

## The effectiveness of an intervention package with an integrative approach for adolescent girls with non-suicidal self-injury: a mixed-method study

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### Abstract

**Aim:** Non-suicidal self-injury (NSSI) is described as a silent crisis in schools, and in this field there is insufficient knowledge and less effective interventions. The aim of the present study was to develop and validate an intervention approach for adolescent girls with NSSI.

**Method:** The research method was a combination and sequential exploratory strategy. In the first stage, a qualitative study was conducted using the phenomenological method, and then the protocol was developed and validated. The statistical population of the research included all the girls of Erbil schools in the first and second year of high school who had NSSI. The face and content validity of the integrative intervention package was examined and confirmed by five professors and specialists in the fields of counseling and psychology. In order to validate the integrative intervention approach, 16 subjects were selected by chain sampling and randomly assigned to two experimental and control groups. They responded to the questionnaire of self-injurious behaviors and functions, the scale of difficulty in regulating emotions, the questionnaire of automatic thoughts and the parent-child relationship scale of the mother form.

**Result:** Multivariate covariance analysis showed that the integrative intervention approach is effective in reducing the difficulty of emotion regulation, improving the mother-daughter relationship, reducing negative self-thoughts, and reducing NSSI in adolescent girls. It can be concluded that the integrative intervention approach is effective in the treatment of adolescent girls with NSSI.

**Keywords:** Non-suicidal self-injury, Girl, Adolescent, Combined Method.

## Introduction

NSSI is one of the common problems of adolescence and appears mostly during the developmental period (Miller and Brock, 2010). Also, NSSI was previously considered a borderline personality disorder. However, in recent years, many models have been presented in this regard, which has reduced the power of this diagnostic stereotype to the extent that in the new version of the classification of mental illnesses, NSSI as a disorder in the field of disorders for More research is suggested under the title of " Non-suicidal self- injury " (American Psychiatric Association, 2018; Muehlenkamp, 2005).

NSSI is defined by Walsh (2012) as: "intentional, self-inflicted bodily harm that has a low lethality rate, is socially unacceptable, and is used to reduce psychological distress and stress". NSSI occurs in the form of severe scratching of the skin, picking wounds, sticking objects in the body, or hitting the head. Meanwhile, the most common form of NSSI is cutting the skin. So that most people involved usually cut their arm, although they are not necessarily limited to this area (Miller & Brock, 2010).

Based on research evidence, NSSI varies with age and gender (Alfonso & Coro, 2012; Bureau, Martin, Freynet, Poirier, & Lafontaine, 2010). According to Alfonso and Coro (2012), NSSI is a growing adolescent behavioral problem at an average age of 11 to 15 years (White, 2016). Regardless of gender and age in the prevalence of NSSI, the results of Bura et al.'s (2010) research showed that the rate is in the range of 38 to 67 percent. In Iran, the study of the prevalence of NSSI among adolescent girls shows that 17.9% of this group have committed self-harm at least once and 11.1% more than once (Peyvastegar, 2012).

In addition, researchers believe that NSSI has consequences. In this context, Esfandiar (2017) showed in his research that NSSI causes failure to learn the proper way to deal with stress, feelings of guilt, and ultimately causes the initial psychological pain of the person to intensify. Also, they are five times more likely to report suicide (Jiletta et al., 2015). The result of the research by Ammerman, Princetin, Abola, Gibb, Barakas and Hankin (2018) also showed that if NSSI starts before the age of 12, it will be associated with more severe NSSI, and these people will self-harm using more diverse methods and frequently. More will go to the hospital and the probability of having suicidal thoughts will be higher.

One of the common models regarding the etiology of NSSI is the biological-psychological-social model. In this model, NSSI is the product of a complex interaction between environmental, biological, cognitive, emotional and behavioral factors. Based on this model, in the majority of individuals, all five factors play an important role in the emergence and occurrence of NSSI, although the exact contribution of each factor is unique to each individual (Miller & Brooke, 2010). In addition, two psychological interventions that have a lot of empirical support for their effectiveness and both fall into the cognitive-behavioral category include problem-solving intervention and dialectical behavior therapy. Among the two, dialectical behavior therapy has gained more empirical support. In fact, dialectical behavior therapy is the first empirically valid treatment for

chronic suicidal patients with borderline personality disorder. Qamarikivi, Sanobar and Ahadi (2013) also showed the effectiveness of dialectical behavior therapy on the NSSI of adults with borderline personality disorder. Although the effectiveness of dialectical behavior therapy on NSSI has been researched in the above-mentioned studies, however, their research sample was adults with borderline personality disorder; This is despite the fact that the majority of adolescents who suffer NSSI do not have borderline personality disorder. On the other hand, the reduction of negative emotions is a common and basic component in all cases of NSSI (Alfonzo and Coro, 2012; Bura et al., 2010; Khanipour, Barjali and Falsafinejad, 2015; White, 2016) and the role of emotional-cognitive antecedents, incompatible relationships, unpleasant family feelings and inappropriate consequences have been confirmed in the occurrence of this behavior (Mohebbi, Qamarikivi, Falsafinejad and Khodabakhshi Koolae, 2020). In order to reduce NSSI, it is necessary to consider interventions to reduce the difficulty of emotional regulation, improve the mother-daughter relationship, and reduce negative automatic thoughts (Mohebbi, Falsafinejad, Qamarikivi, and Khodabakhshi Koolae, 2022).

Emotion regulation is a multidimensional structure including: a) awareness, understanding and acceptance of emotions, b) the ability to use goal-oriented behaviors and prevent impulsive behaviors when experiencing negative emotions, c) flexible use of situationally appropriate strategies to adjust the intensity and/or length of the emotional response instead of eliminating emotion altogether, and d) the tendency to experience negative emotions as a meaningful part of life (Gratz and Gunderson, 2006). In this context, Kress et al. (2013) used guided imagery as a behavioral therapy technique that includes the use of positive thoughts and imagery to regulate negative emotional experiences and succeeded in preventing and managing NSSI impulses. In addition, Hassanvand, Dabaghi and Rabiei (2015) found that there is a relationship between negative emotions and NSSI. This means that the use of negative emotion regulation strategies plays a mediating role between NSSI and negative emotions. On the other hand, based on research evidence; In addition to the problem of emotion regulation, people with NSSI also has problems with parent-child relationships and selfish thoughts (Peyvastegar, 2012; Mohebbi, Qamarikivi, Falsafinejad, and Khodabakhshi Koolae, 2020; Neishabouri, Dolatshahi, and Mohammadkhani, 2020; White, 2016). So that in a research on people aged 17 to 26, it was found that there is a significant difference in the two groups with NSSI and the control group regarding the dimensions of the mother-child relationship (Bora et al., 2010; Mastanabadi and Qamarikivi, 2017). Safe adolescents learn coping strategies from their parents; Therefore, improving the quality of the parent-child relationship will reduce NSSI in adolescents (Beheshti, 2018, Mohebbi, Falsafinejad, Qamarikivi, and Khodabakhshi Koolae, 2022). Various studies have shown that during the puberty of children, the conflict between parents and adolescents increases, changes occur in their relationships, and the intimacy and unity between them decreases to some extent (Spies et al., 2011). Sometimes an issue that is not very important for the children is very important in the mother's opinion, and since the child has not talked about the issue with her mother, she considers this issue as a conflict of values and deviates from her main issue. Also, sometimes the child is very worried about the issue and tries to share the concern with the mother, but if the issue in question has

little value in the mother's personal experiences, the mother may not be able to understand the importance of the issue from her child's point of view (De Wit, Greer and Jehn, 2012). Meanwhile, how parents, especially mothers, respond to children's emotions plays an important role in children's emotional self-regulation. Mothers' values about the importance of paying attention to the acceptance of emotional experiences and mothers' beliefs to moderate negative emotions and maintain positive emotions play an important role in teaching children emotional self-regulation strategies. Mothers who pay attention to and accept their child's emotion are more likely to encourage the child to express emotion (Mayer et al., 2014). This is despite the fact that the existing treatment approaches do not pay attention to the component of the mother-child relationship. According to White (2016), the patterns of mother-child interaction may be different in other races and ethnicities, and this requires more studies. In addition, there is a significant positive relationship between rumination and NSSI (Khemmati, 2018, Mohebbi, Qamrikivi, Falsafinejad, and Khodabakhshi Koolae, 2020). In more recent studies, it has also been determined that rumination is an increasing mediating factor in NSSI, and it is recommended to pay attention to this component in interventions (Neyshabouri et al., 2020). Rumination is defined as a fixed and repetitive thought that revolves around a topic. These thoughts automatically enter awareness and disrupt attention to the current topic and goals (Jacobs et al., 2014). The interpersonal factor that affects the formation and continuation of NSSI is cognitive crises and especially it is rumination (Selby et al., 2013). According to functional theory, NSSI that occur during rumination are reinforced by reducing or stopping disturbing thoughts. If rumination contains self-blame, NSSI also provides a sense of satisfaction and enhances the reinforcement process. Therefore, NSSI is an ineffective but quick and available coping strategy (Selby and Joiner, 2013). This is despite the fact that in most interventions, the issue of negative automatic thoughts has not been given special attention.

In general, according to the mentioned materials, it can be said that NSSI is one of the most common problems of adolescence and one of the concerns of therapists and school-based professionals (Miller and Brock, 2010). This is despite the fact that due to ethical and legal issues, few interventions with an emphasis on NSSI have been carried out in the non-clinical community. The published therapeutic studies were mostly on adults and not adolescents (Qamrikivi et al., 2013; Gross et al., 2012). Also, Andover, Schatten, Morris and Miller (2015) believe that NSSI is a common and dangerous behavior among young adults, but no specific treatment for NSSI without borderline personality disorder has been established. As a result, more researches are needed considering the psychological needs of adolescents, in order to obtain a complete and effective conclusion (Miller and Brock, 2010). Also, in Iran, very few researches have been conducted on the phenomenon NSSI, most of which have not been interventional or experimental (Hasanvand et al., 2015; Khedmati, 2018; Neishabouri et al., 2020). or have only focused on one factor (Kress et al., 2013; Bentley et al., 2017; Esfandiar et al., 2020). Also, they have used quantitative methods and self-assessment in data collection, or they have limited

themselves to conducting interviews (Mohebbi, Qamarikivi, Falsafinejad, and Khodabakhshi Koolae, 2020). And this is despite the fact that these methods alone do not provide complete and comprehensive information and the need for a combined research with the help of quantitative and qualitative methods is needed. Therefore, it is necessary to develop an intervention approach that is suitable for Iranian adolescents. The results of foreign studies may not be generalizable to the context of Iran due to the difference in structural, cultural, social and economic conditions (Mirzaei, Rahimnia, Mortazavi and Shirazi, 2017); Therefore, the current research, taking into consideration the existing findings on the difficulties of emotion regulation, mother-daughter relationships and negative self-thoughts that were mentioned earlier, as well as the findings obtained from the current research, was carried out to develop an integrative intervention approach for NSSI in adolescent girls. . As a result, the main question of the current research is, what is the effectiveness of the intervention package with an integrative approach for adolescent girls with NSSI?

### Methodology

In the present study, the researcher sought the goal of developing practical knowledge, which included developing an intervention approach for adolescent girls with NSSI, and to achieve this goal, a combined research method and sequential exploratory strategy were used. The sequential exploratory strategy includes the collection and analysis of qualitative data in the first stage, followed by the collection and analysis of quantitative data in the second stage, which are based on the qualitative results of the first stage. The reason for collecting qualitative data at the beginning of the research was that there was no specific treatment for NSSI suitable for Iranian adolescents and the findings of quantitative research had contradictions. Also, in order to formulate this intervention approach, it is necessary to identify the nature, conditions and consequences of NSSI from the perspective of adolescents Iranian. Therefore, the current research was conducted in three study phases. For this reason, in the first phase, a qualitative research was conducted, and in the second phase, based on the findings of the first phase, an integrative intervention approach was developed. In continuation of the sequential exploratory strategy, in the quantitative phase and the third phase of the research, the purpose of which was to explain the qualitative findings of the NSSI phenomenon and also validate the intervention approach, an integrative intervention approach was validated, the sequential exploratory strategy helps to explain a phenomenon and in At the same time, it expands the findings of the qualitative section. Also, the researcher decides which findings of the first qualitative phase to use to focus on the next quantitative phase.

The research method was the qualitative part of descriptive phenomenology. The scope of the research was the qualitative part of all female students with NSSI in the first and second year of secondary school in Ardabil city. Purposive sampling was used to select the participants of the qualitative part. The number of participants in the qualitative part of the research was 17. 17 students were selected from the students who were referred to the student counseling centers of Ardabil and some were referred by the referred students.

The exact number of participants in the qualitative part is determined by two criteria, which means that the sampling will continue by conducting a semi-structured interview and until the saturation and sufficiency of the information is reached. Sufficiency means that the number of people is large enough to reflect the range of participants and sites that make up the community, so that others outside the sample have an equal chance of joining the experience of those inside the study. Reaching information saturation is the point from which the interviewer receives repeated information and no longer obtains anything new. In the present study, after interviewing seventeen people, the above criteria were achieved. The tool of the qualitative section was a semi-structured interview and interviews were conducted with 17 participants. The participants participated in the research with knowledge and consent. All interviews were fully audio recorded. In order to analyze the interviews in the qualitative part of the research, Collaizi's seven-stage content analysis method was used, because the use of Collaizi's strategy in descriptive phenomenology is obviously successful.

The second phase of the research was to develop an intervention approach. Considering that the intervention approach used in the current study was formulated by the researchers, in its explanation it should be said that the integrative intervention approach is an approach using the theory of treatment based on acceptance and commitment, cognitive behavioral therapy, humanistic theory of Satyr family therapy and treatment techniques based on It has been compiled and compiled on emotional efficiency and is a specific treatment for NSSI in Iranian adolescent girls. According to the findings of the qualitative part of the research, the researchers started their library studies and the results of these studies were continuously reviewed and, if confirmed, suitable techniques were collected. Researchers, according to the basic findings of the qualitative part in the field of emotion regulation, negative automatic thoughts, mother-daughter relationship, intolerance of failure and NSSI functions; In the field of theories that targeted most of these subjects, a library study including books and articles was conducted.

The research method was a quasi-experimental quantitative part of the pre-test-post-test research design with a control group. The purpose of this section was to validate and determine the effectiveness of the developed intervention approach in reducing NSSI. The experimental group received eight sessions of intervention based on the integrative intervention approach, but the control group did not receive any intervention. Both experimental and control groups participated in the pre-test and post-test and completed the questionnaires. After completing the research, the control group also benefited from the integrative intervention approach. The statistical population of the quantitative part was all female students with NSSI in the first and second period of secondary school in Ardabil city. Sampling of the quantitative part of the research was done by chain sampling method. According to the findings of the qualitative section, it was decided to focus on



the themes and categories of non-suicidal self-injury, difficulty in regulating emotions, negative automatic thoughts, and mother-daughter relationship, and in order to evaluate the cases mentioned in this research, from the questionnaires of NSSI behaviors and functions, a difficulty scale was used. In emotion regulation (DERS), automatic thoughts questionnaire (ATQ) and parent-child relationship scale: mother form (PCRS) were used. In order to analyze the data in the quantitative part, the method of multivariate covariance analysis was used.

Of the 17 adolescent girls who participated in the qualitative interview, 12 were first year high school students and five were second year high school students. The average age of the participants was 15 years and two months. From the data obtained from the semi-structured interview, which were analyzed by the Collaizi's method, the NSSI of adolescent girls is placed in the form of three main themes (the underlying factors of NSSI, the function of NSSI, and the consequences of NSSI). The obtained primary classes are related to each other and help to understand the shared experience of adolescent girls from NSSI. According to the findings of the qualitative and cognitive part of the nature of NSSI in adolescent girls, the appropriate content of the sessions was developed with theoretical support. The theoretical support is an integrative approach, cognitive behavioral therapy,

The treatment was based on acceptance and commitment and the humanistic theory of Satir family therapy, and treatment techniques based on emotional efficiency were also used.

According to the background of the research, the first intervention method that was considered was dialectical behavior therapy. But since this method is considered to be very long-term and expensive for the treatment of NSSI according to research evidence, it was decided to use shorter-term interventions and treatments. Next, the treatment based on emotional efficiency was considered, which had good techniques to intervene in emotional problems, but did not fully cover the findings of the qualitative section. The theoretical bases of therapy are based on emotional efficiency, dialectical behavior therapy and therapy based on acceptance and commitment (West, 2016). But still these interventions and techniques did not cover issues related to family problems and dysfunctional relationships. In order to solve this gap, the continuation of library studies among family therapy theories was pursued. The results of the investigations led to the humanistic theory of Satir family therapy (Nemati, 2018). In the next step, the necessary interventions should be designed for all the findings of the qualitative section and the problems of adolescents with NSSI, and the number of necessary sessions, the type of group and the type of implementation of the sessions should be determined.

The main theme of the underlying factors of NSSI included the three primary categories of emotional-cognitive characteristics, incompatible relationships and adolescent problems in the family. Therefore, Satir's theory of family therapy and therapy based on emotional efficiency were used to the maximum. The main themes of NSSI include calming down, forgetting problems, impressing others, and proving to be big and strong.

Therefore, cognitive behavioral therapy and therapy based on acceptance and commitment were used as much as possible. The main themes of the consequences of NSSI included feelings of remorse and scarring. Therefore, cognitive behavioral therapy was used the most. In all the meetings, attention has been paid to all the theories used, but according to the purpose of each meeting, some theories have been prioritized for that meeting.

In compiling the research intervention package, attention was paid to several points. First, insufficient attention to behavioral skills training, and resulting treatment bias, is more likely in individual skills training than in group skills training. In individual therapy, there is often nothing else to maintain the treatment process other than the will of two people (client and therapist). On the other hand, in group therapy, other clients or at least the therapists' sense of commitment to other clients keeps the therapists on track. Group therapy offers clients something more than individual therapy. Therapists have the opportunity to observe and work on the interpersonal behaviors that manifest in the clients' relationships with their peers. Clients interact with other people like themselves. Clients have the opportunity to learn from each other. Groups reduce individual contact between clients and therapists, in psychodynamic terms, transmission is weakened. Groups provide a non-threatening opportunity for clients to learn to be part of a group (Linehan, 2018). Therefore, the implementation of integrative intervention was in group form.

Second, participants were recruited into a homogeneous and closed group. The members were homogenized according to gender, educational level, education of parents, occupation of parents, type of school and having NSSI. Also, according to the research goal and the validation of the intervention approach, the group was closed. Whether the members of a group are homogeneous or heterogeneous depends on the goals of the group. In general, according to the target population and its specific needs, it is better to select group members from that population rather than from a heterogeneous group. The similarity between group members can increase the group's cohesion, and this allows for a comprehensive and open examination of life's crises. Members can express their feelings in a way that remains confidential and their living conditions can create a deep relationship with each other. The size of the group depends on many factors. The age of the clients, the experience of the leader, the type of group, and the problems to be investigated affect the size of the group. The group of adolescents usually includes about six to eight members (Corey and Corey, 2018). So closed groups with eight people were formed.

Third, homework was given at the end of each session. The purpose of the homework was to put into practice what was discussed during the group meeting, which is actually the most important topic. Homework provides many opportunities for members to



practice new skills in the real world. Ideally, homework should integrate what is happening in the group with everyday life. For this reason, at the end of each session, the members were given homework.

**Table 1-** Summary of closed meetings based on an integrative approach

The title of the session	Goals	content	home works	Addressees of the meeting
First session	Increasing intimacy and reducing blame in the family communication pattern in order to improve the mother-daughter relationship	Teaching all kinds of verbal and non-verbal communication Teaching all kinds of communication patterns	Doing homework in family gatherings	Mothers and daughters
second session	Paying attention to the needs and reducing the sense of control in the family in order to improve the mother-daughter relationship	Familiarity with two-level messages and family rules Practicing empty chair techniques and sculpting in the family	Determining the overt and hidden rules of the family at home	Mothers and daughters
third session	Reducing the feeling of distress and remorse in order to reduce the difficulty of emotion regulation	Introducing an integrative intervention approach An explanation of the anatomy of emotion Practice the technique of watching excitement	Viewing the different components of excitement and recording the four components of excitement in the worksheet	girls
fourth Session	Increased tolerance failure	Practicing Mindfulness Acceptance Using the "Baby Crying on the Bus" Metaphor and the "Ball in the Pool" Metaphor Pendulum fan training Exposure technique training	Practicing the mindfulness acceptance technique and the pendulum technique on a daily basis	girls
fifth session	Avoiding imitation and doing healthy behaviors to impress others and prove to be big and strong	Practicing mindfulness acceptance technique Education about the moment of choice and decision Specify values worksheet	Arousal up to level 5 and do the pendulum and then choose based on your value	girls

		Visualization and feedback		
The sixth session	Teaching better ways to relax and forget problems	Teaching behavioral skills such as body relaxation and self-soothing	Practicing the ability to relax and self-soothe on a daily basis	girls
The seventh session	Reducing automatic negative thoughts in order to accept or control them	Training of cognitive skills including logical debate and acceptance Learning to accept existing reality	Practice fighting and accepting against environmental or mental stimulation	girls
The eighth session	Reducing the feeling of distress and remorse in order to reduce the difficulty of emotion regulation	Training cognitive-behavioral skills such as changing attention and rest time Visualization and feedback Providing a control program for each participant	Performing the skills learned in the meetings and recording them in a special worksheet	girls

## Results

The average age of the research subjects in the quantitative part was 15.47 years. Also, the level of parents' education ranged from illiteracy to high school diploma, and none of the participants' parents had university education. Regarding the employment status of parents, the highest percentages were related to fathers' self-employment (97%) and mothers' housekeeping (88%) of the participants. In this research, descriptive statistics (mean and standard deviation) and inferential (multivariate covariance analysis) methods were used to analyze the data. Table 2 shows the descriptive information related to the research variables.

**Table 2.** Descriptive findings of dependent variables in experimental and control groups

Groups	variables	Number of participants	pre-test		post-test	
			Mean Standard	Deviation	Mean Standard	Deviation
the experiment	Difficulty regulating emotions	16	118.31	21.75	107.68	22.67
	Mother-daughter relationship	16	78.12	33.31	96.62	31.45

	automatic thoughts	16	110.43	31.60	76.81	22.31
	Self-harm without suicide	16	10.43	4.51	0.125	0.341
witness	Difficulty regulating emotions	16	124.87	25.20	125.68	26.72
	Mother-daughter relationship	16	97.06	34.83	90.31	34.89
	automatic thoughts	16	105.50	20.96	105.06	23.28
	Self-harm without suicide	16	8.50	5.42	6.81	3.81

As the results of Table 2 show, the average difficulty of emotion regulation, automatic thoughts and NSSI in the experimental group decreased from pre-test to post-test. The average mother-daughter relationship has also increased in the experimental group from the pre-test stage to the post-test stage. In addition, multivariate covariance analysis was used to investigate the significant difference in the difficulty of emotion regulation, automatic thoughts, mother-daughter relationship, and NSSI in the research groups. Of course, before using this analysis, the assumptions of multivariate covariance analysis were examined. The assumption of normality of the distribution of the dependent variables was investigated with the Shapiro-Wilk test in the pre-test and post-test stages. The result of this test showed that, except for the post-test of the variable of NSSI, the distribution of other variables was normal ( $p > 0.05$ ). The result of the presumption of homogeneity of variances using Levene's test showed that the homogeneity of variances for the variables of emotion regulation difficulty ( $p = 0.27$ ,  $F = 1.28$ ), mother-daughter relationship ( $p = 0.44$ ,  $F = 0.61$ ), automatic thoughts ( $p = 0.91$ ,  $F = 0.11$ ) and NSSI ( $p = 0.72$ ,  $F = 0.132$ ) been achieved.

The result related to the assumption of conventional correlation between dependent variables was also realized through Bartlett's sphericity test because the combined correlation between dependent variables was appropriate and desirable ( $p = 0.0001$ ,  $df = 9$ ,  $\chi^2 = 77.99$ ). In addition, the result of the pretest homogeneity of the covariance matrix of the dependent variables in the test and control groups showed that the correlation of the dependent variables in the pre-test and post-test is homogeneous in the groups, because the Mbox test's  $F$  was not significant at the  $p < 0.05$  level. The assumption of homogeneity of the regression coefficients was also investigated through the analysis of variance of the interaction effects of the pre-test difficulty of emotional regulation, mother-daughter relationship, suicidal thoughts, and NSSI with the independent variable (research intervention). Considering that the interaction of these pre-tests with the independent

variable was not significant ( $p=0.17$ ,  $df=8$ ,  $F=1.61$ ), therefore, the homogeneity of the regression coefficients has been achieved. Finally, the assumption of homogeneity of the slope of the regression lines in the groups was checked through the distribution charts for the pre-test and post-test scores of the dependent variables of the research. Considering that the direction of slopes in emotional regulation variables ( $R^2 = 0.32$ , experimental group,  $R^2 = 0.85$ , control group), mother-daughter relationship ( $R^2 = 0.71$

experimental group, control group  $R^2=0.89$ ), automatic thoughts (experimental group  $R^2=0.09$ , control group  $R^2=0.33$ ) and NSSI (experimental group  $R^2=0.11$ , experimental group  $R^2=0.14$  control) was increased in the control and experimental groups; Therefore, the assumption of homogeneity of the regression slopes of the research variables has been fulfilled. Therefore, according to the realization of the presuppositions of multivariate covariance analysis, the use of parametric tests was recognized as unimpeded.

The results of multivariate covariance analysis using Wilks's lambda test showed that between the experimental and control groups in the post-test of dependent variables with control

Pre-test there is a significant difference ( $p=0.0001$ ,  $df=4$ ,  $F=17/51$ ); Because the calculated F of the group is significant at the  $p=0.0001$  level. Also, the effect size was 0.75; That is, 75% of the variance related to the variables of emotion regulation difficulty, mother-daughter relationship, suicidal thoughts, and NSSI is caused by the effect of the research intervention. Therefore, to compare the research groups in the variables of emotion regulation difficulty, mother-daughter relationship, automatic thoughts and NSSI from Univariate covariance analysis was used, the results of which are presented in Table 3.

**Table 3.** Results of univariate analysis of covariance to compare post-test scores of variables

Variable	Source of changes	sum of squares	Degree s of freedom	mean square	F	level meaningful	Eta squared	Test power
Difficulty regulating emotions	pre-exam	4372.54	1	4327.54	17.56	0.0001	0.40	0.98
	group	1688.74	1	1688.74	6.85	0.01	0.20	0.71
	error	6405.09	26	246.35	-	-	-	-

<b>Mother-daughter relationship</b>	pre-exam	26506.79	1	26506.79	106.08	0.0001	0.80	1.00
	group	3078.12	1	3078.12	12.32	0.002	0.32	0.92
	error	6496.23	26	249.85	-	-	-	-
<b>thoughts Automatical ly</b>	pre-exam	1740.42	1	1740.42	2.91	0.100	0.10	0.37
	group	2753.31	1	2753.31	4.60	0.04	0.15	0.54
	error	15536.78	26	597.56	-	-	-	-
Self-harm without suicide	pre-exam	2.94	1	2.94	0.44	0.51	0.01	0.09
	group	298.86	1	298.86	45.02	0.0001	0.63	1.00
	error	172.57	26	6.63	-	-	-	-

The contents of Table 3 show that the research's integrative intervention has been effective in reducing the difficulty of emotion regulation, automatic thoughts and NSSI, because they have obtained a significant difference ( $p < 0.05$ ) compared to the control group. Also, the research findings showed that the research intervention was effective in improving the mother-daughter relationship, because the result of comparing the scores of this variable in the two experimental and control groups is significant at the  $p < 0.05$  level.

The first quantitative finding of the research showed that by considering the pre-test scores of the difficulty of emotional regulation as a control variable, there is a significant difference between the performance of the experimental and control groups. Therefore, it can be concluded that due to the application of the independent variable (research intervention), the difficulty of emotion regulation has decreased in the experimental group compared to the control group. In the present study, emotional issues such as sadness, anger, curiosity, worry and regret played a role in the initiation and continuation of self-harm, and some of them such as regret and sadness have appeared as a consequence of NSSI. According to Crowell et al. (2009), emotional dysregulation is an important factor in the phenomenon of NSSI, so that adolescents usually state that they use NSSI as a way to deal with negative emotions and emotional experiences (Bureau et al., 2010). In addition, in explaining this finding, it can be said that mindfulness is a strategy that claims to increase awareness of inner experiences, and since NSSI is used to avoid intense emotions, then this behavior can be reduced with conscious awareness and acceptance. On the other hand, using a new evaluation to change the emotional experience helps to prevent the negative emotion that triggers NSSI (Bentley et al., 2017; Safarinia et al., 2013), and this component has made this approach effective in the treatment of NSSI. The same thing makes teaching more adaptive ways of emotional response to reduce NSSI behaviors (Gratz and Gunderson, 2006). On the other hand, the emotion regulation model regarding non-suicidal NSSI claims that emotional regulation self-efficacy plays a

role in the prevention and intervention of non-suicidal self-harm and suicidal ideation (Liu et al., 2020) and it is better to deal with non-avoidant strategies for emotion regulation in treatment (Gratz and Roemer, 2008).

In addition, the other intervention of the current approach for the emotions part was exposure, and in the effectiveness of exposure, it should be said that it is one of the most widely used techniques of cognitive behavioral therapy that can be used to promote the acceptance of emotions. At the same time, this technique is also used to change dysfunctional beliefs. In the therapy based on acceptance and commitment, exposure is not done to change the cognitive content, but to practice willingness and increase behavioral flexibility. The cognitive behavioral therapy approach to acceptance is mainly verbal; In contrast, acceptance and commitment therapy seeks to help the client step out of the language-transformed world, at least for a short time. Also, using guided imagery helps the client envision a positive future that does not involve NSSI. Guided visualizations increase relaxation, which reduces stress and the ability to tolerate strong emotions. As a result, there may be a deep interest in exploring the dynamics associated with NSSI, providing insight into new possibilities and ways of solving the problem (Kress et al., 2013). As a result, it can be stated that the integrative intervention of the research has helped to reduce the difficulty of emotion regulation by helping the subjects to accept their emotions and face them correctly. When the adolescent can accept his excitement and express it in the right way, the possibility of him going to self-harming behaviors is reduced. This finding is consistent with the results of studies by Bentley et al. (2017), Hassanvand et al. (2015), Khanipour et al. ) and Muehlenkamp et al. (2013) is aligned.

Another finding of the quantitative part of the research showed that considering the pre-test scores of the mother-daughter relationship as a control variable, the difference between the performance of the experimental and control groups in this variable is significant. This means that there is a significant difference in the dependent variable of the mother-daughter relationship between the experimental and control groups. Therefore, it can be concluded that the research intervention had an improvement effect on the mother-daughter relationship of the experimental group compared to the control group. According to the interpersonal model, NSSI is a symptom of environmental or family dysfunction; Meanwhile, the system may be a family or another system (Bureau et al., 2010). Therefore, based on this model, it can be argued that people with NSSI receive significantly lower social support from their family members and do not talk to others about their NSSI because they consider it unhelpful (Muehlenkamp, 2013). Biosocial theory also highlights the interaction between biological vulnerability (emotional vulnerability and impulsivity) and family factors that contribute to the



development and maintenance of emotional dysregulation and NSSI (White, 2016). So that the interpersonal factors of the parent-caregiver can affect the occurrence of behaviors harmful during adolescence is considered a risk factor (Peyvastegar, 2012). It can be said that the family environment teaches behavior to children through example, reinforcement, silence and punishment (Nak, 2009). When the whole family members are involved in the treatment process, the results obtained will be more lasting and this will lead the family towards a solution (Mastanabadi and Qamarikivi, 2017; Hoffman et al., 2010). In addition, when the family provides enough space for the adolescent to express his emotions, the likelihood of NSSI decreases (Brown and Kimball, 2013), and making parents more effective will reduce these behaviors (Tan et al., 2014) and self-injurious family members. They will understand the adolescent better (Hoffman et al., 2010). In this regard, parental invalidation during mother-daughter conflictual discussion describes how parents promote adolescent emotion dysregulation. Both invalidation and conflict play a role in the formation of emotion dysregulation. So that mothers of adolescents with NSSI are more likely to increase conflict and intensify and maintain adolescent emotion dysregulation (Crowell et al., 2013).

In addition, sometimes an issue that is not very important for children is very important in the mother's opinion, and since the child has not talked about the issue with his mother, he considers this issue as a conflict of values and deviates from his main issue. Also, sometimes the child is very worried about the issue and tries to share the concern with the mother, but if the issue in question has little value in the mother's personal experiences, the mother may not be able to understand the importance of the issue from her child's point of view (De wit et al. , 2012). This is why when adolescents received interventions on communication patterns and values with their mothers, their relationships improved. As a result, it can be stated that the integrative intervention of the research has succeeded in improving the mother-daughter relationship by helping the subjects and their mothers through the techniques of Satyr's humanistic theory in family therapy and teaching mother-daughter communication patterns. In other words, when adolescents get to know communication patterns together with their mothers and learn to respect their own and others' feelings, they establish a better relationship with each other, and also, the mother, who has a close relationship with the adolescent daughter, puts the adolescent under less control pressure. and they talk to each other more and the outcome of these factors improves the mother-daughter relationship and finally the adolescent does not find the motivation to commit NSSI. This finding is consistent with the results of studies by Brown and Kimball (2013), Peyvastegar (2012), Tan et al. (2014), De Wit et al. (2012), Claes et al. 2015) is aligned.

Another finding of the quantitative part of the present study showed that by considering the pre-test scores of automatic thoughts as a control variable, the difference between the performance of the experimental and control groups in this variable is significant. This

means that there is a significant difference in the dependent variable of automatic thoughts between the experimental and control groups in favor of the experimental group. Therefore, the integrative intervention approach is effective in reducing negative automatic thoughts. In the present study, four types of negative automatic thoughts were obtained, which included all or nothing thinking, exaggeration, negative label, and unrealistic expectation. In other words, the findings showed that the cognitive process plays an important role in the formation and continuation of disproportionate, self-destructive and self-consistent behaviors. Thinking and reasoning often happen at an automatic level, therefore, reviewing and observing one's thoughts can slow down this process and provide an opportunity to investigate and research the nature of one's thoughts. Thoughts do not equal facts, but instead they are hypotheses that may or may not be true. It is the assessment of emotional arousal that determines the emotional experience, not the arousal itself. Meanwhile, negative automatic thoughts are involuntary thoughts specific to a situation that invade a person's mind in times of emotional tension. Most of the time we are hardly aware of the existence of these thoughts, although with a little practice we can bring them into the field of self-awareness. Also, rumination manifests itself as unrealistic thoughts and anticipatory thoughts in individuals who exhibit NSSI (Voon, Hasking, & Martin, 2014). Khedmati (2018) also emphasized the relationship between rumination and self-harming behaviors in his research. On the other hand, the present finding can also be explained with the biological psychosocial model (Walsh, 2012). This means that based on the cognitive dimension of the biological psychosocial model, the cognitive dimension related to NSSI is related to one of the two main classes: cognitive interpretations of environmental events and self-generated cognitions. The first class refers to the tendency of people to engage with irrational thoughts and cognitive distortions in response to certain environmental events. There is considerable evidence that individuals high in self-blame are at increased risk for self-punishment and self-directed anger through non-suicidal self-injury (Klonsky & Muehlenkamp 2007). The second major class of cognitive distortions is self-generated cognitions. Contrary to external conditions and events that may lead to the spread of irrational thoughts, self-generated cognitions are triggered by internal clues. People who do not have specific environmental events, but simply put, are used to maladaptive patterns of thinking. In addition, adolescents who engage in NSSI have a wide range of irrational cognitions, such as: I hate my body; or by this I show that I am really hurt; Or is this the only way to deal with my problem? Replacing such thoughts with positive and logical thoughts is a step It is vital in reducing and even ending NSSI (Bureau et al., 2010). More recent studies have also shown that in prevention and intervention programs for NSSI, special attention should be paid to cognitive dimensions (Dawkins et al., 2019), which is in line with the findings of the present study on the effectiveness of the developed

approach on reducing negative self-esteem in adolescent girls. As a result, it can be stated that the integrative intervention of the research has succeeded in reducing negative automatic thoughts by helping the subjects through logical arguments and accepting or changing negative automatic thoughts. In other words, when a adolescent learns how to change his thinking habits or how to respond to environmental stimuli with acceptance instead of being provoked and mastering his thinking, he succeeds in reducing his negative automatic thoughts and forcing himself to do Do not NSSI. This finding is consistent with the results of studies by Husain et al, 2014.

## Conclusion

The sequential exploratory strategy of the mixed research method describes how the qualitative findings helped to explain or extend the quantitative results. Although the findings of the current study were consistent with the findings of most previous studies, it also had new findings. Based on the findings of the present research in the quantitative part, NSSI is related to various dimensions such as emotion regulation, mother-daughter relationship and negative self-centered thoughts, so all these dimensions should be taken into account in the evaluation and interventions to improve this phenomenon. The situation of each person should be taken in these dimensions. Since the interventions considered in the integrative intervention have been effective for each of the above dimensions, and also, based on the results obtained from NSSI, 63% of the changes in this variable were related to the integrative intervention approach of the research; Therefore, considering the effectiveness of this approach, and the need of mental health therapists and especially school counselors who have the most contact with adolescents with non-suicidal self-harm, it is better than the practical results of this research, which is the integrative intervention approach in the treatment of this problem among adolescents used.

Now it should be seen how the findings of the qualitative section help to expand and describe the findings of the quantitative section. The findings of the qualitative section showed that NSSI of adolescent girls emerged in the form of three main classes (factors underlying NSSI, function of NSSI, consequences of NSSI) and nine primary classes, and these primary classes were the results are related to each other and help to understand the common experience of adolescent girls from NSSI. Since communication and family factors have played a more important role in the motivation to start NSSI and emotional factors in the motivation to continue it, then it can be concluded that in the evaluation and treatment of this problem, sufficient attention should be paid to the factors that initiate and continue the part of NSSI in order to Prevention and treatment worked successfully. That is, considering the importance of underlying factors in the initiation of NSSI and the role of functions in the continuation and maintenance of NSSI, it seems better to pay more and special attention to the underlying factors in the prevention category and to the functions in the treatment category. In other words, the findings of the qualitative section helped the researcher to be more precise in explaining the findings of the quantitative section. In fact, the knowledge and understanding obtained from the qualitative part helped to pay attention to exactly the same factors that are the foundation and continuation

of NSSI in formulating an intervention approach, and since, according to the previously mentioned reasons, emotional factors play a more important role in the continuation of this behavior, it was tried. More interventions should be considered for this part, but it is better to pay more attention to family and interpersonal factors in prevention sessions. Also, the results of the quantitative section showed that the factors identified in the qualitative section are correctly effective in NSSI, and for this reason, we have succeeded in reducing NSSI with the help of the developed interventions.

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