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RESEARCH ARTICLE

The effects of the acceptance and commitment therapy on the experiential avoidance and intolerance of uncertainty of mothers with hearing-impaired children

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Abstract

Background and Aim: Children's hearing loss affects not only their speech and language development but also their mothers' mental health. This study aimed to determine the effect of acceptance and commitment therapy (ACT) on the intolerance of uncertainty and experiential avoidance of mothers with hearing-impaired or deaf children.

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

Results: The results showed that ACT significantly increased scores on the AAQ-II and IUS in the experimental group compared to the control group ($p < 0.001$).

Conclusion: ACT might be an efficient way to decrease intolerance of uncertainty and avoidance of experience in the mothers of hearing-impaired and deaf children. Also, therapists can use this approach for improving the intolerance of uncertainty and experiential avoidance in mothers of hearing-impaired or deaf children in rehabilitation centers.

Keywords: Hearing impairment; experiential avoidance; intolerance of uncertainty; acceptance and commitment therapy

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Introduction

Hearing impairment or hearing loss is an inability leading to reduced hearing in human that may occur due to genetic, environmental, organic factors, or diseases. This inability has different impacts on the speech development of children based on the level of hearing impairment, age, and type of hearing loss [1]. Hearing impairment is one of the most prevalent sensorineural defects in humans so that on average, 5

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out of 1000 children are born with severe to profound hearing loss [2]. Deaf children lose the golden time for language learning and face some problems and difficulties in language development [3]. Furthermore, the complexity of children's disability and its untreatable nature result in psychological problems in mothers, and these problems remain even several years after the children's hearing loss and deafness diagnosis [4]. Therefore, parents who are unhappy with their hearing-impaired children, tolerate stress, and experience emotional and psychological problems [5]. Parents, particularly mothers, play a vital role in raising and supporting their children in the rehabilitation process of the hearing problem [6]. Moreover, such problems may cause marital conflicts, family problems, and mental diseases such as anxiety in parents [7].

One of the main traits of anxiety is avoidance or escaping from situations and drivers, leading to stress. Avoidance is defined as an experience of negative and extreme evaluation of feelings, thoughts, and then intentional attempt to control or escape from such feelings [8]. Moreover, experiential avoidance does have a positive and significant relation with generalized anxiety disorder, negative emotions, self-destruction, behavioral disorder, and anxiety. Hence, avoidance should be controlled and dealt with [9,10]. In addition, intolerance of uncertainty is one of the anxiety-associated traits identified as a cognitive, emotional, and behavioral reaction toward uncertainty, which makes bias in data processing, increases negative evaluation and reduces the ability to cope with the worrying situation [11]. Those patients who have uncertainty problem consider this issue as annoying and cannot tolerate the doubt and hesitation. Because of avoiding unexpected negative events, these people increase their doubts and hesitations [12]. In this case, uncertainty intolerance is significantly related to anxiety arousal, depression, and concern [13-15].

Although there is not any study about the effect of treatment on the experiential avoidance and uncertainty intolerance among mothers of hearing-impaired and deaf children, the existing research results indicate that acceptance and commitment therapy (ACT) is effective in reducing experiential avoidance, anxiety disorders, depression and uncertainty intolerance. This result is rooted in positive association between uncertainty intolerance, experiential avoidance and anxiety and importance of psychological treatments in reducing emotional and behavioral disorders in parents of disable children. ACT would facilitate the way to follow precious goals by improving the knowledge and commitment level of individuals; this therapy also can solve problems during life steps [9,16,17]. Jones et al. [18], Gould et al. [19], Shiralinia et al. [20], Pak et al. [21], Mesbah et al. [22], and Hughes et al. [23] proved the effectiveness of this therapy. Accordingly, the primary objective of ACT is increasing the quality of life by reducing the impact of ineffective control strategies and supporting value-based behavioral changes [24]. Besides, ACT is one of the relatively new approaches of the third wave generation of behavioral therapy [25]. ACT improves 6 psychological skills of acceptance, diffusion (the opposite of fusion), being present, self as context, values, and committed action [26]. The first three variables are acceptance and mindfulness skills, and the next three ones are commitment and behavior-change strategies that boost the psychological flexibility of individuals, empower them to make an informed choice from different options and embrace thoughts, feelings, and unpleasant memories. Accordingly, ACT is used as an effective beneficial therapy to cure an extensive range of psychological disorders [27]. ACT is based on the relational frame theory (RFT) in which, language and cognition is defined as a behavior affected by the context. According to this theory, human behavior is directed by a set of relations between events called relational frame that help the person to learn events and issues without any direct experience [28]. According to this theory, avoidance occurs when negative thoughts and emotions have an extreme and improper effect on behavior. Therefore, the main strategy of ACT is exposing the patient to the situations that were avoided [29].

This study was conducted to determine the effect of ACT-based therapy on experiential avoidance and uncertainty intolerance in mothers of hearing-impaired or deaf children due to following reasons: 1) the importance of experiential avoidance, uncertainty intolerance, and various mental disorders, in particular, emotional disorders and effect of these mental disorders on reduction of quality of life [30], 2) parents of disabled children may show some behaviors such as non-acceptance of problems, low emotional support, experiential avoidance and uncertainty due to concern for the future of their children, and 3) usefulness of ACT implementation in mothers of hearing-impaired children and reducing experiential avoidance and uncertainty intolerance in these mothers.

Methods

This study was a quasi-experimental research with pretest-posttest design and a control group. The study population comprised all mothers of 2−6 years old children with hearing loss or deaf referring to a rehabilitation center for children with hearing disorders affiliated to Tabriz Welfare Organization in 2018. After taking the permission of the rehabilitation center's management, mothers of 32 children (out of 120 children) referring to the rehabilitation center were selected using a purposive sampling method and considering the inclusion criterion. The selected subjects were randomly assigned to the experimental and control groups (n = 16). The inclusion criterion included having a hearing-impaired or deaf child, 2−6 years old experience of hearing loss above 70 dB in family, being 20−40 years old, passing secondary school, giving informed consent to participate in the research, presence of both parents (mother and father) of the child in the family. The exclusion criteria were absence in intervention sessions or suffering from any specific disease or disability.
It should be noted that mothers of children with hearing loss above 70 dB were selected purposefully due to effects of severe hearing loss on the speech and language development of children. After selecting the samples, the researcher introduced himself to the respondents and explained the research objectives and method, ensuring them about the confidentiality of their information. The researcher obtained the written consent from the respondents and asked them to read the questions of Acceptance and Action Questionnaire-second version (AAQ-II) and Intolerance Uncertainty Scale and select the suitable options.

Acceptance and Action Questionnaire-II

This questionnaire measures acceptance, experiential avoidance, and psychological inflexibility and the last version of this instrument consists of 10 items rated based on the 7-point Likert-type scale; this version was developed by Bond et al. in 2011 [31]. The total score ranges from 10 to 70; the higher score indicates a stronger tendency toward experiential avoidance. Psychometric adequacy of the Persian version of this questionnaire was assessed and confirmed by Abbassi et al. [32]. They examined the convergent validity of the questionnaire and reported its correlation with the second version of Beck depression inventory [33] and Beck anxiety inventory [34] as 0.59 and 0.44, respectively in a sample of 192 students of Tehran Universities and Medical sciences University of Tehran.. In the above study, the scores of experiential avoidance of psychometric sample (25 female patients and 25 healthy patients) were compared to examine the differential validity of the questionnaire.

Uncertainty Intolerance Scale

Freeston et al. designed this scale. This test includes 27 items related to unacceptable uncertainty and ambiguity, which usually result in frustration, stress, and inability to act. This test is responded based on the 5-point Likert-type scale (never, rarely, sometimes, often, and always). In the first version (in the French language), the internal consistency (0.91) and relatively good retest reliability coefficient (0.78) were obtained after 4 weeks. The reliability coefficient of this test was significant and acceptable [35]. Uncertainty scale was revalidated by Buhr and Dugas, and it’s Cronbach α coefficient and retest reliability coefficient were

reported as 0.94 and 0.74, respectively after five weeks. The correlation coefficients of this scale were obtained as 0.6, 0.55, and 0.59 in correlation with concern questionnaire, Beck anxiety inventory, and Beck depression inventory, respectively (all were significant) [36].

To conduct therapy and intervention, the protocol of ACT-based therapy sessions of Hayes et al. [37] and Kowalkowski [38] was used. This protocol expands the psychological flexibility of individuals when facing inefficient thoughts and beliefs by employing a metaphor. In this protocol, the therapist emphasizes the experiential avoidance and intolerance of uncertainty caused by the presence of a hearing-impaired child to encourage mothers to do their homework. The protocol was implemented for the experimental group in eight 90-min sessions during four weeks, two sessions per week. The control group did not receive this therapy. After the end of the sessions, the posttest was implemented for both groups. ACT-based sessions can be summarized as follows:

The first session: pretest implementation and familiarity of mothers with the therapist and each other, description of group rules, explanation of therapy approach, and setting homework, including listing 5 important problems of mothers of hearing-impaired children.

The second session: checking homework of the previous session, evaluating problems of mothers of hearing-impaired children in the viewpoint of the individual, assigning homework of preparing a list of advantages and disadvantages and methods to control problems.

The third session: checking the homework of the previous session, specifying the ineffectiveness of negative events' control using metaphors and teaching tendency toward negative emotions and experiences, assigning homework of recording the cases in which mothers of hearing-impaired children stopped inefficient control methods successfully.

The fourth session: checking the homework of the previous session, teaching participants to separate evaluations from personal experiences, and taking the situation of observing the thoughts without judgment, assigning homework of listing the cases in which mothers of hearing-impaired children have observed successfully without evaluating experiences and emotions.

The fifth session: checking the homework of the previous session, connecting with the present moment, considering self as the board (metaphor of chessboard), and teaching mindfulness techniques, assigning homework of recording cases in which, mothers of hearing-impaired children can observe thoughts using mindfulness techniques.

The sixth session: checking the homework of the previous session, identifying life values of mothers of hearing-impaired children, and assessing values based on their importance, assigning homework of preparing a list of barriers to values achievement.

The seventh session: checking the homework of the previous session, providing practical solutions for barriers by using metaphors and planning for commitment to values, assigning homework of reporting steps to follow values and thinking about sessions' achievements.

The eighth session: concluding the reviewed concepts in sessions and asking participants to explain their achievements and their plans for life then conducting the posttest.

After data collecting and end of therapy sessions, data analysis was done using descriptive statistics and ANCOVA in SPSS 19.

It was essential to check the presumptions of ANCOVA such as the normal distribution of dependent variables, homogeneity of regression slopes, and variance homogeneity of the dependent variable in groups. To examine the normal distribution of variables, the Kolmogorov-Smirnov test was used. Also, t-test was used to examine the homogeneity of control and experimental groups during the pretest. In addition, the mutual effect of group and pretest was used to examine homogeneity of regressions' slope. ANCOVA test was used as all of the presumptions had been observed. It should be reminded that after the end of the study, the control group also received ACT because of ethical considerations. This research obtained ethical code of IR.IAU.TABRIZ.REC.1397.030 form the Ethics Committee of Biological Research

Table 1. Mean (standard deviation) of experiential avoidance and intolerance of uncertainty in the pretest and post-test stages in both the experimental and control groups

		Mean (SD)	
Variable	**Group**	**Pretest**	**Post-test**
experiential avoidance	**Experimental**	43.19 (7.68)	35.38 (6.55)
	Control	44.75 (13.9)	43 (11.65)
Intolerance of uncertainty	**Experimental**	77.62 (10.65)	67.25 (8.75)
	Control	77.31 (12.76)	76.50 (12.83)

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Results

The age range of the experimental group was 22−37 years with a mean (SD) age of 29 (4.47) years. The age range of the control group was 26−36 years with a mean (SD) age of 30 (3.01) years. All of the mothers were housewives. In the experimental group, 25% of mothers had a middle school degree, 50% had a diploma, 6.2 % had an academic degree, and 18.8% BA degree. In the control group, 18.8% had a middle school degree, 43.8% had a diploma degree, 12.4% had an academic degree, and 25.0% had a BA degree.

Table 1 presents the mean (SD) pretest and posttest scores of the experiential avoidance and intolerance of uncertainty in the experimental and control groups. Accordingly, mean scores of experiential avoidance and uncertainty intolerance in the experimental group reduced after the intervention. In this case, the mean (SD) score of experiential avoidance of the experimental group reduced from 43.19 (7.68) to 35 (6.55) in the posttest ($p < 0.001$). In addition, mean (SD) scores of uncertainty intolerance of the experimental group reduced from 77 (10.65) to 67 (8.75) in the posttest ($p < 0.001$); while there was not any significant change in the mean scores of experiential avoidance and intolerance of uncertainty in the control group.

ANCOVA test results showed that the group effect was significant at a confidence interval of 99 % ($F_{1, 32} = 120.26$, $p = 0.001$). It means that there was a significant difference between the experiential avoidance levels of the control and experimental groups after adjusting pretest scores. On the other hand, the adjusted mean (SD) score, i.e. 36.05 (0.40) implied that experiential avoidance level in the experimental group was significantly lower than mean (SD) score of the control group 42.32 (0.40). Therefore, the obtained findings indicated significant effect of ACT on reducing experiential avoidance symptoms in mothers of hearing-impaired children. In addition, ANCOVA results of intolerance of uncertainty indicated significant group effect at the confidence interval of 99% ($F_{1, 32} = 71.38$, $p = 0.001$). It means that there was a significant difference between uncertainty intolerance levels of control and experimental groups after adjusting pretest scores. Moreover, the adjusted mean (SD) score implied that uncertainty intolerance level in the experimental group 67.11 (0.79) was significantly lower than mean (SD) score of the control group 76.64 (0.79). Therefore, the obtained findings indicated significant effect of ACT on reducing uncertainty intolerance symptoms in mothers of hearing-impaired children.

Discussion

This study aimed at examining the effect of acceptance and commitment therapy (ACT) on the symptoms of experiential avoidance and uncertainty intolerance in mothers of hearing-impaired or deaf children in Tabriz City, Iran. Research findings indicated that ACT had a

significant effect on reducing symptoms of experiential avoidance in mothers of hearing-impaired or deaf children. Our results were consistent with the studies conducted by Jones et al. [18], Gold et al. [19], and Shiralinia et al. [20] who confirmed the effect of ACT-based on the promotion of psychological flexibility of mothers with Autism spectrum disorder. Also, our findings are in line with the results of Pak et al. who found reduction in experiential avoidance in patients with multiple sclerosis [21], Mesbah et al. who found increase in resiliency of mothers of mentally retarded children [22], Hughes et al. who found positive effect on reducing chronic pain [23] and post-trauma stress disorder (PTSC), social anxiety disorder, depression and experiential avoidance, and finally Kashdan et al. [30]. As a result, ACT helps individuals to acquire skills, to cope with value-based activities, and to move toward valuable objectives. Therefore, moving toward values and precious goals not only makes individuals embrace problems but also helps them improve their psychological flexibility by accepting reality [26]. Moreover, these mothers evaluate life events negatively because of their children's problem as well as their experience of anxiety and experiential avoidance. In addition, these mothers may experience other psychological problems owing to non-acceptance of problem, avoidance behavior and lack of interventions [8]. Experiential avoidance is a problem, which destroys the quality of life [30] and is significantly associated with generalized anxiety disorder, negative emotions, self-destruction, and behavioral disorder; hence, this problem should be solved [9,10].

It can be explained the main point of ACT is active and informed acceptance of unpleasant experiences of life without trying to change life conditions or tolerate undesired situations. In this protocol, mothers of hearing-impaired and deaf children learn how face their emotions, memories, feelings and thoughts actively and eagerly. Under such circumstances and under the support of group, mothers learn flexibility. In other words, as this therapy tends to increase psychological flexibility of individuals, they can free themselves from unpleasant experiences because increased attention and knowledge about thoughts and emotions and practical tendencies is a positive aspect of acceptance and commitment, which leads to adaptive and positive psychological moods and increases social support and adaptation with hearing-impaired and deaf child.

A wealth of evidence confirms the relationship between experiential avoidance and emotional disorder, intolerance of uncertainty, intolerance of discomfort, cognitive and emotional repression, and mindfulness [26]. Therefore, ACT can play a vital role in reducing some problems considering the relationship between experiential avoidance and various mental disorders that diminishes the quality of life [27]. Parents of disabled children may show some behaviors such as denial of problems, low emotional support, experiential avoidance, and uncertainty intolerance because of the unknown future of their children. On the other hand, acceptance is the opposite of experiential avoidance; acceptance contributes to reducing problems occurring in experiential avoidance. Therefore, acceptance is a value-based choice without any force [31].

Moreover, this study showed that ACT could reduce symptoms of intolerance of uncertainty in mothers of hearing-impaired or deaf children. Results of the present study are in line with the results of studies by Avdagic et al. [39], Mansouri and Korozhde [12]. They approved the positive effect of ACT on reducing concern and uncertainty intolerance in individuals with generalized anxiety disorder and mothers of children with autism. The beneficial effect of this therapy has been reported on the resiliency of mothers of mentally retarded children [22], PSTD, coping style and efficacy of girls with abnormal grief [40], quality of life of pregnant women [41], experiential avoidance of MS patients [21] and anxiety and depression of mothers of hearing-impaired or deaf children [42], all being consistent with our study results. Because uncertainty intolerance is defined as emotional, cognitive and behavioral reactions toward ambiguous situations to control future [12] and the

presence of a hearing-impaired or deaf child in family leads to uncertainty about a child's future, ACT helps mothers of such children to accept their unpleasant feelings, emotions, and improve their positive emotions by recognizing their own circumstances. Therefore, one major goal of this therapy is to increase psychological flexibility of individuals and to reduce their uncertainty by teaching them to accept the conditions instead of avoiding and denying the truth using acceptance and mindfulness processes besides commitment and behavior-changing processes [29].

Due to specific conditions of this study, the study population had some limitations, so caution should be taken in generalizing the study results. Research constraints included sampling method and a few samples due to limited access to all mothers of hearing-impaired and deaf children in Tabriz. Considering the significant effect of ACT on the reduction of symptoms of experiential avoidance and intolerance of uncertainty, this therapy is recommended to be used for larger samples and fathers of hearing-impaired or deaf children, too. It is also suggested to examine the effect of this therapy in children older than six years, at school age, and other family members.

Conclusion

The obtained results indicated that ACT could reduce symptoms of experiential avoidance and intolerance of uncertainty in mothers of hearing-impaired children. Increased acceptance capacity and psychological flexibility of mothers of hearing-impaired or deaf children would change the attitude of mothers toward disability of their children. Attitude change along with acceptance, not only provides mental comfort for mothers but also prepares the condition for implementing supporting rehabilitation programs for their children. Therefore, as one of the cognitive-behavioral third-wave generation therapies, ACT plays a vital role in treating experiential avoidance and intolerance of uncertainty in parents of hearing-impaired children. It is recommended that ACT be used in rehabilitation centers, particularly in centers for children with hearing disorders.

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Conflict of interest

The authors declared no conflicts of interest.

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