

The Effectiveness of Cognitive-Behavioral Therapy on Improving the Quality of Life of Adolescents Engaging in Non-Suicidal Self-Injury

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ABSTRACT

Objective: The aim of the present study was to investigate the effectiveness of Cognitive-Behavioral Therapy (CBT) on improving the quality of life in adolescents engaging in non-suicidal self-injury (NSSI).

Methods and Materials: The research method was quasi-experimental with a pre-test and post-test control group design. The statistical population of the present study included 16 to 18-year-old high school students (both boys and girls) in Sari. From this population, 100 individuals were selected through convenience sampling, and among them, 28 individuals who obtained the highest scores on the Non-Suicidal Self-Injury Questionnaire (NSSI) were selected based on inclusion criteria and were randomly assigned to an experimental group and a control group (each group consisting of 14 individuals). The experimental group received group CBT over 12 sessions of 90 minutes each, while the control group received no intervention until the post-test phase. The tools used in this study included the Non-Suicidal Self-Injury Questionnaire (Klonsky & Glenn, 2011) and the Quality of Life Questionnaire (Ware & Sherbourne, 1992). The data obtained in the pre-test and post-test phases were analyzed using covariance analysis with SPSS-22 software.

Findings: The results showed that CBT led to an increase in the quality of life of adolescents.

Conclusion: The findings provide evidence that CBT is a suitable method for increasing the quality of life in adolescents engaging in non-suicidal self-injury and can lead to the enhancement of their mental health.

Keywords: Cognitive-Behavioral Therapy, Quality of Life, Self-Injury.

1. Introduction

Self-injurious behavior is defined as the deliberate and intentional damage or alteration of body tissues that leads to tissue damage (Favazza, 1998; Winchel RM, 1991). According to the American Psychiatric Association (2013),

non-suicidal self-injury (NSSI) is defined as "the deliberate self-inflicted damage to the surface of the body, causing bleeding, bruising, or pain (e.g., cutting, burning, hitting, or excessive rubbing) with the expectation that the injury will result in only minor or moderate physical harm (i.e., there is no suicidal intent)." Furthermore, the International Society

for the Study of Self-Injury (2007) describes NSSI as a conscious behavior where an individual deliberately harms their body tissues, such as cutting and burning, without suicidal intent, which is neither socially nor culturally acceptable and is not performed to fulfill social rituals (Haywood, 2023).

This behavior has become a major public health concern. A meta-analysis on the prevalence of self-injury in non-clinical samples showed that 17.2% of adolescents, 13.4% of young adults, and 5.5% of adults engage in self-injurious behavior. This rate is higher among clinical samples, with 30-45% of adolescents and 21% of adults engaging in such behavior (Swerdlow et al., 2024).

In Iran, a study on self-injurious behaviors using the Deliberate Self-Harm Inventory by Gratz (2001) reported a 12% prevalence of this behavior among 350 female high school students in Tehran (Peyvastegar, 2013). According to the results of this study, 38 individuals (12%) had used cutting at least once and 16 individuals (4%) had done so more than once. Additionally, 58 individuals (17%) had used needle insertion into the skin at least once and 36 individuals (11%) had done so more than once. In this study, needle insertion for tattooing, ear or nose piercing was also considered deliberate self-injury. Other self-injurious behaviors reported in the study included carving pictures or words into the skin, preventing wound healing, head banging, washing hands with cleaners to the point of skin damage, hair pulling, burning the body, bruising (pinching), nail biting, and dripping acid onto the skin (Peyvastegar, 2013).

Quality of life refers to the quality of an individual's physical, psychological, social, and spiritual functioning, with each of these dimensions containing several components (Velloso et al., 2018). Quality of life helps in ensuring health and happiness in individuals and enables them to lead a healthy life. The concept of quality of life has been extensively studied and objectively measured over the past three decades. Despite numerous studies, there is still no universally accepted definition of quality of life. Some researchers define quality of life with an objective approach, equating it with visible and relevant life criteria such as physical health, personal conditions (wealth, living conditions, etc.), social relationships, employment activities, and other social and economic factors (Hagerty & Veenhoven, 2003). On the other hand, the subjective approach equates quality of life with an individual's happiness or satisfaction, emphasizing cognitive factors in evaluating quality of life (Liu, 2006). Between these two

approaches, there is a holistic approach, which posits that quality of life, like life itself, is a complex and multidimensional concept and considers both objective and subjective components (Malkina-Pykh & Pykh, 2008).

Currently, quality of life is a major concern for policymakers and prevention specialists and is used as an indicator to measure health status in research. Due to the growing importance of the concept of quality of life, the World Health Organization has identified increasing quality of life as a major goal by 2010 (Etemadi & Changaii, 2013; Yousefi et al., 2019).

Research indicates that there are few specifically tailored psychological treatments for self-injury (Elsayad & Alghtani, 2022; Fleischhaker et al., 2011; Mohajerin et al., 2023; Mohamadi et al., 2020; Perepletchikova et al., 2011; Peymannia et al., 2018). (Adili et al., 2024; Damavandian et al., 2022; DeCou et al., 2019; Elsayad & Alghtani, 2022; Pourjaberi et al., 2023; Tabatabayi et al., 2021) This study aims to answer whether Cognitive-Behavioral Therapy is effective in improving the quality of life of adolescents engaging in non-suicidal self-injury.

2. Methods and Materials

2.1. Study Design and Participants

This study, given its aim, is an applied research and, in terms of data collection method, is cross-sectional and quasi-experimental with a pre-test and post-test control group design. The statistical population included 16 to 18-year-old high school students (both boys and girls) in Sari. From this population, 100 individuals were selected through convenience sampling, and among them, 28 individuals who obtained the highest scores on the Non-Suicidal Self-Injury Questionnaire (NNSI) were selected based on inclusion criteria and were randomly assigned to an experimental group and a control group. The experimental group received group Cognitive-Behavioral Therapy over 12 sessions of 90 minutes each. The inclusion criteria were individuals with self-injurious behavior, aged 16 to 18, completion of an informed consent form for participation, no use of psychiatric medication in the past three months or during the intervention, no serious physical illness like cancer, no serious psychiatric disorders like major depressive disorder with suicide risk or psychotic disorders, and not receiving any psychological treatment during the study. Exclusion criteria were more than two absences from therapy sessions, use of psychiatric medication or substances in the past three months, and onset of mania or a psychotic disorder.

To implement the educational package, interviews with specialists and university professors were conducted to gather their views and ideas at each stage of the research. After obtaining feedback and approval, 28 adolescents engaging in non-suicidal self-injury were selected through purposive sampling and clinical interviews. Initially, preliminary explanations about the study's aim, session numbers and content, collaboration, and questionnaire completion were provided to the participating adolescents. After obtaining written informed consent, the Quality of Life Questionnaire by Ware and Sherbourne (1992) was administered to both groups in the first session. The experimental group then underwent 12 group CBT sessions, each lasting 90 minutes, twice a week. During this period, the control group received no intervention. Finally, after completing the therapy sessions, the Quality of Life Questionnaire was administered again to both groups. To adhere to professional ethical principles, the control group was treated as a waitlist group, and therapists were required to provide the intended treatment (CBT) to them after the study's conclusion.

2.2. Measures

2.2.1. Non-Suicidal Self-Injury

The Non-Suicidal Self-Injury Questionnaire is a self-report tool developed by Klonsky and Glenn (2011) to assess the frequency and functions of non-suicidal self-injury behaviors. The inventory consists of two parts: the first part screens the frequency of 12 different self-injury behaviors performed intentionally without suicidal intent, including hitting, biting, burning, tattooing, cutting, wound manipulation, pinching, hair pulling, rubbing the skin against rough surfaces, severe scratching, needle insertion, and ingesting dangerous chemicals. It also assesses descriptive features of NSSI behaviors, such as the history of the first and most recent self-injury episodes. The test-retest reliability of this part over 1 to 4 weeks is 0.85, and the internal consistency using Cronbach's alpha is 0.84. The second part evaluates the functions of NSSI behaviors, categorizing 13 validated functions under two broad factors: intrapersonal functions (emotional regulation, anti-dissociation, anti-suicide, signaling distress, self-punishment) and interpersonal functions (autonomy, interpersonal boundaries, interpersonal influence, peer bonding, revenge, self-care, sensation seeking, and toughness). Items are rated on a three-point Likert scale from 0 (not at all related) to 2 (very related), with each subscale

scored from 0 to 6. Higher scores indicate greater issues in the respective domains. This part has high construct validity and internal consistency (Cronbach's alpha for intrapersonal functions 0.89, interpersonal functions 0.75). This inventory has not been previously used in internal studies (Peymannia et al., 2018). In this study, Cronbach's alpha for intrapersonal functions was 0.83 and for interpersonal functions was 0.77.

2.2.2. Quality of Life

The Quality of Life Questionnaire, primarily used to assess life quality and health, was developed by Ware and Sherbourne (1992) and contains 36 items evaluating eight domains: physical functioning, social functioning, physical role functioning, emotional role functioning, mental health, vitality, bodily pain, and general health. Additionally, it provides two composite scores: the Physical Component Summary (PCS) and the Mental Component Summary (MCS). Scores in each domain range from 0 to 100, with higher scores indicating better quality of life. The subscales include physical functioning (10 items), physical role functioning (4 items), bodily pain (2 items), general health (5 items), vitality (4 items), social functioning (2 items), emotional role functioning (3 items), and mental health (5 items). The reliability and validity of this questionnaire in the Iranian population have been confirmed, with internal consistency coefficients for the eight subscales ranging from 0.70 to 0.85 and test-retest reliability over one week ranging from 0.43 to 0.79. This questionnaire can distinguish between healthy and ill individuals across all indices (Peymannia et al., 2018).

2.3. Intervention

2.3.1. Trauma-Focused Cognitive Behavioral Therapy

TF-CBT, developed by Judith Cohen, Esther Deblinger, and Anthony Mannarino, is an evidence-based intervention that targets negative thinking. Introduced in the 1990s initially for young children who experienced sexual abuse, research from 1996 to the present shows that TF-CBT is effective for various emotional and behavioral problems associated with one or more traumatic events, including PTSD, depression, anxiety, and grief. TF-CBT is a structured, short-term psychotherapy for children aged 3 to 18 who have experienced trauma, delivered over 12-18 sessions, each lasting 60 to 90 minutes. Sessions are equally divided between the child and the parent. Thirty years of research on TF-CBT has demonstrated its effectiveness in

treating PTSD in children (Kameoka et al., 2020; Mohajerin et al., 2023; Noroozi et al., 2018; Rakhmasari et al., 2021; Salemi et al., 2017a, 2017b; Thielemann et al., 2022).

Session 1: Establishing Rapport and Introduction

In the first session, the focus is on establishing rapport with group members and explaining the group rules. Participants are educated about depression, rumination, and self-injurious behavior. They are introduced to the cognitive components of emotional reactions and are guided in identifying initial surface-level thoughts that occur between events and emotional reactions.

Session 2: Introduction to the Cognitive-Behavioral Model

The second session involves introducing participants to the cognitive-behavioral model. This includes explaining how thoughts, emotions, and behaviors are interconnected and how changing one can influence the others.

Session 3: Activity Monitoring and Behavioral Activation

In the third session, participants learn about the relationship between depressed mood and lack of activity. They are taught behavioral activation techniques and engage in self-monitoring of activities that provide mastery and pleasure.

Sessions 4 and 5: Goal Setting and Understanding Moods

The fourth and fifth sessions focus on goal setting and familiarizing participants with different types of moods. Participants learn how to set realistic and achievable goals to enhance their mood and overall well-being.

Session 6: Identifying Negative Thoughts

In the sixth session, participants learn to recognize negative thoughts that contribute to and exacerbate

depression. They are introduced to the concept of automatic thoughts and how these thoughts can influence their emotions and behaviors.

Sessions 7 and 8: Cognitive Distortions

The seventh and eighth sessions are dedicated to identifying cognitive distortions in participants' thinking. Participants learn about different types of cognitive distortions and practice challenging these distortions to develop healthier thought patterns.

Sessions 9 and 10: Cognitive Restructuring

In the ninth and tenth sessions, participants engage in cognitive restructuring techniques. They identify negative beliefs, use the downward arrow technique to explore deeper beliefs, and learn strategies to challenge and reframe these negative beliefs.

Sessions 11 and 12: Relapse Prevention

The final sessions focus on relapse prevention. Participants review their plans for maintaining treatment goals and strategies to prevent relapse. The post-test is administered to evaluate the effectiveness of the intervention.

2.4. Data analysis

The data obtained in the pre-test and post-test phases were analyzed using covariance analysis with SPSS-22 software.

3. Findings and Results

Participants in the experimental group (Cognitive-Behavioral Therapy) were high school students (10th, 11th, and 12th grades). Fifty-five percent of the participants were female, and 45 percent were male.

Table 1

Mean and Standard Deviation of Quality of Life Before and After Cognitive-Behavioral Therapy

Group	Variable	Pre-test Mean	Pre-test SD	Post-test Mean	Post-test SD
Experimental	Physical Quality	14.87	4.97	24.67	3.96
	Psychological Quality	64.00	6.05	75.93	6.84
	Quality of Life	87.87	8.41	100.60	7.03
Control	Physical Quality	15.54	4.22	18.33	4.25
	Psychological Quality	66.60	4.62	70.07	3.82
	Quality of Life	82.17	4.72	88.40	4.43

As shown in Table 1, the mean quality of life in adolescents engaging in self-injurious behavior improved after Cognitive-Behavioral Therapy compared to before the therapy.

Before conducting the main analyses, several assumptions were checked to ensure the validity and

reliability of the results. These included normality, homogeneity of variances, and the independence of observations. Tests such as the Shapiro-Wilk test for normality and Levene's test for homogeneity of variances were performed. The results indicated that the data met the necessary assumptions for conducting ANCOVA and other

statistical tests used in this study. Additionally, the independence of observations was confirmed by ensuring that the participants were randomly assigned to the experimental and control groups, and that there was no

interaction between groups that could bias the results. Therefore, the statistical assumptions required for valid analysis were confirmed.

Table 2

Between-Subjects Effects for Examining the Impact of Training on Dependent Variables

Dependent Variable	Sum of Squares	df	Mean Square	F	P	Eta
Corrected Model	Physical Quality	328.868	3	109.623	6.50	.002
	Psychological Quality	77.702	3	234.026	14.56	.0001
Interaction	Physical Quality	109.266	1	109.266	6.48	.02
	Psychological Quality	93.436	1	93.436	5.81	.02
Physical Quality	Physical Quality	17.832	1	17.832	1.06	.31
	Psychological Quality	2.738	1	2.738	.17	.68
Psychological Quality	Physical Quality	8.204	1	8.204	.49	.49
	Psychological Quality	443.941	1	443.941	27.62	.0001
Group	Physical Quality	267.968	1	267.968	15.88	.0001
	Psychological Quality	430.359	1	430.359	26.78	.0001
Error	Physical Quality	438.632	26	16.870		
	Psychological Quality	417.923	26	16.074		
Total	Physical Quality	14635.000	30			
	Psychological Quality	160990.000	30			
Corrected Total	Physical Quality	767.500	29			
	Psychological Quality	1120.000	29			

Table 2 shows that the group effect on both variables is significant, indicating that the treatment was effective.

Table 3

One-Way ANCOVA for Examining the Impact of Training on Overall Quality of Life Scores

Source of Variation	Sum of Squares	df	Mean Square	F	P	Eta
Corrected Model	1409.187	2	704.594	27.88	.0001	.67
Interaction	632.619	1	632.619	25.03	.0001	.48
Pre-test	292.887	1	292.887	11.59	.002	.30
Group	1335.758	1	1335.758	52.86	.0001	.66
Error	682.313	27	25.271			
Total	269999.000	30				
Corrected Total	2091.500	29				

Table 3 shows that the group effect is significant, indicating that Cognitive-Behavioral Therapy had a significant impact on the overall quality of life scores of adolescents.

4. Discussion and Conclusion

The present study aimed to investigate the effectiveness of Cognitive-Behavioral Therapy on the quality of life of adolescents engaging in self-injurious behavior. It was found that the group of 16 to 18-year-olds who received Cognitive-Behavioral Therapy showed significant improvement in their quality of life compared to those who did not receive

the therapy. This finding is consistent with previous research (Kameoka et al., 2020; Mohajerin et al., 2023; Noroozi et al., 2018; Rakhmasari et al., 2021; Salemi et al., 2017b; Thielemann et al., 2022). Yousefi et al. (2019) conducted a comparative study on the effectiveness of enrichment-based Cognitive-Behavioral Therapy and classic Cognitive-Behavioral Therapy on depression and quality of life in depressed women (Yousefi et al., 2019). The results showed that both classic Cognitive-Behavioral Therapy and enrichment-based Cognitive-Behavioral Therapy were effective in reducing depression and increasing quality of life.

In explaining this finding, it can be said that Cognitive-Behavioral Therapy, through the use of activity planning strategies, encourages individuals to engage in pleasurable activities, leading to positive attitude changes and mood improvement. Moreover, this method helps individuals recognize dysfunctional thoughts, challenge cognitive distortions, and modify negative beliefs about themselves, others, and the future, thereby changing negative moods and improving feelings. Cognitive-Behavioral Therapy helps adolescents correct negative and unhelpful thoughts, feelings, and behaviors stemming from traumatic experiences. It seems that the combination of cognitive and behavioral factors can open new possibilities for the cognitive and emotional regulation of self-injurious adolescents.

5. Limitations & Suggestions

Despite the positive outcomes, this study had several limitations. Firstly, the sample size was relatively small, with only 28 participants in each group, which may limit the generalizability of the findings to a larger population. Secondly, the study relied on self-report questionnaires, which can be subject to biases such as social desirability and recall bias. Thirdly, the study was conducted in a specific geographical location (Sari), and the findings may not be applicable to adolescents in different cultural or regional contexts. Lastly, the study only included adolescents aged 16 to 18, so the results cannot be generalized to younger children or older adolescents.

Future research should consider larger and more diverse sample sizes to enhance the generalizability of the findings. Longitudinal studies would be beneficial to understand the long-term effects of Cognitive-Behavioral Therapy on quality of life in adolescents engaging in self-injurious behavior. Additionally, future studies could incorporate a mixed-methods approach, combining quantitative and qualitative data to gain a more comprehensive understanding of the participants' experiences and the mechanisms behind the observed changes. Research could also explore the effectiveness of Cognitive-Behavioral Therapy in different cultural settings and among different age groups to determine its applicability and efficacy across various populations.

The findings of this study have several important implications for clinical practice and policy. Mental health professionals working with adolescents should consider incorporating Cognitive-Behavioral Therapy into their

treatment plans for individuals engaging in self-injurious behavior, as it has been shown to significantly improve quality of life. Schools and educational institutions should also be aware of the benefits of Cognitive-Behavioral Therapy and consider providing access to such interventions for students in need. Additionally, policymakers should recognize the importance of mental health services in schools and allocate resources to support the implementation of evidence-based therapies like Cognitive-Behavioral Therapy. These measures can contribute to better mental health outcomes and overall well-being for adolescents.

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Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors contributed equally.

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