The Effect of Resilience Education by the Teach-back Method on the Stress of Mothers of Educable Mentally Retarded Children: A Field Trial Study

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Abstract

Background: The presence of a mentally retarded child is a stressful experience for the family, especially mothers. The present study aimed to determine the effect of resilience education by the teach-back method on the stress of mothers of educable mentally retarded children.

Materials and Methods: In this field trial study, 70 mothers of educable mentally retarded children were selected as the sample using convenience sampling method and then assigned to the intervention (n=35) and control groups (n=35) based on block random allocation. Each mother in the intervention group participated in 8 sessions of resilience education by the teach-back method (each session lasted 30-45 minutes) in a period of 30 days. The Parenting Stress Index of Abidin and Connor-Davidson Resilience Scale were filled out by mothers of the intervention (teach-back) and control groups in pretest and posttest. The obtained data were analyzed using SPSS version 16.0 software.

Results: The mean score of maternal stress before the intervention was 127.94 ± 22.35 in the intervention group, and 129.31 ± 21.82 in the control group. These values after the intervention were 88.6 ± 17.98 and 135.23 ± 23.08 in the intervention and control groups, respectively. In addition, the mean score of resilience before the intervention was 29.17 ± 11.95 in the intervention group, and 25.89 ± 10.3 in the control group. These values after the intervention were obtained 58.94 ± 9.43 and 22.2 ± 8.17 in the intervention and control groups, respectively. There was a significant difference between the intervention and control groups in the mean score of stress and resilience one month after the completion of intervention ($p<0.05$). Additionally, mothers in the intervention group, who received the teach-back method, had significantly less stress and more resiliency ($p<0.05$).

Conclusion: The study showed that resilience education through teach-back had a significant effect on reducing stress and increasing resiliency of mothers of educable mentally retarded children.

Key Words: Mental Retardation, Mother, Resilience, Stress, Teach-back.

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1- INTRODUCTION

Despite all the advances in today's world, mental retardation is a lifelong condition and one of the most complex problems in children, which begins with significant constraints on both intellectual function and adaptive behavior (1). The statistics show that about 1-3% of the world's population is mentally retarded (2), and the prevalence of mental retardation was 4.2% in people referred to the Genetic Counseling Center of Southern Iran (3). The presence of a mentally retarded child is a stressful experience for the family, especially parents (4), and negatively affects their mental health (5). Parents, especially mothers, of these children are susceptible to psychological disorders such as anxiety, depression, and stress (6), and other devastating social, financial, and emotional problems (7). Stress in mothers who have a mentally retarded child is associated with parental violence, defective treatment of the child, and lack of participation in the mother-child relationship. As a result, maternal stress increases the odds of adaptive and behavioral problems in children and prevents the actualization of potentials in mentally retarded children (8).

One of the strategies to improve mental health in individuals is the resilience education. Resilience causes adaptation and positive reaction in difficult and stressful situations (9), increased positive emotions, self-confidence, self-management, and reduced negative emotions, stress, and depression (10). Studies have also shown that resilience, through the development of a psychological admission, reduces occupational stress and increases mental health of employees and teachers who are interacting with mentally retarded individuals (11). Client education is one of the most effective roles of nurses which can lower the health care costs (12). In addition, relying on the unique power and acknowledging the skill of families in taking care of their own child, nurses can support the clients in the process of care and decision-making (13). The teach-back is a communication repeated method in which the instructor asks the client to express the information they have learned in their own words (14). Healthcare organizations have approved this method as an effective way to ensure the understanding and maintenance of health information (15). In other words, the teach-back is a comprehensive, interdisciplinary, and evidence-based method which measures the learner's understanding by asking questions (16). In fact, it is an interactive educational strategy and a well-proven way to ensure patient understanding, aiming at providing effective learning to suit the level of patient literacy. The learner may be a patient, one of their family members or another supporter (17). This educational method is a safe, patient-oriented technique which improves health care (18). It is also an easy and inexpensive way of education (19).

Although some studies have investigated the effect of interventions on the reduction of stress in parents with mentally retarded children, there is still an evident research gap in this regard. Moreover, the majority of studies on the resilience of such families have been of descriptive type and few interventional studies have been conducted on this subject. Since mothers are more likely to be involved with the problems of children in a family and they are more responsible for the care and maintenance of their children and also given the novelty of resilience in the field of health promotion and the teach-back method in the area of client education, the present study aimed to determine the effect of resilience education by the teach-back method on the stress of mothers of educable mentally retarded children.

2- MATERIALS AND METHODS

2-1. Study design and population

The research was a field trial study which was carried out in exceptional schools of Yasuj, Kohgiluyeh and Boyer-Ahmad province, Iran, in 2016.

2-2. Methods

At first, 250 mothers whose educable mentally retarded children (6-11 years old) were studying in exceptional schools, filled out the relevant questionnaires. Finally, after scoring the questionnaires, 70 mother that had a parental stress score of > 90 and a resilience score of < 50 at the same time were selected as the sample using the non-probability and convenience sampling methods. Then, the participants were assigned to the intervention and control groups based on block randomization.

According to the previous study of Hatefi Moadab et al. (20) and considering a type-1 error, test power, and attrition rate of 5%, 80%, and 15%, respectively, 35 mothers were assigned to each of the intervention and control groups. The required data in the intervention group were collected in two stages: before the intervention and one month after the end of the intervention. Participants of the control group received no intervention. The teach-back method intervention was developed for at least 8 sessions, and then the faculty members of the research team were asked to approve the content and materials of the intervention.

The content of sessions included familiarity with the concept of resilience, characteristics of resilient individuals, internal and external supportive factors, and familiarity with different ways of creating resilience. The teach-back method consists of 5 stages including pretest, targeting, education process, evaluation, and decision-making about the repetition of above stages based on the learner's learning level and the educational objectives. The pretest was implemented with regard to the objectives set for each session. For example, one of the goals set for the first session of education was that the client defines stress and expresses its symptoms. In line with the objectives set for the second stage, if in the pretest the client was asked "How do you notice the stress symptoms in your body?" and the client did not refer to symptoms of stress in their statements, the second stage of the teach-back was implemented. In the targeting stage, some behavioral objectives in cognitive and psychomotor domains were set for each client in each session. For instance, the client was expected to recognize at least three of the most important symptoms of stress. In the third stage, the education process was executed with regard the following points: clear and understandable conveyance of concepts and content, emphasis on the key points and repeating them at the end, and the use of short sentences. In the evaluation of the teach-back method after the education, feedback was received from the client using the same redesigned questions.

If the client's answers reflected a failure in achieving the objective set for them, the second stage of the teach-back was executed. The next stage was decision-making about the repetition of above stages based on the learner's learning level and the educational objectives. In this stage, some steps of the education process were repeated with regard to what the client had not expressed or presented. The whole process was repeated in each session. This process was flexible about the educational needs of mothers and presented to participants in a face-to-face manner and with the help of educational tools such as flip chart, photo novels, and whiteboard for 30-60 minutes (21, 22) (**Table.1**).

Table-1: Resilience education sessions by the teach-back method on the stress of mothers of educable mentally retarded children

Session	Topics	Duration (minute)	Teacher
First	Providing guidelines for participating members and explaining the study method; 1. Introduction of the researcher, 2- Introduction of participants.	30-45	The researcher
Second	Definition of stress, resiliency; Introducing the characteristics of resilient people: 1. Happiness, 2. Wisdom and insight, 3. Humor, 4. Empathy, 5. Rational adequacy, 6. Purposefulness in life, 7. Grittiness.	45-60	The researcher
Third	Understanding internal support factors: The concept of optimism, Self-esteem, Source of Control.	30-45	The researcher
Fourth	Understanding external support factors: Social support system, Individual responsibility and acceptance of meaningful roles.	30-45	The researcher
Fifth	Understanding the ways of resilience creation: Establishing and maintaining communications, Framing stress, Accepting change.	45-60	The researcher
Sixth	Understanding the ways of resilience creation: Purposefulness and hope for the future, Acting.	30-45	The researcher
Seventh	Understanding the ways of resilience creation: Self-awareness, Building self-confidence.	30-45	The researcher
Eighth	Understanding the ways of resilience creation: Self-care.	30-45	The researcher

2-3. Criteria

The inclusion criteria were mother's full consciousness, mother's ability to communicate and answer questions, non-affliction of the child with several disabilities, non-affliction of the family members to mental or physical illnesses, willingness to participate in the study, non-use of psychiatric drugs over the past 4 months, a parenting stress score of greater than 90 (23), and a resilience score of smaller than 50 (24). In addition, the exclusion criteria included encounter of the mother or the family with a new crisis during the study, absence in two sessions of education, and death or migration of the participant.

2-4. Measurement tools: validity and reliability

The required data were collected through a demographics questionnaire, Connor-Davidson Resilience Scale, and Parenting Stress Index (Short form) of Abidin. The demographics questionnaire consisted of two parts of maternal demographic characteristics (educational status, age, job, and place of residence), and the disease information (mother's history of mental illness, history of admission to the psychiatric ward, and history of taking psychotropic drugs or consuming alcohol by the mother). Connor-Davidson Resilience Scale includes 25 items which are scored based on a 5-point Likert scale (from completely false to completely true). The cut-off point for this questionnaire is 50. This means that a score of over 50 represents resilient people and the scores below 50 indicate individuals with a lower

level of resilience (24, 25). Cronbach's alpha coefficient of this scale has been reported by Connor and Davidson to be 0.89 (24). In addition, in this study the reliability coefficient obtained from the test-retest was 0.75. In Iran, the validity and reliability of Connor-Davidson Resilience Scale have been confirmed by Hagh Ranjbar et al., that Cronbach's alpha coefficient of this scale has been reported by them to be 0.84 (25). Parenting Stress Index- Short form consists of 36 items with same statements of the original form. In addition to three areas of parental stress, this questionnaire measures the overall stress (23). This index includes three subscales of parental distress, parent-child dysfunctional interaction, and difficult child. In this study the reliability coefficient obtained in a 4-week interval was 0.77.

2-5. Data analysis

Data were analyzed using SPSS version 21.0 software through descriptive statistics and inferential tests with 95% confidence level (95%CI). In order to select the appropriate test for verifying the validity of the research hypotheses, normal distribution of the study hypothesis variables was investigated through the Kolmogorov-Smirnov test. In addition, to ensure the consistency of the groups at baseline, the intervention and control groups were compared before the intervention in terms of frequency distribution of qualitative variables using chi-square and Fisher test, in terms of the mean of underlying quantitative variables and dependent variables with normal distribution using independent t-test, and in terms of median and mean of the quantitative background variables rank and independent variables with normal distribution using the Mann-Whitney test. The intragroup comparison of dependent variables before and after the intervention was performed through the paired t-test in case of normal distribution or the

Wilcoxon test in case of non-normal distribution.

2-6. Ethical considerations

A written consent form was obtained from all participants, and they were assured that they will have the right to quit the study at any stage and their information will be kept confidential. At the end of the research, participants of the control group were provided with a booklet containing all educational content and materials.

3- RESULTS

In this research, aimed at determining the effect of resilience education through teach-back on the stress of mothers of educable mentally retarded children, 70 mothers with simultaneous parental stress score of > 90 and resilience score of < 50, and with other inclusion criteria were participated in the study. The age range of the educable mentally retarded children was 6-11 years and the mean age of their mothers was 32.2±4 years.

The mothers consisted of 67 (95.7%) housewives and 3 (4.3%) employees. In terms of education, 25 (35.7%) had a primary and secondary education, 26 (37.1%) high school, and 19 (27.2%) diploma and bachelor. The scores of Connor-Davidson Resilience Scale and Parental Stress Scale were 40.6±20.5 and 111.9±31.2, respectively, at baseline. The participants were assigned to the intervention (teach-back) and control groups using a random block assignment with an equal number of 35 people in each group. The appropriate statistical test in this study was selected using the Kolmogorov-Smirnov test, according to the results of which, the groups were compared in terms of quantitative variables with normal distribution (p>0.05) and without normal distribution (p<0.05) with the independent t-test and the non-parametric Mann-Whitney test, respectively. In this study, independent t-

test, Chi-square, and Fisher's exact test were used in order to ensure the consistency of intervention (teach-back) and control groups at baseline to compare the demographic characteristics of age, education, and job. As shown in **Table.2**, the results of these tests confirmed the consistency of the participants in terms of age, education, and job ($p>0.05$). Resilience education through teach-back was the independent variable of this study, and as shown in **Figure.1**, the level of resilience of the participants in both groups (teach-back and control) was almost the same at baseline. Accordingly, since the results of the Mann-Whitney test did not confirm a significant difference in the level of resilience between the two groups at baseline ($p>0.05$) (mean ranks of the intervention group and the controls were 38.17 and 32.89, respectively; $p=0.28$), therefore, one can acknowledge that the participants were consistent in terms of the resilience level at baseline.

Despite the similar levels of resilience in the participants of both intervention and control groups at baseline, **Figure.1** shows that one month after the completion of resilience education through teach-back, the level of resilience increased with a steep slope in the intervention group, while it had a downward trend in the control group which received no intervention. Independent t-test also showed that one month after the completion of intervention, the level of resilience in the intervention group (58.9 ± 9.4) was significantly more than the control group (22.2 ± 8.2) ($p<0.001$); this confirms the validity of resilience education through teach-back as an independent variable in the present study. The level of stress was the dependent variable in this research which was almost the same in the participants of both groups of intervention (teach-back) and control (**Figure.2**). Accordingly, since the results of the Mann-Whitney test did

not confirm a significant difference in the level of stress between the two groups at baseline ($p>0.05$) (mean ranks of the intervention group and the controls were 34.84 and 36.16, respectively; $p=0.79$), therefore, one can acknowledge that the participants were consistent in terms of the stress level at baseline. Despite the similar levels of stress in the participants of both intervention and control groups at baseline, **Figure.2** shows that one month after the completion of resilience education through teach-back, the level of stress decreased with a steep slope in the intervention group, while it had an upward trend in the control group which received no intervention. Independent t-test also showed that one month after the completion of intervention, the level of stress in the intervention group (88.6 ± 18) was significantly more than the control group (135.2 ± 23.1) ($p<0.001$).

According to the above-mentioned items, and based on normal distribution of the dependent variable stress in both groups at both assessments times, and given their $p>0.05$ in the Kolmogorov-Smirnov test ($p<0.05$), the intragroup comparison of stress level in both groups was performed using paired t-test to determine the effect of resilience education on the stress level of mothers of educable mentally retarded children, the results of which are presented in **Table.3**. According to the results of Table.3, the stress of mothers of educable mentally retarded children in the intervention group (teach-back) was significantly reduced (39.3 ± 7.7) in the post-test (one month after the completion of the research intervention) compared to the pretest (at baseline) ($p<0.05$); whereas the stress of mothers of educable mentally retarded children in the control group was significantly increased (5.9 ± 6.9) in the post-test (one month after the completion of the research intervention) compared to the pretest (at baseline) ($p<0.05$).

Table-2: The comparison of demographic characteristic of mothers of educable mentally retarded children at the beginning of study

Variables		Group		P-value
		Intervention (Teach back)	Control (No Intervention)	
Age, year (Mean ± SD)		32.4±3.8	34.1±4	0.07*
Education Status Number (Percent)	Primary and secondary education	12 (34.3)	13 (37.1)	0.96**
	High School	13 (37.1)	13 (37.1)	
	Diploma and bachelor	10 (28.6)	9 (25.8)	
Status of maternal job Number (Percent)	Housewife	34 (97.1)	33 (94.3)	0.6***
	Employer	1 (2.9)	2 (5.7)	

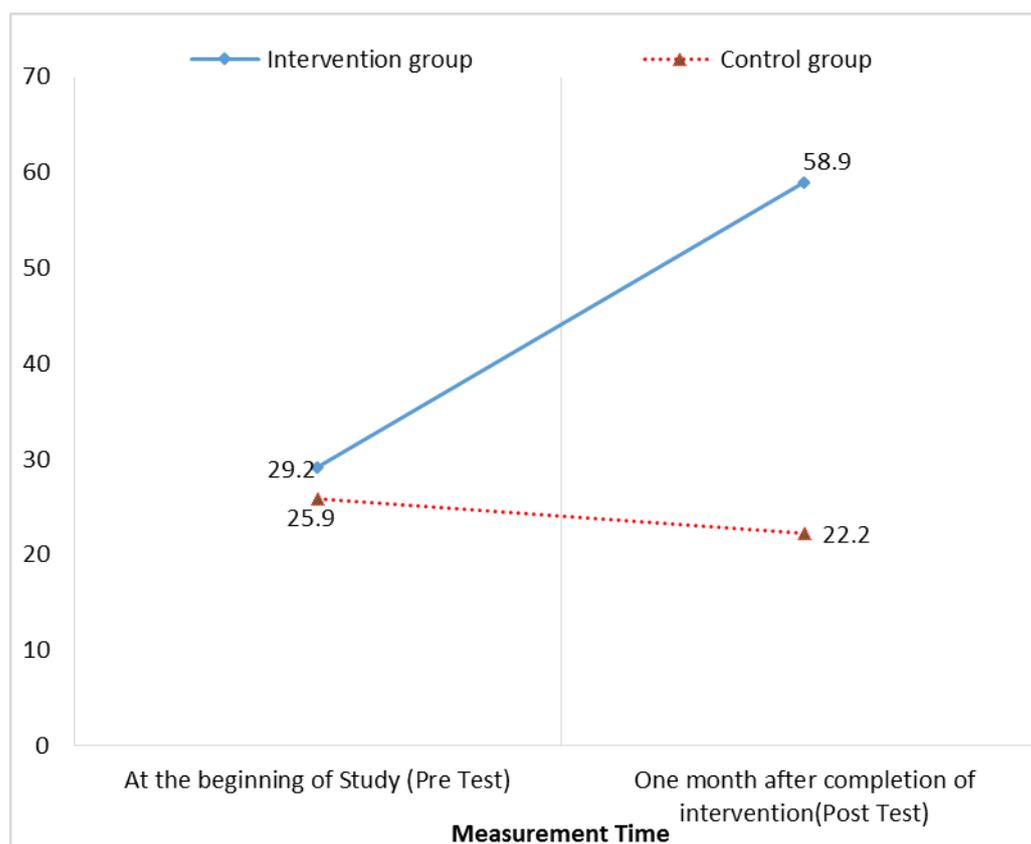SD: Standard deviation; *T-Test; ** Chi-Square Test;*** Fisher's Exact Test.

Fig.1: The change of mean score of resilience in intervention and control group between pre-test and post-test.
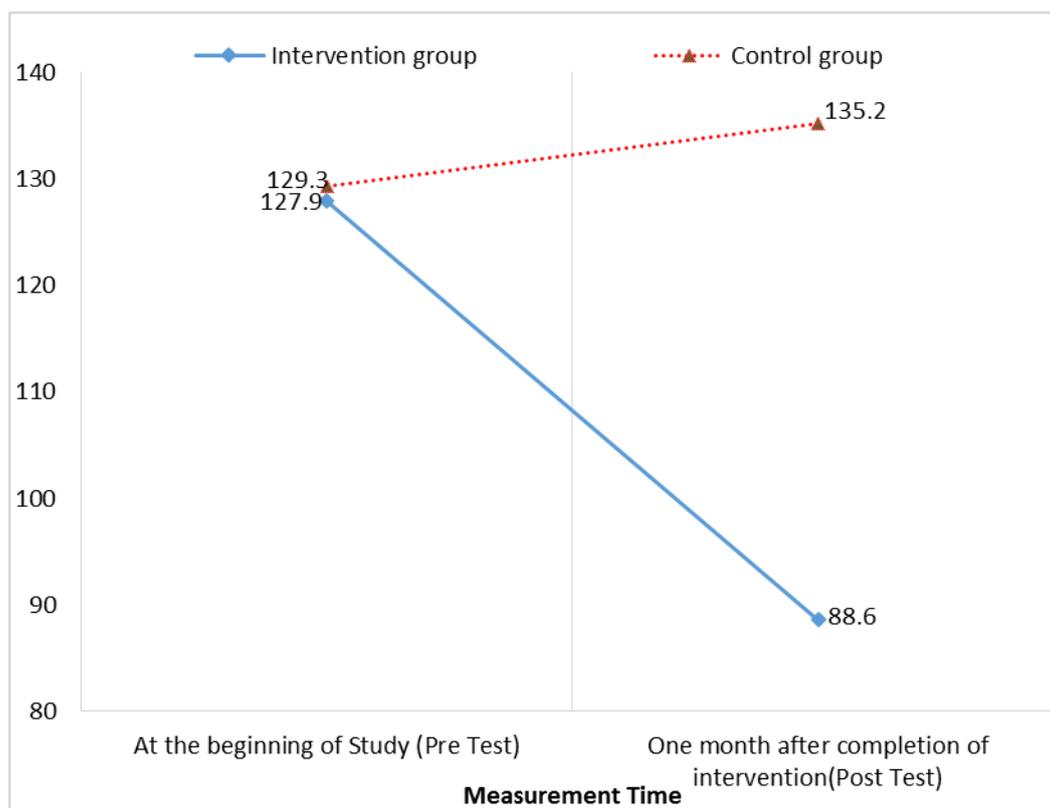
Fig.2: The change of mean score of stress in intervention and control group between pre-test and post-test.

Table-3: Within group comparison of stress score of mothers of educable mentally retarded children in intervention and control groups

Statistic indices of Variable			Study groups	
			Intervention (Teach back)	Control (No Intervention)
Mean ± SD of Pre Parental Stress Score (At the beginning of Study)			127.9±22.4	129.3±21.8
Mean ± SD of Post Parental Stress Score (one month after completion of intervention)			88.6±18	135.2±23.1
Paired Differences	Mean± SD		-39.3± 7.7	5.9± 6.9
	95% Confidence Interval of the Difference	Lower	-42	3.5
		Upper	-36.7	8.3
P-value*			0.0001	0.0001

*Paired T-Test; SD: Standard deviation.

4- DISCUSSION

The results showed that the teach-back method has managed to increase the resilience and reduce the stress of mothers of educable mentally retarded children. The level of maternal stress in the posttest in the intervention group was significantly lower than the control group. Therefore, it can be concluded that the teach-back method has reduced the maternal stress in the intervention group. According to Abedin and Molaei, group therapy can reduce stress in mothers of mild mentally retarded children (8). Tavakolizadeh et al. concluded that rational-emotional education can affect the mental health of mothers of mentally retarded children and recommended it as a strategy to reduce stress (7). Valizadeh showed that training the coping skills can be an effective way to reduce stress in mothers of mentally retarded children (26).

Consistent with the results of this study, Hatefi Moadab et al. showed that the teach-back method is a non-pharmacological and effective intervention for reducing the anxiety of women under cesarean section (20). The findings of Mahmoudirad et al. showed that the teach-back method significantly increased the mean score of leg care in patients with type 2 diabetes (27). The results of Ahmadidarrehsima et al. also indicated that self-management education by the teach-back method increases happiness in patients with breast cancer (28). However, Mahramus et al. reported that majority of nurses have the competence to use the teach-back in client education (29).

Maternal resilience in the intervention group showed an increase one month after the intervention, while it decreased in the control group. This is consistent with the findings of Hosseini Qomi and Salimi Bejestani who reported the positive effect of resilience education on reduced stress of mothers of children with cancer (22). White et al. also concluded that resilience,

as a positive psychological movement, determines one's tolerance and resistance in the face of depression and anxiety (30). Carlton et al. and Hiemdal et al. stated that educational interventions that aim to foster resilience and increase positive adaptation to adverse conditions can effectively reduce the odds of relapse or deterioration of psychosocial problems (31, 32). Prince-Embury studied the effect of education on resilience skills in various situations and concluded that increased resilience is effective in the mental health promotion (33). According to Arce et al., resilient people mostly return to the normal status by creating positive emotions after a strenuous confrontation.

Without any decline in their mental health and affliction with diseases, resilient people deal with stressful situations. In addition, it seems that they sometimes make progress and succeed despite their harsh experiences (34). However, the results of Skehill showed that participation in educational programs has no effect on the increased resilience and well-being or reduced psychological discomforts in adolescents (35). This is inconsistence with the findings of the present study which can be attributed to different samples of these studies (mothers and adolescents).

4-1. Limitations of the study

The possibility of contact and information exchange among the participants in intervention and control groups was a problem that the researchers might encounter. In order to reduce the exchange of information among mothers, the two groups were contacted individually in separate days. Media was also considered as another source of communication among the participants.

5- CONCLUSION

The present study showed that resilience education through teach-back can reduce

stress and increase resilience in mothers of mentally retarded children. In justifying this, it can be said that resilience education makes people to cope with stressful events with optimism, self-expression, and self-esteem. Optimistic attitudes make information processing more effective; individuals learn strategies and skills to deal with unpleasant events of life, and look at the problems as an opportunity to learn and growth. On the other hand, teach-back is a novel, low cost, simple, and uncomplicated educational method which can be used to educate the clients.

6- AUTHORS CONTRIBUTIONS

- MM, ZK, NE and MZ participated in the study design.
- NE participated in data acquisition.
- NE drafted the manuscript modified by MM, ZK and MZ. All authors read and approved the final manuscript.

7- CONFLICT OF INTEREST

The authors declare that they have no competing interests.

8- ACKNOWLEDGEMENTS

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