

Research Paper

The Effect of Resilience Training on the Stress of Mothers of Students With Down Syndrome

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Down syndrome, Mother**ABSTRACT**

Objectives: Down syndrome (DS) is a genetic disorder that causes many problems for the affected person and his or her family. The present study aimed to investigate the effect of resilience training on the stress of mothers of students with DS.

Methods: This study is a non-randomized clinical trial conducted on 36 mothers of students with DS studying at Shahid Rajaieh School, Tehran. They were selected by a convenience sampling method and divided into the control and intervention groups. Resilience skill training intervention was performed in ten sessions for the intervention group. The instruments used in the present study included a demographic questionnaire and a parenting stress index. Data were analyzed using SPSS software, version 18.

Results: Before training resilience skills, no significant difference was observed between the mean stress scores in mothers of the intervention and control groups. After the training program, there was a significant difference between the mean stress scores of the two groups.

Discussion: Training resilience skills can reduce stress in mothers of children with DS.

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Highlights

- Strengthening resilience skills can reduce the stress on mothers of children with Down syndrome (DS).
- After the training program, there was a significant difference between the mean stress scores of the two groups.
- Plain language summary: Strengthening the resilience skills of mothers of children with DS can reduce the stress of these mothers, increase their quality of life, and ultimately increase the quality of life of other family members

Plain Language Summary

Down's syndrome (DS), also known as trisomy 21, is a genetic disorder. It is usually associated with developmental delays, mild to moderate intellectual disability, and characteristic physical features. There is no cure for this disease. Education and proper care have been shown to provide good quality of life. Families who care for a child with DS at home face a variety of psychological, social, and economic problems. Parents of these children experience more stress compared to normal children's parents. Parenting stress has deleterious effects on parents, children, and overall family functioning. Parents of children with intellectual disability, including DS, showed higher levels of parenting stress than parents of normal children. In this study, we aim to investigate the effect of resilience skills on reducing the stress of the mothers of these children. Resilience is the process and outcome of successfully adapting to difficult or challenging life experiences, and adjustment to external and internal demands. Strengthening the resilience skills of mothers of children with DS can reduce the stress of these mothers, increase their quality of life and ultimately increase the quality of life of other family members. Combining social support with resilience training may be more effective in mitigating carer-stress among parents of children with DS.

Introduction

Down syndrome (DS) is considered the most common genetic disorder with unknown causes [1]. Research suggests that the prevalence of this syndrome is one in 800 to 1000 live births. In Iran, there are about 1.2 million people with DS [2]. In general, many children with DS have physical, developmental, cognitive, mental, and psychological problems [3]. Undoubtedly, the family and people around these children will be affected by these problems in different ways. The mental disability of the child, as a member of the family, prevents the family system from performing its functions and duties properly, and as a result, the family function is impaired [4]. Families who care for a child with DS at home face many psychological, social, and economic problems [5]. Children's parents with DS experience more stress compared to normal children's parents. Having an ill child in the family causes physical and psychological stress to family members, especially the mother as these children spend more time with their mothers than their fathers [6].

Stress is the biggest threat to health, and the strategy to cope with it is one of the structures in the quality of life [7]. Resilience builds an individual's capacity to cope with stressors [8]. Families of children with DS can

tolerate the challenges associated with child growth and development through resilience skills [9]. Resilience is one of the issues investigated by positive psychology [10]. Resilience is a phenomenon that arises from human adaptive responses. It is a kind of developable state in the person, through which he or she can face failures, disasters, and family and relationship problems. It can be viewed as a measure of stress-coping ability in response to adversity, improve social performance, and overcome problems [11].

Moreover, creating resilience through psychological acceptance reduces work stress and increases the mental health of those who interact with people with mental disabilities [12]. Therefore, as mothers are more engaged in their children's illnesses among family members and are more responsible for taking care of children, they experience higher adverse events. Also, mothers are considered the heart of life in the family. Hence, resilience can be introduced as a relatively new perspective that can open a new horizon in the area of promoting the health of people with mental disabilities and their families. Thus, given what was mentioned and because there is no study on the effect of resilience on the stress of mothers of students with this syndrome, this study aimed to evaluate the influence of resilience skills training on the stress of these mothers.

Materials and Methods

Study design

This study is a non-randomized clinical trial. The statistical study population of the study consisted of all students' mothers with DS at Shahid Rajaieh School in Tehran.

Sample size

The sample size was determined to be at least 18 people in each group considering similar studies, the formula of determining the sample size ($n=(Z1-Z1-\beta)22\times SD2/d2$), the type 1 error ($\alpha=0.05$), the probability of dropout, and test power of 80% [12]. Then, 46 people were selected based on the purpose, and assigned to two groups (23 in the intervention group and 23 in the control group) by convenience random sampling.

Sampling method

After obtaining permission and a letter of introduction from the Ethics Committee [University of Social Welfare and Rehabilitation Sciences](#), mothers aged 8-14 years and mothers who had information, addresses, and contact numbers based on the inclusion criteria were selected by the researchers in this school.

After introducing himself to the participants, he provided explanations about the research and its objectives. Then, written consent was obtained from mothers who were willing to participate in the study. After collecting data and matching two groups, the intervention and control groups were randomly assigned to the two groups based on the classification of participants (demographic and intervening variables).

Intervention

The training was provided only to the intervention group. Then, all training was given to the control group and the school. Participants were first asked to complete a parenting stress index (PSI). Then, resilience skills training [13] was provided to the mother in ten sessions of 45 minutes, 2-3 times per week, by a researcher who participated in relevant courses and workshops under supervision. One month after the final session [14], the participants completed the questionnaires again, and the results were evaluated. In addition, to obtain the final approval of the educational content, an educational package was sent to some professors of [University of Social](#)

[Welfare and Rehabilitation Sciences](#), and their opinions were used to complete and improve it.

Participants' inclusion and exclusion criteria

Inclusion criteria included willingness to participate in research, living in Tehran, having a primary school student with DS, child and mother living together, no physical and mental illness (based on medical records, self-disclosure of mother, the physician, and the treatment team), lack of serious emotional problems and severe family crises (divorce, death of first-degree relatives, etc.) and not participating in similar training courses. Exclusion criteria also included incomplete questionnaires and not participating in training sessions.

Assessment tool

A demographic information questionnaire and PSI were used for data collection. PSI consists of 120 five option questions designed by Abidin in 1983 [15], which was translated and validated in Iran in 2009 by Kaveh [16]. It assesses a child's behavioral characteristics, parents' personality traits, and family environment stressors. The total score was obtained by summing up the scores of the subscales. A score of more than 75 percentile reflects a higher level of stress [17].

Data analysis

The collected data was analyzed by SPSS software, version 18. The two groups (treatment and control) were compared before the treatment in terms of baseline characteristics (maternal age, maternal education, number of children, and income) using a chi-square test. The independent samples t-test was used to compare the mean stress scores before and after the intervention, and multivariate analysis of covariance (ANCOVA) was used to investigate the effect of the intervention on the stress scores.

Results

The two groups were homogeneous in terms of demographic characteristics. [Table 1](#) presents the demographic variables and compares them in the two groups. Before the intervention, the mean stress scores in the intervention and control groups were not significantly different ($P=0.89$). After the intervention, the mean stress scores in the intervention group decreased and remained almost unchanged in the control group. The independent t-test showed that the mean scores of the two groups were significantly different ($P=0.001$) ([Table 2](#)). In addition,

Table 1. Demographic characteristics of mothers of students with DS

Variables	Chi-square Value	df	P
Maternal age	0.644	3	0.886
Maternal education	1.210	3	0.751
Number of children	0.470	2	0.791
Age of children	0.144	2	0.931
Income	0.188	3	0.979

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Table 2. Comparison of mean stress scores in the intervention and control groups before and after the intervention

Variable	Stage	Mean±SD		T-test	
		Intervention	Control	t	P
Stress	Pre-test	375.67±3.25	375.50±3.94	0.138	0.89
	Post-test	360.94±4.82	377.06±3.78	-11.15	0.001

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the ANCOVA results showed a significant difference between the experimental and control groups in the mean stress scores in the post-test ($F=192.908$; $P<0.001$), and the effect of training was approximately 88% (Table 3).

Discussion

The present study aimed to investigate the effect of resilience training on the stress of mothers of students with DS at Shahid Rajaieh School. Mothers experienced above-normal stress levels. Lee et al. reported that the younger age of individuals with DS was associated with increased unique needs of the children and stress levels

in parents and caregivers [18]. However, O'Sullivan found that the parents of DS children perceived a higher-than-average stress level, which could be exacerbated by the child's young age [19]. The findings of another study highlighted the higher psychological stress in families caring for a disabled child, which can affect their ability to meet their child's needs. Thus, families need to maintain their resilience when facing considerable stress in their lives [20]. In addition to affecting their parenting roles, excessive parental stress can exert negative impacts on various aspects of parents' lives and prevent them from meeting their needs in life [21]. Despite spending much time, energy, and money and paying

Table 3. Results of multivariate analysis of covariance of the effect of independent variable on stress scores

Source of Changes	Sum of Squares	df	Mean Squared Error	F	P	Effect Size
Corrected model	2602.287	3	867.429	74.675	<0.001	0.874
Intercept	24.836	1	24.836	2.138	0.153	0.063
Stress	129.824	1	129.824	11.176	<0.002	0.259
Group	2240.821	1	2240.821	192.908	<0.001	0.877
Error	371.713	32	11.616			
Total	4904770	36				
Total corrected	2974	35				

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great attention to their disabled children, the families of such children suffer from feeling inadequacy in meeting their child's needs and are subject to more stress compared to other families [22]. Nevertheless, these families require more support, and by providing sufficient support, healthcare providers, including nurses, can help them better manage their children [23]. Among the interventions that could enhance the welfare of these individuals was promoting resilience. The results of the present study revealed that participation in resilience skills training sessions could help reduce stress in mothers of DS children. Consistent with this finding, Onyedibe et al. also suggested that highly resilient parents perceived less parenting stress and parental stress, and resilience-based treatment appears to be effective in managing the stress of the upbringing of such children [24]. Pastor-Cerezuela et al. also indicated an association between high resilience and mild stress in these families [25]. Families having DS children could live full, productive lives. They could successfully cope with their child's diagnosis by early recognition of the problems that they are facing and providing interventions to enhance their resilience [26]. In a study on mothers of children with intellectual disabilities, Hosseini-Ghomi et al. concluded that training resilience skills in these mothers could mitigate their stress levels and improve their mental health [27]. Kaboudi et al. also showed that mothers who were trained in resilience skills could increase their style of coping and reduce parental stress significantly [28]. The results of the studies done by Rostami et al. [29] and Kaveh et al. [30] also comply with the present research.

In developing countries, due to a shortage of social services, the parents undertake the entire responsibility of raising a disabled child, which is highly stressful for them and adversely impacts their quality of life [30]. These parents need to strengthen their resilience to minimize the difficulties of raising a disabled child [32]. Resilience is associated with parental acceptance, cognitive adaptation, positive affect, and self-efficacy and can mark a starting point for their understanding and learning [33].

It is recommended that the results of this program be used in training other caregivers of these children as well as mentally retarded children and their teachers and in-service training for nursing staff and nursing students. The present study faced some limitations, including convenience sampling and no follow-up after the study due to the unavailability of mothers during school holidays. Thus, we suggest that future studies should be conducted on larger samples, preferably selected by random sampling and involving other age groups, such as young children and adolescents.

Conclusion

Strengthening the resilience skills of mothers with DS children reduces their stress, increases their quality of life, and ultimately increases the quality of life of other family members. Also, increasing resilience skills can empower parents in educating their children ultimately reduce the damage caused by mental disability and help parents accept the existing status. Thus, introducing resilience as a relatively new perspective can open a new horizon in promoting the health of people with mental disabilities and their families.

Ethical Considerations

Compliance with ethical guidelines

All the ethical considerations based on the international ethical protocols were considered by the authors and the work was approved by the Ethics Committee of the [University of Social Welfare and Rehabilitation Sciences](#) (Code: IR.USWR.REC.1394-279).

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Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

The authors declared no conflict of interests.

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