

RESEARCH ARTICLE

The effectiveness of family-centered early intervention based on psychological well-being on the general health of mothers of children with hearing impairment

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Abstract

Background and Aim: Several research studies indicate that children born with disabilities impair the general health of their parents. Therefore, it is necessary to address the emotional and psychological needs of parents of children with disabilities through rehabilitation programs. For this reason, the purpose of the present study was to investigate the effectiveness of family-centered early intervention based on psychological well-being on the general health of mothers of children with hearing impairment.

Methods: Thirty-two mothers of children with hearing impairment were selected through convenience sampling and randomly assigned to experimental (n=16) and control groups (n=16). The general health of both groups was assessed by general health questionnaire (GHQ) before the intervention as a pretest. The experimental group then participated in 12 sessions of family-centered early intervention program based on psychological well-being, while the control group did not take part. After the experimental group completed the intervention, the general health of both groups was assessed by GHQ as the post-test.

Results: Analysis of covariance (ANCOVA) and multivariate analysis of covariance

(MANCOVA) showed significant decreases in mean scores on general health and in the subscales (somatic symptoms, anxiety, social dysfunction, and depression) by the experimental group ($p < 0.05$).

Conclusion: The findings indicated that family-centered early intervention based on psychological well-being improved the general health symptoms in mothers of children with hearing impairment. Therefore, a method was proposed which designed and implemented this kind of early intervention to improve the general health of mothers of children with hearing impairment.

Keywords: Family-centered; early intervention; general health; mothers; hearing-impaired children

Introduction

Parents' general health is very important, as their abilities to cope and adapt with problems affect their life [1]. However, research indicates that children born with disabilities adversely affect the general health of their parents [2]. One of these disabilities is hearing impairment, which imposes many negative psychological pressures on the parents [3]. Similarly, Wake et al. [4] in their studies concluded that parents of deaf children have less mental health compared to the parents of normal children. Therefore, besides providing the usual services to children with hearing impairment, it is necessary to

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address the emotional and psychological aspects of family and mothers in rehabilitation programs [5]. In this regard, family-centered early intervention based on psychological well-being is considered as one of the basic measures for protecting the general health of the parents having hearing-impaired children [6].

Timely interventions are the kind of support-training systems that attempt to support, rehabilitate, and train children and their families after identifying children with special needs since their birth (or the earliest time possible) [7]. Family-centered intervention includes early mediation focusing specifically on the participation of parents. Training parents is the main element of this intervention [8]. In particular, the primary objective of family-centered early intervention (based on psychological well-being) for parents of children with hearing impairment is to help in raising the consciousness of parents, their compatibility, and identifying their essential roles in taking care of children with hearing impairment [6].

Research suggests that intervention, social support, and appropriate expertise reduce anxiety and depression and avoid other psychological disorders in parents after identifying hearing-impaired baby and help them in raising their children [9]. Mothers who have greater social support are more flexible, have emotional and behavioral consistency, and raise their children more successfully [10]. Blair et al. [11] in a study examined the consequences of child and family dynamics in the early intervention program, administered on children with damaged or delayed growth. In their study, the emphasis was put on the relationship between mother and child. Results of their study showed that mothers who received early intervention were less likely to use control strategies and had sympathy for their children.

Karkhaneh et al. [12] evaluated the effectiveness of encouragement to reduce depression in mothers of children with hearing impairment. The results demonstrated that encourage training programs are effective in reducing depression in these mothers. Also, Movallali et al. [3] investigated the effectiveness of positive

parenting program on the mental health of mothers of children with hearing impairment and concluded that teaching positive parenting program was effective in improving the mental health of these mothers.

As it can be seen, timely interventions focused on the family, influence the compatibility and general health of parents of children with hearing impairment. However, in our country according to investigators' knowledge, no research has been done so far on the impact of these interventions on the general health of families having children with hearing impairment. For this reason, besides filling this gap, the present study could be a step towards considering the psychological state of mothers of children with hearing impairment and improve their general health. Therefore, this research aimed to investigate the effectiveness of family-centered early intervention based on psychological well-being on the general health of the mothers of children with hearing-impairments.

Methods

The research was an experimental study with a pretest-post-test design and a control group. The statistical population of this study comprised all mothers of children with hearing impairment in Shiraz, Iran that their children (under 5 years) with hearing impairment were under training and rehabilitation in preschool Rehabilitation Centers in the academic year of 2015-16. The sample consisted of 32 mothers of hearing-impaired children that were selected from an intervention center and rehabilitation preschool through convenience sampling. Then, they were randomly divided into experimental and control group, each with 16 subjects.

The experimental group underwent the family-centered early intervention program based on psychological well-being. It is worth noting that before performing the intervention program for the experimental group, the general health questionnaire (GHQ) was administered as pretest and after implementing the intervention program for the experimental group, it was administered again as the post-test for both groups. In addition, at first, 40 subjects were selected.

However during the study, four members of the experimental group were excluded because of refusing to cooperate, thus four members of the control group were also randomly excluded for which the sample size finally reduced to 32 participants (16 in experimental (11 girls, 5 boys) and 16 (9 girls, 7 boys) in the control group). Mothers included in the control group aged between 25 and 45 years with mean (SD) age of 36.18 (5.13) years, whereas the mothers of the experimental group was in the age range of 25 to 47 years with a mean (SD) age of 34.12 (7.12) years. Children of mothers in the control group were of the age from 1 to 7 years, with mean (SD) age of 3.56 (1.96) years and the children of mothers in the experimental group were also in the age range of 1 to 7 years, with mean (SD) age of 4 (1.71) years.

Inclusion criteria of mothers were as follows: 1) having a hearing-impaired child under 7 years old; 2) bearing at least a diploma; and 3) motivation for collaboration in intervention sessions. The exclusion criteria were as follows: 1) children with hearing impairment have additional disabilities; 2) the parent undertook similar psychological intervention; and 3) absence of more than two sessions.

After the end of the study, in order to observe research ethics, the family-centered early intervention program (based on psychological well-being) was presented to the members of the control group for 12 sessions.

Psychological well-being based family-centered early intervention program

The program consisted of two major components: group counseling with mothers of children with hearing impairments and training on skills to deal with crisis and stress, which were presented to the participants during 12 sessions of 90 minutes each. Consultation process was held in groups with mothers has been designed using Hornby consultative model [13], which was presented in the first 6 sessions. Consultation process was as follows: at first, topic or the issue was chosen and fully explained, then the mothers were asked to express their feelings and opinions on the topic without any self-censorship

They were also asked to allow others to express their ideas and feelings and try to give others a chance and respect one another. In the third phase, the adviser reviewed opinions of parents and listed proposed and agreed opinions and finally the results of the meeting were summarized in one or two sentences.

Lectures on skills to deal with crisis and stress were also presented using cognitive-behavioral approach. The training program consisted of two major components: increasing knowledge and skill training. In knowledge increasing component, some information was presented to the mothers on how stress affects the physical, social, and psychological functions. In the second step, skills to deal with the crisis and stress, including self-control, relaxation, and positive thinking were presented. At the end of each session, mothers were given the task to perform at home to see what was learned in each session; in the end, summary and issues raised in each session were submitted in writing to the mothers. A summary of the purpose and content of sessions of family-centered early intervention based on psychological well-being is presented in Table 1.

General health questionnaire

To assess the general health of participants in this research, Goldberg general health questionnaire-28 (GHQ-28) was used. The 28-item form of the questionnaire, which was used in this study has 4 subscales. These scales measure physical symptoms (questions 1 to 7), symptoms of anxiety (questions 8 to 14), signs of social dysfunction (questions 15 to 21), and symptoms of depression (questions 22 to 28). Test scoring is based on the Likert-type scale where option "A" gets 0 score, option "B" 1 score, option "C" 2 score, and option "D" 3 score. The highest score of the subjects with this scoring scale is 84 and a higher score indicates more disorder in the general health of individuals. Taghavi [14] reported the reliability of the questionnaire based on the test-retest, Split-half, and the Cronbach α as 0.70, 0.93, and 0.90, respectively. The correlation coefficients between subtests of the

Table 1. Summary of the purpose and content of sessions of family-centered early intervention based on psychological well-being [14]

Session(s)	The Purpose and content of the program
First	Introduction, stating rules, expressing goals, preparation and completion of questionnaires
Second	The process of acceptance and compatibility with hearing-impaired children
Third and fourth	The effects of hearing-impaired children in the family and the challenges of raising hearing-impaired children
Fifth	Familiarity with methods to communicate with hearing-impaired children and offer suitable solutions
Sixth and seventh	General familiarity with the issues and problems hearing-impaired children and society's attitude towards hearing impairment
Eight	Provide information about stress and its negative impact on physical functioning, mental health, and family functioning, learn relaxation strategies through breathing and progressive muscle relaxation
Ninth	Provide information about ways to control emotions and properly deal with it, learn relaxation strategies through breathing and progressive muscle relaxation
Tenth	Self-control skills and questioning the negative thoughts, practicing relaxation strategies through breathing and progressive muscle relaxation
Eleventh	Positive thinking training, controlling negative thoughts, practicing relaxation strategy through breathing and progressive muscle relaxation
Twelfth	Discussion and conclusion of the meetings, exchange of experiences, express suggestions and criticisms, administering the questionnaires

questionnaire with a total score of 0.72 to 0.87 were satisfactory.

Study procedure

To conduct this study, the sample group was selected among mothers, referring to preschool centers in Shiraz for deaf children. The mothers of children under 5 years old with hearing impairment were randomly divided into experimental and control groups. The GHQ was administered to both groups as pretest. Then, family-centered early intervention based on psychological well-being was administered in 12 sessions for the experimental group. After the end of the sessions, GHQ was administered to both groups as the post-test. The obtained data were analyzed with SPSS 21.

Data analysis

For descriptive data analysis, descriptive statistics such as frequency, mean and standard deviation were used and to determine whether the obtained changes are statistically significant, the analysis of covariance for general health and multivariate analysis of covariance for subscales

of general health were used. Before analysis of covariance and multivariate analysis of covariance, homogeneity of variances (Levene's test) was conducted and confirmed ($p>0.05$). The normal distribution of the dependent variables was confirmed with Kolmogorov-Smirnov test ($p>0.05$).

Results

According to Table 2, means of control and experimental groups in subscales of physical symptoms, anxiety symptoms, the symptoms of social dysfunction, and depression symptoms as well as general health scores in the pretest are approximately equal, but after the intervention, the mean values of experimental group in the general health subscales and its overall score were dropped.

Yet to determine whether these changes are statistically significant, analysis of covariance (ANCOVA) and multivariate analysis of covariance (MANCOVA) were used. The results of ANCOVA showed that the family-centered early intervention (based on psychological well-being) caused a significant difference

Table 2. Frequency, mean and standard deviation of general health status variable and its subscales in control and experimental groups in the pretest and post-test

Variable	Group	Pretest	Post-test	p
		Mean (SD)	Mean (SD)	
General health	Control	35.93 (3.64)	34.18 (3.20)	0.0001
	Experimental	37.43 (4.91)	28.87 (3.77)	
Physical symptoms	Control	7.12 (1.31)	7.68 (1.62)	0.005
	Experimental	9.18 (1.55)	6.56 (1.67)	
Anxiety symptoms	Control	10.56 (1.78)	9.81 (1.47)	0.01
	Experimental	10.12 (2.39)	8.31 (2.08)	
Social dysfunction symptoms	Control	8.87 (2.02)	8 (1.59)	0.05
	Experimental	9 (2.30)	6.75 (1.52)	
Depression symptoms	Control	9.37 (2.44)	8.68 (1.77)	0.05
	Experimental	9.12 (2.15)	7.25 (2.01)	

between the control and experimental groups with regard to the general health of mothers of children with hearing impairment ($F_{(29,1)} = 34.54$, $p < 0.0001$). Thus, this early intervention has a positive and significant impact on the general health of mothers of children with hearing impairment.

In order to investigate the effect of this intervention on the general health subscales of mothers of hearing-impaired children, MANCOVA was used and the results showed that family-centered early intervention caused significant difference between the control and experimental groups with regard to the physical [$F_{(26,1)} = 4.02$, $p < 0.005$], anxiety [$F_{(26,1)} = 11.04$, $p < 0.01$], social dysfunction [$F_{(26,1)} = 5.67$, $p < 0.05$], and the depression symptoms [$F_{(26,1)} = 5.24$, $p < 0.05$]. Thus, the family-centered early intervention leads to a reduction of physical, anxiety, social dysfunction, and depression symptoms in mothers of children with hearing impairment.

Discussion

The objective of this research was to investigate

the effect of family-centered early intervention based on psychological well-being on the general health of the mothers of hearing-impaired children. Research results showed that family-centered early intervention had a positive and significant impact on improving the general health of these mothers. This finding is consistent with Pipp-Siegel et al. [15], Meinzen-Derr et al. [16] and Movallali et al. [3] studies and supports them.

To explain these findings, we can say that family-centered early intervention helps parents adapt with special needs of their children [17]. It also helps them to cope with stress resulting from having a child with special needs and improve their general health [18]. Moreover, mothers of hearing-impaired children would be able to learn how to obtain resources to help their children with disabilities and ways to express their feelings more effectively [19-21].

To explain the effectiveness of family-centered early intervention (based on psychological well-being) on the physical disorder symptoms in mothers of children with hearing impairment, it

can be said that the problem of these mothers in the physical area may be due to the complexity of the child's disability and its incurable condition which could lead to high levels of stress in them that may continue several years after identifying their children's problems [15]. Weiss [22] showed that physical complaints and somatization are common coping strategies in parents of exceptional children, especially in mothers. According to research results by Blumenthal et al. [23], the use of stress management techniques helps people to deal better with stressful situations and achieves greater control of their physical and emotional state, and therefore improves their health. Stress management training, particularly that on the use of relaxation technique, reduces stress and physical symptoms; thus, we can conclude that the inclusion of relaxation training program is effective in improving healthy lifestyles and maintaining physical and mental health of these mothers [24].

To explain the effectiveness of this early intervention on symptoms of anxiety disorder of mothers of hearing-impaired children, we can say that the intervention reduces maternal anxiety with the support of children and their families and understanding that they are not alone with their problems. In other words, family-centered early intervention reduces maternal anxiety and concerns by increasing information and parent awareness about hearing impairment and its antecedents and consequences, and yet amends the myths of inefficient parents. These amendments also finally prepare grounds for improving mental and social health of the mothers with hearing-impaired children. Additionally, in this early intervention program, stress management training was included as managing stress can reduce anxiety. Moreover, mothers were taught relaxation strategies. Performing relaxation properly improves blood circulation, creates a positive attitude, improves brain function, and reduces anxiety [25].

To explain the effectiveness of family-centered early intervention on social dysfunction in mothers of children with hearing impairment, it can be said that this intervention often provides

emotional, social, and informational support for families and helps parents adapt themselves to the situation of having a child with hearing impairment [26]. In other words, this kind of early intervention helps the parents of hearing-impaired children communicate with other parents having same problems and use their strategies to cope with and overcome the obstacles that the social environment imposes [27]. In fact, in this case, parents supporting each other make them feel less isolated and help them adapt themselves. Participation of families of children with special needs creates a sense of belonging. This kind of support for families provides an opportunity to interact with each other and is considered a kind of emotional support [28] indicating that probably all of these factors improve social function of mothers of hearing-impaired children.

To explain the effectiveness of family-centered early intervention (based on psychological well-being) on the symptoms of depression in mothers of children with hearing impairment, we can say that the intervention can change negative attitudes of parents about themselves, their children, and the current conditions [29]. In fact on the one hand, parents should have necessary and comprehensive knowledge about their children to fulfill their responsibilities properly and on the other hand, overcome their negative feelings and figure out how to behave with their children to educate them not to despair and depress.

It should be noted that current study was conducted only on the mothers of hearing-impaired children, so care should be taken in generalizing its results to other groups. The futility of implementation and following-up are other limitations of this study. Therapists and researchers are suggested to implement family-centered early intervention program based on psychological well-being with mothers and fathers and wherever possible to investigate the long-term effect of the intervention. In the end, it is recommended that curators and custodians of education and rehabilitation of children with hearing impairment recognize the importance of early intervention approach and implement its

executive strategies in the country, given its important implications. Fathers' participation in the training program and their awareness of the problems of hearing-impaired children prepares them with a better understanding of the challenges mothers have in raising children and actively participate in their child's education and rehabilitation. Therefore, it is suggested that such interventions be in the spotlight for fathers, too.

Conclusion

This study demonstrates that family-centered early intervention based on psychological well-being can improve the general health of mothers of hearing-impaired children. The results of this study indicate that the design and implementation of programs with family-centered approach reduce anxiety, depression, and other psychological disorders in mothers of children with hearing impairment and helps them a lot in raising their children. Generally, family-centered early intervention (based on psychological well-being) has a positive effect on the parents of children with hearing impairment and helps them accept the conditions and limitations of their children so that they can manage the problems of the children while maintaining their own mental health.

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Conflict of interest

The authors declared no conflicts of interest.

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