



## The Effect of Problem-Focused Coping Strategy Training on Psychological Symptoms of Mothers of Children with Down Syndrome

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### Abstract

**Background:** Anxiety is one of the most common reactions that parents show while understanding their children's intellectual disability due to Down syndrome. Anxiety leads parents not to develop appropriate relations with their children, subsequently their psychological health are at risk. The present study was aimed to determine the effect of problem-focused coping strategy training on psychological symptoms of mothers with Down child.

**Methods:** This was an experimental study with pretest and posttest design with case and control group. Sixty-four mothers were selected randomly from Iranian Down Syndrome Charity Society. They completed Symptoms Checklist-90-Revised (SCL-90-R). They were assigned to experimental and control groups in equal. Experimental group participated in 12 training sessions (once a week; 60 minutes for each session) and received problem-focused coping strategy program, but control group did not. After 12<sup>th</sup> session, all subjects completed SCL-90-R again. Analysis of covariance was used for analyzing the data.

**Results:** There was a significant difference ( $P < 0.01$ ) between experimental and control group according to psychological symptoms and its components (phobia, depression, paranoid thoughts, psychosis, somatic complaints, interpersonal sensitivity, obsession-compulsion, anxiety and aggression) after participation in intervention sessions.

**Conclusion:** There was a significant decrease in psychological symptoms, phobia, depression, paranoid thoughts, psychosis, somatic complaints, interpersonal sensitivity, obsession-compulsion, anxiety and aggression of experimental group. Our findings showed that problem-focused coping strategy-training program led to improve family's perception towards the child and subsequently promote of mental health of mothers with Down children.

**Keywords:** Down Child, Psychology, Problem-Focused Coping

### Introduction

Down syndrome is one of the most common genetically disorders, which is accompanied with intellectual disability (1). Its prevalence varies from 1 from 700 to 900 of alive birth (2). Since, baby birth is a critical moment, the diagnosis of

Down syndrome leads parents to experience various feelings before and after the moment (3). The family of children with Down syndrome experience more stress and tension than other families (4-6), but some researchers have not approved

these relations (7, 8). From 1980, massive researchers have emphasized on the role of mediating factors in experiencing stress (9). While confronting with a crisis, available social resources and facilities, family's perception about the child, the presence of other stressors in family, and coping strategies are considered as important factors, which effect on psychological health of mothers with Down syndrome (10-12).

The appraisal of a situation will influence on the coping responses of an individual and leads to different emotional consequences. According to cognitive theory of stress and coping, each event will be appraised in two ways: at first, an individual appraises the situation (first appraisal), then, he will judge about the resources which are available for coping with stress (secondary appraisal). There is two types of coping: 1) problem-focused coping, which is directed on reducing environmental demands or increasing personal resources, 2) emotion-focused coping, which is concentrated on controlling emotional response to a stressful situation (13). People are able to regulate their emotional responses to a stressful situation through behavioral (i.e., alcohol consumption or substance use) or cognitive (i.e., changing the meaning of a situation or denial of unpleasant facts) approaches. Many studies have indicated that emotion-focused strategies (ineffective coping) are correlated with more psychological problems (14), while problem-focused or active coping strategies are related to wellbeing and health (15, 16). Females usually prefer using emotion-focused coping more than males, also mothers of intellectual disabled children use less problem-focused strategies than their fathers and parents of normal children (17). Some investigations (7, 18) have shown that there is a relationship between the intensity or frequency of behavior problems in intellectual disabled children and parental stress or psychiatric problems such as: cognitive disorder, depression, anxiety and hopeless. Mothers of autistic children have experienced more stress than mothers of children with Down syndrome (19, 20) and mothers of intellectual disabled children (21). In spite of considerable documents that confirming the effect of mediating

factors on manifesting stress in families of intellectual disabled children, if personal and familial resources satisfy their needs, an individual will be able to adapt successfully (22, 23).

There is a multidimensional approach in relation to stress and coping in families (24). Therefore, the recent interventions are using family-centered approaches in which the experts work with parents together in order to help them to cope with their needs and challenges resulting from having disabled child (25). Beyond of these findings in family therapy approaches (26), various interventions such as: single-case management, cognitive-behavior group interventions, and parents' supportive networks probably help to reduce parental stress (6).

The presence of a child with Down syndrome makes parents' duties (especially mothers') more complex. Children's disabilities, their slow growth, and special resources that required for their care and training lead to strike parents' balance and psychological calmness. Generally, there is a few studies about the relationship between parental stress and psychological helplessness amongst parents of children with special needs (27).

The present study was aimed to discover the relationship between the application of problem-focused coping strategies by mothers and their health. Therefore, it is looking the answer for this question: Does problem-focused coping strategy training influence on psychological symptoms of mothers with Down child?

## **Materials and Methods**

This was an experimental study with pretest and posttest design covering a sample of 64 mothers of children (under 12 years old) with Down syndrome representative of Iranian Down Syndrome Charity Society aged 24 to 54 yr old (mean=35.22 and standard deviation=2.83). There were 180 members (children under 12 years old) in the Charity which 99 of them lived in Tehran. They were diagnosed as exceptional and educable children through clinical interview and assessment. Among them, 64 children were selected randomly

by lottery and their mothers were invited to participate in the project. The study was formally approved by University of Social Welfare and Rehabilitation Sciences ethics in Iran. At first, written informed were supplied by mothers. To measure mothers' psychological symptoms, all participants answered to Symptoms Checklist-90-Revised (SCL-90-R). The SCL-90-R is a self-reporting diagnostic questionnaire and composed of 90 questions for assessing psychological symptoms. It is represented by Derogatis and his colleagues in 1973 and its last version was provided according to clinical experiences and psychometrics analyses in 1976. Derogatis has reported its internal stability 0.95, 0.77 for depression and psychosis respectively. Internal stability quotients in 94 psychotic persons were reported from 0.78 to 0.90 by test-retest in one-week interval. Various studies have reported its reliability between 0.73 to 0.36 for depression and phobia in respect (28). The checklist was scored based on Likert from zero (for selecting 'never' option) to 4 (very intensive). The questions of SCL-90-R are included 9 various dimensions (somatic complaints, obsession-compulsion, interrelations sensitivity, depression, anxiety, aggression, phobia, paranoid thoughts, and psychosis). Each dimension is scored separately and sum up of dimensions'

scores is representative for general symptom index. (GSI).

After answering to SCL-90-R, the mothers were divided to experimental and control groups randomly (32 individuals in each group). Experimental group participated in 12 intervention sessions (once a week; each lasting for 60 minutes) and trained by problem-focused coping strategy, while control group did not. All participants completed SCL-90-R after the sessions. During 4<sup>th</sup> session, 5 individuals from experimental group did not continue to cooperate with the researcher due to fasting month. Also, the data for 4 individuals did not been analyzed because of more than one absence from the sessions. Therefore, the data of 55 individuals (23 persons in experimental group and 32 persons in control group) were analyzed by analysis of covariance (ANCOVA).

The problem-focused coping strategy training program which was used in the present study was provided by Lazarus and Folkman (13). It was presented in two stages in present study. At first stage, the purpose of training was to increase mothers' knowledge and awareness about stress and coping strategies with it. At second stage, mothers were trained by the skills in order to know how to increase coping resources. Problem-focused coping strategies were divided to internal-dependent and external-dependent.

**Table 1:** The content of problem-focused coping strategy training program

Sessions	Content of each session
1	Introducing and recognizing the stress and its symptoms
2	Explaining effective and non-effective coping strategies with stress
3	Awareness of effective factors (like relaxation) in forming coping styles
4	Explaining the role of problem-solving skill on promotion of mental health. *participants were asked to do relaxation from 4 <sup>th</sup> to 12 <sup>th</sup> sessions.*
5	Training problem-solving skills (thought rain, creating alternative solutions, selecting the best one)
6	Applying the selective solution, its evaluation and awareness about its barriers
7	Introducing internal and external locus of control, recognition of negative thoughts
8	Training communicative skills, interpersonal and different styles of behavior, their advantages and disadvantages, awareness of anger management methods.
9	Introducing assertiveness and awareness of the disadvantages of passive behavior styles and advantages of assertiveness
10	Awareness of the factors creating waste of time and ability for time management
11	Training coping by using humours and explaining the advantages of social support
12	Summing up of the previous sessions with emphasizing on usage of coping skills

Internal-dependent strategies included problem solving, preserve internal control, and humour. External-dependent strategies included interpersonal and communicative skills, assertiveness, time management, develop supportive system, and physical practices like sport. The content of training sessions were as follows: (Table 1).

## Results

In order to compare the mean of psychological symptoms and GSI in experimental and control groups, analysis of covariance (ANCOVA) was used.

It is required to test the assumptions of ANCOVA for determining the effectiveness of prob-

lem-focused coping strategy training on psychological symptoms of mothers with Down's children. So, statistical presumptions (Pillai's trace, Wilk's Lamda, Hotellings' trace, and Roys' Largest Root) were tested for psychological symptoms and they were 0.97, 0.34, 0.54, 0.80, 0.01, 0.89, 0.58, 0.02, 0.18 for phobia, depression, Paranoid thoughts, psychosis, somatic complaints, interrelations sensitivity, obsession-compulsion, anxiety, and aggression respectively. It was showed that all predictors could differentiate between two groups. In order to compare the psychological symptoms of experimental and control groups in posttest, ANCOVA was used. Its results have reported in Table 2.

**Table 2:** The results of ANCOVA for comparing psychological symptoms of experimental and control groups

Variable	Source of change	SS	df	MS	F	Sig	$\eta^2$
Phobia	Pretest	7.865	1	7.865	474.0	494.0	0.01
	Group	166.786	1	166.786	47.350	001.<0	0.48
Depression	Pretest	406.220	1	406.220	3.605	063.0	0.07
	Group	332.1759	1	332.1759	28.780	001.<0	0.36
Paranoid thinking	Pretest	775.21	1	775.21	1.455	233.0	0.03
	Group	666.338	1	666.338	22.635	001.<0	0.03
Psychosis	Pretest	055.43	1	055.43	1.296	260.0	0.02
	Group	923.1359	1	923.1359	40.938	001.<0	0.44
Somatic complaints	Pretest	947.486	1	947.486	9.400	003.0	0.15
	Group	167.1018	1	167.1018	19.655	001.<0	0.27
Interrelations sensitivity	Pretest	434.93	1	434.93	2.923	093.0	0.05
	Group	787.946	1	787.946	29.624	001.<0	0.36
Obsession-compulsion	Pretest	359.36	1	359.36	043.1	312.0	0.20
	Group	690.929	1	690.929	26.672	001.<0	0.34
Anxiety	Pretest	399.10	1	399.10	443.0	508.0	0.01
	Group	014.1238	1	014.1238	52.788	001.<0	0.50
Aggression	Pretest	090.19	1	090.19	716.1	196.0	0.03
	Group	880.393	1	880.393	35.396	001.<0	0.40

As indicated in Table 2, there is a significant difference ( $P < 0.001$ ) between experimental and control groups according to psychological symptoms. Also, according to  $\eta^2$ , 48%, 36%, 3%, 44%, 27%, 36%, 34%, 50%, and 40% of variation of phobia, depression, paranoid thinking, psychosis,

somatic complaints, interrelations sensitivity, obsession-compulsion, anxiety, and aggression respectively can be explained by participating in problem-focused coping strategy training sessions. Besides, the most variation of dependent variables was related to anxiety (0.50) and phobia (0.48).

In order to determine the effectiveness of problem-focused coping strategy training on the GSI in mothers with Down child, ANCOVA was used. At first, Pillai's trace, Wilk's Lamda, Hotellings' trace, and Roys' Largest Root were tested and they

were significant ( $P < 0.001$ ), which was indicating that overall predictors can differentiate between two groups. The results of ANCOVA were presented in Table 3 for comparing the GSI of experimental and control group.

**Table 3:** The results of ANCOVA for comparing GSI of experimental and control groups

Source of change	SS	df	MS	F	Sig	$\eta^2$
Pretest	0.897	1	0.897	3.137	0.82	0.06
Group	9.397	1	9.397	32.877	<0.001	0.39
Error	14.862	52				
Total	134.886	54				

The results of ANCOVA showed that problem-focused coping strategy training had positive and significant effect ( $P < 0.001$ ) on GSI of experimental group. Also, according to Eta quotient ( $\eta^2$ ) 39% of variation in GSI can be explained by participating in problem-focused coping strategy training sessions. Accordingly, as far as mothers with Down child are participating to intervention sessions, their GSI will reduce and their mental health will increase.

## Discussion

The findings showed that problem-focused coping strategy training program has positive effect on the promotion of mental health and decrease of GSI and psychological symptoms (phobia, depression, paranoid thoughts, psychosis, somatic complaints, interrelations sensitivity, obsession-compulsion, anxiety, and aggression) in mothers of children with Down syndrome. This coincides with some studies (29-32). It seems that the components of problem-focused coping strategy (accepting responsibility and planned problem solving) are considered as confronting coping through which an individual tries to reduce the threatening situation itself and this might lead to reinforce family relations. People who persist on this strategy, have more mastery on the situation in stressful circumstances, and are able to adapt better with them, also experience less symptoms (13, 16).

The second finding indicated that problem-focused coping strategy training has reduced phobia in mothers who had a child with Down syndrome. This was in agreement with some studies (33-35). Since, the participants learned to appraise each stressful stimulus at first to determine the threaten or damage resulting from it; they could use a series of coping responses in secondary appraisal (28). It looks that seeking social support (as one of the components of problem-focused coping) contains one's effort to take informational and affective supports from friends and relatives when a person does secondary appraisal and wants to determine the best action must be done. It is expected that the best coping responses are problem-focused ones, because it is composed of four elements (awareness increasing, information processing, behavior modification, getting peaceful and relaxed solutions) (36).

Other finding showed that the depression of mothers who participated in training session has decreased. This is in agreement with some studies (24, 37, 38). Fery and colleagues (24) found that depression includes an extended clinical symptoms which vary from depressive mood, lack of enjoy or motivation and loss of energy. Additionally, it is composed of helpless feeling, suicide thoughts, and some cognitive and physical symptoms relating to depression. As far as, problem-focused coping strategy training emphasizes on replacing locus of control from external to internal factors, and considers one's availability to so-



cial supportive groups, it is probably influence on reducing depression (28).

It was found that the training has reduced paranoid thinking in mothers of Down children. Some studies (39-41) have approved the finding. Considering that the selection of problem-focused coping strategy includes a set of logical and rational thoughts and efforts focused on confronting and analyzing the problem, we can express that paranoid thoughts include suspicion, egotropy, egocentrism, and fear to loss autonomy, illusion, and aggression (28). Then, reappraisal leads to understand the behavior positively regarding to the development of an individual and this might minimize paranoid thoughts (13). During training sessions, mothers knew to seek negative emotions as a subsequent of negative thoughts and wrote them, disputed and replaced them with logical thoughts. It is clear that this procedure probably leads to reduce paranoid thoughts (41).

Other finding showed that participating in intervention has caused the reduction of psychosis in mothers. This coincides with the results of Vollrath (42), Dempsey (43), Khamis (27) and Shakeri (35). Regarding that psychosis is varied from isolation state and schizotypal living to schizophrenia symptoms like illusion and thought spreading, also include disorders ranging from moderate isolation to acute psychosis (44), the use of problem-focused coping strategy causes optimal performance of a person in social and psychological dimensions. Consequently, it leads to mothers' adaptation and reduction of psychosis symptoms (27).

The training has reduced somatic complaints of mothers with Down child. Some studies (45, 38) are in agreement with this finding. As somatic complaints are related to one's perception about body dysfunctions, usually autonomous system and its components function improperly and results in complaints about cardio-vascular, gastrointestinal, and respiratory systems. Furthermore, repeated headaches and musculature pains are considered as these complaints (28). In present study, participants knew how to master over their mind, change their complaints to requests, forget the anger relating to previous times, and use prob-

lem solving method for managing their anger. It is possible that the individuals who apply problem-focused coping strategies, their complaints will be less than before.

Also, the finding showed that participating in training sessions, has reduced the interrelations sensitivity of mothers. This finding coincides with the other results (such as: 33, 34). One explanation is that interrelations sensitivity refers to incompetency and inferiority feelings. Individuals who get high score in this component, are conscious in relations with others and have negative expectations about themselves (28). Davis and co-workers (46) believed that assertiveness means that a person is able to state his personal rights and feelings, say 'NO' without feeling guilty, spend sufficient time to answer other's questions, ask for help, experience and express own feelings, have positive feeling in each circumstances, act logically toward criticism and unfair behaviors, and express his successes (36). Regarding to the process of problem-solving training in the intervention sessions and recognizing the boundaries for solving the problem in a creative manner (emotional boundaries like fear about: making a mistake, unknowing, being ridicule, environmental and cultural boundaries), the participants had access to the necessary information and it was emphasized on receiving support from family or friends. Therefore, it seems that the use of problem-focused coping strategy has been minimized the interrelations sensitivity of mothers with Down children.

Training sessions has reduced obsession-compulsion in mothers. As Dempsey (43) has stated that the symptoms which are included in obsession-compulsion are in accordance with clinical profile of obsession, this dimension focuses on thoughts, impulses and actions which the person considers them uncontrollable and are as signs of general subtleness. If an individual knows how negative effects of obsessions influence on his behaviors, judges their truth and untruth, and does not find rational cause for continuing them, so it is expected that obsession/compulsion will reduce (36).

Also, it was found that participating in intervention sessions has reduced mothers' anxiety. This is

in agreement with some studies (14, 47, 48). Anxiety is an indicator for being nervous, feeling stress and hand tremor, immediate fears, feeling frightening and anxiety toward the future which are reflecting clinical overt anxiety. Participating in training session made mothers acquaintance with physical methods (such as: sport and physical practices, diet, relaxation, ...) for controlling stress and anxiety in order to reduce the signs of stress in themselves. So, the individuals who cope effectively with stressful events probably will show low levels of anxiety and depression (14).

The last findings showed that problem-focused coping strategy training has reduced aggression of mother with Down child. It coincides with the results of Harris (49), McNarma (41). Aggressive behavior describes the situation in which an individual wants to overcome on others' thought and actions (50). The individuals who are over compete and feel difficult to take a rest or enjoy hobbies, their anger might trigger aggression and hinder them to use appropriate coping strategy (28). During problem-focused coping strategy program, the participants were trained about interpersonal and communicative skills in addition to knowing the advantages and damages of different behavior styles (passive, assertive, aggressive). In addition, they have been awarded with the best behavior style (assertive). They were trained about the anger and the ways of reducing it. Also, they learned to overcome their mind, forget the angers relating to previous times and use problem-solving method for managing the anger. It is probable that the use of problem-focused coping strategy leads to reducing aggression.

The effectiveness of problem-focused coping training on psychological symptoms was limited to short-time training sessions, lack of follow-up and self-reporting questionnaire. It is recommended that problem-focused coping strategy training be applied as educational and psychological services in schools and rehabilitation centers in order to prevent psychological problems. Since, the application of coping strategies is related to family perception about a child and parents' personality characteristics; it is recommended to examine the

relation between these variables in different developmental stages in a longitudinal study.

## Conclusion

Regarding to the results, it can be concluded that problem-focused coping strategy has influenced positively on reduction of GSI and psychological symptoms in mothers with Down children. Considering that presenting adaptive strategies with Down syndrome will release their mothers from emotional stress and anxiety, and probably facilitates logic thinking in them. Therefore, it seems that stress, psychological health and parents' adaptation are influencing with multiple factors (24). By the way, the application of problem-focused coping strategies when confronting with a crisis will improve family perception about the child and reduces psychological symptoms of mothers with Down syndrome. Therefore, it is important to make mothers aware of the role of problem-focused coping strategy.

## Ethical consideration

Ethical issues (including plagiarism, informed consent, misconduct, data fabrication and/ or falsification, double publication and / or submission, redundancy, etc.) have been completely observed by the authors.

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