

Research Paper

Comparing Dialectical-behavioral Skills Training Based on the Soler Model vs Family Education for Borderline Personality Disorder



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ABSTRACT

Objectives: The high prevalence of borderline personality disorder, along with comorbid psychiatric disorders and impulsive reactions (suicide attempts, self-mutilation, substance use, and impulsive behaviors) increase the need for effective psychological interventions. In this study, the effectiveness of dialectical behavior skills training based on the Soler method and family education with individual therapies are compared in this group of patients.

Methods: In this single-blind case study, eight cases were selected through a targeted sampling method based on the inclusion and exclusion criteria. The participants were divided into two groups: Intervention individually and individual intervention with family education. Both group members and the family members of the second group received dialectical behavior skills training based on the Soler model. The participants completed the borderline personality inventory, self-harm inventory, and Barratt impulsivity scale in four stages: At the beginning of the sessions, in the middle of the treatment, at the end of the treatment, and three months after treatment.

Results: The data were analyzed using the Wilcoxon test, Friedman test, and Mann-Whitney U test. The results indicate the effectiveness of the dialectical behavior skills training method based on the Soler model in reducing symptoms of borderline personality disorder and self-mutilation, as well as emotion regulation improvement at the significant level of $P=0.05$.

Discussion: This treatment is recommended as an effective and short-term method for controlling symptoms of borderline personality disorder. Family education, in addition to dialectical behavior therapy, has been shown to have a positive effect on reducing symptoms in patients.

Keywords:

Borderline personality disorder,
Dialectical behavior therapy-
skill training, Family therapy,
Personality disorder

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Highlights

- A reduction in psychiatric symptoms associated with borderline personality disorder was observed among clients who received treatment with dialectical behavior therapy skills training. Greater clinical benefits and lower rates of dropout are important points of this treatment.
- Although family education can be an effective treatment for reducing borderline personality disorder symptoms, it is not typically considered the first-line treatment for this disorder. It should be used as an adjunct to another treatment.
- This intervention can be particularly effective in the Iranian population, especially when used as a group therapy to improve psychological well-being in individuals with borderline personality disorder.

Plain Language Summary

BPD has problems in all areas of self-regulation, regulation of behavior, emotional regulation, interpersonal regulation, and regulation of thought. Dialectical behavior therapy is considered an effective treatment that helps individuals focus on a goal, retain information, tolerate stress, and solve problems. The limitation of efficient treatment is a basic factor for dysfunctional life for this group of people. This study's results indicate that when dialectical behavior therapy is used as a short-form treatment, they learn the skills in a short time; therefore, they do not miss the treatment and trigger positive emotions and better relationships. In addition, their family also will be able to communicate correctly due to paying closer attention to their signs and symptoms.

Introduction

The prevalence of borderline personality disorder (BPD) in the general population is 1.6% [1]. The criteria can be summarized into five categories: Self-dysregulation, dysregulation of behavior, emotional dysregulation, interpersonal dysregulation, and dysregulation of thought [2]. It is crucial to develop effective therapeutic models that can reduce the symptoms of BPD, prevent the loss of clients, and lower the cost of treatment [3].

Dialectical behavior therapy (DBT), which was developed as borderline patients' treatment, consists of a combination of individual psychotherapy and group skills training [4]. DBT, in comparison with other therapeutic approaches, has demonstrated efficacy in reducing symptoms of BPD, such as suicide, self-mutilation, substance abuse, eating disorder, and mood disorder [5-8]. One limitation of the prolonged dialectical behavior approach is increasing the possibility of missing patients [9-11]. The DBT skills training (DBT-ST), first introduced by Soler in 2009 includes mindfulness techniques (2 sessions), interpersonal skills (4 sessions), emotion regulation (4 sessions), distress tolerance skills (3 sessions), and relapse prevention (1 session). He found the efficacy of dialectical behavioral skills training in reducing symptoms of BPD as a short-term method [11].

Instead of using different methods separately, it can be used as an integrated treatment model [12, 13]. Another psychological model proposed for borderline patients is family education. According to the etiology of BPD, an invalidating family environment is a major contributing factor that increases the risk of developing BPD. This treatment includes the method by Gunderson and Singer, which is based on psychological education for patients and their families, Hoffman DBT, couple therapy, and family therapy [14]. It uses several techniques, including mindfulness, problem-solving, and psychological education [15]. The present study examines the effectiveness of DBT-ST and the modification of family members' interactions in the reduction of BPD. The hypothesis in this study is dialectical behavior skills training based on the Soler model, either alone or in combination with family education, will reduce the BPD's symptoms. This study is done because of limited research in Iran based on the effectiveness of integrated therapy for BPD, as well as the lack of family education studies on this particular group.

Materials and Methods

In this single-blind case study, eight cases were assessed using the structured clinical interview for the diagnostic and statistical manual of mental disorders, fifth edition (DSM-5) and the structured clinical interview for DSM-5 personality disorders in 2017 at the clinic of [Shahid Ayatol-](#)

lah Taleghani Hospital. The diagnostic criteria were based on DSM-5 guidelines. The inclusion criteria were the absence of bipolar disorder, substance abuse, and psychosis, a score of >10 in the BDP questionnaire, scoring of Sansone self-harm inventory of >5. Meanwhile, the exclusion criterion was non-cooperation with medication. The participants were randomly divided into two groups. Informed consent was obtained at the beginning of the research. The manual of dialectical behavior skills training based on the Soler model was implemented for both groups and families of the second group (parents of single members and spouses of married ones) [16]. Members of both groups were assessed before the intervention, three weeks after starting treatment, at the end of treatment, and three months after the end of intervention with borderline personality inventory, Sansone self-harm inventory, and Barratt impulsivity scale (BIS). After the completion of the project, the data were analyzed using the SPSS software, version 21.

The dialectical behavior skills training based on the Soler model was used as the manual for this study. The training consists of 13 sessions, each lasting 120 min, and focuses on teaching four main skills (Table 1) [15, 16].

Results

The age of the samples in this study was between 20 and 31 years, with mean ages of 25 years and a standard deviation of 3.85 years. In this study, 37.5% of the patients (3 persons) were single and 62.5% were married (5 subjects). The results of the Mann-Whitney U test indicate that the members had no significant difference before the intervention; therefore, the difference in the post-test stage is the result of DBT-ST. Patients who had non-threatening suicidal thoughts only received a psychotherapy program, but others were referred to a psychiatrist for medication (Table 2). Significant differences were not shown on the pre-test in all measurements of these eight patients.

Significant differences were shown between the pre-test and post-test of both groups in all measurements (Table 3). Therefore, the first and second assumptions of the research on the effectiveness of the solar method, individually and with the family were confirmed.

According to Table 4, significant differences were found between the pre-test and post-test of all scales and subscales, except the primitive defense mechanism in the group that was treated with individual DBT-ST. However, no significant differences were reported between the post-test and the 3-week follow-up or post-test and the 3-month follow-up.

Significant differences between all overall scores of scales and subscales were reported in a group that received DBT with family education (Table 5). Meanwhile, The two groups did not show a significant difference (Table 6).

Discussion

DBT-ST is effective in symptom reduction of BPD in both groups with a 95% confidence level. In addition, treatment reduced self-dysregulation, behavior dysregulation, emotional dysregulation, interpersonal dysregulation, and dysregulation of thought. Also, post-test and 3-month follow-up results did not show significant differences ($P>0.05$) which indicates the stability of the results during 3 months. The Mann-Whitney U test results do not show any significant difference between the first and second groups ($P>0.05$). Therefore, the third hypothesis of the study, which states that DBT-ST with family education is more effective than individual DBT-ST, has been rejected.

As discussed before, the most effective DBT-ST strategies in emotional dysregulation treatment are comprehensive mindfulness and distress tolerance skills [11]. To the best of our knowledge, no study has assessed the effectiveness of this treatment on BPD and their families in Iran. In this study, DBT-ST is effective for decreasing symptoms, affective instability, impairment in social interaction and communication, identity disturbances, depressive symptoms, and suicide attempts in BPD. Compared to studies by Soler [11], Stepp [3, 18], Linehan [19] and Neacsiu [7, 20], these impacts are not low. On the other hand, the low efficacy of this intervention on some symptoms like defense mechanisms and identity diffusion may be associated with severe disability and the use of avoidant mechanisms [4].

The difference between the two groups is not significant, and this matter needs to be explained. Focusing on family psycho-education will not be sufficient. It is not recommended as the sole treatment for borderline personality patients [1]. Although family and couple education are useful adjuncts to individual therapy, improvement in interactions between couples and family members does not lead to treating the main problems of a person with BPD, including primitive defense mechanisms, emotional dysregulation, suicide, and self-destructive behaviors [21]. In other words, it is more useful to have family education based on schema therapy, DBT, or psychoanalysis as complementary methods along with individual therapy [22, 23]. It is necessary to use different methods as well as other approaches to family

Table 1. Fidelity monitor in DBT-ST and DBT-ST with family education for BPD patients and their family members

Justification	<p>After 60 min, in each session, 15 min rest was given to the therapist and members. Possibility for members and family of the 2nd group to call 10-15 min during the week. Family and spouses of the 2nd group in private received general information about psychopathology and symptoms of BPD.</p> <p>Due to cultural issues family and spouses were informed cautiously about the possibility of child abuse and any controversial information.</p> <p>End of each session and the end of each skill, all members give their opinion about the effectiveness of skills in the management of symptoms.</p> <p>The majority of members, parents, and spouses of the 2nd group were dissatisfied with mindfulness skills and mentioned that it seemed irrelevant to the disorder. It was very difficult for them to concentrate on themselves and their emotions. It was suggested to imply this skill as the last one when members learned more skills and techniques to manage their symptoms so it seemed more reliable and effective to them.</p>	<p>After 60 min in each session, 15 min rest was given. Possibility for members and families of the 2nd group to call and talk for about 10-15 min during the week.</p> <p>Family and spouses of the 2nd group in private received general information about psychopathology and symptoms of BPD.</p> <p>End of each session and the end of each skill, all members give their opinion about the effectiveness of skills in the management of symptoms.</p> <p>After the 3rd session BPI, SHI, and BIS were completed for the 2nd time.</p>
Duration	4 h	6 h
Temporality	<p>All members who were referred by a psychiatrist and received a BPD diagnosis were evaluated via DSM 5 diagnostic criteria, semi-structured interview SCID-I and SCID-II, and BPI, SHI, and BIS. They also received medication if it was necessary. After 3 weeks, all members of the two groups received intervention simultaneously. Members who used medication visited by psychiatrist each month and continued till the end of treatment.</p> <p>1st two weeks, mindfulness skill was learned.</p>	<p>In the 3rd, 4th, and 5th weeks, distress tolerance skills were learned.</p>
Action	2 sessions, each session 120 min	3 sessions, each session 120 min
Actors	Trained psychologist	Trained psychologist
Definition	<p>Core mindfulness skills: Wise mind (states of mind); "what" skills (observe, describe, participate); "how" skills (nonjudgmentally, one-mindfully, effectively). Other perspectives on mindfulness: Mindfulness practice as a spiritual perspective (including a wise mind and practicing loving kindness); skillful means balancing doing mind and being mind; wise mind indicates walking the middle path.</p>	<p>Crisis survival skills: STOP skill; pros and cons; temperature, intense exercise, paced breathing, paired muscle relaxation body chemistry; distracting with wise mind activities, contributing, comparisons, emotions, pushing away, thoughts, sensations; Self-soothing through the senses (vision, hearing, smell, taste, touch, body scan); imagery, meaning, prayer, relaxation, one thing in the moment, vacation, encouragement in the moment; Reality acceptance skills (radical acceptance turning the mind willingness half-smiling willing hands mindfulness of current thoughts).</p>
Strategy Intervention	Mindfulness skills	Distress tolerance

DBT-ST for patients of both groups and family members of the 2nd group.

Justification	<p>After 60 min in each session, 15 min rest was given. Possibility for members and families of the 2nd group to call and talk for about 10-15 min during the week. Family and spouses of the 2nd group in private received general 2nd about psychopathology and symptoms of BPD. End of each session and the end of each skill all members give their opinion about the effectiveness of skills in the management of symptoms.</p>	<p>After 60 min in each session, 15 min rest was given. Possibility for members and families of the 2nd group to call and talk for about 10-15 min during the week. Family and spouses of the 2nd group in private received general information about psychopathology and symptoms of BPD. End of each session and the end of each skill all members give their opinion about the effectiveness of skills in the management of symptoms.</p>	<p>In the final session, all members and families of the 2nd group were assessed in a private session about their opinions about skills, training, and whether one seemed more applicable to them. Members were informed about the necessity of using skills after the end of the session and if it was necessary to call with therapist and the necessity to use medication under the supervision of a psychiatrist. In this session, BP1, SHI, and BIS also were filled. None of the members were missed and all the sessions were consecutive.</p>
Duration	8 h	8 h	2 h
Temporality	In the 6 th , 7 th , 8 th and 9 th weeks, this skill was educated.	In the 10 th , 11 th , 12 th , and 13 th weeks, interpersonal skills were-learned.	In the 14 th week, this session was held.
Action	4 sessions, each session 120 min	4 sessions, each session 120 min	1 session, 120 min
Actors	Trained psychologist	Trained psychologist	Trained psychologist
Definition	<p>Understanding and naming emotions; Changing emotional responses; checking the facts; opposite action; problem solving; reducing vulnerability to emotion mind; accumulating positive emotions, building mastery; coping ahead; treating physical illness; balancing eating; avoiding mood-altering substances; balancing sleep; getting exercise; managing really difficult emotions. Mindfulness of current emotions. Managing extreme emotions.</p>	<p>Obtaining objectives skillfully Clarifying priorities Objectives effectiveness Describe, express, assert, reinforce, stay mindful, appear confident, negotiate. Relationship effectiveness be gentle, act interested, validate, use an easy manner, self-respect effectiveness being fair, no apologies, sticking to values, be truthful, whether and how intensely to ask or say no, supplementary interpersonal effectiveness skills, building relationships and ending destructive ones, skills for finding potential friends, mindfulness of others, how to end relationships. Walking the middle path skills; dialectics Validation Behavior change strategies.</p>	<p>Reviewing all sessions and skills for maintaining intervention effects.</p>
Strategy Intervention	Emotion regulation skills	Interpersonal effectiveness skills	Relapse prevention

DBT-ST for patients of both groups and family members of the 2nd group.

Abbreviations: DBT-ST: Dialectical behavior therapy skills training; BPD: Borderline personality disorder; BPI: Borderline personality inventory; SHI: Sansone self-harm inventory; BIS: Barratt impulsivity scale; SCID-I: Structured clinical interview for the diagnostic and statistical manual of mental disorders; SCID-II: Structured clinical interview for DSM-5 personality disorders.

Table 2. Pharmacological treatment

Pharmacy Therapy Program	Causes of Drug Use	Group	No.
Two weeks before the start of therapy, Risperidone* was started and at the end of the 2 nd month of intervention, the medication was discontinued.	Self-harm and suicide history	1	1
A week after the start of treatment, lithium* was started and bipyridine* was consumed for one month.	Suicidal thoughts	1	2
Depakin* and fluoxetine* started with the onset of treatment.	Self-harm	1	3
At the same time as starting treatment, propranolol* and fluoxetine* were taken.	Self-harm and severe anxiety	2	4
Five months before the start of the sessions, patients took intermittent clonazepam* and propranolol*, which were terminated by the psychiatrist and referred to the researcher for psychotherapy.	Suicidal thoughts and history of suicide attempt	2	5

*Psychiatric medications.

Iranian Rehabilitation Journal

Table 3. Friedman test results of the 1st and 2nd groups in borderline personality disorder, self-harm inventory, Barratt impulsivity scale

Questionnaire	Subscales	Intervention Group	Friedman Statistics	Sig.
Borderline personality questionnaire	Identity diffusion	1	10.88	0.012*
		2	10.68	0.014*
	Primitive defense mechanism	1	7.18	0.066
		2	10.5	0.015*
	Reality testing	1	8.69	0.038*
		2	10.38	0.015*
	Fear of closeness	1	11.27	0.01*
		2	9.78	0.02*
	Cut of point score	1	8.36	0.039*
		2	11.68	0.009*
	Overall score	1	12	0.007*
		2	11.44	0.01*
Self-harm inventory	Self-harm	1	9.23	0.026*
		2	8.25	0.041
Barratt impulsivity inventory	Attentional	1	9.08	0.028*
		2	9.72	0.019*
	Motor	1	12	0.007*
		2	9.3	0.026*
	Non-planning	1	9.15	0.023*
		2	9.38	0.018*
	Overall score of impulsivity	1	11.36	0.01*
		2	7.8	0.05*

*P<0.05.

Iranian Rehabilitation Journal

Table 4. Wilcoxon test for subscales of borderline personality disorder, self-harm inventory, and Barratt impulsivity scale of the individual dialectical behavior therapy skills training group

Subscales	Comparative Stage	Wilcoxon Test	Sig.
Identity diffusion	Pre-test-post-test	-2.73	0.028*
Primitive defense mechanism	Pre-test-post-test	0.65	0.146
Reality testing	Pre-test-post-test	-2.92	0.025*
Fear of closeness	Pre-test-post-test	-2.86	0.026*
Overall score of borderline personality inventory	Pre-test-post-test	-3.4	0.019*
Self-Harm	Pre-test-post-test	-3.52	0.018*
Attentional impulsivity	Pre-test-post-test	-1.96	0.047*
Motor impulsivity	Pre-test-post-test	-2.72	0.028*
Non-planning impulsivity	Pre-test-post-test	-3.09	0.023*
Overall score of impulsivity	Pre-test-post-test	-2.44	0.034*

*P<0.05

Iranian Rehabilitation Journal

Table 5. Wilcoxon test for subscales of borderline personality disorder, self-harm inventory, and Barratt impulsivity scale of the individual dialectical behavior therapy skills training group with family education

Subscales	Comparative Stage	Wilcoxon Test	Sig.
Identity diffusion	Pre-test-post-test	-3.95	0.015*
Primitive defense mechanism	Pre-test-post-test	-2.28	0.038*
Reality testing	Pre-test-post-test	-3.06	0.023*
Fear of closeness	Pre-test-post-test	-3.49	0.018*
Overall score of BPI	Pre-test-post-test	-3.25	0.021*
Self-harm	Pre-test-post-test	-3.7	0.016*
Attentional impulsivity	Pre-test-post-test	-1.92	0.049*
Motor impulsivity	Pre-test-post-test	-3.69	0.017*
Non-planning impulsivity	Pre-test-post-test	-3.33	0.02
Overall score of BIS	Pre-test-post-test	-3.86	0.015

BPI: Borderline personality inventory; BIS: Barrat impulsivity scale.

Iranian Rehabilitation Journal

*P<0.05.

Table 6. Results of Mann-Whitney U test

Questionnaire	Subscales	Mann-Whitney U Test	Sig.
Borderline personality disorder inventory	Overall score	0.18	0.2
Self-harm inventory	Overall score	0.765	0.886
Barratt impulsivity scale	Overall score	0.309	0.343

Iranian Rehabilitation Journal

and couple therapy and compare their effectiveness with individual interventions to obtain a reliable treatment for BPD. What had been lacking is evidence of the effectiveness of an intervention designed to address family problems of BPD.

Conclusion

Teaching DBT skills based on the Soler model as a short-term intervention is an effective method to reduce symptoms of BPD, non-suicidal self-harm behaviors, impulsivity, and improving self-regulatory skills. Also, in the second group, the training of DBT based on the Soler model, along with family education decreased the symptoms of BPD. Given that the difference between the two groups is not significant indicates the priority of individual therapy. Family education based on the Soler model is recommended as an additional and complementary treatment with individual therapies.

Study limitations

In interpreting the findings, it is important to note its limitations. The generalization of results must be made cautiously because of the small sample size and loss of the control group. Although psychoeducation promotes empathy and validation among family members, it has limitations in providing elaborative information like childhood abuse or information about destructive behaviors to parents and spouses of BPD due to confidentiality commitment. It is suggested to adopt other complementary approaches with individual treatment which focuses on improving interpersonal patterns. Different eclectic methods should be considered and their effectiveness compared to individual interventions to obtain a fairly reliable result about the necessity and priority of treatment for BPD.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Ethics Committee of [Shahid Beheshti University of Medical Sciences](#) (Code: IR.SBMU.MSP.REC.1395.449).

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Authors' contributions

Conceptualization and supervision: Atiyeh Safarzadeh and Maryam Bakhtiari; Methodology: Mohammad Reza Shaeiri; Data collection: Atiyeh Safarzadeh; Data analysis: Ali Kheradmand and Mohsen Saberihaji; Investigation and writing: Atiyeh Safarzadeh, Bonnie Bozorg and Zahra Ahmadvand.

Conflict of interest

The authors declared no conflict of interest.

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