by (35). This questionnaire is a multi-dimensional questionnaire and a self-report tool that has 36 items and has a special form for adults and children. Cognitive emotion regulation scale (9) assesses self-blame, acceptance, rumination, positive refocusing, refocusing on planning, positive reappraisal, perspective taking, catastrophizing, and others' health. (35) Reported the reliability of this test using Cronbach's alpha coefficient of 0.91 for positive strategies and 0.87 for negative strategies. The reliability coefficient of the subscales of this questionnaire was reported in the range of 0.48 to 0.61 in the study of Garnevsky et al. (36) has reported the reliability of the questionnaire as 0.82 using Cronbach's alpha coefficient in a sample consisting of 15-25-year-old subjects. (37) in his study, he found Cronbach's alpha coefficient in the range of 0.62 to 0.91 and retest coefficient with a time interval of one week in the range of 0.75 to 0.88 for the subscale reported in this questionnaire. (38), in their study, Cronbach's alpha coefficient for all test subscales was significant. The highest Cronbach's alpha coefficient was reported for the positive marketing subscale (0.86) and the lowest for the acceptance subscale (0.60). In their research, the reliability coefficient through retest also showed relatively satisfactory results. The range of these coefficients was from 0.40 for the catastrophizing strategy to 0.67 for the strategy of adopting a point of view, and all the coefficients were significant.

2- Conners Children's Behavioral Symptoms Questionnaire (CAARSS: S): The parent form of the Connors scale has 48 items that are completed by the child's parents. Parents score the questions in forms graded on a Likert scale using 4 options, so the range of scores for each question is from 0 (not true at all, or never, rarely) to 3 (completely true, or often) times, almost always) is variable. Validity and reliability of the scale have been reported in various studies in different countries. (39) have reported internal correlation between 0.41 and 0.57 (40, 41) in Sudan have reported retest reliability equal to 0.83 and internal consistency between different subscales from 0.52 (anxiety subscale) to 0.80 (hyperactivity). In Bengal, the internal consistency coefficient of the scale has been reported from 0.60 (psycho-somatic scale) to 0.75 (hyperactivity scale). Retest data ranges from 0.84 (learning problems) to 0.97 (hyperactivity). In Mumbai, Cronbach's alpha coefficient is between 0.60 (psycho-physical problems) and 0.75 (hyperactivity) and the retest reliability after two weeks is between 0.84 (conduct disorder) and 0.97 (hyperactivity). 42-43), in occupied Palestine, (44) has reported the average internal

consistency of 0.90. Completing this questionnaire takes about 10 to 15 minutes. In order to obtain retest reliability, the questionnaire was given to parents again after 4 to 6 weeks. Returning the questionnaires was followed up by calling the parents. The test-retest correlation coefficients for the total score were 0.58 and for the subscales of psychosomatic problems, behavior problems, anxiety-shyness and social problems, respectively, 0.76, 0.64, 0.62 and 0.41 were obtained. All coefficients are significant at the 0.0001 level, and except for social problems, other coefficients are average. A group of 80 parents were selected from the sample to calculate inter-rater reliability. The parents of this group were contacted for coordination and 58 people declared their readiness to cooperate. A special questionnaire for parents was sent to those who were supposed to complete the questionnaire and it was specified in a letter which parent would complete it. In this way, the correlation between parents' scores was calculated, and the results are as follows: the reliability coefficient of the total score is 0.70 and for the subscales of social problems, behavior problems, psychological problems, anxiety, shyness, and 0.71 respectively. 0.0, 0.68, and 0.46 were obtained, which are optimal except for anxiety-shyness in other cases. All coefficients are significant at the level of less than 0.0001. Cronbach's alpha coefficient was 0.73 for the total score and 0.77, 0.57, 0.86, and 0.74 for the subscales of behavior, social problems, anxiety-shyness, and psycho-physical problems, respectively.

3- Pham and Taylor's Academic Performance Questionnaire (EPT): This questionnaire is an adaptation of research (45) in the field of academic performance, which was made for Iranian society (46). This questionnaire has 48 questions and its purpose is to evaluate academic performance from different areas (self-efficacy, emotional effects, planning, lack of control over the outcome, motivation). In research (47), the validity of the content of this questionnaire was confirmed by the opinion of professors. Also, the validity of this scale was confirmed by the factor analysis method. The reliability of the questionnaire was also determined by Cronbach's alpha method for each subscale (self-efficacy (0.92), emotional effects (0.73), planning (0.93), lack of outcome control (0.64), motivation (0.73) was obtained.

4- The treatment of parenting training based on schema therapy: the content of the sessions based on the method of parenting based on schema therapy was presented by (48) in 8 sessions of 90 minutes as follows.

Table 1. Group schema therapy sessions of (48)

Meetings	Content
First session	Establishing communication and initial assessment, introducing members, stating group rules (including confidentiality, respect, listening, etc.), concluding a treatment contract, identifying the client's current problem, assessing the client for a therapeutic schema focusing on life history.
Second session	Teaching about schemas and coping styles, communicating between current problems and schemas by providing an educational example.
Third session	(cognitive strategies); Presenting the logic of cognitive methods, implementing the schema validity test by presenting an educational example, using the empathic confrontation therapy style, a new definition of the evidence confirming the schema.

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Meetings	Content
Fourth Session	Evaluating the advantages and disadvantages of coping responses, establishing a dialogue between the healthy aspect and the schema aspect, challenging the schemas, teaching how to compile educational cards.
Fifth meeting	Presenting the logic of the experimental method (fighting schemas on an emotional level); Mental imaging, connecting the mental imaging of the past to the present, conducting an imaginary conversation.
Sixth session	Presenting the logic of behavioral patterns, stating the purpose of behavioral patterns, providing ways to prepare a behavior list, prioritizing and specifying the most problematic behavior, increasing the motivation to change behavior.
Seventh session	Behavioral methods, increasing to change behavior, practicing healthy behaviors through imaging and role playing, overcoming obstacles to change behavior and making important changes in life.
Eighth session	Reviewing and summarizing the previous meetings, summarizing and final conclusions, determining the time of the relevant post-exams with an interval of one week after the last meeting and thanking the group and ending the meetings - post-exam implementation

Findings:

Table 2. Descriptive indices of research variables by groups in pre-test, post-test and follow-up

Variable	group	level the	Average	standard deviation
Adaptive strategies of emotion regulation	Schema therapy	exam-pre	44/333	5/136
		After the test	62/267	7/723
		Follow up	57/067	3/788
	Control	exam-pre	42/8	10/122
		After the test	42/333	10/688
		Follow up	43/467	5/817
Negative emotion regulation strategies	Schema therapy	exam-pre	64/647	8/7
		After the test	54/933	4/114
		Follow up	56/2	5/102
	Control	exam-pre	65/6	8/733
		After the test	63/267	9/721
		Follow up	62/733	5/922
Behavioral symptoms	therapy Schema	exam-pre	92/267	12/635
		After the test	64/20	12/85
		Follow up	67/933	13/828
	Control	exam-pre	91/133	8/262
		After the test	87/60	9/891
		Follow up	87/067	9/453
Academic Performance	Schema therapy	exam-pre	126/533	22/434
		After the test	168/8	24/27
		Follow up	154/067	15/568
	Control	exam-pre	129/667	20/646
		After the test	135/933	10/416
		Follow up	138/733	18/317

As can be seen from the results presented in Table 2, the average of the experimental and control groups is almost the same in all three variables in the pre-test stage. However, in the post-test stage, the average of the test groups increased in the variables of adaptive strategies and academic performance, and decreased in the variables of non-adaptive strategies, emotion and behavioral symptoms. In the case of the control group, minor changes are observed in the pre-test and post-test stages.

Table 3. Results of multivariate covariance analysis on the post-test scores of adaptive and non-adaptive emotion regulation strategies, behavioral symptoms and academic performance

Source of change	Multivariate test	F value	The degree of freedom of the hypothesis	Error degree of freedom	significance level	Effect size
group	Pillai effect	7/29	8	72	0/0001	0/448
	Wilks Lambda	12/814	8	70	0/0001	0/594
	by Hotelnig	20/015	8	68	0/0001	0/702
	The largest zinc root	41/677	4	36	0/0001	0/822

The results of the multivariate covariance analysis test showed that there is a significant difference between the schema therapy-based parenting training group and the control group in the combination of dependent variables of the research. Further, the results of the intergroup effects test showed that there was a significant effect between the schema therapy experimental group and the control group in adaptive and non-adaptive strategies, behavioral symptoms and academic performance. Pairwise comparison of the adjusted means showed that the observed difference between the experimental groups and the control group. In total, the results of statistical tests showed the same effectiveness of parenting training methods based on schema therapy in improving emotion regulation methods, academic performance and reducing behavioral symptoms in children with attention deficit/hyperactivity disorder. Also, the comparison of the follow-up scores with the pre-test scores using MANCOVA showed the stability of the results obtained in the follow-up period.

Discussion and conclusion:

The results of the statistical tests showed that the parenting training methods based on schema therapy were equally effective in improving emotion regulation methods, academic performance and reducing behavioral symptoms in children with attention deficit/hyperactivity disorder. This result is in line with the findings of (49-52). Based on the results of all studies, parenting based on schema therapy can be used as an effective intervention to improve emotion regulation, children's behavioral symptoms and academic performance, and this treatment method reduces negative plans and improves emotion regulation, children's behavioral symptoms and performance. Education is effective. In explaining the findings of similar studies, it can be said that parenting based on schema therapy emphasizes emotional regulation, children's behavioral symptoms, and academic performance, and by using effective emotional techniques such as awareness, acceptance, and reconstruction of incompatible schemas, it reduces negative emotions and regulates It is followed by a positive judgment and perception in the individual; Therefore, schema therapy by changing the maladaptive coping strategy and maladaptive schemas formed in childhood and how these schemas affect facing stressful events and providing cognitive and behavioral techniques in order to transfer more adaptive behavioral and cognitive patterns Instead of ineffective coping patterns, it plays a role in improving emotion regulation, behavioral symptoms, and academic performance (53).

In explaining the inconsistency of the findings of this study with other studies in the field of the effectiveness of parenting based on schema therapy on improving emotion regulation, behavioral symptoms and academic performance, it can be said that according to Yang, schema therapy is reserved for people who have personality problems have and have shown resistance to existing treatments and have not recovered (54). The philosophy of creating a therapy schema shows that this therapy model should be used in the form of a step-by-step care model. Some researchers, in order to show the appropriateness of schema therapy in their target sample, at the beginning of the process identify the initial incompatible schemas of people and consider this as a proof of the need to use schema therapy. It should be kept in mind that the initial maladaptive schemas identified may not

be the root of the problems of the people who are targeted for therapeutic intervention. The disease may have primary maladaptive schemas unrelated to the disorder in question that do not need to be confronted and manipulated. On the other hand, some factors such as incorrect selection of techniques, incorrect diagnosis, differences in the therapist's skills, the therapist's inability to understand the theme and the hidden content of the therapist's open conversations and the therapist's simplistic attitude, the therapist's countertransference reactions and counterresistance such as aggression, state Defensiveness, ambition, contempt, fear, resentment, and shame may plague the therapist. Some disturbing variables can also have an adverse effect on a person's emotion regulation strategies, and sometimes these variables are outside of the person's personality, such as the behavior of the people around them who were not affected by the treatment.

In order to explain the higher effect of parenting training based on schema therapy on reducing emotion regulation, children's behavioral symptoms and academic performance of children with attention deficit/hyperactivity disorder, it can be said that traditional parenting training programs, including parent management training, help parents to They focus on changing their children's behavior, of course, part of this work is done by changing the parents' own parenting methods. Most of these approaches refer to parenting problems as "weakness in skills". In fact, the main premise of these approaches is that parents lack the necessary skills to change their child's behavior.

Although many studies have shown behavioral approaches in the majority of parent training group programs, these approaches are not beneficial for all families. Because it seems that parents' unpleasant or inconsistent feelings are one of the main reasons for not using correct parenting skills and the ineffectiveness of training programs for parents. In addition, evidence has shown that parents play an important role in the perpetuation of children's behavior problems. During the last decades, researches have shown the effects of parents' behavior training on reducing children's problematic behaviors. Despite the positive effects of behavioral training in the short term, few longitudinal studies have shown that the significant performance improvement of about 30% of the subjects did not continue until the follow-up stages. In addition, the results show that it is possible that the basic and more important components have been neglected in parenting education programs (55).

The main focus of many parenting training programs is on teaching parents to manage behavior, while not directly addressing parents' thoughts, feelings, and values. Such interventions often teach parents skills to control or suppress negative emotions (such as positive self-talk, positive mental imagery, and replacing negative thoughts with positive ones). While based on the perspective based on schema therapy, children's negative thoughts and feelings can cause an increase in inappropriate or ineffective behavior, and in addition, strategies that are used to suppress and control negative thoughts increase its intensity and prevent children from using Value-based parenting skills are open. Parenting intervention based on schema therapy provides an alternative solution to traditional methods of dealing with negative thoughts and feelings. Instead of trying to control or suppress negative thoughts, these interventions seek to facilitate communication and acceptance of negative thoughts and feelings that may arise during parent-child interactions. Considering the results of the research hypotheses and in order to improve

emotion regulation, children's behavioral symptoms and academic performance in children with attention deficit/hyperactivity disorder, it is suggested that school officials, principals and parents recognize the psychological and emotional problems of children with the disorder. Address hyperactivity/attention deficit and refer students who have problems to counseling centers.

Research limitations: Although in nature, any research is looking for the relationship between the factors and the extent of its effect. However, a collection will have limitations in its heart. These limitations may appear on the way of the research and make it difficult to generalize the results. The current research is not exempt from such a thing and has limitations as follows: 1- Given that the current research was conducted on all primary school children aged 7 to 11 with ADHD along with their mothers in Amol city, and For the same reason, the obtained results are applicable to this community, and its generalization to other communities, genders, and age groups is difficult and should be done with caution. 2- Organizational limitations, especially the education organization due to the lack of agreement for the researcher to refer to all educational areas and the lack of time and not having enough opportunity, as well as the lack of allocation of class time by the teachers to the researchers and the lack of necessary and enthusiastic cooperation of the subjects and Also, the lack of internal research on parenting based on schema therapy and therapy based on acceptance and adherence, which has caused the possibility of neglecting this important factor.

Ethical considerations: The ethical considerations of this plan included: written information about this research to the participants and giving them assurance about the confidentiality of the information and its use only in research matters, voluntary participation and obtaining the written consent of the participants to participate in this research.

Conflict of interest: This article has no financial sponsor or conflict of interest.

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