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Increasing the tolerance of mothers with children with autism: the effectiveness of cognitive therapy based on mindfulness – experimental research

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Introduction and importance: Autism spectrum disorder significantly impacts the life and psychosocial health of the family, resulting in high levels of anxiety, stress, isolation, and indecisiveness among parents. This study aimed to determine the effectiveness of cognitive therapy based on mindfulness in increasing the tolerance of mothers of children with autism.

Case presentation: The study used a semi-experimental pre-test–post-test design with a control group. The study population comprised mothers referred to autism centers in Tehran. Eighty mothers were randomly divided into two groups, with 40 in each group. The Connor and Davidson Resilience Scale was used to measure the level of tolerance in both groups in the pre-test and post-test stages. The experimental group underwent cognitive therapy group therapy based on mindfulness, comprising eight sessions of 120 min. On the other hand, the control group did not receive any intervention.

Clinical discussion: The results of the study showed that the tolerance scores of the experimental group significantly increased after the intervention, in both the post-test and follow-up stages.

Conclusion: Therefore, the results of this research emphasize the importance of using this intervention in increasing the tolerance of mothers of children with autism spectrum disorder and creating new horizons in the clinical interventions of these people.

Keywords: autism spectrum disorder, autism, cognitive therapy based on mindfulness, tolerance

Introduction

Autism spectrum disorder (ASD) is a lifelong neurological condition that affects an individual's performance in various areas[1].

HIGHLIGHTS

- Mindfulness-based therapy is effective in increasing the tolerance of mothers of children with autism spectrum disorder.
- Tolerance can be a moderator between stressful events in life and mental health.
- People who have more tolerance have the ability to develop a set of coping skills that support them in difficult situations.

It is estimated that ~1% of the world's population suffers from this disorder[2]. Symptoms of ASD include communication difficulties, both verbal and non-verbal, restricted and repetitive patterns of behavior and interests, and impaired social and imaginative play skills[3]. The characteristics of this disorder, along with the late and challenging diagnosis and lack of definitive treatment, can create significant psychological pressure on the child's family and caregivers[4]. Previous studies have shown that mothers of individuals with ASD often experience higher levels of depression and anxiety than mothers of children with other disabilities[5]. However, other research studies have reported less tolerance in mothers of children with ASD than in mothers of children with mental disabilities or children with typical development. This lack of tolerance is related to high levels of depression, anxiety, and depersonalization[6]. Tolerance is an essential human ability that promotes flexibility and effective coping with challenging situations and factors[7]. It involves exposure to serious threats and problems, as well as the ability to adapt and endure obstacles and difficulties that people encounter.

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Resilience is the ability to return to the original balance or achieve a higher level of balance in a threatening situation, leading to successful adaptation in life. Positive adaptation may be considered as a consequence of tolerance, which in turn causes a higher level of tolerance. This issue is the result of the complexity of the definition and process view of tolerance. Individuals with high levels of tolerance are more likely to behave logically and correctly with their exceptional children[8]. Many psychological science researchers believe that stressful events play an effective role in the occurrence of psychosomatic disorders. For example, they found that life events were associated with disease onset. However, tolerance can act as a mediator between stressful life events and mental health[9]. Based on the stress–vulnerability model, people must first have a biological, psychological, or socio-cultural preparation to develop a disease and then be exposed to some kind of stress. Most people are prepared to suffer from certain disorders, but they do not suffer from a disorder by being exposed to stress. Tolerance is what protects people from succumbing to stress[10]. According to Manyena, resilient people can develop coping skills that support them in difficult situations, have a source of internal control, display adapted social behaviors, have empathy for others, and have a positive self-concept. They are optimistic people who can organize their daily responsibilities, which allows them to have a support network consisting of family members and friends who support them in stressful times. Resilient people are more capable of adapting to life changes than vulnerable people[11]. Mindfulness is a modern way to escape from fantasies and be present in the moment. It involves looking at the present moment differently and being constantly aware of it[12]. To calm down or remove worries and anxieties, it is necessary to establish a deep and realistic relationship with the continuous and moment-to-moment flow of life. Some people practice mindfulness through exercises that involve concentration and paying attention to the five senses in a deep and calm understanding of moments and pleasures[13]. Since the human mind habitually examines past events or tries to predict the future, it becomes easily distracted or even anxious. Mindfulness is an important way to process attention, which originates from Eastern meditation and is defined as paying full attention to the experiences of the present in a moment-by-moment form. It is also defined as addressing and paying attention in a certain way in the present without judgment[14]. In clinical psychology, mindfulness is paying attention to the present moment in a non-judgmental and present-focused manner, and mindfulness-based interventions aim to reduce psychological symptoms of distress and increase quality of life, which are increasingly helpful in the field of mental and physical health[15]. The goal of mindfulness is to create an aware and non-judgmental mind of what happens in perception every successive moment[16]. In the conscious mind, moment by moment, a person tries to gain insight into the patterns of thoughts, emotions, and interactions with others and be able to skillfully choose purposeful and useful responses instead of automatically reacting in habitual and unconscious ways[17].

Considering the complex and heterogeneous nature of ASD and problems in diagnosis, treatment, and support, recent research directions have changed from the concept of stress to positive adaptation, and research has focused on parents of people with ASDs. For instance, Okano *et al.* (2011)[18] conducted a study to evaluate the effectiveness of a modified parent training program for mothers of preschool children with ASD. Their research showed that the intervention improved parents' self-confidence and reduced challenging behavior in children.

Considering the destructive effects of autism disorder on the parents of these children, the way the family copes and adapts is effective in the development of children with ASD[19]. It is important to pay attention to psychological issues, especially the mental well-being and tolerance of these parents, and learning how to be resilient can be useful in helping family members overcome the stress and pressure associated with caring for children with ASD[20]. Therefore, according to the above-mentioned contents, based on the aforementioned contents, this research aims to investigate the effectiveness of mindfulness on the tolerance of mothers with children with autism.

Methods

In this study, a semi-experimental pre-test–post-test with the control group was used as a research method. The independent variable was cognitive therapy based on mindfulness while the dependent variable was the tolerance of mothers of children with autism. The method of collecting information was field type, using a questionnaire and therapeutic intervention. The statistical population of this study consisted of all mothers of children with ASD in Tehran. With the available sampling method, 80 people were selected and equally divided into two groups: control and experimental groups, with 40 people in each group. Initial evaluations were carried out as a pre-test for both groups before the start of the intervention. The experimental group received eight sessions of cognitive therapy based on mindfulness for 120 min once a week. After completing the interventions, the final evaluation and post-test were conducted. Like the experimental group, the control group participated in the initial evaluations (pre-test) and final evaluations (post-test). The work has been reported in line with the STROCSS criteria[21]. The registration unique identifying number (UIN) is IRCTID: IRCT20101130005280N30 (https://fa.irct.ir/trial/41397).

Criteria for entering the study

Mothers of autistic children in Tehran, declaration of consent to participate in research, ability to participate in intervention sessions, and non-participation in other educational and therapeutic sessions at the same time were the criteria for entering the study.

Exclusion criteria from the research

Mothers' reluctance to continue cooperation, absence of more than one session in the intervention sessions, and failure to complete the questionnaires were the exclusion criteria.

The content of mindfulness-based cognitive therapy (MBCT) sessions

In each session, certain tasks should be done, which include the distribution of training booklets related to the session, reading materials, preparing the room before each session with several chairs, and possibly the content that is written as keywords on the blackboard.

According to Table 1, the content and exercises related to cognitive therapy based on mindfulness in each session were performed according to the method of Segal *et al.*[22].

Table 1

Content and exercises related to the recognition of mindfulness-based therapy by each session[21]

Session	Content	Practice
1	Automatic guidance	Stretching with mindfulness and body-checking meditation
2	Dealing with obstacles	Body verification meditation, 10 min of mindfulness on the flow of breathing
3	Mindfulness on breathing (and on the body during movement)	Moving with a mindful state, doing stretching and breathing or mindfulness, followed by sitting meditation focused on breathing and body awareness. These exercises can begin with a short visual or auditory mindfulness exercise, 3 min of breathing space
4	Staying in the present	Five minutes of the visual or auditory presence of mind, sitting meditation (awareness of breathing, body, sounds, thoughts, and awareness without specific direction), 3 min of breathing space – introducing this method as a coping strategy to be used in times when the situation evokes difficult feelings, walking with mindfulness
5	Acceptance and permission to attend	Meditation in the sitting position – awareness of breathing and body, emphasis on understanding how to react to thoughts, feelings, and bodily sensations created. Introducing a difficult position in training and exploring its effects on the body and mind and 3 min of breathing space
6	Thoughts, not facts	Sitting meditation – awareness of breathing and body – in addition to introducing the problem related to the exercise and realizing its effects on the body and mind, 3 min of breathing space
7	How can I best take care of myself?	Meditation in the sitting position, awareness of breathing, body, sounds, thoughts, and emotions, 3 min of breathing space, and planning the problem that arose in doing the task and realizing its effects on the body and mind
8	Using what you have learned to cope with emotional situations in the future	Body inspection meditation, finishing the meditation

Research tool

Connor and Davidson Resilience Scale (CD-RISC)

Conner and Davidson's Resilience Scale (CD-RISC) (2003), which was considered in this research, has 25 five-choice items that are graded on a Likert scale from zero (completely incorrect) to five (completely correct). The minimum score of a person's resilience in this scale is zero and his maximum score is 100. The average score on this scale will be 52, so the higher the subject's score is above 52, the more resilient he is, and the closer his score is to zero, the less resilient he is[23]. The psychometric properties of this scale were investigated in six groups, the general population, primary care patients, psychiatric outpatients, patients with generalized anxiety disorder, and two groups of patients with post-traumatic stress disorder. This scale is prepared to measure the ability to deal with pressure and threats. Although this scale measures different dimensions of resilience, it has a total score. The creators of this scale believe that this questionnaire can separate resistant people from non-resilient ones in clinical and non-clinical groups and can be used in research and clinical situations. Internal consistency, reliability, and convergent and divergent validity of this scale have been reported, and the results of exploratory factor analysis have confirmed the existence of five factors of competence/personal strength, trust in personal instincts/tolerance of negative emotions, positive acceptance of emotions/tolerance of negative emotions, secure relationships, and restraint and spirituality for the resilience scale. However, since the validity and reliability of these scales have not yet been confirmed, only the quantitative score of resilience is considered valid for research purposes[24]. The reliability of this scale has been examined and confirmed in several studies. The reliability of the scale was obtained as 0.93, which was completely consistent with the reliability reported by the creators of the scale[25].

Data analysis

To analyze the data in this research, descriptive statistics indicators were first determined, and in the next stage, statistical methods, ANCOVA, and *t*-test were used. All statistical analyses in this research were done using SPSS-25.

Results

One-factor covariance analysis was used to examine the difference between the experimental and control groups in terms of tolerance scale. The results of Lon's test to check the hypothesis of homogeneity of variance of the groups showed that the control and experimental groups are not homogeneous in terms of variance, $P = 0.05$, $P < 0.05$, and $F = (28.1)\ 7.57$.

Table 2 shows that in the tolerance scale, the post-test scores of the experimental group increased significantly compared to the pre-test.

According to Table 3, the results of examining the effects of the pre-test of the group variable (experiment and control) on the post-test of the tolerance variable indicated the existence of a significant effect of the intervention in the experimental group, $P = 0.001$ and $F = (1962.42) = 14.10$.

To check the homogeneity of the two control and experimental groups in terms of tolerance variables, an independent *t*-test was used in the pre-test stage. The results showed that there was no significant difference in the tolerance scale between the control

Table 2

Descriptive statistics of the tolerance scale in the pre-test and post-test stages

Group	Adjusted mean	SD	Post-test mean	SD	Pre-test mean	Scale	Standard error
Experimental	Tolerance	59.50	14.66	67.06	15.34	65.23	2.14
Control	Tolerance	54.57	19.40	51.28	16.51	53.37	2.29

Table 3

One-variable analysis of covariance to compare the experimental and control groups in the tolerance scale

Source of changes	df	*F*	Sig	Eta
Cognitive therapy based on mindfulness	1969.42 – 1	14.10	0.001	0.34

and experimental groups in terms of the difference in the initial level and the basis of comparison in the pre-test stage, $t(28) = 0.79$, $P = 0.43$. The establishment of this assumption indicates the homogeneity of the two control and experimental groups in terms of the dependent variable of tolerance in the pre-test stage. The results show that the effectiveness of cognitive therapy based on mindfulness in increasing the tolerance of mothers of children with ASD in pre-test and post-test evaluation is statistically significant.

Discussion and conclusion

In this study, the effectiveness of MBCT in increasing the tolerance of mothers with children with autism was investigated. The results indicated a significant increase in tolerance in mothers of children with ASDs who underwent MBCT. Previous research suggests that mindfulness practice can enhance psychological flexibility, which could be a contributing factor to the positive outcomes observed in this study[24].

The findings of the research on increasing the amount of tolerance are in line with the research results[8–10,13]. In positive psychology in increasing and maintaining people's tolerance, mindfulness has been proposed as a missing link between cognitive therapy and positive psychology[23]. Often the change caused by mindfulness exercises in adverse situations or emotions under pressure is because people learn to live and accept their mental and physical limitations[15]. In addition, mindfulness is accepted as a method to increase awareness, in other words, it is possible that over time, by increasing awareness of internal and external events and judging oneself with less severity, participants gradually develop their ability to respond more skillfully and adaptively to stressful events. In turn, this degree of self-awareness can help parents develop different aspects of tolerance, including coping and social skills and emotional regulation (emotional regulation is one of the skills needed to increase tolerance)[11]. In fact, during the MBCT program, people learn to pay attention to their thoughts, feelings, and physical senses, accept them, observe them as separate persons, be kind to themselves, and not judge. In addition, by practicing breathing, seeing, and listening with mindfulness, they learn to focus their attention on the present and everything that is happening right now. Practicing and repeating this process causes the frontal electronic activity in the left part of the brain to be affected by mindfulness exercises, and the fact that the activity of this part is related to being receptive to experiences, which is one of the attitudes related to mindfulness, so exercises can create new emotional regulation patterns in a person. Increasing the ability to regulate emotions increases tolerance[22].

Mindfulness exercises help mothers to develop problem-solving skills and use efficient coping strategies in facing events so that mothers learn during the program to examine the aspects of an event or situation and choose the best solution and by solving the problem effectively, react appropriately. This process causes mothers to use effective coping strategies in response to various events and thus develop their coping skills and become resilient. In other words, cognitive therapy based on mindfulness, by teaching acceptance to people, helps them to accept their thoughts, feelings, and bodily senses in different situations, not to judge them and just observe them; acceptance and mere observation help mothers to be flexible, develop coping strategies, strengthen their problem-solving power, and thus increase their tolerance. Therefore, according to the above results, it can be said that mindfulness exercises, by increasing parents' awareness of thoughts, feelings, and physical senses, accepting them, describing events, and not judging them, as well as increasing mindfulness, regulating emotions, and developing problem-solving skills, have increased their tolerance[26].

Conclusion

Based on the research findings, cognitive therapy based on mindfulness has been shown to have a significant positive impact on increasing the tolerance of mothers of autistic children. Psychologists, counselors, and activists in the field of ASDs need to prioritize mindfulness-based training to better support parents of these children and provide a safe and peaceful environment for children with ASD.

Limitations

However, it is important to note that the current research has some limitations. For instance, the measurement tool used was limited to questionnaires, and other tools were not utilized. Additionally, the study participants were mothers of autistic children in Tehran, so caution should be taken when generalizing these findings to other societies.

Ethical approval

This study was approved by the research ethics committee of Research Ethics Committees of Islamic Azad University – Semnan Branch (ethical code: IR.IAU.SEMNAN.REC.1402.055).

Consent

Written informed consent was obtained from the patients' parents/legal guardians for publication and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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There were no financial sponsors for this study.

Author contribution

All authors contributed to the design and implementation of the study.

Conflicts of interest disclosure

The author declares no conflicts of interest.

Research registration unique identifying number (UIN)

1. Name of the registry: not applicable.
2. Unique identifying number or registration ID: IRCTID: IRCT20101130005280N30.
3. Hyperlink to your specific registration (must be publicly accessible and will be checked): https://fa.irct.ir/trial/41397.

Guarantor

All authors accept full responsibility for the study.

Data availability statement

Data are available from authors on request.

Provenance and peer review

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