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Original Article

Evaluating the efficacy of Danger Ideation Reduction Therapy (DIRT) on symptom severity and obsessive beliefs in individuals with obsessive-compulsive disorder

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Abstract

Obsessive-compulsive disorder (OCD) is a chronic and incapacitating condition, often characterized by severe symptoms. This study aimed to assess the efficacy of Danger Ideation Reduction Therapy (DIRT) in alleviating symptom severity and obsessive beliefs among individuals with OCD. The study employed a pre-test and post-test experimental design with a control group. Participants were individuals with OCD in Ahvaz in 2023, with 38 selected through targeted non-random sampling and randomly divided into experimental and control groups. The experimental group received eight sessions of 90-minute DIRT, while the control group remained on a waiting list. Data collection involved pre-test and post-test assessments using practical OCD measures and the Obsessive Beliefs Questionnaire. Covariance analysis in SPSS 24 software was used for data analysis. Results revealed a significant reduction in symptom severity and obsessive beliefs post-treatment in the experimental group compared to the control group, after controlling for pre-test effects. This suggests that DIRT effectively reduces symptoms and beliefs associated with OCD.

Keywords

Danger ideation reduction therapy
Obsessive beliefs
Obsessive-compulsive disorder

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Introduction

Obsessive-compulsive disorder (OCD) is a persistent and serious condition characterized by obsessions, compulsions, or both, with repetitive and disruptive thoughts and actions being its primary features. Obsessions manifest as unwanted and intrusive thoughts, images, or impulses, causing significant distress as they are perceived as irrational and uncontrollable (Clark, 2019). The disorder is often self-perceived as inconsistent (American Psychiatric Association, 2013). Compulsions are repetitive, ritualistic behaviors that individuals feel compelled to perform, often unable to resist, providing temporary relief from anxiety or discomfort (Van Westen et al, 2021). OCD affects approximately 1-2% of the population, with a higher prevalence among women (Gangi, 2021). It ranks as the third most debilitating psychiatric condition, imposing substantial economic, emotional, and social burdens on individuals, families, and society (American Psychiatric Association, 2013). Individuals with OCD often feel overwhelmed by their repetitive behaviors, leading to heightened anxiety (Jones et al, 2018). Additionally, the disorder can exacerbate symptoms and beliefs associated with OCD (Angelakis & Pseftogianni, 2021; Menzies et al, 2021).

Individuals with OCD perceive their thoughts as potential threats that could harm themselves or others, attributing responsibility for both the harm and its prevention to themselves (Clark, 2000). According to cognitive theories of OCD, individuals with the disorder experience similar distressing thoughts as those without the disorder, but the key difference lies in the interpretation of these thoughts. Inefficient beliefs, which underlie the evaluation of obsessive thoughts, are proposed to be responsible for transforming ordinary distressing thoughts into obsessive thoughts (Julien et al, 2019). Attempts to avoid these obsessive thoughts are believed to be counterproductive due to these inefficient beliefs (Calkins et al, 2013). Consequently, inefficient beliefs are crucial in the onset and persistence of OCD symptoms, influencing both the nature and severity of symptoms (Kim et al, 2016; Doron et al, 2016).

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OCD profoundly impairs individuals, necessitating lifelong treatment (Gordon et al., 2013). Recent studies by Abdi et al. (2023), Pouyanasab et al. (2024), and Mosalman et al. (2023) underscore the urgency for OCD research and treatment. While various interventions, including psychiatric and psychological approaches, have been utilized, exposure and response prevention (ERP) therapy stands out as the most effective current treatment (Ferrando & Selai, 2021). However, in recent studies, cognitive-based approaches have also demonstrated efficacy (Basile et al., 2018). Risk reduction therapy, a novel intervention developed by Jones and Menzies (1998), specifically targets washing/image contamination obsessions and cognitive patterns (O'Connor, 2009). This therapy focuses on reducing risk experiences associated with OCD through corrective information, cognitive reconstruction, screening of filmed interviews, microbiological tests, attention concentration and estimation of the likelihood of disaster. (Krochmalik et al., 2001). Research suggests that risk reduction therapy may be more effective than response inhibition therapy in modifying specific threat beliefs (Krochmalik et al., 2004). Untreated OCD not only exacts significant socioeconomic costs but also leads to decreased quality of life, anxiety and mood disorders, substance dependence, repeated suicide attempts, and disruption of social functions (Karami et al., 2022; Angelakis et al., 2020; Osland et al., 2018; Brown et al., 2019; Salkovskis & Kobori, 2020). Treatment, particularly risk reduction therapy, offers distinct advantages over conventional methods such as medication and ERP therapy, especially for clients averse to the latter (Vaccaro et al., 2010a; Albalawy, 2018). Additionally, risk reduction therapy has shown superiority over response inhibition therapy in treatment-resistant patients (Krochmalik et al., 2001). Hence, this study aims to investigate the impact of risk reduction therapy (DIRT) on OCD symptom severity and beliefs in affected individuals.

Method

Participants

The present study employed a pre-test and post-test design with a control group. The population for this study comprised all individuals diagnosed with OCD in Ahvaz in 2024. A sample of 38 individuals with OCD was targeted for selection. It's worth noting that in experimental research, a minimum sample size of 15 individuals per subgroup is often recommended (Sarmad, et al., 2011).

Instrument

Maudsley Obsessive -Practice Questionnaire (OPQ):

Hodgson & Rachman (1977) developed the OPQ to investigate the nature and extent of obsessive-compulsive disorder. This questionnaire comprises 30 items, half of which are correctly keyed while the other half are incorrectly keyed. Administered at Maudsley Hospital, the questionnaire effectively discriminated between 50 patients with obsessive disorders and 50 with psychosomatic disorders. Analysis of responses from 100 patients revealed four major components—Worry, Cleanliness, Slowness, and Obsessive Doubt—representing four sub-scales. These components are used for both a total obsessive score and four sub-scores. Hodgson & Rachman (1997) reported a reliability coefficient of 0.89 through retesting. The validity of the Maudsley Obsessive-Compulsive Inventory has been established through studies conducted on clinical samples from various countries. For instance, Sanavio found a correlation of 0.70 between total scores on the Maudsley Inventory and the Padua Inventory. In Iran, Pakrawan et al. (2007) reported a test-retest reliability coefficient of 0.84 and concurrent validity of 0.84 with the Yale-Brown Obsessive Compulsive Scale.

The Obsessive Beliefs Questionnaire:

The Obsessive Beliefs Questionnaire (OBQ) was developed by the Obsessive Compulsive Cognition Working Group (2005) to assess pathological dimensions in the cognitive domain. This questionnaire comprises 44 items on a seven-point Likert scale, ranging from 1 (Strongly Disagree) to 7 (Completely Agree). A higher score indicates a greater degree of obsessive beliefs. The original version consists of three subscales: Responsibility and Threat Assessment, Perfectionism and Certainty, and Importance and Control of Thoughts, each containing 16, 16, and 12 questions, respectively. The psychometric properties of the questionnaire were evaluated using clinical and non-clinical samples. Convergent validity was established by correlating it with the Revised Obsessive Compulsive Disorder Questionnaire and the Maudsley Obsessive Compulsive Inventory, yielding correlations of 0.57 and 0.50, respectively. The Cronbach's alpha coefficients for the subscales were as follows: Control of Thoughts 0.87, Importance of Thoughts 0.84, Responsibility 0.89. Test-retest reliability coefficients were Control of Thoughts 0.77, Importance of Thoughts 0.69, and Responsibility 0.69. In Iran, Shams et al. (2014) assessed the Persian version of the OBQ, reporting a Cronbach's alpha of 0.91 for the total score and 0.81, 0.84, 0.76, 0.78, and 0.61 for the subscales, respectively. The questionnaire demonstrated stability over time, with intraclass correlation coefficients of 0.87 for the total scale over 15 and 30-day intervals. Convergent validity was confirmed by correlating scores with the Maudsley Obsessive Compulsive Inventory, yielding correlations of 0.49 for the total score, 0.54 for the general factors, 0.35 for perfectionism, 0.21 for responsibility and threat assessment, 0.38 for importance and control of thoughts, and 0.49 for total scale.

Intervention program:

To implement Danger Ideation Reduction Therapy (DIRT), therapists utilized a manual developed by Jones et al. (2001). The core structure of DIRT sessions involved cognitive reconstruction, guided by principles from cognitive therapy and the emotional rational theoretical model. Each therapy session adhered to the A-B-C model, integrating filmed interviews, display of corrective information, focus training, presentation of microbiology test findings, and discussions on the probability of negative outcomes. These elements were introduced at the outset of each session and served to outline the objectives of the therapy. The primary aim of DIRT was to challenge intrusive thoughts and facilitate cognitive restructuring in clients. Various tools such as disaster cards, filmed interviews, and cognitive reconstruction techniques were employed for this purpose.

Table 1. The protocol for Risk Reduction based on Jones et al. (2001)

Session	Subject
Session 1	An individualized clinical interview, focusing on the rationale behind the "Reduced Risk Perception" treatment and its cognitive aspects in obsessive-compulsive disorder. An introduction to various treatment approaches was provided, including instruction on rhythmic breathing and meditation. Homework: Practice rhythmic breathing to regulate breathing speed and meditate in a serene environment.
Session 2	Review of homework and discussion on the previous week's experiences and concerns. Introduction to the rationale underlying cognitive therapy and the emotional rational model (A-B-C Model). Homework: Continue practicing rhythmic breathing and meditation, and identify and record thoughts related to contamination and illness in a relatively calm environment.
Session 3	Training in identifying intrusive thoughts and emotions, compiling a list of intrusive thoughts associated with OCD. Homework: Practice rhythmic breathing and meditation in a moderately crowded environment, identify and document contamination-related thoughts and associated feelings, as well as obsessive behaviors.
Session 4	Implementation of cognitive reconstruction and challenging of intrusive thoughts, with the use of filmed interviews to reduce risk perception and understand alternative perspectives. Homework: Repeat previous breathing and meditation exercises in a crowded environment, identify contamination-related thoughts and feelings, and question whether others engage in similar behaviors.
Session 5	Presentation of microbiology test results to correct misconceptions about contamination fears. Homework: Repeat previous tasks and work on changing disturbing thoughts.
Session 6	Instruction on attention control techniques, focusing on numbers while breathing and on relaxation while exhaling. Homework: Repeat previous exercises.
Session 7	Introduction of disaster probability training cards, comparing participants' estimates of negative consequences with objective analyses of potential outcomes. Homework: Regularly review and reassess disturbing thoughts, applying new perspectives to daily situations.
Session 8	Reconstruction and reassessment of intrusive thoughts related to risk, with emphasis on reforming beliefs. Each session begins with a review of homework and a discussion of session goals.

Procedure

The research was conducted in accordance with the ethical guidelines of Arab Researcher University (IR.UMA.REC.1402.081). Coordination was established with counseling and psychological services centers in Ahvaz. Thirty-eight individuals diagnosed with OCD were selected via targeted sampling from the OCD Diagnostic Center and randomly divided into experimental and control groups. The experimental group underwent eight 90-minute sessions of risk reduction treatment, while the control group remained on a waiting list. Inclusion criteria were: diagnosis of OCD by a psychologist using the Structured Clinical Interview based on DSM-5-TR criteria (SCID), age 17 to 48 years, literacy in reading and writing, and informed consent to participation. Withdrawal criteria included unwillingness to continue treatment, missing more than two sessions, or incomplete test completion. Participants completed pre-test assessments made using the Maudsley Obsessive Compulsive Disorder Questionnaire and the Obsessive Beliefs Questionnaire. After treatment, both groups completed post-test assessments made using the same measures. Confidentiality and psychological preparedness of participants were ensured. Four individuals from each group were excluded from the final analysis due to missing more than two therapy sessions, leaving data from 15 participants per group for analysis. Data analysis utilized multivariate covariance analysis in SPSS version 24.

Results

The demographic findings of the study indicate that the average age of participants in the experimental group was 32.2 years (with a standard deviation of 10.7), while in the control group, it was 31.4 years (with a standard deviation of 10.1). Analysis of education levels revealed that individuals with a master's degree or higher comprised the largest proportion in both the experimental and control groups. Regarding gender distribution, the experimental group had a higher percentage of female participants compared to the control group.

Table 2. Pre- and Post-Test Means and Standard Deviations for the Two Groups on the Severity of Obsessive Symptoms and Beliefs

Group	Variable	Pre Test		Post-Test	
		M	***SD***	***M***	***SD***
Experiment	Symptom Severity	14.93	2.65	10.53	3.22
	Obsessive Beliefs	199.26	64.30	135.26	41.94
Control	Symptom Severity	13.53	4.06	14.73	1.75
	Obsessive Beliefs	180.40	46.68	183.03	37.62

Descriptive statistics for the study variables are provided in Table 2. The findings presented in Table 2 depict the pre-test and post-test mean scores for symptom severity and obsessive beliefs in the experimental and control groups. It is observed that these scores decreased in the experimental group post-intervention, whereas no significant change was noted in the control group.

Table 3. Levine's Test Results Examining Equality of Group Variances

Variables	Stage	Coefficient F	*df* 1	*df* 2	*p*
Symptom Severity	Post-Intervention	1.402	1	28	0.252
Obsessive Beliefs	Post-Intervention	1.320	1	28	0.277

Table 3 confirms the equality of variances across all variables during the post-test phase. Given the confirmed normal distribution of scores and equal sample sizes in both the experimental and control groups (n = 15), the use of covariance analysis to test the hypotheses is deemed appropriate, necessitating an examination of its underlying assumptions. To begin, the covariance matrix homogeneity hypothesis for dependent variables was assessed using the MBox test, while the Bartlett test was utilized for the remaining covariance variables. Results indicated that the covariance hypothesis was established among these variables. Additionally, the Kolmogorov-Smirnov test was employed to assess the normality of pre-test and post-test score distributions, revealing no significant deviation from normal distribution. Thus, the assumption of normal score distribution was validated. Furthermore, the equality of variances was evaluated using the Levine test, affirming variance equality across research variables in both pre-test and post-test conditions. The homogeneity of the regression slope was examined through analysis of group interaction and pre-test significance levels, which yielded non-rejection of the hypothesis. Moreover, to utilize the multivariate covariance analysis test, the linear relationships between dependent variables were confirmed in this study. With the validation of these assumptions, covariance analysis could be conducted.

Table 4. Results of Multivariate Covariance Analysis Comparing the Post-Test Mean Severity of Obsessive Symptoms and Beliefs

Test	Values	*F*	$df_{hypothesis}$	df_{error}	*p*	Effect Size
Pillai's Trace	0.31	4.593	12	165	0.0001	0.39
Wilks' Lamda	0.69	4.694	12	140	0.0001	0.39
Hotelling's Trace	0.41	4.783	12	155	0.0001	0.39
Roy's Largest Root	0.37	5.127	4	55	0.0001	0.39

According to the findings displayed in Table 4, the results of the multivariate analysis indicate significance in Wilks' Lambda statistics. This suggests that, while controlling for pre-test effects, there is a significant difference between the two groups concerning the combined variable ($p<0.05$). Furthermore, the Eta component reveals that 39% of the variance in the combination of post-test scores for symptom severity and obsessive beliefs is attributed to risk reduction therapy (DIRT).

Table 5. Results of Covariance Analysis Comparing the Post-Test Mean Scores of Obsessive Symptoms and Beliefs

Source	Dependent variable	*SS*	*df*	*MS*	*F*	*p*
Educational intervention	Symptom Severity	53.400	3	17.800	4.947	0.0001
	Obsessive Beliefs	45878.317	3	15292.772	5.045	0.0001
Baseline	Symptom Severity	12499.267	3	12499.267	1347.803	0.0001
	Obsessive Beliefs	1950124.817	3	1950124.817	48.271	0.0001
Error	Symptom Severity	519.333	56	9.274	-	-
	Obsessive Beliefs	173099.867	56	3091.069	-	-

As indicated by the tabulated results, there exists a significant difference in post-test scores for symptom severity ($F=4.947$, $p < .05$), demonstrating the substantial efficacy of Risk Reduction Therapy (DIRT) in reducing symptom severity among the intervention group. Consequently, the research hypothesis regarding the effectiveness of DIRT in reducing symptom severity is upheld. Moreover, significant disparities are observed in post-test scores for obsessive-compulsive beliefs ($F=5.045$, $p <.05$), indicating the considerable effectiveness of DIRT in reducing obsessive-compulsive beliefs within the intervention group. Thus, the research hypothesis regarding the effectiveness of DIRT in reducing obsessive beliefs is affirmed.

Discussion

The study aimed to assess the impact of Risk Reduction Therapy (DIRT) on the severity of symptoms and beliefs associated with obsessive-compulsive disorder (OCD) in affected individuals. The primary hypothesis posited that Risk Reduction Therapy would effectively reduce the severity of OCD symptoms in individuals diagnosed with the disorder. Results from the study revealed a significant discrepancy between the experimental and control groups regarding the severity of OCD symptoms. These findings align with previous research conducted by Babaee et al. (2010), Andouz et al. (2005), Jones et al. (2022), Vaccaro et al. (2010b), Drummond & Kolb (2008), Krochmalik et al. (2001), and Jones & Menzies (1998).

Risk Reduction Therapy, akin to cognitive behavioral therapy but with a specific focus on washing obsessions, is a cognitive therapy approach centered on dispelling exaggerated threat beliefs about disease. Central to this treatment is the reconstruction of irrational beliefs, which serves as its cornerstone. By effecting cognitive changes, this therapy aims to naturally alter behavior. Notably, Risk Reduction Therapy appears promising as a treatment option for individuals grappling with practical washing obsessions. Preliminary research suggests several advantages of this therapy over response inhibition therapy, including greater reduction in obsessive-compulsive symptoms, higher patient acceptance, and more pronounced changes in cognitive variables (Babaee et al., 2010).

Andouz et al. (2005) found in their study that treatment aimed at reducing risk perception effectively alleviated symptoms of washing obsessions. Similarly, Babaee et al. (2010) concluded in their study on the effect of cognitive-behavioral combination therapy and reduced risk perception on obsessive-compulsive disorder in female students that such therapy approaches effectively mitigated risk perception associated with the disorder. In this study, therapists facilitated change by fostering awareness of cognitive distortions and the nature of obsessive-compulsive symptoms, guiding individuals toward more constructive thought patterns. Clients were encouraged to accept negative feelings, thoughts, and emotions as part of their condition and to adopt corrective behaviors, with therapists providing guidance on attitudinal shifts during treatment sessions.

From a different perspective, it can be asserted that group therapy offers a positive avenue for enhancing attention and awareness toward thoughts, emotions, and practical inclinations, leading to the alignment of adaptive behaviors and fostering positive psychological states (Roemer & Orsillo, 2007). This heightened awareness not only enhances individual capacities for both personal and social activities but also cultivates an interest in engaging in such activities.

Individuals with cognitive impairments often experience low self-esteem and frustration stemming from feelings of isolation and an inability to partake in the interpersonal and intimate relationships enjoyed by others. Such individuals may exhibit fear and anxiety in personal interactions and social situations, often resorting to avoidance behaviors such as withdrawal, adopting new beliefs, and avoiding non-social events (American Psychological Association, 2013).

In individuals with obsessive-compulsive personality disorder, there exists a dichotomy characterized by rigid and stringent beliefs regarding right and wrong, indicative of interpersonal inflexibility. Simultaneously, there exists a strong inclination towards order and perfectionism. This juxtaposition suggests that while individuals with this disorder may exhibit highly disciplined and obsessive behaviors, these behaviors may vary in adaptability across different contexts. For instance, engaging in meticulous planning for an important administrative project may elicit a sense of pride and anticipation of reward, despite the perceived risks involved. However, such behaviors may become maladaptive and incongruous in scenarios requiring communication and intimacy, such as planning a family vacation (Molaee et al., 2014).

The second hypothesis of this study posited that treatment aimed at reducing the perception of risk would impact individuals with obsessive-compulsive disorder. The study results revealed a significant difference between the experimental and control groups in the variable of obsessive beliefs. These findings are congruent with those of the study conducted by Krochmalik et al. (2004). To account for this discovery, it can be posited that individuals with obsessive tendencies, influenced by their obsessive beliefs, perceive their thoughts as potential sources of harm to themselves or others. Moreover, they often feel accountable for averting this harm (Clark, 2000). According to theories in obsessive-compulsive cognition, individuals afflicted with OCD experience intrusive thoughts similar to those found in the general population. The fundamental disparity lies in the interpretation of these thoughts. These theories suggest that inefficient beliefs about the evaluation of obsessive thoughts are pivotal in transforming intrusive thoughts into obsessions (Julien et al., 2007). Inefficient beliefs exacerbate the fixation on obsessive thoughts, rendering efforts to avoid or suppress them futile (Calkins et al., 2013). Consequently, inefficient beliefs play a significant role in the onset and perpetuation of OCD symptoms, even serving as predictors of symptom type and severity (Kim et al., 2016; Doron et al., 2016).

Conclusion

The results of this study suggests that DIRT effectively reduces symptoms and beliefs associated with OCD. This study encountered several limitations. Firstly, it was conducted among individuals seeking treatment at centers offering psychological services centers for OCD, which warrants caution when extrapolating findings to broader populations of individuals with this disorder. Additionally, the study lacked control over the severity of OCD among participants and utilized non-random sampling methods for sampling. Future research endeavors should aim to address these limitations by

implementing controlled measures for the severity of obsessive-compulsive disorder and employing random sampling methods to enhance the generalizability of results.

On a final note, it is recommended that psychotherapists take into consideration the findings of this study and consider incorporating risk reduction therapy as an effective intervention for alleviating both the severity of symptoms and beliefs associated with obsessive-compulsive disorder.

Disclosure statement

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