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Effect of Internet-based versus face-to-face Cognitive Behavioral Therapy for Dependent Personality Disorder: A randomized clinical trial

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ABSTRACT

Background: Dependent Personality Disorder (DPD) is the most prevalent personality disorder, which is associated with several negative consequences. *Objectives:* The current study aimed to investigate the effect of ICBT on DPD and compare it with face-to-face CBT in a sample of DPD patients. *Method:* The participants were adults with DPD recruited from various counseling and psychological clinics in Tehran, Iran. They were randomly assigned to receive face-to-face CBT ($n = 20$) or ICBT ($n = 20$). Depression-Anxiety-Stress Scale-21 (DASS-21) and Interpersonal Problems Questionnaire (IIP-32) were completed at pre- and post-treatment. *Result:* Analysis of Covariance (ANCOVA) showed that the face-to-face CBT group had significantly lower interpersonal problem scores than the ICBT group ($F=23.81$, $p<0.05$). However, no significant difference was observed between the face-to-face CBT and ICBT groups in anxiety ($F=3.68$, $p<0.05$) and depression ($F=1.70$, $p<0.05$). *Conclusion:* The findings support the effects of both ICBT and face-to-face CBT in treating patients with DPD. While both ICBT and face-to-face CBT demonstrated favorable outcomes, our study suggests an advantage of face-to-face CBT in addressing interpersonal problems among these patients. Further research is needed to investigate the long-term effects of ICBT to enhance traditional approaches for DPD.

Keywords: Cognitive Behavioral Therapy, Dependent Personality Disorder, Interpersonal Problems, Anxiety, Depression

1. INTRODUCTION

Dependent Personality Disorder (DPD) is defined as a maladaptive pattern of submissiveness, fear of separation, and clinging behavior. This disorder

typically begins in early adulthood and is characterized by a strong desire to be taken care of and a belief that one is incapable of functioning independently (Association, 2013). Patients with DPD have difficulties making decisions, expressing disagreement, and taking responsibility; they also suffer from passivity, lack of self-confidence, and imbalanced or distorted relationships (Association, 2013). DPD affects 0.49% of the general adult population. Also, some studies have reported 1-2% of DPD prevalence (Anderson et al., 2017; Trull et al., 2010). A previous study reported that the prevalence of DPD was 1.79% in a sample of Iranian college students (Ghaderi et al., 2016). Women are 40% more diagnosed with DPD than men (Crego and Widiger, 2019). Even though DPD is more prevalent than other personality disorders, only a few clinical trials have investigated the effectiveness of therapeutic approaches in these patients (Faith, 2009).

Patients with DPD are more vulnerable to somatization, major depression, panic, and eating disorders than other personality disorders (Barzega et al., 2001; Coyne and Whiffen, 1995; Kemp et al., 2013; Overholser, 1996; Rost et al., 1992; Tisdale et al., 1990). Moreover, DPD is associated with gastrointestinal problems and sleep disturbances (Sachse et al., 2013). There are various treatment approaches for DPD, including psychodynamic and Cognitive Behavioral Therapy (CBT) (Eskedal and Demetri, 2006; Faith, 2009; Sperry, 2013). Time-limited psychodynamic therapy is considered the most suitable approach for individuals diagnosed with DPD. However, it has been found that patients with limited ego strength or significant separation anxiety may not benefit as much from short or long-term psychodynamic therapy compared to alternative treatment options (Eskedal and Demetri, 2006). CBT intends to increase the patient's autonomy and self-efficacy Sperry, (2013), and it is appropriate for addressing the longstanding problems of patients with personality disorders (Beck et al., 2015; Linehan, 1993).

Despite considerable advances in developing, assessing, and disseminating empirically supported treatments for Axis I disorders, only slow progress has been observed for most personality disorders. Most randomized clinical trials for personality disorders are limited to borderline and avoidant personality disorders (Matusiewicz et al., 2010). As a more recent form of CBT, Internet-based Cognitive Behavioral Therapy (ICBT) has growing empirical support for various psychiatric conditions (Andrews et al., 2010; Hedman et al., 2012). Owing to the exponential growth of internet access, ICBT was developed and welcomed by therapists (Webb et al., 2017). The advantages of ICBT over face-to-face CBT are a lower dropout of elders, high fidelity, greater accessibility, greater convenience, reduced cost to patients, and limited professional support for its administration (Andersson and Cuijpers, 2009; Edmonds et al., 2018; Kenter et al., 2015). A systematic review indicated that ICBT is as effective as CBT for mental disorders such as depression and anxiety (Hedman et al., 2012).

However, as personality disorders are complex and require more interaction between patient and therapist, there has been little development of internet-based therapies for these disorders (van-der-Boom et al., 2022). Mahoney et al., (2021) investigated the effectiveness of ICBT for depression and anxiety in patients with comorbid personality disorders. The results showed that comorbid personality disorders were not significantly associated with poorer treatment adherence, higher post-treatment symptom severity, or psychological distress (Mahoney et al., 2021). Most previous studies of internet-based therapy for personality disorders were developed for borderline personality disorders van-der-Boom et al., (2022) and were based on schema therapy and dialectical behavioral therapy (Austin et al., 2020; Jacob et al., 2018; Klein et al., 2018; Klein et al., 2021; Rizvi et al., 2011; van-der-Boom et al., 2022).

There is a clear need for further development and evaluation of CBT effects on understudied personality disorders such as DPD (Matusiewicz et al., 2010). As far as the authors know, no published study has investigated the effects of ICBT on DPD. In the same way, no published study has directly compared ICBT to face-to-face CBT in patients with DPD. Thus, the aim of the current study was to investigate the effect of ICBT on DPD and compare it with face-to-face CBT in a sample of DPD patients.

2. MATERIALS AND METHODS

Participants

Participants were recruited from various counseling and psychological clinics in Tehran, Iran. These patients were self-referred, with a mean age of 38.8 (SD = 6.62). Eligible participants were aged 18 and 65, had a primary diagnosis of DPD, and were fluent in Persian. They were excluded if they met the criteria for a current diagnosis of schizophrenia spectrum disorder, bipolar I disorder, neurocognitive disorder, or substance-related disorder, according to the DSM-5. They were also excluded if they had a diagnosis of antisocial, schizotypal, schizoid, or borderline personality disorder, were at high risk of suicide, had a history of CBT within the last four years, underwent other psychological treatment during the study, or started, stopped, or changed medication doses during the course of the study. Figure 1 depicts the trial design in the Consolidated Standards of Reporting Trials (CONSORT) flowchart.

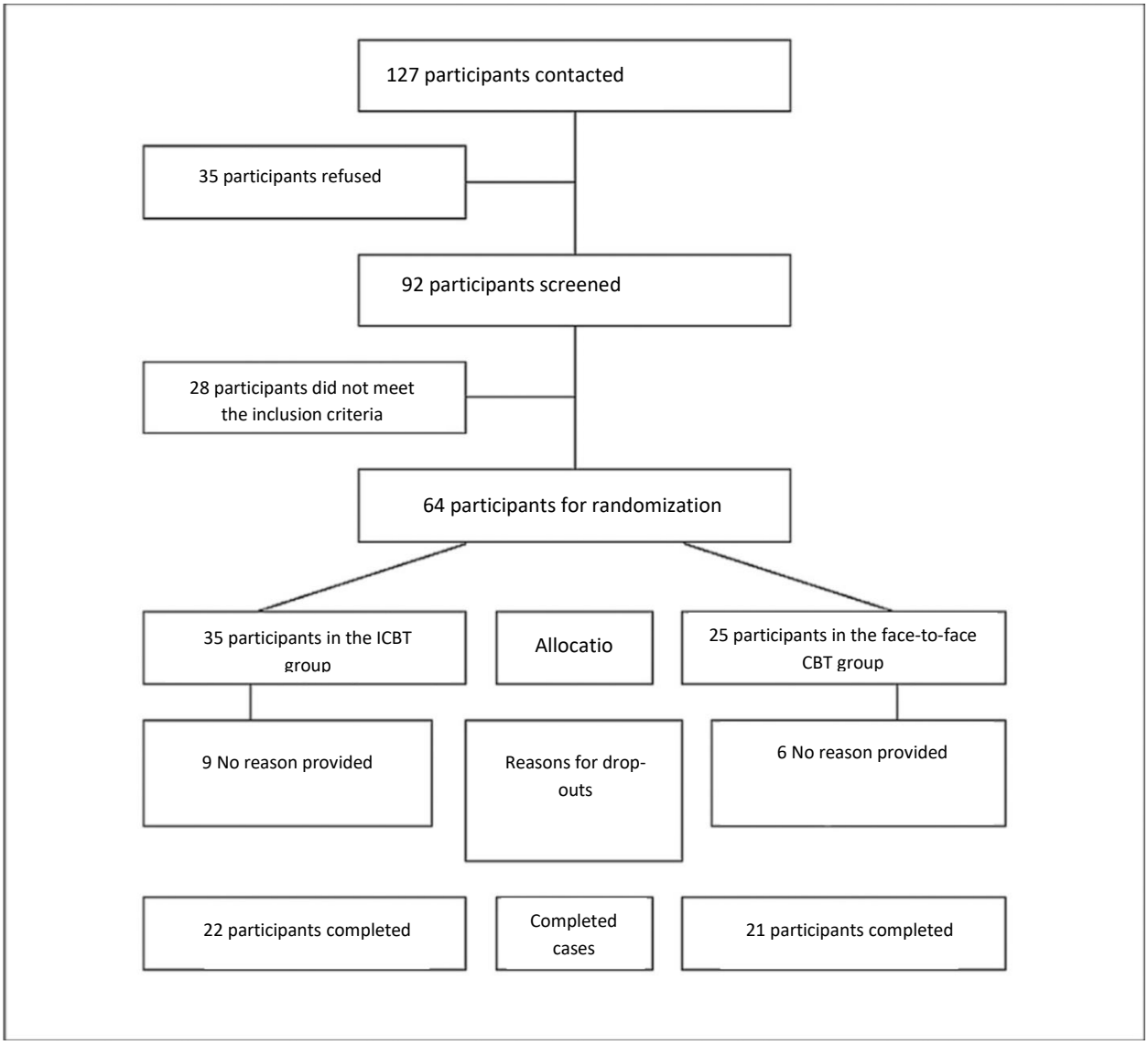

Figure 1 CONSORT flowchart of participant recruitment, randomization, and retention

Measures

Depression Anxiety Stress Scale-21 (DASS-21)

This 21-item scale Henry and Crawford, (2005) is a brief version of DASS-42. This self-report scale measures emotional states of depression, anxiety, and stress. Responses are rated on a 4-point Likert scale ranging from 0 (Did not apply to me at all) to 3 (Applied to me very much or most of the time). Internal consistency of DASS-21 in a non-clinical sample has been reported to be 0.88, 0.82, 0.90, and 0.93 for depression, anxiety, and stress subscales and the total scale, respectively (Henry and Crawford, 2005). The Persian version of the DASS-21 was found to have an internal consistency of 0.94 in a non-clinical sample (Asghari et al., 2008). In this study, the *Cronbach's* alpha for the depression and anxiety subscales was 0.79 and 0.74, respectively.

Inventory of Interpersonal Problems (IIP-32)

IIP-32 assesses people's difficulties in their relationships with others. This 32-item scale Barkham et al., (1996) is a brief version of the Interpersonal Problems Inventory. The answers are rated on a scale from 0 (Not at all) to 4 (Very much). Moreover, two interpersonal dimensions of agency and communion are calculated based on weighted combinations of these eight subscales (Gómez-Penedo et al., 2022). The subscales of the IIP-32 have exhibited satisfactory levels of internal consistency in both outpatient and non-clinical populations (Barkham et al., 1996). The Persian version of the IIP-32 includes 6 subscales (Assertiveness and sociability, openness, caring, aggression, supportiveness and involvement, and dependency). The IIP-32 Persian version had a Cronbach's alpha of 0.82 in an Iranian sample (Fath et al., 2013).

Structured Clinical Interview for DSM-5-Research Version (SCID-5-RV)

SCID-5-RV (First et al., 2015) is a guide for semi-structured interviews for the major DSM-5 diagnoses. The task is carried out by a skilled clinician or healthcare professional who is knowledgeable about the diagnostic criteria and classification of disorders in DSM-5 (First et al., 2015). The SCID-5-RV is generally administered in a single 45-90-minute session (Jiang et al., 2021). The Research Version contains more disorders than the Clinician Version (Blackmore et al., 2022). Several studies have shown that SCID-5-RV has acceptable reliability and validity (First et al., 2015). The Persian version of the SCID-5-RV indicated an acceptable range for internal consistency (0.95-0.99), test-retest reliability (0.60-0.79), and kappa reliability (0.57-0.72) (Mohammadkhani et al., 2020).

Structured Clinical Interview for DSM-5 Personality Disorders **(SCID-5-PD)**

SCID-5-PD First et al., (2016) is a semi-structured diagnostic interview to assess DSM-5 personality disorders under three clusters of A, B, C, and other specific personality disorders. This semi-structured interview consists of 119 items. The SCID-5-PD can help diagnose personality disorder, either categorically (present or absent) or dimensionally summing the ratings (0, 1, or 2) (First et al., 2016; Somma et al., 2020). SCID-5-PD has been shown to have good interrater reliability in a European sample (Somma et al., 2020). The Persian version of the SCID-5-PD indicated good interrater reliability for all personality disorders except for the schizotypal personality disorder. The kappa of the Persian version of the SCID-5-PD for all personality disorders was higher than 0.4, except for DPD and avoidant personality disorder (Gharraee et al., 2021).

Structured Clinical Interview for DSM-5 Screening Personality Questionnaire (SCID-5-SPQ)

SCID-5-SPQ First et al., (2016) is a self-report screening tool to assess the diagnostic criteria of 10 DSM-5 personality disorders. This tool serves as a preliminary data collection tool before the interview. It contains 106 true-false self-report items (Fjermestad-Noll et al., 2020). The internal consistency of the SCID-5-SPQ Persian version has been reported to be 0.93 (Gharrae et al., 2022).

Procedure and study design

This randomized controlled trial compared ICBT and face-to-face CBT in a sample of adults with DPD. The study was conducted between June and August 2023. All participants provided written informed consent. They were diagnosed with DPD using SCID-5-PD and SCID-5-SPQ. Independent evaluators (psychologists) who were blind to the treatment condition administered SCID-5-PD at baseline. In addition, the participants were asked to complete SCID-5-SPQ. Eligible participants were randomized to face-to-face CBT or ICBT groups. Randomization was achieved by even/odd serial numbers. Patients completed self-report measures (DASS-21 and IIP-32) pre-and post-treatment. The kappa of SCID-5-PD for DPD was below 0.4. The outcome measures were DASS-21 and IIP-32.

Therapists

Therapists were two doctoral students with 4-5 years of experience. They had expertise in treating personality disorders both face-to-face and digitally. They received supervision on request at the clinic's own scheduled supervision hours.

Interventions

The treatment was adapted from the *cognitive behavioral therapy of DSM-5 personality disorders* (Sperry and Sperry, 2015). Face-to-face CBT and ICBT consisted of 15 sessions. Each treatment session lasted 45 minutes once a week.

Face-to-face cognitive behavioral therapy

CBT is based on the assumption that dependency is related to individuals' maladaptive beliefs and related thought processes (Beck et al., 2015). After building a collaborative interaction between patient and therapist, CBT applies specific cognitive and behavioral techniques such as Socratic dialogue, cognitive awareness training, pinpointing and challenging automatic beliefs, assertive communication training, and problem-solving training (Sperry and Sperry, 2015).

Internet-based cognitive behavioral therapy

The content of ICBT sessions was similar to face-to-face CBT, except that the sessions were provided through the native Skyroom platform. This platform does not require the installation of any applications, and users can access the desired event with just one click.

Statistical analyses

Analyses were conducted using SPSS 28 software. The Chi-square and independent t-test analyzed the participants' demographic and clinical characteristics. Changes in the mean scores for depression, anxiety, and interpersonal problems from pre- to post-treatment within the face-to-face CBT and ICBT groups were analyzed with paired t-tests. The Analysis of Covariance (ANCOVA) examined differences in interpersonal problems, depression, and anxiety between the treatment groups. $P < 0.05$ was considered statistically significant.

3. RESULTS

Table 1 summarizes the participants' demographic characteristics. To indicate the normality of the data, we used the skewness and kurtosis and Shapiro-Wilk test. All variables approximated normal distribution (skewness and kurtosis from -2 to +2; $p < 0.05$ on the Shapiro-Wilk test). No significant difference was found in age (t = 0.55, $p > 0.05$), gender (X2 = 0.75, $p > 0.05$), marital status (X2 = 0.33, $p > 0.05$), education (X2 = 0.88, $p > 0.05$), occupational status (X2 = 0.70, p > 0.05), current medication use (X2 = 0.76, $p > 0.05$), Axis I disorders (X2 = 0.543, $p > 0.05$), and Axis II disorders (X2 = 0.124, $p > 0.05$) between the face-to-face CBT and ICBT groups. Figure 2 and Figure 3 present clinical characteristics of participants.

Table 1 Demographic characteristics of participants

Variable		Face-to-face CBT N (%)	ICBT N (%)	Statistical significance
Age	Mean	39.40	38.20	.556
	SD	6.75	6.50	
Gender	Women	14 (66.7)	13 (59.1)	.755
	Men	7 (33.3)	9 (40.9)	
Married status	Marital	16 (76.2)	13 (59.1)	.332
	Single	5 (23.8)	9 (40.9)	
Education	High school	7 (33.3)	6 (27.3)	.889
	Bachelor's degree	6 (28.6)	8 (36.4)	
	Master's degree	5 (23.8)	6 (27.3)	
	Ph.D. degree	3 (14.3)	2 (9.1)	
Occupational status	Employed	14 (66.7)	17 (77.3)	.701
	Unemployed	5 (23.8)	4 (18.2)	
	Retired	2 (9.5)	1 (4.5)	

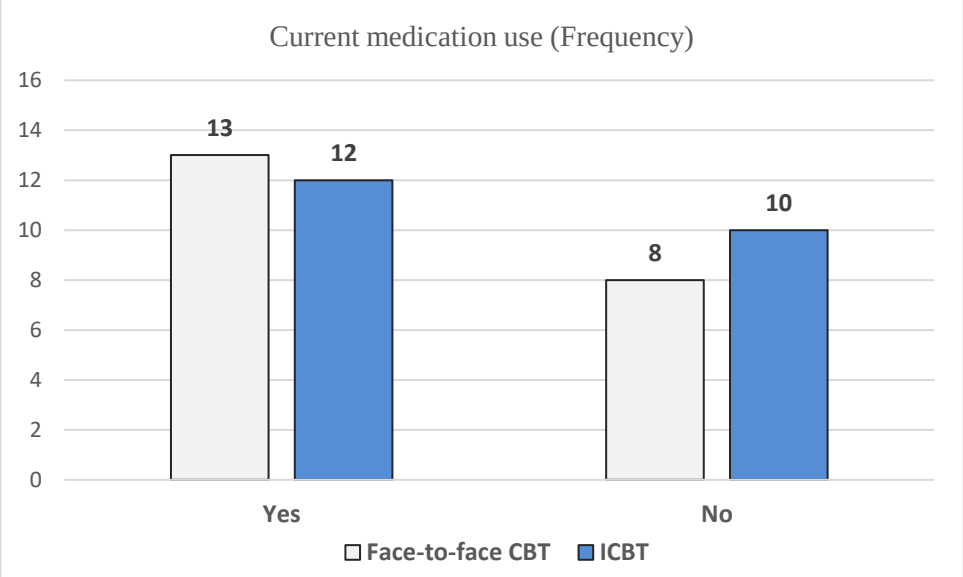

Figure 2 Frequency of current medication use in face-to-face CBT and ICBT groups

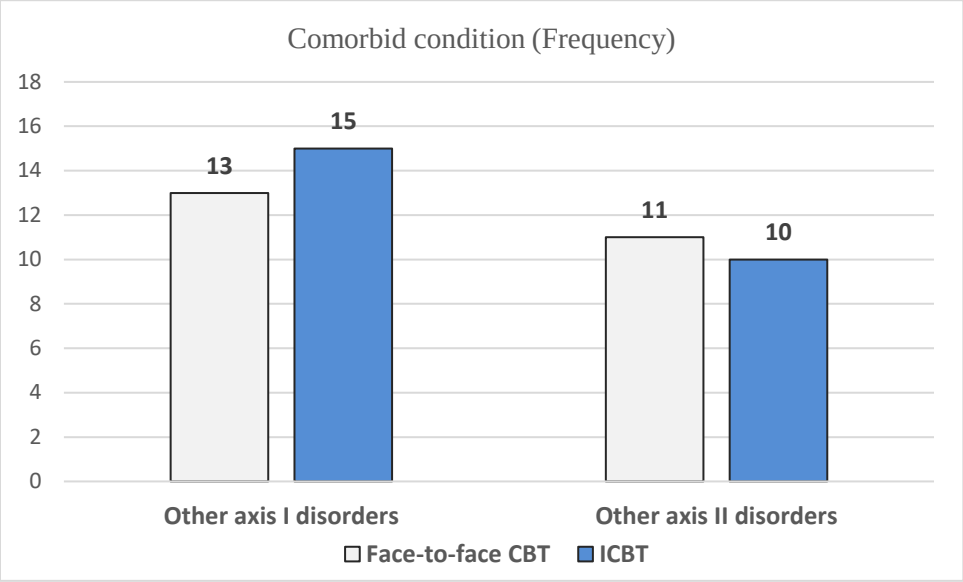

Figure 3 Frequency of axis I and axis II disorders in face-to-face CBT and ICBT groups

Table 2 shows the means, standard deviations, and paired t-test results for the face-to-face CBT and ICBT groups on all outcome measures at pre- and post-treatment. Based on the paired t-test, the ICBT group significantly improved from pre- to post-treatment in depression (t (1.41) = 9.99, p<0.05), anxiety (t (1.41) = 12.35, p<0.05), and interpersonal problems (t (1.41) = 12.54, p<0.05). Also, a significant change was observed in depression (t (1.41) = 8.66, p<0.05), anxiety (t (1.41) = 9.75, p<0.05), and interpersonal problems (t (1.41) = 14.56, p<0.05) in the face-to-face group.

Table 2 Means, standard deviations, and t-test results for face-to-face and ICBT groups on all outcome measures at pre- and post-treatment

Variable	Group	Pre-test	Post-test	Mean difference	t value	p-value
Anxiety (DASS-21)	Face-to-face	10.84a ±2.25b	7.86±2.23	2.99 ±.306c	9.75	< .001
	ICBT	11.50±2.20	8.95±1.92	2.55±.207	12.35	< .001
Depression (DASS-21)	Face-to-face	14.67±2.70	10.75±2.32	3.91±.452	8.66	< .001
	ICBT	15.31±2.96	11.63±2.54	3.68±.368	9.99	< .001
Assertiveness and sociability	Face-to-face	15.05±2.82	12.14±2.69	2.91±.351	8.27	< .001
	ICBT	15.82±2.74	14.00±2.27	1.82±.340	5.35	< .001
Openness	Face-to-face	13.71±2.80	9.41±2.17	4.30±.592	7.28	< .001
	ICBT	12.86±2.24	10.87±1.84	1.99±1.127	4.79	< .001
Caring	Face-to-face	14.83±3.73	11.58±1.67	3.25±.689	4.72	< .001
	ICBT	14.13±2.86	11.05±1.34	3.07±.415	7.40	< .001
Aggression	Face-to-face	7.95±1.66	7.29±1.45	.67±.354	1.88	.074
	ICBT	7.59±1.71	7.27±1.32	.32±.250	1.28	.216
Supportiveness and involvement	Face-to-face	12.81±3.16	12.05±2.59	.76±.447	1.71	.104
	ICBT	12.50±3.50	12.23±3.15	.27±.324	.84	.409
Dependency	Face-to-face	9.71±1.91	9.18±1.41	3.43±.486	7.06	< .001
	ICBT	6.29±1.53	9.18±1.46	2.18±.252	8.67	< .001
Interpersonal problems (IIP-32)	Face-to-face	74.07±8.34	58.75±8.24	15.31±1.05	14.56	< .001
	ICBT	72.08±9.19	62.43±7.25	9.66±.770	12.54	< .001

a = Mean, b = Standard deviation, c = Standard error of mean

The ANCOVA showed that the face-to-face CBT group had significantly lower interpersonal problem scores (mean=58.11, SE=0.719) than the ICBT group (mean=63.04, SE=0.702) (F=23.81, df=1,41, p<0.05). However, no significant difference was established

between the face-to-face CBT and ICBT groups in anxiety (F=3.68, df =1,41, *p*>0.05) and depression (F=1.70, df =1,41, p>0.05) (Table 3).

Table 3 Comparison of mean scores of all outcome measures in face-to-face CBT and ICBT groups

Variable	Adjusted mean		Mean difference	F value	p-value	ηp2
	ICBT	Face-to-face				
Anxiety	8.08a ±.226b	8.73±.221	.649 ±.338	3.68	.062	.07
Depression	10.92±.297	11.47±.290	.541±.416	1.70	.200	.04
Assertiveness and sociability	12.43±.314	13.72±.308	1.29±.443	8.52	.006	.18
Openness	9.17±.341	11.10±.333	1.92±.478	16.22	< .001	.29
Caring	11.42±.434	11.21±.424	.210±.609	.12	.732	< .01
Aggression	7.18±.265	7.37±.259	.188±.371	.26	.615	.01
Supportiveness and involvement	11.93±.352	12.34±.343	.412±.492	.70	.407	.02
Dependency	6.16±.314	7.12±.308	.964±.443	4.73	.036	.11
Interpersonal problems	58.11±.719	63.04±.702	4.93±1.010	23.81	< .001	.37

a = Mean, b = Standard error of mean

4. DISCUSSION

This study investigated the effect of ICBT on DPD and compared it with face-to-face CBT in a sample of DPD patients. Our findings indicated that ICBT was similar to face-to-face CBT in reducing depression and anxiety symptoms in patients with DPD. However, face-to-face CBT was more effective than ICBT in improving interpersonal problems. The primary finding of the current study was that ICBT was as effective as face-to-face CBT in reducing depression and anxiety symptoms in DPD patients. This finding aligns with previous studies showing comparable effectiveness of face-to-face and internet-based treatment for depression and anxiety (Komariah et al., 2022; Lappalainen et al., 2014; Wagner et al., 2014). However, a study by Wagner et al., (2014) showed that internet-based treatment, compared to face-to-face treatment, had a sustained symptom reduction, suggesting potential long-term effectiveness that may be unique to internet-based interventions (Wagner et al., 2014).

Our study did not include follow-up assessments, so the longitudinal effects of face-to-face CBT compared to ICBT are unclear. Additionally, Casey et al., (2014) found that patients with depression do not prefer internet-based therapy due to lower perceived barriers to treatment (e.g., time constraints and participation restrictions) (Casey et al., 2014). Therefore, our findings regarding the equal effectiveness of ICBT and face-to-face CBT for depression and anxiety symptoms are consistent with the notion that perceived barriers to treatment may not significantly impact treatment outcomes. Furthermore, it is important to note that face-to-face CBT and ICBT share similar techniques, processes, and treatment goals, which could explain the comparable effectiveness of both approaches for depression and anxiety symptoms. The second finding of the current study was that face-to-face CBT and ICBT effectively improved interpersonal problems.

However, face-to-face CBT was more effective than ICBT in reducing interpersonal problems. This finding aligns with previous studies supporting CBT as a well-established and effective treatment for Personality Disorders (PDs), including DPD (Matusiewicz et al., 2010; Zanin and Valerio, 2004). More specifically, the intervention approach employed in this study encompassed various components, including assertiveness training and problem-solving skills, which have been previously established as effective techniques for addressing and ameliorating interpersonal problems (Spence et al., 1994; Sperry and Sperry, 2015; Tisdelle and Lawrence, 1986). In addition, CBT has been found to place a greater emphasis on addressing maladaptive schemas in treating PDs than Axis 1 disorders (Rafaeli, 2009). Beck and colleagues linked dependency to a maladaptive incompetence schema (Gude et al., 2004). Our treatment approach concentrated on the maladaptive schemas of dependency/incompetence and failure to achieve in individuals with DPD (Sperry and Sperry, 2015).

Addressing and modifying these maladaptive schemas could notably impact behavioral patterns and subsequent improvement of interpersonal problems. Previous studies highlight the importance of the therapeutic relationship in treating PDs (Muran et al., 2018). Several studies have reported lower alliance levels in internet-based therapy compared to face-to-face therapy Kiropoulos et al., (2008), Weineland et al., (2020), which may explain the difference in the effectiveness of face-to-face CBT compared to ICBT for

DPD patients. However, it is worth noting that other studies have found similar levels of alliance in both modalities (Kaiser et al., 2021). Therefore, it is important to investigate the underlying factors influencing alliance in different therapeutic settings. In general, while the effectiveness of face-to-face CBT and ICBT was comparable for depression and anxiety symptoms, individuals with DPD may be particularly sensitive to the quality of alliance.

Overall, face-to-face CBT remains an effective treatment for DPD, but ICBT may be a viable option for patients who cannot access in-person therapy. Mental health professionals must consider individual patient needs and preferences when selecting treatment options for DPD. Despite the promising findings of the current study, some limitations warrant mention. First, the kappa of the Persian version of the SCID-5-PD for DPD has been reported to be low. However, we used the SCID-5-SPQ in addition to SCID-5-PD to acknowledge the diagnosis of DPD. Second, the current study did not include a follow-up assessment. Thus, longer-term associations between treatment and outcome measures are unknown.

Future studies should consider follow-up assessments. Third, since ICBT studies for DPD are scarce, comparing our results with previous studies was difficult. More studies are needed to investigate the effect of ICBT in DPD patients. Finally, as the present study did not investigate the mechanisms of change, no firm conclusions can be drawn about therapy processes. Future studies should more specifically understand how these outcomes are achieved and whether there are differences in mechanisms across treatments.

5. CONCLUSION

This study investigated the effect of ICBT on DPD and compared it with face-to-face CBT in a sample of DPD patients. Our findings indicated that both ICBT and face-to-face CBT effectively reduced depression and anxiety, while face-to-face CBT showed an advantage in decreasing interpersonal problems. However, it is important to note that ICBT may still have potential as an alternative treatment option, particularly in remote areas where access to CBT may be limited. Further research is needed to explore the long-term effects of ICBT and its potential to complement or enhance traditional CBT approaches.

Acknowledgment

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Author contributions

NA and HD: Conceptualization, design, and methodology. JS: Data collection and formal analysis. HD: Supervision. SF, JS, and NA: Investigation and project administration. NA and SF: Writing the original draft. HD: Revising the manuscript.

Ethical approval

The Medical Ethics Committee of Shahid Beheshti University of Medical Sciences approved the study (Ethical approval code: IR.SBMU.MSP.REC.1402.060).

Informed consent

Written and oral informed consent was obtained from all individual participants included in the study.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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