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RESEARCH ARTICLE

Effects of acceptance and commitment therapy on decreasing anxiety and depression symptoms in mothers of hearing-impaired or deaf children

Karim Gharashi[1]*, Naeimeh Moheb[1], Reza Abdi[2]

[1]- Department of Psychology, Faculty of Humanities and Educational Sciences, Tabriz Branch, Islamic Azad University, Tabriz, Iran
[2]- Department of Psychology, Azarbaijan Shahid Madani University, Tabriz, Iran

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Abstract

Background and Aim: The presence of a child with hearing impairment in the family is often problematic and needs psychological interventions. The purpose of this study was to investigate the effect of acceptance and commitment therapy (ACT) on the symptoms of anxiety and depression in mothers of hearing-impaired or deaf children.

Methods: This is a quasi-experimental study with pretest-posttest design and with experimental and control groups. The study population comprised all mothers of hearing-impaired or deaf children of 2–6 years old in Tabriz City, Iran. Using purposive sampling method, 32 mothers of hearing-impaired or deaf children were selected and then randomly assigned to control and experimental groups (each with 16 subjects). The experimental group was treated with ACT during 8 sessions of 1.5 hours long in two weeks. The study data were collected by the depression anxiety stress scale.

Results: ACT was effective in decreasing anxiety and depression symptoms in mothers of hearing-impaired or deaf children ($p < 0.05$).

Conclusion: Considering the results and effectiveness of ACT in reducing the symptoms of anxiety and depression in mothers of hearing-impaired or deaf children, this treatment is recommended in rehabilitation centers for children with hearing problems.

Keywords: Depression; anxiety; acceptance and commitment therapy

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Introduction

Anxiety, depression, and mental pressure are always on the top of news headlines. Annual harms caused by mental pressure and different types of disabilities can be seen during human life all around the world [1]. Hearing impairment in children can cause stress and anxiety in their parents [2]. Researchers have introduced some factors such as family problems, injustice, and disabilities in the family and many other daily problems as reasons leading to anxiety and depression [3]. According to a study, anxiety disorders have been reported greater than 33.7% [4]. Therefore, the existing anxiety related to a deaf child in a family not only associates with the disability but also deals with stressful adaptation with the needs of a hearing-impaired or deaf child [5].

* **Corresponding author:** Department of Psychology, Faculty of Humanities and Educational Sciences, Tabriz Branch, Islamic Azad University, Tabriz, 51579-44533, Iran. Tel: 009841-31966332, E-mail: stu.gharashi@iaut.ac.ir

The prevalence of depression has been reported between 5.69% and 73% based on the studied population in Iran; the probability of depression prevalence in women has been 1.7 times greater than men [6]. The stress, which exists among disabled children leads to some adverse consequences such as chronic stress, anxiety, and depression in the parents [7].

The anxiety and concerns caused by a disabled child lead to marital conflicts; the couple blames each other for the condition, which breaks the emotional relationships between them leading to marital dissatisfaction and even divorce [8]. Therefore, anxiety comes up with negative mood, physical stress, and future fear, which affect people's feelings, physical, social, and behavioral skills [9]. In addition to anxiety, depression disorder is a recurrent disease with social, economic, physical, and mental consequences [10]. Depression is such an important disorder that is reported as the fourth common disease in the world [11]. According to the World Health Organization (WHO), 340 million people suffer from depression and it is anticipated that depression becomes the second common disorder in the world by 2020 [12]. Moreover, nearly 800000 people commit suicide due to depression. It has been estimated that almost one-fifth of population living in the world suffer from major depression [13]. Surveys have indicated that the presence of a hearing-impaired or deaf child cause severe depression for family members [14].

As it is hard for mothers to accept disability and hearing impairment of their children, rejection of reality leads to psychological problems, too. Moreover, as it is not possible to follow up the rehabilitation and teaching process for children lower than 6 years old without mothers' support, lack of attention to the mental and moral health of mothers will be harmful to hearing-impaired children, too. Therefore, psychological interventions are essential to accept problems caused by hearing-impaired children and increase psychological flexibility. Acceptance and commitment therapy is one of the effective therapies to expand individuals' flexibility.

Acceptance and Commitment Therapy (ACT) is a third wave therapy, which emphasizes the relationship between the person, thoughts, emotion, and behaviors within emotional disorders [15]. Therefore, acceptance is the main process of psychological flexibility in this approach. This model does not introduce acceptance as a passive submission under disappointing condition but points to the active and informed acceptance of personal experiences, in particular when these experiences cause mental harms [16]. The first objective of ACT is to improve quality of life by reducing the effect of unproductive control strategies and values-based behavioral change [17]. This goal can be achieved by using experimental practices. In fact, mindfulness skills, acceptance, and cognitive diffusion are employed to improve psychological flexibility [18]. When ACT is applied for anxiety disorders, the client learns to stop fighting the discomfort related to anxiety, instead try to control his/her activities by dealing with problems, which help him/her to achieve life objectives (values). ACT teaches clients to be skilled in accepting unpleasant thoughts and feelings instead of taking strategies to reduce undesired thoughts and feelings [19].

Meta-analyses studies on ACT during 2006–2008 have indicated that ACT can affect a wide range of disorders such as anxiety disorders, depression, pain, trichotillomania, and psychotic disorders providing satisfying results in the field of anxiety and depression in people [20]. Rajabi and Yazdkhasti [21] carried out a study entitled "effect of ACT on anxiety and depression in women with MS" and Mohabbat-Bahar et al. [22] studied the effect of this approach on the life quality of women with cancer: all of their studies proved the positive effects of this therapy. Furthermore, Twohig and Levin studied ACT efficiency in different psychological fields and improvement of psychological flexibility and stated its superiority over other traditional methods [23]. According to research on the effects ACT, this approach has been effective in increasing marital satisfaction and reducing interpersonal and psychological anxiety [24], some disorders like psychos [25], mental and physical diseases [26], and depression [27]. However,

there are few studies on the application of ACT and its effects on parents of hearing-impaired or deaf children. Besides, the mental health of such parents is beneficial for both parents and their children and timely prevention and interventions are necessary to reduce impacts of mental pressure, anxiety, and concerns related to hearing-impaired children. This study was conducted to find whether ACT is effective in declining anxiety and depression symptoms in mothers of hearing-impaired or deaf children.

Methods

This is a quasi-experimental study with pretest-posttest and conducted on the experimental and control group. The statistical population comprised all mothers of hearing-impaired or deaf children 2-6 years old referring to rehabilitation centers for children with hearing disorders under the support of welfare organization in Tabriz City, Iran during 2018. To carry out the study, of 120 children who had referred to the rehabilitation center, 32 mothers of these children were selected using purposive sampling method based on the inclusion criteria, then the mothers were randomly assigned to the experimental and control groups (n = 16 in each group).

Inclusion criteria consisted of 1) the presence of a hearing-impaired or deaf child with hearing loss greater than 70 dB in the family, 2) age range of 20–40 years, 3) education level above secondary school, 4) informed consent in participating in the research plan, and 5) the presence of both parents (mother and father) of the child in the family. The absence in intervention sessions led to subjects' exclusion from the study.

The researcher introduced himself to the respondents and explained about research objectives and method and emphasized on the participants' information confidentiality. After obtaining the consent letter from all respondents, they were asked to read study questionnaires and choose the best answer. As the ACT protocol of Hayes et al. [28] and Kovalkoski [29] was general and expanded (using metaphors in dealing with inefficient thoughts and beliefs), this protocol was implemented with therapist's emphasis on the anxiety and depression caused by hearing-impaired children and duties related to hearing-impaired and deaf children. The protocol was implemented for the experimental group in eight 90-minute sessions within four consecutive weeks and the control group did not receive the intervention.

ACT sessions were held as follows:

Session 1: Implementing the pretest and introducing therapist to the mothers, describing group rules and therapeutic protocol. Homework: listing 5 important problems, which mothers of hearing-impaired children face in life.

Session 2: Checking homework of the previous session, assessing problems of hearing-impaired children from the participants' viewpoint. Homework: listing advantages, disadvantages, and methods to control problems.

Session 3: Checking homework of the previous session, specifying inefficiency in controlling negative events using metaphors and teaching willingness toward affections and negative experiences. Homework: recording those cases in which mothers of hearing-impaired children have corrected inefficient control methods.

Session 4: Checking homework of the previous session, teaching to distinguish evaluations from personal experiences and accepting the thoughts without any judgment. Homework: recording those cases in which mothers of hearing-impaired children have successfully observed experiences and emotions without evaluating them.

Session 5: Checking homework of the previous session, communicating with the present time, considering self as the field (metaphor of chessboard) and teaching mindfulness techniques. Homework: recording those cases in which mothers of hearing-impaired children have observed the thoughts using mindfulness techniques.

Session 6: Checking homework of the previous session, identifying values of the life of hearing-impaired children's mothers and assessing values based on their importance. Homework: listing barriers to the actualization of the values.

Session 7: Checking homework of the previous session, providing practical solutions for such barriers by using metaphors and planning for commitment to values. Homework: reporting

values and thinking about achievements.
Session 8: Summarizing the concepts reviewed in sessions, asking participants to explain their achievements for the group and their plan for life, and implementing posttest.
This research obtained Ethical Code of IR.IAU.TABRIZ.REC.1397.030 from Ethics Committee of Biological Studies in Islamic Azad University, Tabriz Branch. To observe the ethical considerations, the control group received the ACT at the end of the study.
To collect data, the Depression Anxiety Stress Scale (DASS-21) was used. This questionnaire was designed in two forms by Lovibond and Lovibond (1995). The main form contains 42 items and evaluates each of mental constructs of depression, anxiety, and stress by 15 different items. The short form of this scale includes 21 items; every 7 items measures one mental construct or factor. The respondent should choose the frequency of the considered symptom of each item that has occurred during her past week. Each item is rated based on the Likert-type scale from 0 to 3. The test-retest validity of the scale was measured by Lovibond and obtained as 0.71, 0.79, and 0.81 for depression, anxiety, and stress, respectively. The validity of this scale was measured using coefficient correlation with anxiety and depression scale of Beck and obtained as 0.81 and 0.74 for these variables, respectively [30].
The Persian version of DASS-21 has been validated for the Iranian population and an acceptable internal consistency was obtained for the test, which is almost equal to the internal consistency of the main 21-item DASS version. The internal consistency of DASS scales was calculated for 870 Iranian people using the Cronbach α and values of 0.77, 0.79 and 0.78 were obtained for depression, anxiety, and stress, respectively. Moreover, Sahebi et al. reported the value of 0.70 for correlation between DASS depression and Beck test depression; they also reported 0.67 for correlation between DASS anxiety and Zung test anxiety [31].
Finally, the data analysis was done using SPSS 19. Both groups were tested after the end of the sessions. After collecting the study data, ANCOVA was used to examine the effect of ACT on reducing anxiety and depression symptoms in mothers of hearing-impaired or deaf children. The most important presumptions of ANCOVA include normal distribution of the dependent variable, homogeneity of regression slope, and homogeneity of the dependent variable's variance in study groups. To test normal distribution of the study variables, Kolmogorov-Smirnov test was used and a significance level of this test was obtained respectively as 0.262 and 0.290 for anxiety at pretest and posttest, and 0.923 and 0.698 for depression at pretest and posttest.
To test the homogeneity of the experimental and control group, the pretest anxiety and depression of two groups were compared using the independent t-test. According to the significance level of t test in the pretest of experimental and control groups in terms of anxiety (0.935) and depression (0.642), the null hypothesis was not rejected. Therefore, there was no significant difference between the two groups in terms of anxiety and depression. In addition, the hypothesis of the homogenous slope of regressions was tested based on the mutual effect of group and pretest with significance levels of 0.799 and 0.246 for anxiety and depression, respectively indicating homogenous slopes of regressions.
The homogenous variance of the dependent variable in both groups was tested using Levene's test and the obtained significance levels of 0.173 and 0.147 for anxiety and depression, respectively showed homogeneity in groups. Hence, ANCOVA presumptions were observed and this method was employed.

Results

The experimental group's subjects were 22 to 37 years old with a mean (SD) age of 29 (4.47) years; the control group's subjects were 26 to 36 years old with a mean (SD) age of 30 (3.01) years. All of the mothers were housewives. Seven (21.9%) mothers had secondary school education, 16 (46.9%) mothers had diploma, 3 (9.4%) mothers had associate degree, and 7 (21.9%) mothers had BA (Table 1).
Table 2 presents the mean (SD) pretest and

Table 1. Demographic characteristics of mothers of hearing-impaired children in the experimental and control groups

		Experimental group	Control group
Sex	**Female**	16	16
Age	**Mean (SD)**	29.31 (4.47)	30 (3.01)
Education		Secondary school (4) (25%)	Secondary school (3) (18.8%)
		Diploma (8) (50%)	Diploma (7) (43.8%)
		Associate degree (1) (6.3%)	Associate degree (2) (12.5%)
		BA (3) (18.8%)	BA (4) (25%)
Job	**Housewife**	16 (100%)	16 (100%)

BA; bachelor of art

posttest scores of anxiety and depression in the experimental and control groups; accordingly, the mean (SD) score of anxiety and depression in the experimental group reduced after intervention so that the posttest mean (SD) score of anxiety in the experimental group decreased from 5.12 (1.63) to 2.63 (1.50) ($p < 0.001$). In addition, the posttest mean (SD) of depression in the experimental group reduced from 6.00 (2.66) to 3.62 (2.22) ($p < 0.001$). However, there was no significant change in the mean scores of anxiety and depression in the control group.

ANCOVA results showed that group effect was significant at 99% level ($F(1,30) = 78.56$, $Eta^2 = 0.731$, $p = 0.001$). It means that the anxiety level of the control and experimental groups in the posttest was different significantly after adjusting the score. On the other hand, the adjusted means implied that anxiety of the experimental group (2.65 ± 0.15) was significantly lower compared to the control group (4.54 ± 0.15) Therefore, ACT had a significant effect on reducing anxiety symptoms in mothers of hearing-impaired or deaf children in Tabriz City, Iran. Furthermore, ANCOVA results of depression showed a significant group effect at a significant level of 99% ($F(1,30) = 92.11$, $Eta^2 = 0.761$, $p = 0.001$). It means that the depression level of the control and experimental groups in the posttest was different significantly after adjusting the score. On the other hand, the adjusted means implied that depression of the experimental group (3.44 ± 0.13) was significantly lower compared to the control group (5.31 ± 0.13). Therefore, ACT had a significant effect on reducing depression symptoms in mothers of hearing-impaired children in Tabriz City.

Discussion

This study was conducted to examine the effect of ACT on the anxiety and depression symptoms in mothers of hearing-impaired or deaf children. Research results showed that ACT could significantly reduce anxiety and depression in mothers of hearing-impaired and deaf children. Accordingly, the posttest scores of anxiety and depression in the experimental group significantly decreased while there was no significant difference between the pretest and posttest in anxiety and depression level of the control group. The obtained results were in line with studies of Rajabi and Yazdkhasti on the effect of ACT on the anxiety and depression of women with MS [21] and Mohabbat-Bahar et al. about the effect of this therapy on the quality of life of women with cancer [22] and Twohig and Levin about the effect of this therapy on anxiety and depression [23]. Besides, the results of this research are consistent with the meta-analysis results of studies on ACT publishing during 2006–2008. According to these papers,

Table 2. Mean and standard deviation of anxiety and depression in the pretest and post-test stages in both the experimental and control groups

	Mean (SD) in experimental group		Mean (SD) in control group	
	Pretest	**Post-test**	**Pretest**	**Post-test**
Anxiety	5.12 (1.63)	2.63 (1.50)	5.19 (2.54)	4.56 (2.22)
Depression	6.00 (2.66)	3.62 (2.22)	5.56 (2.61)	5.12 (2.36)

the ACT approach affects a wide range of disorders such as anxiety, depression, pain, trichotillomania, and psychotic disorders indicating the effectiveness of this intervention in many disorders [20]. Therefore, the positive effects of ACT in treating a wide range of anxiety and depression disorders as well as using this therapy for families who have disabled members, in particular, families with hearing-impaired or deaf children, have attracted the interest of therapists and researchers.

Many families suffer from having hearing-impaired or deaf children because of heavy costs of treatments, marital conflicts, limited social relationships, compassionate behavior of other people, and behavioral maladaptation in other children of the family, having difficulty in making decision to have another child, and the stress and anxiety caused by the disabled child. The presence of a disabled child is harmful to the health and balance of the family affecting the function of family and parents. In this case, ACT can be an effective approach in reducing anxiety and depression symptoms based on its theoretical structure and effective therapeutic protocol.

ACT helps patients to experience happy, purposeful, and meaningful life in order to increase their psychological flexibility by integrating acceptance and mindfulness interventions in commitment and change strategies. Contrary to conventional psychological behavior therapies, this therapy does not aim to change the form or frequency of annoying thoughts and feelings but to improve psychological flexibility. Psychological flexibility aims to make the person capable of contacting with life moments and modify or fix the behavior, which varies in different situations based on the individual's values. In other words, this skill helps people have a rewarding life despite the unpleasant thoughts, emotions, and feelings [16]. ACT emphasizes on a process in which, committed action is an outstanding practice that encourages mothers to clarify values, determine goals, predict barriers and commit to achieving goals and values despite having a hearing impaired or deaf child. In this regard, not only parents can experience happiness and high quality of life but also they do not suffer from negative feelings and thoughts [19].

It can be explained that as the presence of a hearing-impaired and deaf child and relevant problems may cause mental pressures for mothers, rejection of disabled child does not solve the problems but intensifies them. In this case, control cannot play a stable role in dealing with problems and parents can just forget problems for a short time while the unsolved problem still exists. The anxiety and depression caused by a hearing-impaired or deaf child cannot be controlled by parents, particularly mothers so that untreated anxiety and depression may destroy their personal and social life. Furthermore, there might be problematic rehabilitation for such children since the lack of mental health of parents may harm the mental health of children. Therefore, ACT contributes to informed acceptance of hearing impairment persuading parents to accept hearing impaired and deaf children and look for values and goals in life. Acceptance of hearing impairment and deafness of children by parents not only reduces extra mental pressure but also

facilitates educational and rehabilitating programs, educational achievement, social success, and speech development of children. Child's achievement in different fields improves the values and objectives of the parents and paves the way to decrease anxiety and depression caused by a hearing-impaired and deaf child. Some study aspects can affect the research results and limit the generalization of the obtained results. The limitations may be related to the sampling method and a low number of samples due to difficult access to sufficient number of mothers of hearing-impaired and deaf children, which should be considered in results generalization. Considering the positive effect of ACT on reducing anxiety and depression symptoms, it is also recommended to use this therapy for fathers of hearing-impaired and deaf children in rehabilitation centers. Moreover, it is suggested to examine the effect of this therapy on the parents of children who are older than 6 years.

Conclusion

According to the obtained results, acceptance and commitment therapy (ACT) can reduce anxiety and depression symptoms among mothers of hearing-impaired children and ACT workshops for parents of hearing-impaired children not only enables them to solve problems but also makes them ready to follow habilitating objectives-based values. Such practices can reduce anxiety and depression symptoms by increasing mental health and awareness of the parents. Therefore, it is suggested that ACT be educated in rehabilitation centers and particular centers for children with hearing impairment in order to reduce psychological disorders in parents.

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Conflict of interest

The authors declare that they have no conflict of interest.

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