

Developmental Family Functioning and Conduct Disorder Symptoms in Teenagers: The Function of Cognitive Emotion Regulation

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Abstract

Background: Conduct disorder is a prevalent difficulty among children and adolescents, encompassing a range of mental and behavioral problems. The present study aimed to determine the association of developmental family functioning and conduct disorder signs with the mediating effect of cognitive emotion regulation in adolescents.

Methods: The present descriptive-correlational study was conducted on 362 students aged 15-18 (16.70±0.92) in Tabriz, Iran in 2023. The study participants were chosen through multi-stage cluster sampling technique. Data collection was done using Cognitive Emotion Regulation Questionnaire (CERQ), Youth Self Report Questionnaire (YSRQ) and Developmental Family Functioning Assessment Scale Questionnaire (DFFAQ) and interviews. Data analysis was done through descriptive statistical methods and path analysis with SPSS version 23 and LISREL version 8.80.

Results: Mean±SD of the studied variables were as follows: Attention and regulation (2.35±0.54), Logical thinking (1.96±0.49), Discipline (1.95±0.45), Catastrophizing (2.63±1.16), and Acceptance (2.75±1.24). The data analysis showed that the developmental family functioning had a significant association with negative ($r=-0.21$, $P=0.0001$) and positive strategies ($r=0.32$, $P=0.0001$) of cognitive emotion regulation. Also, negative ($r=0.31$, $P=0.0001$) and positive strategies ($r=-0.44$, $P=0.0001$) of cognitive emotion regulation had a statistically significant correlation with conduct disorder symptoms.

Conclusion: Based on the results of the present study, developmental family functioning has a significant association with the symptoms of conduct disorder in adolescents due to the association between negative and positive strategies of cognitive emotion regulation.

Keywords: Conduct Disorder, Cognitive Emotion Regulation, Mental Health, Family Functioning, Adolescent, Schools

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1. Introduction

Conduct disorder (CD) and related antisocial behavior are prevalent mental and behavioral problems among children and adolescents (1). CD refers to a long-lasting trend of antisocial and violent behavior in which the rights of others or the basic standards of society, or both are violated (2). While the prevalence of this disorder in the United States and other high-income countries (HICs) has been reported to be about 4% (range, 2-10%) (1, 2), its overall prevalence is high in Iran (about 5%) (3). Conduct disorder can be found in both male and female individuals; however, it is more commonly seen in boys than in girls. Evidence suggested that if the disorder begins in childhood, it is more persistent and severe than when it begins in adolescence (2, 3). The presence of such issues during the adolescent stage is deeply concerning for those who are affected, as this period of life

is known to be particularly delicate (4). Conduct disorder (CD) is associated with functional impairments across the lifespan (4, 5). Although the severity of behavioral impairment varies widely among teenagers with CD, most of whom have substantial psychosocial disorders. Academic underachievement, weak social connections, significant conflict with parents and educators, entanglement with the justice system, and elevated levels of emotional distress are among the various areas identified in clinical studies (4).

Adolescents with conduct disorder may turn to more serious behaviors, including bullying, harming animals, fighting, stealing, vandalism, and arson (6). Besides individual problems and expenses, CD brings a very expensive form of psychological harm, both material and social, to society. Material expenses encompass expenditures related to incarceration to avoid additional abuse of

children with CD who engage in severe delinquent behaviors. Additionally, it encompasses the costs incurred for the restoration of schools that have been vandalized by CD students (7, 8).

Inappropriate and hazardous learning settings within schools contribute to the social costs associated with the behavior of numerous children diagnosed with CD (7). Furthermore, the presence of these patients diminishes the quality of life for individuals whose rights have been infringed upon by children diagnosed with CD, residing in communities facing significant social challenges. Rising juvenile aggression has not been reported to burden the community with significant costs (5, 7). Furthermore, many teenagers diagnosed with conduct disorder exhibit irritability, low self-esteem, and frequently experience temper outbursts. Some may engage in alcohol and opium abuse. Individuals with conduct disorder often lack insight into how their actions can cause harm to others and typically show minimal feelings of guilt or remorse for their harmful behaviors (9).

Most adolescents who perform aggressive actions display a history of antisocial behavior consistent with a diagnosis of CD (10). As a consequence, understanding and effective treatment of teenagers with CD is an important and inevitable component of any program to reduce violence among adolescents. Given its social consequences, it is not unexpected that the remedy of CD has been the concentration of a high number of controlled treatment studies (7, 9, 11).

The developmental family functioning is one of the important factors that affects the entire family system of a child with CD. The developmental family functioning model, which was proposed by DeMayo and colleagues, established a developmental and comprehensive approach based on integrating cognitive, emotional, linguistic and excite mental abilities (12). According to this model, the family, as a unique unit, goes through functional developmental stages similar to developmental stages of every human person, including seven stages: attention and adjustment; intimacy; two-way communication; social problem solving; creating representations or ideas; logical thinking and discipline (13). It is obvious that these stages both affect and affected by the course and severity of CD symptoms (13).

Emotional regulation is essential for social functioning. Defects in feeling regulation play a significant function in delinquent behaviors (12). In everyday situations, people regularly encounter situations that cause conflicts with emotions. Therefore, regulation of emotions helps them to respond to these emotions in an acceptable and flexible way (14). Emotion regulation problems have been conceptualized as deficiencies in awareness, comprehension and admission of feelings, inability to behave adaptively during the experience of negative feelings, difficulty in applying appropriate strategies to regulate emotional answers according to environmental conditions and goals (14). If feeling adjustment fails, self-adjusting in other areas, like control over social behavior, may fail (13).

Recognizing and regulating emotion is one of the important and fundamental aspects of mental health at different ages, especially during adolescence. Regulation of emotion using cognitive strategies is one of the common and widespread methods. Cognition-related processes assist individuals adjust their feelings and not be overcome by their severity (14). Therefore, recognizing and regulating emotion is one of the important and fundamental steps in all matters related to mental health at different ages, especially during adolescence. Several studies confirmed the association between emotional cognitive plans and behavioral issues in children and adolescents (14, 15). Therefore, the present study was carried out to investigate the relationship between the developmental family functioning and conduct disorder symptoms with the mediating effect of cognitive regulation of emotion in adolescents.

2. Methods

In this correlational study, 15-18-year-old high school pupils in Tabriz, Iran were studied from January 21, 2023, to March 16, 2023. After coordinating with the officials of the provincial Education Department, Education Districts, and, using multi-stage cluster sampling technique, certain schools and classes were selected. The researcher, after a brief introduction and explanation of the research objectives and tools, provided questionnaires to the adolescents in each class and collected the necessary information.

A total number of 375 individuals completed the questionnaires; after excluding invalid

questionnaires, 362 questionnaires were used for the final analysis.

The study employed the cluster sampling method, with classes as the sampling units. The sampling process involved randomly selecting one district out of five in Tabriz, Iran (specifically District 3), followed by the selection of three boys' schools within that district. Twelve classes from each school were randomly selected. For data analysis, descriptive statistical indicators such as mean and standard deviation (SD) and statistical tests including Pearson's correlation coefficient were calculated via SPSS version 23, and path analysis was performed using LISREL version 8.80.

The inclusion criteria were: 15 to 18-year-old students, enrolled in education, and tendency to participate in the study. The exclusion criteria were: no tendency for participating in the study, not being enrolled in education.

2.1. Instruments

2.1.1. The Developmental Family Functioning Questionnaire (DFFAQ): This scale was developed by Aali and Kadivar (16) to measure the development of family function. The final version of this tool consists of 43 items and evaluates the emotional-functional characteristics of the family in the form of 7 developmental stages. These stages include: attention and regulation, intimacy and absorption with humans, mutual two-way intentional communication, joint social problem-solving, creation of representations and ideas, logical thinking, and discipline.

For scoring DFFAQ, all responses are coded from 0 (never) to three (constantly), and higher scores disclose more developed functioning (17). Criterion validity through McMaster (FA) was obtained. To do so, the correlation between McMaster Family Assessment Device (FAD) and the researcher-made DFFAQ family developmental assessment questionnaire was determined using the Pearson correlation test, and a correlation coefficient of 0.75 was obtained (16).

Validity and reliability: Aali and Kadivar (16) used content, criterion, and structural methods to assess the validity of the questionnaire and used Cronbach's alpha and retest methods to assess reliability. They demonstrated the factor structure

after varimax rotation; the first factor measures the ability of attention and regulation, the second factor measures the ability of intimacy and absorption with humans, the third factor measures mutual two-way intentional communication, the fourth factor measures joint social problem-solving, the fifth factor measures the creation of representations and ideas, the sixth factor measures logical thinking, and the seventh factor measures discipline. In total, they explained 67.25% of the total variance. The content validity indices are equal to 0.70 (16).

2.1.2. Cognitive Emotion Regulation Questionnaire (CERQ): Garnefski and colleagues designed the Cognitive Emotion Regulation Questionnaire (CERQ) (18). The questionnaire consists of 18 questions, and assesses cognitive emotion regulation approaches in response to menacing events and stressors in life on a 5-point scale ranging from 1 (never) to 5 (always) across 9 subscales: 1) Self-blame, 2) Other-blame, 3) Rumination, 4) Catastrophizing, 5) Putting into perspective, 6) Positive refocusing, 7) Positive reappraisal, 8) Acceptance, and 9) Planning. The minimum and maximum scores for each subscale are 2 and 10, respectively; higher scores indicate greater use of the cognitive strategy.

The psychometric properties of this scale, including internal consistency, test-retest reliability, content validity, convergent validity, and discriminant validity have been reported as desirable. In addition, Cronbach's alpha coefficients for the subscales ranged from 0.70 to 0.97 (19). Another study reported good internal consistency for 9 subscales of this questionnaire, with Cronbach's alpha ranging from 0.76 to 0.92. Item scores and total scores of adapted and maladaptive subscales were significantly correlated ($r=0.46$ to $r=0.75$), and the values of test-retest correlation coefficients (0.51 to 0.77) indicated scale stability (19). The content validity of this questionnaire has been approved by psychology experts (20).

2.1.3. Youth Self-Report (YSR) Persian Form: The form used for individuals aged 11-18 is completed by the adolescents themselves. The respondents answer questions about their competencies, disabilities, and illnesses, and then proceed to assess their emotional, behavioral, and social problems in the form of 113 three-choice questions. Based on their condition six months

earlier, the respondents rates each question as 0=not correct; 1=occasionally correct; and 2=frequently correct. The YSR form contains eight subscales: withdrawal, anxiety/depression, somatic complaints, social issues, attention issues, thought issues, delinquent behavior, and violent behavior. Additionally, the overall externalizing and internalizing problems are assessed through the combination of these scales.

For internal consistency, the researcher achieved Cronbach's alpha coefficients of 0.88 for externalizing and 0.87 for internalizing. The researcher also reported high discriminant validity and test-retest reliability for the self-report adolescent questionnaire. In the present study, alpha coefficients for 10 significant scales in the YSR ranged from 0.70 to 0.94 (21). Minaee obtained a diagnostic coefficient of 0.40 to evaluate the content validity (CV) of YSR questionnaire (19).

3. Results

The adolescents studied in this study aged between 15 and 18 years, with an average age of 16.70 years and SD of 0.92. In terms of academic status, 219 students (62.5%) had good or very good status, 106 students (30.3%) medium status, and 25 students (7.2%) had bad or very bad status. Among the students participating in the study, 126 (34.8%) were working while studying. The economic status of the family of 163 students (46.4%) was reported as medium, 159 students (45.3%) as high or very high, and 29 students (8.3%) as low or very low.

All the measurements related to the student evaluation questionnaire showed a relatively good average score. The results of mean \pm SD scores of student metrics are shown in Table 1.

The relationship between the parameters examined by students with emotional aspects shows the existence of a significant relationship of some parameters. The complete results of the correlation matrix of the studied variables in emotional measures are presented in Table 2.

It is important to highlight that in cases where the chi-square is not statistically significant, particularly for samples with less than 100 cases, indicating perfect fit. A chi-square ratio index on degrees of freedom less than 3 indicates an excellent fit. If Comparative Fit Index (CFI), Adjusted Goodness of Fit Index (AGFI), and Goodness of Fit Index (GFI) are higher than 0.90 and Root Mean Square Error of Approximation (RMSEA) and Root Mean Square Residual (RMR) are less than 0.05, it discloses excellent and optimal fit, and if it is less than 0.08, it shows good and optimal fit.

The results listed in Table 3 show that based on the mentioned indicators, the fit of the presented model is evaluated very favorably.

As seen in Figure 1, the developmental family functioning had a significant relationship with negative ($t=-4.10$ and $\gamma=-0.21$) and positive strategies ($t=6.38$ and $\gamma=0.32$) of cognitive emotion regulation. Also, negative ($t=6.53$ and $\beta=0.27$) and positive strategies ($t=-8.89$ and $\beta=-0.37$) of cognitive emotion regulation have a statistically considerable relationship with conduct disorder symptoms.

4. Discussion

The findings of the present study revealed that the developmental function of the family through negative and positive strategies of cognitive regulation of emotion has a significant relationship

Table 1: Mean and Standard Deviation of studied variables

Variables	Mean \pm SD	Variables	Mean \pm SD
Attention and regulation	2.35 \pm 0.54	Catastrophizing	2.63 \pm 1.16
Intimacy and engagement in relations	2.22 \pm 0.59	Other blame	2.54 \pm 1.10
Tow way intentional communication	1.96 \pm 0.43	Negative cognitive emotion regulation	2.83 \pm 0.81
Shared social problem solving	2.30 \pm 0.46	Putting in to perspective	3.19 \pm 1.07
Creating representation and ideas	2.08 \pm 0.54	Positive refocusing	3.15 \pm 1.15
Logical thinking	1.96 \pm 0.49	Positive reappraisal	3.62 \pm 1.14
Discipline	1.95 \pm 0.45	Acceptance	2.75 \pm 1.24
Developmental family functioning	2.11 \pm 0.38	Refocusing on planning	3.75 \pm 1.10
Self-blame	2.87 \pm 1.14	Positive cognitive emotion regulation	3.29 \pm 0.78
Focus on thought/rumination	3.26 \pm 1.10	Conduct disorder syndrome	0.32 \pm 0.31

SD: Standard Deviation

Table 2: The Correlation matrix of studied variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
1. Attention and regulation	-																			
2. Intimacy and engagement in relations	0.70**	-																		
3. Tow way intentional communication	0.52**	0.50**	-																	
4. Shared social problem solving	0.67**	0.67**	0.58**	-																
5. Creating representation and ideas	0.62**	0.62**	0.57**	0.59**	-															
6. Logical thinking	0.54**	0.54**	0.43**	0.60**	0.49**	-														
7. Discipline	0.35**	0.35**	0.30*	0.38**	0.32**	0.38**	-													
8. Developmental family functioning	0.83**	0.83**	0.72**	0.85**	-0.77**	0.75**	0.57**	-												
9. Self-blame	-0.18**	-0.18**	-0.06	-0.09	-0.08	-0.05	0.01	-0.11*	-											
10. Focus on thought/rumination	-0.13*	-0.13*	-0.08	-0.09	-0.08	-0.01	-0.01	-0.08	0.48**	-										
11. Catastrophizing	-0.17**	-0.18**	-0.12*	-0.15**	-0.04	-0.18*	-0.15**	-0.19**	0.34**	0.45**	-									
12. Other blame	-0.24**	-0.24**	-0.06	-0.25**	-0.09	-0.16*	-0.13*	-0.23**	0.22**	0.23**	0.42**	-								
13. Negative cognitive emotion regulation	-0.25**	-0.23**	-0.11*	-0.17**	-0.10	-0.14**	-0.10	-0.21**	0.71**	0.75**	0.77**	0.65**	-							
14. Putting in to perspective	0.20*	0.22**	0.18*	0.21**	0.12**	0.21**	0.09	0.24**	0.07	0.06	0.01	-0.06	0.03	-						
15. Positive refocusing	0.28**	0.23**	0.27**	0.25**	0.21**	0.14**	0.08	0.28**	-0.05	-0.12*	-0.05	0.03	-0.07	0.43**	-					
16. Positive reappraisal	0.24**	0.32**	0.16**	0.28**	0.15**	0.16**	0.13*	0.27**	0.02	0.15**	-0.12*	-0.12*	-0.02	0.42**	0.37**	-				
17. Acceptance	-0.05	-0.01	-0.02	-0.02	0.04	-0.07	-0.04	-0.03	0.31**	0.24**	0.21**	0.02	0.27**	0.24**	0.15**	0.18**	-			
18. Refocusing on planning	0.34**	0.41**	0.21**	0.32**	0.20**	0.19**	0.24**	0.36**	0.01	0.08	-0.11*	-0.12*	-0.05	0.37**	0.44**	0.62**	0.18**	-		
19. Positive cognitive emotion regulation	0.29**	0.33**	0.23**	0.30**	0.21**	0.18**	0.14**	0.32**	-0.11*	0.12*	-0.01	-0.07	0.05	0.71**	0.69**	0.75**	0.53**	0.75**	-	
20. Conduct disorder syndrome	-0.38**	-0.47**	-0.23**	-0.47**	-0.28**	-0.29**	-0.28**	-0.45**	0.15**	0.10	0.29**	0.36**	0.31**	-0.31**	-0.29**	-0.39**	-0.06	-0.49**	-0.44**	-

**P<0.01; *P<0.05

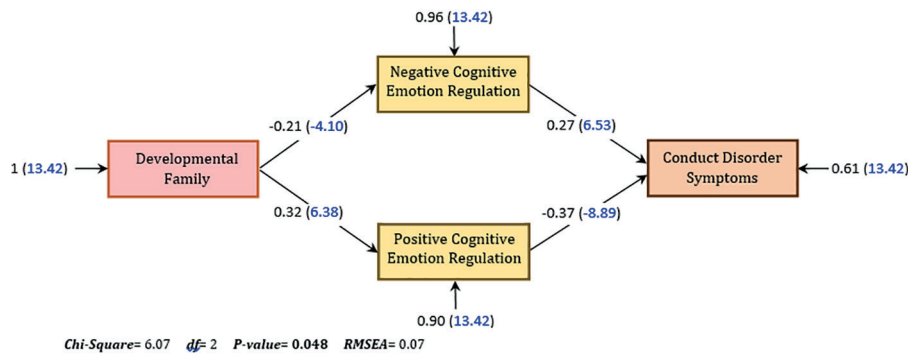


Figure 1: The figure shows the structural model.

Table 3: Model fit indices presented in the research

Index of Fit	Indicator values
Chi Square (X^2)	6.07
X^2/df	3.03
Goodness of Fit Index (GFI)	0.99
Adjusted Goodness of Fit Index (AGFI)	0.96
Comparative Fit Index (CFI)	0.98
Normed Fit Index (NFI)	0.97
Root Mean Square Error of Approximation (RMSEA)	0.07
Root Mean Square Residual (RMR)	0.02

with the symptoms of conduct disorder and can be used to control conduct disorder. This is in accordance with the results of Rahbar Karbasdehi and colleagues (2), Babaei and colleagues (20), but inconsistent with findings of Ayano and co-workers (7). One of the most important causes of inconsistency is the difference in the target population of the two studies, the difference in the sample size, as well as the tools used to measure variables and collect information. Paley and Hajal, believed that emotions can include a wide range of physiological, behavioral and psychological processes and can be realized automatically or controlled, conscious or unconscious (21). The effect of emotion regulation in the family can be very impressive in controlling children's inappropriate behavior, especially CD (21).

In general, treatment programs are more effective in reducing obvious symptoms of behavior disorder such as aggression than hidden symptoms such as lying or stealing. It is believed that therapeutic strategies aimed at increasing social behaviors and social adequacy will reduce aggressive behavior (15). People use different strategies to regulate emotions, which can be compromised, (shifting attention after an emotional breakdown or regulating emotions through writing) or non-compromised and ineffective (catastrophic thinking and rumination) (22).

The term emotion regulation refers to activities done to change or amend an emotional condition. In psychology text-books, this theory is usually used to define the process of adjusting negative emotion and requires a set of necessary and important skills that people need to learn in order to live their daily lives (23, 24). Emotion regulation includes internal and external processes that manage the individual's emotional reactions (evaluation, control, change, adjustment and correction) in order to achieve goals and includes the pattern of behavioral and intellectual approaches to alter the length or severity of the experience of an feeling (25). Previous studies showed that emotion management plays a crucial role in preventing the emergence of emotional and mental maladies during teenage years. Emotion regulation skills are necessary especially during adolescence for psychological adaptation, personal satisfaction, sense of competence, social efficiency, academic success, and overall physical and mental health (26, 27).

The present study revealed that cognitive regulation of emotions along with the help of the family's evolutionary function, appropriate steps can be taken to control the symptoms of conduct disorder and various aspects of conduct symptoms in adolescents can be controlled. One of the most important conditions for achieving these results is having a family and parents with minimal mental problems and qualified to have children (28). Psychoactive, irritable and low-energy parents tend to have hostile reactions towards their children and usually control their children through punishment and violence. This state is one of the prominent characteristics of families where children with conduct disorders can be seen. In addition, one should not ignore the significance of genetic factors in the incidence of behavioral disorders in children (28, 29). In one study, Masi and colleagues demonstrated the significant role

of genetic factors in the development of children's behavioral disorders. Through CBCL (Child Behavior Checklist) as a Dysregulation Profile (DF) in the anxiety/depression, aggression subscales and attention during childhood, the behavioral status of a given person in adolescence and adulthood is predicted to a large extent; however, the prognostic consequences of CBCL-DP are still discussed and have not been fully determined (22).

Carrère and Bowie believed that in explaining the association of the overall functioning of the family and feeling regulation skills, the family as an environment that provides the first experiences and life lessons for children, is able to shape the cognitive, emotional and social orientation of children by teaching different skills, equip them emotionally and cognitively to deal with possible problems in the future (30).

According to Bariola and co-workers, it is believed that a significant milestone in personal development within the family setting is the skill of emotion regulation. Apart from direct education, this skill is also acquired through observation and shaped by the atmosphere and circumstances of the family environment (31).

In order to overcome crises, teenagers, in addition to having their own abilities, need to receive help from those around them, especially family members, to accompany and guide them through the way. In addition to positive psychological capital, family performance as an effective variable in this field has a very prominent role in the experience of positive emotions and mental states of its members, especially teenagers. Family members play an important role in playing a role, facilitating emotional expression and understanding, and communicating with each other. The results of previous findings were mainly in accordance with the results of the present study and revealed the very valuable role of the family in controlling emotions and behavioral disorders of adolescents (30, 31).

Jones and co-workers believed that behavior control is one of the subscales of family functioning, which refers to the standards and freedom of behavior in the family. When a teenager grows up in a family whose members have established and defined clear standards for behavior, he is more likely to be able to identify and analyze the situation

and choose the appropriate response based on his teachings; that is, an emphasis on the mediating influence of cognitive emotion regulation in the family's transformative function on adolescent conduct disorder. This finding was entirely in accordance with our findings (32).

4.1. Strengths and Limitations

One of the notable strengths of the present study was selecting the statistical population of adolescents and investigating conduct disorder symptoms in relation to important variables such as family functioning and cognitive emotion regulation strategies. Adolescence is one of the most sensitive periods of life, and studying psychological impairments during this age is of great importance. The results of the present study may emphasize the significance of teaching emotion regulation abilities and improving family functioning. One of the limitations of this study was relying solely on self-reported data from adolescents. It is recommended that in future studies, other sources of information such as teachers and parents should also be used. One further limitation in the present study was the exclusive focus on male participants within the statistical sample.

5. Conclusions

The findings of the present study indicated that developmental family functioning through negative and positive strategies of cognitive regulation of emotion has a significant relationship with the symptoms of conduct disorder and can be used as a valid and efficient model in controlling overt and covert behaviors of teenagers, especially aggressive behaviors.

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Authors' Contribution

Shahrokh Amiri: Significant contribution to research design and drafting the manuscript. Behzad Shalchi: Substantial contributions to analysis and interpretation of results, planning and supervision,

and aided in interpreting results, reviewing the work critically for important intellectual content. Ayyoub Malek: Significant contribution to research design and drafting the manuscript. Saber Pour Hasan: Contributions in gathering data, interpretation of data for the work, and drafting the manuscript. Zahra Bakht Shokuhi: Contribution to the conception of the work, performing the work and drafting the manuscript. All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work, such that the questions related to the accuracy or integrity of any part of the work.

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Ethical Approval

This study was approved by the Regional Medical Ethics Committee of Tabriz University of Medical Sciences with the code of IR.TBZMED.REC.1402.246. Also, written informed consent was obtained from the participants.

Conflict of Interest: None declared.

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