Evaluation of an acceptance and commitment therapy with religious content to control obsessive-compulsive disorder, dysfunctional beliefs, feeling guilty, scrupulosity, and thought control among Muslims in Iran

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Abstract:

BACKGROUND: The present study aimed to develop an integrated protocol by combining religious content and acceptance and commitment therapy (ACT) and evaluate its effectiveness in controlling obsessive-compulsive disorder (OCD), dysfunctional beliefs, feeling guilt, scrupulosity, and thought control among Muslims in Tehran, Iran.

MATERIALS AND METHODS: An exploratory mixed-method research design was applied in this study. In the qualitative stage, the document analysis method was used to extract components related to ACT with religious content. Also, the content and face validity of the intervention were confirmed by experts. Subsequently, a semi-experimental, pretest–posttest, control-group design was performed to evaluate the effectiveness of the adapted protocol with a 3-month follow-up. In the quantitative stage, the inclusion criteria were meeting the diagnostic criteria for OCD based on the diagnostic interview of a psychiatrist, having religious purity/impurity obsessions, not receiving minimum psychological treatment for at least one month before entering the study, religious commitment; minimum age of 18 years and maximum age of 50 years; and having at least a high school diploma. The exclusion criteria from the research were as follows: age over 50 years; educational level of less than a high school diploma; having a personality disorder; receiving other treatments, inability to participate in sessions; and being introduced by a family member. The experimental and control groups participated in 25 individual treatment sessions based on the adapted protocol and 8 conventional ACT sessions.

RESULTS: According to the results, the effectiveness of the religion-adapted ACT intervention on the severity of obsession and dysfunctional religious beliefs was higher in patients with OCD compared to the control group in the posttest.

CONCLUSION: The present study showed that adding religious components to the ACT protocol can increase its effectiveness in reducing the severity of purity/impurity obsessions compared to the conventional ACT in the Muslim Iranian population.

Keywords:

Acceptance and commitment therapy, dysfunctional religious beliefs, guilt feeling, religious obsession, thought control

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Introduction

Obsessive-compulsive disorder (OCD) is a debilitating mental disorder that can decrease an individual's performance and is characterized by persistent and intrusive obsessions and a compulsive tendency to perform behaviors to reduce personal distress.[1] Generally, obsessive-compulsive thoughts involving contamination, doubt, symmetry and perfection, forbidden thoughts (i.e. aggressive, sexual, or religious thoughts and related actions), and harm, vary among individuals.[2,3] One of the subtypes of OCD is a religious or moral obsession, also known as scrupulosity.[4] This subtype of OCD is characterized by repetitive and exaggerated thoughts about having committed a sin, blasphemy, or profanity, fear of angering God, excessive attention to religion and morality, and intense fear of going to hell or eternal damnation,[5] which are usually associated with compulsive behaviors to reduce or neutralize discomfort caused by obsessive thoughts.

The severity and disabilities of OCD are higher in individuals with scrupulosity compared to those with other subtypes of OCD.[6] Individuals with scrupulosity also have a poorer prognosis than those with other forms of OCD and are more likely to be resistant to treatment.[7-9] Evidence suggests that scrupulosity accounts for the highest percentage of OCD cases in Iran (50–80%), especially religious obsessions about impurity/purity and purification.[10]

Individuals with religious obsessions will likely focus on some very common religious principles. They are the most likely to obsess over certain aspects of religion that may exacerbate their anxiety. Considerable attention has been paid to this issue in Islamic rules (Fatwas).[11] One of the possible manifestations of religious obsession among Muslims is the concept of obsession with purity/impurity ("Taharat") or obsessive-compulsive rituals focusing on the purity of the body, actions, and intentions.[11] The cleanliness of the private parts of the body after urination and defecation and filthy clothes (with blood, urine, feces, and semen), bathing ("Ghusl") of the body after menstruation in women, and cleanliness after sexual intercourse (or after the release of semen) are important concepts in Islam.

It may initially seem that religiosity and guilt are common characteristics of individuals with OCD and positively correlated with the severity of OCD symptoms. However, in a previous study,[12] after implementing therapeutic interventions and a 66-month follow-up, the correlation of religiosity with the severity of obsession was found to be negative, while the correlation of guilt with the severity of obsessive symptoms remained positive, suggesting the more important role of guilt. In this regard, several studies and clinical observations have suggested the central role of guilt in the emergence and maintenance of OCD.[13,14] Additionally, dysfunctional metacognitive beliefs,[15] obsession-related dysfunctional beliefs,[16] and thought control strategies are among the factors involved in the development and persistence of OCD.[17,18] Furthermore, some studies suggest that changing dysfunctional beliefs associated with obsessions and compulsions is a suitable predictor of therapeutic changes and needs to be considered in interventions.[16] Therefore, effective, evidence-based interventions should be investigated to simultaneously target these components.

Cognitive-behavioral therapy (CBT), involving exposure and response prevention (ERP), alone or in combination with selective serotonin reuptake inhibitors (SSRIs), has been recommended as the first-line treatment for OCD.[2] Nevertheless, CBT and ERP have been the least effective methods in treating sexual and religious obsessions and hoarding.[19,20] It can be challenging to treat people with religious obsessions using common treatments because these individuals may view the symptoms of their illness as an inevitable aspect of religion, not a psychiatric disorder.[21] Besides, they may consider their therapist incapable of understanding their problem's religious aspects.[21,22]

According to Abramowitz, to treat scrupulosity, which can be more severe than other subtypes of OCD, it is necessary to make subtle modifications to traditional therapeutic models because the incorporation of religious attitudes, methods, and teachings in therapeutic approaches yields more favorable outcomes in the treatment of individuals with religious obsessions.[23,24] Therefore, it is preferable to employ treatment options with religious content for these individuals. According to Dehlin *et al.*,[25] although religious obsession is highly prevalent and associated with clinical distress, it has not been sufficiently studied in etiological and treatment research. Therefore, finding effective treatment methods to treat patients with religious obsessions is necessary.

Considering some limitations of OCD treatment, attempts have been made to introduce alternative approaches. In the last two decades, acceptance and commitment therapy (ACT) has been proposed to improve the effectiveness of OCD treatment.[26-28] As one of the third-wave treatments, ACT uses mindfulness-based principles and techniques and is based on the hypothesis that psychopathology is associated with attempts to control or avoid negative thoughts and emotions.[26,28] The goal of ACT is to change the individual's relationship with their personal experiences, reduce avoidance of experiences, and improve the individual's positive behaviors in life.[29]

Previous studies suggest that integrated treatments are more effective for patients with religious obsessions.[24,30] Therefore, it is necessary to investigate the effectiveness of new integrated treatment methods according to the Iranian culture influenced by religion, so that treatments can be more effective, tolerable, and practical for this group. Religion-adapted ACT may be effective in treating religious obsession disorder because it is a behavior-based intervention that encourages interaction and inclination to face fearful stimuli; meanwhile, it does not involve anxiety relief strategies.[31] Overall, integrating religious teachings in the ACT may increase the acceptance of this treatment among these patients, increase the effectiveness of treatment, and encourage participation in the treatment process.

Although research efforts have been made in Iran to investigate combined treatments in improving obsessive-compulsive disorder,[32] according to the literature review, the present study, to the best of my knowledge, is the first research on the effectiveness of ACT compatible with religious teachings in patients with religious OCD. The present results can help therapists select more effective treatment methods for patients with religious obsessions and encourage further research.[33]

To adapt ACT to Islamic principles, especially in Iran, and to promote the implementation of this treatment model for individuals with religious obsessions, in the present study, we aimed to extract Islamic verses and narrations compatible with the components of ACT from religious and scientific sources involving religious interventions, using an exploratory approach in two qualitative and quantitative phases. Finally, we aimed to investigate the effects of the designed protocol on the severity of obsession, dysfunctional religious beliefs, scrupulosity, feeling of guilt, and thought control in a Muslim population. The general question of this research is whether the acceptance and commitment therapy with religious content is comparable to standard ACT in controlling OCD, dysfunctional beliefs, feeling guilty, scrupulosity, and thought control among Muslims in Iran.

Materials and Methods

Study design and setting
This exploratory mixed-method research was conducted in two sequential qualitative and quantitative phases, based on Twohig *et al*.[31] An intervention protocol was designed based on the qualitative data, and in the quantitative phase, after evaluating its validity, its effectiveness was evaluated by experts in a semi-experimental study.

Qualitative Research Phase I

Study design and setting
In the first phase of this study, components related to ACT adapted to religious teachings were reviewed and extracted using the document analysis method, commonly used in qualitative studies.[34]

Study participants and sampling
Resources, including studies on religion and OCD and interventional protocols for religious obsession, were reviewed in scientific databases, such as PubMed, Google Scholar, Scopus, ISI Web of Science, and IranDoc. In these databases, keywords, such as "mental health and religion," "religion and obsessive-compulsive disorder," "therapeutic interventions for patients with religious obsessions," "religious experiences and psychology," "religious obsessions" (scrupulosity), and "culture and religion," were searched. Besides, articles with integrated protocols with religious content for individuals with religious obsessions, ACT-based sources and books for clergies and religious counselors,[35] and faith-based ACT for Christian clients[36] were reviewed. Moreover, the Bible and reliable Islamic sources, including the Holy Quran, Nahj al-Balagha, Tafsir al-Mizan (20 volumes), Tafsir-e Noor (due to fluency), two religious narrative books containing reliable religious narrations, Usul al-Kafi (4 volumes), and Bihar al-Anwar (25 volumes), were reviewed, as well as websites, including WikiFiqh,[37] Shia Hadith Library website,[38] and Feqahat School website[39] which display these books online.

Data collection tool and technique
A review (enumeration of the contents of the mentioned books) was conducted using keywords related to ACT components, as well as keywords by which religious verses and narrations related to our search could be retrieved. The searched keywords were as follows: "qabala" (acceptance), "la taqaf" (to break up, not to stop), "marru" (to release), "kabad" (suffering), "se'eyesadr" (generosity), "asr" (difficulty), "mehan" (pain), "yosr" (ease), "tajassos" (search), "tavakol" (trust), "amal" (act), "sa'y" (effort), "khowf" (fear), "nezaareh" (observation), "afvazamri" (delegation), "baqy" (to remain), "tarak" (to abandon), and "waqt" (time). (Words in quotation marks are Arabic)

In the next stage, Quranic verses, narrations, hadiths, anecdotes, and stories that were more relevant to the ACT concepts and better explained the ACT components were extracted, and then, verses and narrations related to each ACT component were determined separately. After extracting nearly 200 verses and narrations, which could better explain the ACT model according to the researcher, a qualitative review was performed

through consultation with experts. Ten psychologists and psychiatrists with published articles on mental health and religion, as well as university religious experts, were consulted to qualitatively assess the face and content validity of verses and narrations regarding their compatibility with the ACT components.

After this stage, 38 verses and narrations that were the most consistent with the ACT components were selected following the approval of experts. The remaining verses and narrations, which either overlapped with the selected verses and narrations or were inconsistent with the ACT components, were not included. Afterward, to determine the quantitative content validity of verses and narrations, the content validity ratio (CVR) and content validity index (CVI) were measured to explain the ACT components with the help of 15 other experts. The following formula was used to calculate the CVR:

$$CVR = (N_e - N/2)/(N/2)$$

where N_e is the number of experts choosing the "necessary" option for the component, and N is the total number of experts. Next, the Lawshe model was applied; scores above 0.49 were considered acceptable, as the number of experts was 15. Moreover, Waltz and Bausell's method was used to determine the CVI.[40] For this purpose, the experts rated the relevance of components on a four-point Likert scale (1, "irrelevant"; 2, "relatively relevant"; 3, "relevant"; and 4, "completely relevant"). Religious verses and narrations were incorporated into the ACT protocol to further explain the ACT components to individuals with religious obsessions and increase their familiarity with the ACT model. The formula used for measuring the CVI was as follows: Number of examiners with a score of 3 or 4 to the question/the total number of examiners.

The minimum acceptable CVI value was 0.79. If the CVI of an item was below 0.79, the corresponding verse or narration would not be used in this protocol. The results of CVI and CVR showed that out of 38 religious verses and narrations, 28 had a CVI above 0.79 and a CVR above 0.49 and were used to further explain the ACT components. The remaining verses or narrations that were not inconsistent with the ACT components were not used in this protocol. After this stage, a draft protocol was designed based on the eight-session ACT protocol by Twohig for OCD patients, while incorporating the religious contents extracted in the first stage.[41,42] The adapted protocol included 25 one-hour sessions. The draft was reviewed and finalized by supervisors (clinical psychologists) and advisors (a psychologist and clergymen). Next, two experts outside the research team reviewed and approved the protocol again. The summary of the adapted treatment protocol, along with the treatment process based on the eight-session ACT plan, is presented in Appendix 1.

Before the final protocol was formulated, and the second phase of the study was implemented, in a case study, the initial treatment protocol and the intervention were implemented for a female client (in her thirties) who had a master's degree and was single and unemployed. This stage was performed to assess the function of the adapted protocol. During the study, checklists were used to evaluate the protocol process and content from the client's perspective. Some items were replaced in the protocol during the sessions so that the experts could better interact with the protocol and the treatment would proceed smoothly. Also, the researcher, supervisors, and advisors concluded that the number of sessions should be set at 25.

Phase II of the Semi-experimental Research Project

Study design and setting
The hypotheses of the quantitative section of this study were examined in a semi-experimental study with a pretest–posttest design and a control group with a 3-month follow-up. The independent variable in this study was religion-adapted ACT or conventional ACT. Dependent variables were specific treatment changes in two different treatment methods.

Study participants and sampling
The statistical population of this study included all individuals with religious OCD in Tehran Province, Iran. The study sample was selected among individuals visiting psychologists and psychiatrists' clinics (or online) in 2020, who were asked to cooperate with the study, as well as patients with religious obsessions who had seen the research advertisement on WhatsApp or Instagram (social media).

The convenience sampling method was applied to select samples based on the inclusion and exclusion criteria among individuals who visited the psychotherapy clinics. The study criteria were presented to the psychiatrists and psychologists in a written format or using advertisements on social networks, such as WhatsApp and Instagram. To make sure that the participants met the inclusion criteria, the Structured Clinical Interview for major disorders (SCID-5) and SCID-5-PD for personality disorders were conducted with clients who visited therapists, as well as individuals who had seen the advertisement themselves; the participants had religious OCD and were willing to be treated by a clinical psychologist. If an individual met the inclusion criteria to enter the study, the therapist informed them about the research, and the informed

consent form prepared by the University was presented to them. If a candidate agreed and signed the consent form, they would enter the study as a research sample.

The inclusion criteria were as follows: meeting the diagnostic criteria for OCD based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), the diagnostic interview and judgment of a psychiatrist, and the diagnosis of a clinical psychologist according to the results of the SCID-5-RV interview; having religious purity/impurity obsessions; not receiving minimum psychological treatment for at least one month before entering the study; religious commitment (measured with 11 items from the Attitudes toward Religion Scale); minimum age of 18 years and maximum age of 50 years; and having at least a high school diploma.

Data collection tool and technique

The assignment of the participants was performed using the simple random sampling method. Evaluations in all stages were performed by an independent examiner. Among nearly 70 clients with religious obsessions, some were considered ineligible for treatment in the first session of initial screening, and about 15 clients were found to be ineligible for the study or were not prepared for the treatment after the second or third session; therefore, they were excluded from the study. Finally, 36 people were selected for the study. The reasons for excluding samples from the research were as follows: age over 50 years; the educational level of less than a high school diploma; having a personality disorder; receiving other treatments, such as repetitive transcranial magnetic stimulation (rTMS) and neurofeedback; reluctance to complete the questionnaires; inability to participate in sessions before 7:30 pm; and being introduced by a family member.

Thirty-six clients were randomly divided into the experimental group, with 18 participants receiving religion-adapted ACT, and the control group, with 18 participants receiving the conventional ACT. After group allocation, one of the participants in the control group withdrew from the study, and 17 individuals were included in the control group. Sampling was performed on two dates, once in August 2020, when the required number of samples could not be recruited due to a drop in visits for the mentioned reasons, and once in October 2020, to reach the required number of clients in both groups.

The two groups of this study included a group treated with the religion-adapted ACT protocol and a control group receiving conventional ACT for obsession. In the briefing session, each client was provided information about the type of treatment, how to hold the sessions, and the number and time of sessions. To comply with the ethical principles, patients who did not take any medications before the study but seriously required medications during the study were referred to a psychiatrist for pharmacotherapy. Also, the prescriptions of patients already taking medications would change if advised by a psychiatrist. In the experimental group, two participants who had not used any medication when entering the treatment were referred to a psychiatrist and did not participate in the follow-up. In the control group, where four participants did not participate in the follow-up, three of four needed medication.

The treatment sessions were held both online and in person. One of the requirements for participation in this study was the participant's agreement with at least two in-person sessions for treatment. Since this study was performed during the COVID-19 pandemic when the province had a yellow status in terms of the COVID-19 spread, the sessions were held in one of the clinics in Tehran; when the province had an orange or red status, they were held through WhatsApp and video chat. Given the critical conditions of the COVID-19 pandemic, most sessions were held online in compliance with health regulations. After confirming the inclusion and exclusion criteria and random allocation, all participants completed the research tools before treatment.

The treatment for participants in the intervention group, individually treated by the researcher for up to 25 sessions, started in September 2020 and continued for about 6 months once a week. Simultaneously, the control group individually participated in the conventional ACT program held by the researcher for OCD once a week for eight sessions. The second samples for the experimental and control groups were selected in October 2020. The treatment started in November 2019. The treatment for the control group was completed after 2 months, and the treatment for the experimental group was completed in May 2021.

After finishing the sessions, both groups completed the questionnaires again to determine changes during treatment; both groups had a 3-month follow-up. Throughout the study, the therapist tried to provide identical conditions for the two groups; except for the number of sessions, other factors, such as attention, energy, and emphasis, were identical in both treatments. Despite these measures to reduce the effect of possible bias, both groups were evaluated by another examiner. After the control group completed the follow-up questionnaires, three educational-therapeutic group sessions were arranged for them on mindfulness and religious teachings related to treatment, which was extensively implemented for the experimental group. Ten patients in the control group participated in these sessions.

Measures

In this study, the following questionnaires were used to evaluate the demographic and clinical characteristics:

Yale-brown Obsessive-compulsive Scale (Y-bocs)

The Y-BOCS is a clinical scale developed by Goodman[43] to measure obsessive-compulsive severity and type, regardless of the content and number. Unlike other questionnaires available, Y-BOCS is highly sensitive to changes in patients after treatment and is widely used to evaluate the effectiveness of pharmacological and psychological treatments for OCD. This scale is known as the gold standard for evaluating the severity of OCD symptoms after treatment.[44] For scoring, each item is rated on a five-point Likert scale, ranging from 0 (no symptoms) to 4 (very severe). The sum of all 10 items represents the total score (range, 0–40) for the severity of the disorder. The scores of five dimensions were measured, including time spent, confusion and distress, resistance, interference in daily life, and control. The suggested cutoff points were as follows: 0–7, scarce; 8–15, mild; 16–23, moderate; 24–31, severe; and 32–40, extreme.[43]

The Y-BOCS has adequate inter-rater reliability, internal consistency, test-retest reliability, and convergent validity.[45] Its diagnostic validity compared to the Hamilton Rating Scale was estimated at 0.64 and 0.59, respectively.[10] The severity cutoff point of Y-BOCS was nine in Iranian patients with OCD.[46] In the present study, this scale was used to evaluate the severity of OCD. Also, Cronbach's alpha coefficient was calculated to be 0.89.

Kugler and Jones' Guilt Inventory (1995)

This questionnaire is a self-assessment tool developed by Kugler and Jones[47] between 1988 and 1992. It contains 45 items and three subscales. The results of this scale pertain to three subscales, that is, a trait of guilt, state of guilt, and moral norms. The internal consistency coefficient of this questionnaire was estimated at 0.79 for the state of guilt and 0.89 for the trait of guilt. Also, after a two-week interval, the test-retest coefficients for the subscales of moral norms, a trait of guilt, and a state of guilt were 0.81, 0.72, and 0.56, respectively.[47] The content validity of this questionnaire was confirmed based on the opinions of 15 psychologists and psychiatrists, who evaluated the reliability of this tool twice in three weeks and reported a reliability coefficient of 0.83.[48] To measure the reliability coefficient of this scale, Alilou *et al.*[49] used the test-retest method on 25 students for two weeks and reported a reliability coefficient of 0.98. This questionnaire was used in the present study to investigate the feeling of guilt in patients. Also, Cronbach's alpha coefficient was calculated to be 0.97.

Penn Inventory of Scrupulosity (Pios)

This scale, which was designed by Abramowitz *et al.*,[50] contains 19 self-report items to evaluate scrupulosity, including obsessive religious thoughts. It includes two subscales: (1) fear of committing a religious sin (fear of guilt, e.g. "I am afraid to have sexual thoughts") and (2) fear of God's punishment (e.g. "I worry that God is upset with me"). The items are scored based on a five-point Likert scale, ranging from zero (never) to four (always). In the study by Abramowitz *et al.*,[50] this questionnaire had a Cronbach's alpha of 0.93. Also, Cronbach's alpha coefficients of 0.88 and 0.90 were reported for the two subscales of fear of God and fear of guilt, respectively. Ramezani and Atef Vahid (2010) translated and adapted this tool in Iran.[51] In a survey of 30 students, this test had a Cronbach's alpha of 0.82 and a test-retest reliability coefficient of 0.72 to 0.85 in one month. This questionnaire was used for two purposes in this study: to evaluate the fear of sin and divine punishment in these individuals and to examine the effectiveness of treatment on this dimension of scrupulosity. Also, Cronbach's alpha coefficient was calculated to be 0.84.

Religious Beliefs of Washing Rituals Questionnaire

The religious beliefs of the cleaning rituals questionnaire were designed by Naziri, and Karimi[48] to evaluate the patients' attitudes toward forced washing rituals, cleanliness ("Taharat"), and behavioral abstinence to avoid impurities.Scoring was based on a Likert system, ranging from "completely agree" (4) to "completely disagree" (0) (completely agree, 4; partly agree, 3; moderately agree, 2; disagree to some extent, 1; and completely disagree 0). This questionnaire contains 25 questions, with scores ranging from zero to 100.

The face validity of this questionnaire was confirmed by several clinical psychologists and psychiatrists. The correlation of the questionnaire scores with the scores of the religious adherence questionnaire was calculated, assuming that the participants' scores on these two scales are positively correlated; each score was considered an external criterion for the other. The significance of Pearson's correlation coefficient approved this assumption. In the present study, this scale was used to assess dysfunctional religious beliefs. Also, Cronbach's alpha coefficient was calculated to be 0.94.

Thought Control Questionnaire (Tcq)

The Thought Control Questionnaire (TCQ) is a 30-item self-report scale, which compiled by Wells and Davis,[52] to systematically examine the effectiveness of adaptive and maladaptive strategies to control disturbing thoughts. This tool contains five subscales: distraction, social control, worry, punishment, and reappraisal. The Cronbach's alpha coefficients of the questionnaire ranged from 64 to 79%. The test–retest correlations for the subscales were 72%, 79%, 71%, 64%, and 67%,

respectively, in a 6-week interval and 83% for the total scale.[52] In Iran, Gudarzi and Esmaeili-Torkanpouri (2005) reported Cronbach's alpha coefficients of 81%, 79%, 70%, 70%, 76%, and 70% for the total scale, and each subscale, respectively. In the present study, this questionnaire was used to evaluate thought control, and Cronbach's alpha coefficient was calculated to be 0.77.

Ethical consideration
The present study was approved by the Ethics Committee of the University of Social Welfare and Rehabilitation Sciences, Tehran, Iran (IR.USWR. REC.1398.019). All treatment sessions for patients in the two groups were recorded with their consent. All implementation stages were carried out under the supervision and guidance of the supervisor. Besides, every 2 months, a treatment progress report was presented to all the supervisors and advisors, and the guidelines were adhered to.

Statistical analyses
All analyses were calculated using IBM SPSS Statistics 24 (IBM Corp, Armonk, NY, USA). Demographic characteristics between completer and noncompleter were compared with the Chi-square test for categorical data and the independent samples *t*-test for continuous data. Baseline differences in outcomes were calculated using independent samples t-tests with Bonferroni correction (for completer vs. noncompleter and the two intervention groups). In this study, due to missing data, linear mixed models with restricted maximum likelihood estimation (REML) and unstructured covariance were used. Also, the intervention group was compared with the control group at baseline, after the intervention, and in the follow-up.

In this study, 35 individuals with OCD in the age range of 22–43 years (M = 33.54, standard deviation (SD) = 5.46) were investigated. Most of the participants were female (n = 32, 91.4%), married (n = 23, 65.7%), and housewives (n = 24, 68.6%), with a bachelor's degree or higher (n = 26, 74.3%). Twenty-nine participants completed all the questionnaires until the follow-up (82.8%). There was a

17.2% attrition in the sample. The mean and SD of the research variables are reported separately in Table 1. For the intervention and control groups.

Completers did not differ from noncompleters in their baseline scores of the severity of Obsessive-Compulsive Disorder ($t_{(33)}$ =-0.14, p =.889), dysfunctional religious beliefs ($t_{(33)}$ =-0.41, p =.686), scrupulosity ($t_{(33)}$ =0.01, p =.999), feeling guilty ($t_{(33)}$ = 0.19, p = .846) and thought control ($t_{(33)}$ =-0.79, p =.435). Furthermore, they did not differ in sex ($\chi^2_{(1,N=35)}$ =0.54, p =.460), marital ($\chi^2_{(2,N=35)}$ =2.26, p =.323), job ($\chi^2_{(2,N=35)}$ =3.69, p =.158), education ($\chi^2_{(2,N=35)}$ =2.02, p =.364), and age ($t_{(33)}$ = 0.81, p = .420).

Lastly, participants of the two groups did not differ in their baseline scores of the severity of the obsessive-compulsive disorder ($t_{(33)}$ = 1.77, p =.085), dysfunctional religious beliefs ($t_{(33)}$ = 1.56, p = .127), scrupulosity ($t_{(33)}$ = -0.23, p = .815), feeling guilty ($t_{(33)}$ = -0.24, p = .810) and thought control ($t_{(33)}$ = -0.32, p = .751).

For the linear mixed-effects model to be valid, covariance among repeated measures must be modeled properly. To identify the appropriate covariance structure, there are four commonly used covariance structures, which include compound symmetry (CS), first-order autoregressive (AR (1)), unstructured (UN), and Toeplitz (TOEP) were considered.

According to Table 2, which presents the results of the comparison, we chose the model with the smallest AIC and BIC values of covariance structure. Therefore, the first-order autoregressive (AR (1)) covariance structure was selected due to the smallest AIC and BIC as compared to the remaining covariance structures.[53]

The results presented in Table 3 reveal that the effect of the group on the study variables was insignificant. Besides, the main effect of time on the severity of obsession (F = 27.501, P < .001), scrupulosity (F = 8.880, P = .001), and dysfunctional religious beliefs (F = 36.578, P < .001) was significant.

Table 1: The mean and standard deviation (SD) of research variables

Variable	Group	Pre		Post		Follow-up	
		Mean (SD)	n	Mean (SD)	n	Mean (SD)	n
Scrupulosity	Intervention	31.33 (12.24)	18	30.11 (14.81)	18	23.68 (12.70)	16
	Control	32.35 (13.29)	17	31.23 (15.34)	17	27.00 (13.14)	13
Dysfunctional religious beliefs	Intervention	56.72 (14.68)	18	28.11 (19.24)	18	23.56 (16.19)	16
	Control	48.11 (17.74)	17	38.88 (19.29)	17	34.53 (22.19)	13
Feeling guilty	Intervention	127.50 (10.25)	18	128.38 (12.27)	18	125.62 (10.59)	16
	Control	128.47 (13.30)	17	127.11 (15.61)	17	126.15 (14.05)	13
Thought control	Intervention	55.00 (10.52)	18	58.11 (9.95)	18	57.56 (7.78)	16
	Control	56.05 (8.92)	17	57.41 (7.28)	17	55.00 (6.28)	13
Severity of obsessive-compulsive disorder	Intervention	24.33 (6.83)	18	13.72 (7.01)	18	11.70 (6.38)	17
	Control	20.00 (7.59)	17	18.29 (7.27)	17	14.23 (7.70)	13

Based on the Bonferroni correction, the pretest, posttest, and follow-up stages were significantly different regarding the severity of obsession and scrupulosity [Table 4]. The obsession and scrupulosity severity scores decreased further in the follow-up. Also, there was a significant difference between the pretest and follow-up regarding dysfunctional religious beliefs; however, Bonferroni correction results showed no significant difference between the posttest and the follow-up. Moreover, in the religion-adapted ACT group, the effect of time on the severity of obsession (F = 23.387, P < .001), scrupulosity (F = 3.906, P = .030), and dysfunctional religious beliefs (F = 29.373, P < .001) was significant, and in the conventional ACT group, the effect of time on the severity of obsession (F = 9.43, P = .001), scrupulosity (F = 4.035, P = .029), and dysfunctional religious beliefs (F = 8.014, P = .002) was significant.

Additionally, the interaction effects of time and group on the severity of obsession (F = 9.455, P < .001) and dysfunctional religious beliefs (F = 7.963, P = .001)

were significant in patients with OCD. According to the Bonferroni correction results in Table 4, there was a significant difference of -4.57 units in the severity of obsession (t = -3.88, P = .043) and −10.77 units in dysfunctional religious beliefs (t = -3.82, P = .045) between the intervention and control groups in the posttest stage (the scores reduced). Also, according to the results of Bonferroni correction, in the follow-up phase, no significant difference was found between the intervention and control groups considering the severity of obsession (P = .448), scrupulosity (P = .891), dysfunctional religious beliefs (P = .176), feeling guilty (P = .787), and thought control (P = .554) [Table 4].

The present results showed that the religion-adopted ACT intervention was effective in reducing the severity of obsession and dysfunctional religious beliefs in patients with OCD in the posttest compared to the conventional ACT; however, no significant difference was found in the follow-up [Table 4]. Besides, by examining the effect of time, the results showed that the

Table 2: Comparison of Covariance structures for linear mixed-effects model

Variable	Covariance structure	-2 Res. Log Likelihood	AIC	BIC
Scrupulosity	UN	703.824	717.824	735.552
	CS	709.295	715.295	722.893
	AR (1)	702.773	714.773	722.370
	TOEP	708.773	716.773	726.903
Dysfunctional religious beliefs	UN	780.118	794.118	811.846
	CS	784.073	790.073	800.671
	AR (1)	780.067	788.367	795.965
	TOEP	782.367	790.367	800.498
Feeling guilty	UN	720.651	734.651	752.379
	CS	727.837	733.837	741.434
	AR (1)	720.523	731.523	739.121
	TOEP	725.523	733.523	743.654
Thought control	UN	653.206	667.206	684.934
	CS	658.447	664.447	672.045
	AR (1)	653.179	664.379	671.977
	TOEP	658.379	666.379	676.509
Severity of obsessive-compulsive disorder	UN	620.524	634.524	652.328
	CS	623.204	629.204	636.834
	AR (1)	620.466	626.766	634.396
	TOEP	620.766	628.766	638.939

Note: CS: Compound Symmetry, UN: Unstructured, AR (1): First-order Autoregressive and TOEP: Toeplitz

Table 3: Main effects of group and time, group by time interactions for the variables

Variable	Group		Time		Group by time	
	F	P	F	P	F	P
Scrupulosity	0.050	0.825	8.880	0.001	0.010	0.990
Dysfunctional religious beliefs	0.469	0.498	36.578	<.001	7.963	0.001
Feeling guilty	0.007	0.933	0.703	0.499	0.167	0.846
Thought control	0.041	0.842	1.252	0.295	0.516	0.600
Severity of Obsessive-Compulsive Disorder	0.123	0.728	27.501	<.001	9.455	<.001

amount of change in the scores of obsession severity, scrupulosity, and dysfunctional religious beliefs was higher in the religion-adapted ACT group compared to the conventional ACT group.

Discussion

According to previous research, religion-adapted ACTs have not been applied to patients with religious obsessions. However, studies with common treatment approaches, such as CBT and ERP adapted to religious teachings, have been conducted on patients with religious obsessions in Iran and other countries. In the first part of the present study, the adapted intervention and the protocol designed for the Iranian Muslim population had face and content validity based on the experts' opinions. In the second part, the findings of the semi-experimental study showed that the religion-adapted ACT had relative effectiveness and superiority in some components compared to the conventional ACT (control group). This effect on the severity of obsession and dysfunctional religious beliefs about purity/impurity was significant

and even greater in the posttest. It can be concluded that the effectiveness of the intervention was higher in the posttest compared to the follow-up. Although the intervention significantly affected the reduction of scrupulosity, it was not significantly different from conventional ACT. Regarding the effect of time, the religion-adapted ACT was more effective in reducing the severity of obsession, religious beliefs, and scrupulosity than the conventional ACT. However, the intervention was not significantly superior to the conventional ACT in improving the feelings of guilt and thought control, and its effectiveness was not significant.

The current research results regarding the effectiveness of an integrated treatment for religious people are consistent with the findings of some studies.[23,51,54-60] The current research, for the first time, showed that religion-adapted ACT was effective in improving the severity of religious obsessions and dysfunctional religious beliefs, which is consistent with the hypothesis that integration of religious content into ACT can increase the specificity of this treatment for religious

Table 4: Estimation of fixed effects parameter of a regression model

Variable	Parameters	Estimate	Std.Error	df	t	p	95% CI
Scrupulosity	intercept	24.85	3.45	54.626	7.19	<.001	(17.93, 31.77)
	Time* (pretest)	7.49	2.74	24.564	2.73	0.011	(1.84, 13.15)
	Time* (posttest)	6.38	2.48	59.256	2.56	0.013	(1.40, 11.36)
	Time (pretest)×group** (intervention)	-1.02	4.56	46.211	-0.333	0.824	(-10.19, 8.15)
	Time (posttest)×group** (intervention)	-1.12	4.56	46.211	-0.341	0.806	(-10.30, 8.05)
	Time (Follow-up)×group** (intervention)	-0.651	4.74	52.279	-0.140	0.891	(-10.17, 8.86)
Dysfunctional religious beliefs	intercept	33.60	4.74	64.361	7.08	<.001	(24.12, 43.07)
	Time* (pretest)	14.51	4.58	30.583	3.16	0.003	(5.16, 23.86)
	Time* (posttest)	5.27	3.95	61.420	1.33	0.187	(-2.63, 13.19)
	Time (pretest)×group** (intervention)	8.60	6.13	53.548	1.96	0.166	(-3.69, 20.90)
	Time (posttest)×group** (intervention)	-10.77	6.13	53.548	-3.82	0.045	(-23.06, -0.52)
	Time (Follow-up)×group** (intervention)	-8.86	6.47	61.464	-1.87	0.176	(-21.81, 4.09)
Feeling guilty	intercept	126.54	3.32	70.290	38.10	<.001	(119.92, 133.17)
	Time* (pretest)	1.92	2.64	25.380	0.725	0.475	(-3.53, 7.37)
	Time* (posttest)	0.56	3.35	46.265	0.170	0.866	(-6.17, 7.13)
	Time (pretest)×group** (intervention)	-0.97	4.32	58.945	0.050	0.823	(-9.63, 7.69)
	Time (posttest)×group** (intervention)	1.27	4.32	58.945	0.086	0.770	(-7.39, 9.93)
	Time (Follow-up)×group** (intervention)	-1.23	4.54	67.421	0.073	0.787	(-10.30, 7.84)
Thought control	intercept	55.37	2.29	71.889	24.08	<.001	(50.79, 59.96)
	Time* (pretest)	0.67	2.15	28.164	0.315	0.755	(-3.73, 5.09)
	Time* (posttest)	2.03	2.23	54.604	0.911	0.366	(-2.43, 6.50)
	Time (pretest)×group** (intervention)	-1.05	2.94	60.065	0.129	0.721	(-6.95, 4.83)
	Time (posttest)×group** (intervention)	0.69	2.94	60.065	0.056	0.813	(-5.19, 6.59)
	Time (Follow-up)×group** (intervention)	1.86	3.13	68.954	0.353	0.554	(-4.38, 8.11)
Severity of Obsessive-Compulsive Disorder	intercept	13.94	1.88	68.087	7.41	<.001	(10.19, 17.70)
	Time* (pretest)	6.05	1.93	35.109	3.13	0.003	(2.12, 9.97)
	Time* (posttest)	4.34	1.64	62.233	2.64	0.010	(1.06, 7.62)
	Time (pretest)×group** (intervention)	4.33	2.41	56.834	3.21	0.078	(-.50, 9.17)
	Time (posttest)×group** (intervention)	-4.57	2.41	56.834	-3.88	0.043	(-9.40, -0.26)
	Time (Follow-up)×group** (intervention)	-1.94	2.54	63.996	-0.582	0.448	(-7.02, 3.14)

* reference=Follow-up, **reference=control

people and their symptoms. However, these findings are implicitly inconsistent with the findings of studies[30,51,59] as they did not find any significant difference between the adapted and conventional treatments.

To explain why the religion-adapted treatment was more effective in reducing the symptom severity of purity/impurity obsessions compared to the conventional ACT in the present study, differences between these two treatments can be mentioned. Although in the design of the religion-adapted ACT, the basis and structure of treatment were based on the ACT treatment protocol, the religious content also entered the therapeutic intervention, and some components of ACT were modified, as well. In our model, the therapist was allowed to continue treatment for up to 25 weekly sessions. A larger number of sessions was also held because people with religious obsessions are more resistant to treatment and often require more sessions.

In studies,[31,61,62] 16 to 20 sessions were considered suitable for treating individuals with religious obsessions. One of the reasons for using medium-term treatment is that the considered duration of treatment could help the person become more familiar with the treatment model, which is compatible with religious teachings, and spend more time developing cognitive flexibility before ERP. Second, the religious content of sessions in the adapted treatment focused on the needs of individuals with religious obsessions (purity/impurity), and a major effort was made to make the content fully targeted and acceptable.

Regarding the effect of time, the effectiveness of the religion-adapted intervention was higher than that of conventional ACT in reducing the severity of obsessions, religious beliefs, and scrupulosity. However, the difference between the two groups was insignificant; although the intervention could reduce the severity of obsessions and dysfunctional religious beliefs over time, there was no significant difference between the groups in the follow-up. In other words, the intervention caused similar effects to the conventional ACT.

To explain why differences between the two groups regarding the effectiveness of the intervention on the severity of religious obsessions and dysfunctional religious beliefs were not significant in the follow-up, it should be noted that in this study, the religious content was presented in the middle sessions, and the number of sessions was 25 in total. While the adapted intervention showed superiority over the conventional ACT in the posttest, the difference was insignificant in the follow-up. The religious content showed its greatest effect in the first few sessions. Besides, its effect was not lost in the follow-up and was comparable to that of conventional

ACT; therefore, the religious content of treatment does not necessarily lose its effect in the long term.

Moreover, in the design of this protocol, particular attention was paid to the practical dimension of mindfulness exercises, which was not well addressed in the protocol but is one of the components of ACT, and the experimental group was asked to perform the exercises daily. In the present study, the hierarchy of obsession and ERP was used during treatment, but the clients were not asked to score the subjective units of distress (SUDS) during exposure because ACT does not aim to reduce tension during treatment. Attention was paid to a person's exposure to committed action; this issue was not considered in the primary protocol, which can be another reason for the superiority of the treatment protocol designed in the present study.

To explain the effectiveness of this intervention in reducing dysfunctional religious beliefs, the more the OCD patients are influenced by their wrong beliefs about religious issues (or the less knowledge they have about religious teachings), the more they are likely to show obsessive cleaning behaviors ("Taharat"). This conclusion is consistent with the findings reported by Foa *et al.* (1979),[51] which showed that one factor reducing behavioral therapy's success was the overvalued opinions of patients. These beliefs may have a religious root in Iran and even make the symptoms ego-syntonic.[51]

Finally, every research has some limitations and strengths, which should be addressed to make future research more accurate. One of the strengths of this study was its novelty, as it can be considered one of the first studies in this area. Besides, the strengths of the designed protocol were as follows: use of religious teachings to facilitate the application of treatment and exposure, attention and respect to the client's beliefs, consulting a clergy psychologist familiar with the ACT approach, holding adequate sessions for the obsessive subgroup who are treatment resistant, using ERP through ACT, and use of mindfulness exercises, which have been less addressed in Twohig's protocol.[63] In general, attention to these dimensions strengthened the original protocol. Another strength of this study was the mastery of the therapist holding the treatment sessions because participation in the ACT training program and using the ACT protocol step by step helped improve the treatment results for people with OCD. Moreover, clinical supervision in treating patients with OCD, selection of religious teachings based on ACT, and identification of treatment obstacles and resistance of clients with OCD influenced the effectiveness of treatment.

Limitation and recommendation

Some limitations of this study include the attrition of

samples due to prolonged sessions. However, attrition in the intervention group was because two clients, after completing 17 treatment sessions, found that psychotherapy alone could not help them and required pharmacotherapy; they were referred to a psychiatrist to start pharmacotherapy. Also, in the control group, given the severity of the clients' obsession and failure to meet their treatment expectations after an eight-session ACT course, they no longer participated in the follow-up. They decided to start or change pharmacotherapy and then psychotherapy.

Moreover, there was a female predominance among the participants, and there were few males in this research; therefore, one should be cautious in generalizing the findings to the male population. Also, a lack of specific questionnaires for individuals with religious obsession has been reported in previous studies; only the existing questionnaires were used in this study, which could negatively affect the results and their accuracy. Finally, this was a semi-experimental study, and we cannot claim that all confounding factors were controlled; it is suggested to use experimental designs to control for these factors in future studies.

Conclusion

The present study showed that ACT protocol mixed with religious components can increase its effectiveness in reducing the severity of purity/impurity obsessions compared to the conventional ACT in the Muslim Iranian population.

Ethical Approval
The present study was approved by the Ethics Committee of University of Social Welfare and Rehabilitation Sciences, Tehran, Iran (IR.USWR.REC.1398.019).

Data availability statement
The data that support the findings of this study are available upon reasonable request from the corresponding author.

Author statement
BD and FT participated in the conceptualization and writing of the article. HA contributed to writing the religious section. AP participated in data collection and data analysis. AAD is the main author of the article.

Conflicts of interest
There are no conflicts of interest.

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Appendix 1.

Treatment Protocol

Acceptance and Commitment-Based Treatment Process Adapted to Religious Content

The treatment was based on the 8-session ACT-based treatment program for OCD by Twohig, M. P., et al (2009, 2010) the religious content obtained in the qualitative part was added to it, and the number of sessions was planned up to 25 sessions.

Table 1: A summary of ACT-based treatment adapted to religious content

Sessions 1 and 2	Introducing the structure of treatment sessions, explaining the rules of treatment, taking the client's history: Overall assessment of the client (physical-psychological-social-religious) and the process of disorder formation, assessing disorder comorbidities with SCID-5 and SCID-5-PD based on DSM-5, evaluating the client's religiosity based on the Life Profile Scale (the religious attitude section), explaining some of the basic principles of ACT, explaining about the ACT model and the metaphor of two mountains.
	Homework: Reading the pamphlet prepared on what OCD is. (From the "Getting Control: Overcoming Your Obsessions and Compulsions" by Lee Bauer (2003).)
Session 3	Implementing the 58-question Yale-Brown scale with the cooperation of a psychologist in order to collect more details of the client's obsessions.
	Homework: Completing the worksheet on the effect of obsession on life, completing the case formulation sheet with the ACT model for the client by the therapist.
	The worksheet on the effect of obsession on life is given to the client as homework so that he/she is aware more of the short-term and long-term effects of obsession on life.
Session 4	Assessing performance, examining the client's reactions to the previous session, examining the task of the effect of obsession on life, explaining control strategies, and assessing their costs and benefits for the client with obsessions, and homework.
	The types of control are explained and an example is given for each from the type of religious obsession. The client is asked to give an example of each type of control about his/her own obsessions.
	As homework, the client was asked to remember and write down the effectiveness of the types of control that he/she experienced to reduce his/her obsession.
Session 5	Continuing the discussion of controlling, assessing performance, examining the patient's reactions to the previous session, checking homework, controlling is not the solution but the problem itself, explaining creative frustration.
	Homework: Doing the worksheet of finding the reasons for the persistence of the obsession
	The metaphor of a person in a pit, the metaphor of a tug of war with a giant, the metaphor of a spider's web to explain that controlling is not the solution, the metaphor of falling in love, and the metaphor of a cream cake to explain the avoidance of emotions, paying attention to the client's examples about the types of control and bringing the insight of the client to the fact that the solutions of the controlling are not the solution but the problem itself, avoiding physical emotions and sensations, both positive and negative, is impossible and is a futile effort.
Sessions 6 and 7	Explaining acceptance (willingness), clean pain and dirty pain, assessing performance, checking the patient's reactions to the previous session, checking homework, explaining willingness and acceptance, the compassionate hand technique, explaining behavioral commitments, and homework.
	Discussing the cost of reluctance, clean pain, and dirty pain (by the example of toothache and visiting the doctor), acceptance to bear the pain resulted from change, the technique of showing "self-compassion" to accept unpleasant feelings.
	Homework: Daily experience note worksheet, willingness daily registration worksheet, clean and dirty mess daily registration worksheet, introducing the "Treatment Based on Acceptance and Adherence" book (Flaxman, Blackledge and Bond, 2014) to read the contents of the sessions.
Session 8	Training mindfulness: Assessing performance, checking the patient's reactions to the previous session, checking homework, mindfulness exercises, verses, and narrations related to being in the present.
	Homework: Doing mindfulness exercises.
	Explaining mindfulness exercises, hourglass breathing exercises, voice and thought exercises, mindfulness exercises with a recorded voice of prayer (the file is available and has been sent as an attached file), and providing verses and narrations related to acceptance and being in the present.
	Homework: Doing mindfulness exercises daily
Session 9	The treatment structure and components: Assessing performance, checking the patient's reactions to the previous session, checking homework, the metaphor of stairs, verses and narrations about exposure, and homework.
	The metaphor of stairs to teach the concept of ERP from easy to difficult exposures, verses, and narrations about exposure.
	Recalling the behavioral commitment topic briefly to carry out exposures.
	Homework: Agreement with the client to commit to carrying out easy exposures with low severity in OCD.

Contd...

Table 1: Contd...

Session 10	Introducing oneself as context and fault (defusion): Assessing performance, checking the patient's reactions to the previous session, checking homework.
	Introducing oneself as a context and defusion, verses and narrations about oneself as a context and fault, homework.
	The following exercises and metaphors are presented and explained for self-education as a context: Numbers exercise, chess metaphor, the metaphor of giants in a boat, pickle, pickle, pickle exercise, self-observation exercise, verses, and narrations about oneself as a context, and fault.
	Homework: Self-observation exercise, mindfulness exercise, and doing exposures with low severity of OCD.
Session 11	Assessing performance, checking the patient's reactions to the previous session, checking homework, re-formulating language conventions, exercise: Watching your thoughts in the presence of God, verses, and narrations about yourself as a context, homework.
	Explanation and examples for re-formulating language conventions, exercise: Watching your thoughts in the presence of the merciful God (religious exercise for fault), verses and narrations about yourself as a context.
	Homework: Daily mindfulness exercises and inter-session examples should be used at home to a fault between yourself and thoughts and emotions.
Sessions 12 and 13	Assessing performance, checking the patient's reactions to the previous session, teaching religious jurisprudential rules, and homework.
	Teaching religious jurisprudential rules and explaining their relationship with related components in the ACT by the therapist. The religious jurisprudential rules included: The lack of indigestion and embarrassment rule, the Taharat rule, the Helliyat rule, the rape rule, the separation rule, and the Estehbab rule. These religious jurisprudential rules are the basis of the religious edicts, which were taught entirely with examples related to the rules of filth. The taught items were selected in consultation with and approved by a religious advisor.
	Homework: Mindfulness exercises, ERP with low severity, and staying with unpleasant emotions.
Session 14	Assessing performance, checking the patient's reactions to the previous session, checking homework, review, verses related to cognitive fault and superstitious thoughts, homework.
	Reviewing ACT components, verses related to a cognitive fault, and superstitious thoughts. Homework: Mindfulness practice, ACT-based ERP, watching the short film of the metaphor of gratitude from the mind.
Session 15	Assessing performance, checking the patient's reactions to the previous session, checking homework, explaining the values, relevant verses, and narrations, homework.
	Explaining the value, comparing the value and goal, goal circle, metaphor of 80th birthday party, relevant verses, and narrations.
	Homework: Similar to the previous session.
Session 16	Assessing performance, checking the patient's reactions to the previous session, checking homework, committed action, relevant verses and narrations, ACT-based ERP, and a review of the model adapted with religious aspects in performing exposures, and homework.
	Committed action, addressing goals, explaining treatment obstacles, verses, and traditions related to committed action.
	Homework: Similar to the previous session.
Sessions 17 to 25	Assessing performance, checking the patient's reactions to the previous session, checking homework, and focusing on ACT-based ERP.
	Homework: ACT-based ERP, explaining behavior in line with the values.

*** The main topics of the treatment were completed in 16 sessions, but for most clients with religious obsession, who have more severe obsessions and are more resistant to treatment than other types of obsessions, repeating the topics and continuing the exposures is necessary, which sessions 17 to 25 were set for this purpose.