Original Article

# The effect of cognitive therapy combined with drug therapy in reducing the symptoms of trichotillomania

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## ABSTRACT

Trichotillomania is a disorder that causes psycho-physical problems. However, there are various ways to treat this disorder. The present study aimed to compare effectiveness of group therapy combination of habit reversal training and acceptance and commitment based therapy, and pharmacotherapy in reducing anxiety and depression in patients with trichotillomania. This study was quasi-experimental with pre-test, post-test and control group. For this purpose, 18 individuals who had received diagnosis of trichotillomania were selected through targeted sampling method and were randomly divided into two experimental and one control groups. All three groups completed the Massachusetts General Hospital Hairpulling Scale, Beck Depression Questionnaire, and Beck Anxiety Questionnaire at pre-test and post-test stages. Participants in psychotherapy group attended 10 sessions of group therapy. The pharmacotherapy group also received citalopram 40 mg daily, and the control group received no treatment at this stage. SPSS-16 software and univariate covariance analysis test were used for data analysis. The results of univariate covariance analysis showed a significant difference in trichotillomania symptoms (F=75.933) between psychotherapy group, pharmacotherapy group and control group at 0.05 level. Reduction of anxiety and depression in psychotherapy group was significantly higher than pharmacotherapy and control groups. The study results showed that group therapy combination of habit reversal training and acceptance and commitment based therapy can be used as a more effective method than pharmacotherapy.

**Keywords:** Trichotillomania, Anxiety, Depression, Acceptance and Commitment Based Therapy, Habit Reversal Training

## Introduction

Trichotillomania (hair pulling disorder), commonly known as TTM, has been defined in Diagnostic and Statistical Manual of Mental Disorders (DSM-5) as an obsessive-compulsive disorder. Trichotillomania is a relatively rare disorder characterized by pulling the hair of different parts of the body resulting in hair loss. In this disorder usually the hair in different parts of the body, especially the scalp, eyebrows and eyelids is pulled [1]. Recent studies estimate prevalence of this disorder to be about 1% to 3% in adults, which is more common in women than in men [2]. Etiology of TTM disorder for each patient is a complex interplay of biological and psychosocial factors. The neurological-biological bases of this disorder are so unknown. Initial researches show that TTM is a hereditary disorder in 76% to 78% of cases [3].

This disorder has harmful consequences and often causes social, emotional, and physical problems. People with

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trichotillomania, in addition to hair loss, may suffer from numerous physical problems caused by hair pulling behavior (such as skin lesions and trichobezoar (a mass of hair and food formed in stomach)). In addition to these problems, significant psychological complications such as anxiety, depression, shame and embarrassment, and consequently social withdrawal are also reported in these patients [4]. As Woods et al. (2006) showed in a group correlational study on 1697 adults with TTM disorder, patients with TTM experience problems in occupational, educational, and social performance, and avoid daily activities such as swimming, going to barber shop, and going out on stormy days [5]. If TTM disorder is not treated, it usually persists chronically. If early diagnosis and appropriate treatment are done, about 50% of these patients experience at least short-term reduction of symptoms [6]. Several treatments have been proposed for TTM disorder, which are generally divided into two groups of pharmacotherapy and non-pharmacotherapy. Drugs such as fluoxetine, clomipramine, citalopram, and other selective serotonin reuptake inhibitors (SSRIs) are among the drugs used to treat symptoms of TTM [7]. This is while most studies show that 70 to 90 percent of patients who are treated only through drugs observe recurrence of symptoms only after a few weeks after drug discontinuation [8].

In recent years, attention has been paid to the role of psychological interventions in treatment of TTM. One of the most common psychological treatments for TTM is Habit Reversal Training (HRT) which has been proposed by Azrin, Nun and Frantz (1980) as a behavioral approach [9, 10]. This treatment consists of two components of awareness training and competitor response training that seek to, by increasing the patient's awareness of hair pulling behavior, replace it by another behavior [11]. Tolin et al. (2007) in a study on 22 patients with TTM disorder showed that habit reversal training significantly reduces symptoms of TTM disorder [7]. Although habit reversal is an important component of psychological treatments for TTM, however, the rate of recurrence of symptoms after treatment period is high [10]. Studies show that combining habit reversal training with some cognitive-behavioral therapies that are effective in treating TTM disorder increases response to treatment in patients with this disorder. One of the cognitive-behavioral therapies that studies support for its effectiveness in treatment of TTM disorder is Acceptance and Commitment based Therapy (ACT) [12]. Acceptance and commitment based therapy is classified as a third wave of cognitive-behavioral therapies which has been proposed by Hayes, Wilson, and Strochal, and its effectiveness in treating anxiety, depression, and TTM disorders has been proven. ACT is a contextual-action intervention based on communication framework theory that considers human suffering to be resulted from psychological inflexibility which is reinforced by cognitive fusion and empirical avoidance. The goal of ACT is psychological flexibility [13, 14].

Given the side effects of not treating this disorder, probability of recurrence of symptoms after pharmacotherapy, necessity of having useful and evidence-based therapies, and lack of a research on comparing citalopram pharmacotherapy and combination of two psychological methods, the present study aimed to compare effectiveness of group therapy combination of habit reversal training and acceptance and commitment based therapy, and pharmacotherapy in reducing anxiety and depression in patients with trichotillomania disorder.

## Research Method

The present study is applied in terms of purpose. The research design is quasi-experimental with pre-test and post-test in two experimental groups and a waiting list. The statistical population in this study consists of men and women aged 18-50 years with TTM who participated in the study voluntarily and through awareness of numerous calls throughout the city of Mashhad. In this study, among the volunteers who were diagnosed with TTM based on diagnostic interview as well as psychiatrist diagnosis, and then obtained the minimum score for diagnosis of the disorder (given the cutting score) on Massachusetts General Hospital Hairpulling Scale, Beck Depression Questionnaire, and Beck Anxiety Questionnaire, 18 individuals were selected and randomly divided into 3 groups.

The criteria for inclusion in the research included clinical and psychiatric diagnosis of TTM, obtaining minimum cutting score in Massachusetts General Hospital Hairpulling Scale, depression and anxiety questionnaires, having a minimum age of 18 and a maximum of 50, having a minimum primary education, not receiving other medication or psychological treatments when entering the study, discontinuation of medication or psychological treatments at least one month before entry into the study, and finally, subjects not suffering from psychotic or psycho-organic diseases which interfere with the study. Exclusion criteria also included: unwillingness to take drugs after starting treatment, changing the drugs due to its side effects, not attending more than three consecutive sessions in group therapy sessions, and unwillingness to continue treatment. Massachusetts General Hospital Hairpulling Scale was used to measure severity of the disorder. This scale was developed by Cohen et al. (1995) and validated by Rabiei et al. (2014) [15, 16]. This scale is a self-measurement questionnaire including 7 items each of which measures one dimension of hairpulling. These dimensions include: 1. Frequency of urges; 2. Intensity of urges; 3. Ability to control the urges; 4. Frequency of hairpulling; 5. Attempts to resist hairpulling; 6. Control over hairpulling; and 7. Associated distress. Each question is scored on a 5-point Likert scale (from 0 to 4), with 0 indicating no symptoms and 4 indicating severe symptoms. In this scale, the lowest score is 0 and the highest is 28. A cutting score of 17 indicates existence of TTM disorder. This scale has good internal validity (Cronbach's alpha= 0.89) and has a good test-retest reliability (r=0.97) in measurement with other psychological tests such as anxiety and depression [17].

The Beck Depression Questionnaire was first developed in 1961 by Beck et al., and was revised in 1971. This questionnaire, consisting of 21 items, has been designed to measure the feedbacks and symptoms of depressed patients. Subjects should respond it on a four-point scale from 0 to 3. These items are in

areas such as sadness, pessimism, feelings of powerlessness and failure, feeling of guilt, sleep disturbance, loss of appetite, auto-phobia, etc. such that 2 items are related to emotion, 11 items to cognition, 2 items to explicit behaviors, 5 items to physical symptoms, and 1 item to interpersonal semiotics. As such, this scale determines different degrees of depression from mild to very severe, with scores ranging from a minimum of 0 to a maximum of 63. Its validity coefficient, using retest method, varied from 0.48 to 0.86 based on the time interval between implementations times as well as type of the tested population. Beck et al. again in 1996 obtained validity coefficient of test-retest in one week time interval as 0.93. In other researches, such as the study by Chegini (2002), validity of Beck questionnaire has been reported to be high and varying between 0.70 and 0.90 [18].

In 1991, Beck et al. introduced Anxiety Questionnaire consisting of 21 items and including common symptoms of anxiety. Each item of this questionnaire is scored on a 4-point Likert scale. In a study on 160 patients, they reported internal consistency (Cronbach's alpha= 0.92) and test-retest validity to be equal to 0.75 [19]. To investigate psychometric properties of this questionnaire in Iran, a research entitled "Psychometric properties of Beck Anxiety Questionnaire in age and gender categories" was done. The results of this study showed that this questionnaire has good validity (r=0.72), reliability (r=0.83), and internal consistency (Cronbach's alpha= 0.92) [20].

To carry out the research, since June 2016, numerous calls titled "Participation in the plan for treatment of trichotillomania (hairpulling disorder)" were distributed on several occasions in the city of Mashhad including in Psychiatric and psychological Clinics, hairdressers, all health centers throughout the city, and Telegram Virtual Network. A number of men and women referred to the designated places including Clinic of Faculty of Educational Sciences and Psychology of Ferdowsi University of Mashhad for initial interview and diagnosis. Among these, 29 received initial diagnosis and 23 received the score of 17 and above in Massachusetts Hospital Scale and were selected to participate in the study. Finally, 18 individuals participated in the study and were divided into three groups using random numbers table. All participants read and signed the informed consent form and participated in the study with awareness of conditions of continuing or discontinuing treatment. For six patients, citalopram with 40 mg baseline was prescribed which reached 60 mg after 5 weeks. Participants were given the dosage and timing of consumptions of drugs, as well as their side effects, and were asked to start taking the drug after a visit and prescription by the psychiatrist on a specific date announced to them. Six others were in the psychotherapy group and 6 others on the waiting list. The week before starting the intervention, pretest was taken from the three groups, and the time of group psychotherapy sessions was determined with the consent of members of the psychotherapy group. The first group received citalopram under the supervision of a psychiatrist. The second group received a combination of habit reversal training and acceptance and commitment based treatment in ten 100-minute sessions once a week. The third group (control group) received no treatment and was on the waiting list. One week after the end of sessions, post-test was taken from all three groups. Finally, the data collected from the three groups were analyzed by SPSS 16 software. Firstly, to examine the research propositions, the hypotheses of normality through Kolmogorov-Smirnov test, homogeneity of variances and regression line slope homogeneity were examined; and then, univariate covariance analysis test (ANCOVA) was used between the main constructs. In this study, given the existence of one independent variable with three levels (psychotherapy group, pharmacotherapy group and waiting list) as well as existence of one dependent variable in each hypothesis that compares these groups, univariate covariance analysis was used so that after controlling the pre-test effect, the post-test of groups will be compared.

**Table 1: Summary of treatment sessions combining habit reversal training and acceptance and commitment based treatment**

| Session | Description |
|---|---|
| **First session** | The therapist's familiarization with the patient; establishment of therapeutic relationship; treatment principles and contracts including timely and continuous presence, confidentiality, participation and doing assignments; training about TTM; an introduction to self-monitoring homework; and a description of treatment expectations. |
| **Second session** | Implementation of stimulus control strategies and habit reversal training. |
| **Third session** | Discussing important patient issues and ways to combat pulling impulse (valuation). |
| **Fourth session** | Discussing perceptual problems in order to continue pursuing better quality of life (creative helplessness). |
| **Fifth session** | Continuing the fourth session discussion and achieving acceptance. |
| **Sixth and seventh sessions** | Addressing cognitive faulting process. |
| **Eighth session** | Practicing the previous session materials (practicing acceptance and commitment based treatment) |
| **Ninth session** | Reviewing treatment. |
| **Tenth session** | Preventing recurrence and ending the sessions and taking the post-test |

Adapted from Woods and Tohig (2016), Woods (2008) [21]

## Results

According to research results, 12 (66.7%) of the sample group were female and 6 (33.3%) were male. Other demographic variables are listed in Table 2.

Given the existence of a dependent variable (TTM) as well as an independent variable (treatment), that has three levels (psychotherapy, pharmacotherapy, and waiting list); univariate ANCOVA test was used to respond to the research hypothesis.

**Table 2: Number and percentage of demographic variables of gender, education, and age**

| | Gender | | | | Education | | | | | | | | Age | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Female | | Male | | High school | | Associate degree | | Bachelors' degree | | Masters' degree | | 25-30 | | 31-36 | | 37-42 | |
| | Number | Percentage | Number | Percentage | Number | Percentage | Number | Percentage | Number | Percentage | Number | Percentage | Number | Percentage | Number | Percentage | Number | Percentage |
| **Psychotherapy** | 4 | 66.7 | 2 | 33.3 | 2 | 33.3 | 1 | 16.7 | 2 | 33.3 | 1 | 16.7 | 3 | 50 | 1 | 16.7 | 2 | 33.3 |
| **Pharmacotherapy** | 3 | 50 | 3 | 50 | 2 | 33.3 | 0 | 0 | 2 | 33.3 | 2 | 33.3 | 3 | 50 | 1 | 16.7 | 2 | 33.3 |
| **Control** | 5 | 83.3 | 1 | 16.7 | 2 | 33.3 | 0 | 0 | 2 | 33.3 | 2 | 33.3 | 2 | 33.3 | 3 | 50 | 1 | 16.7 |

**Table 3: Descriptive statistics for depression variable in psychotherapy, pharmacotherapy, and waiting list groups in pre-test and post-test stages**

| Variable | Implementation stage | Psychotherapy group | | Pharmacotherapy group | | Waiting list | |
|---|---|---|---|---|---|---|---|
| | | M | SD | M | SD | M | SD |
| **Depression** | Pre-test | 23.166 | 8.304 | 21.666 | 18.250 | 12.666 | 10.053 |
| | Post-test | 3.166 | 4.996 | 14.666 | 10.152 | 17.833 | 12.967 |

According to Table 3, it can be seen that the mean depression scores in psychotherapy group has decreased in the post-test compared to the pre-test in the psychotherapy group compared to pharmacotherapy and waiting list groups.

Before implementation of univariate ANCOVA to compare the experimental groups and the waiting list in depression score, pre-assumptions of this test were examined. Given that significance level of Kolmogorov-Smirnov test is above 0.05; therefore, the assumption of normality for doing final analysis exists. Given that significance level of F test is above 0.05, so, the assumption of homogeneity of variances for doing final analysis exists. In addition, in spite of significance of Levin test for depression variable, considering equal sample size in psychotherapy group, pharmacotherapy group, and waiting list, we can be assured that the statistical test results are not impaired. Finally, given that significance level of F test is above 0.05, so, the assumption of homogeneity of regressions' slope for doing the final analysis exists. Therefore, based on compliance with all the three assumptions, it is possible to use covariance analysis.

**Table 4: Covariance analysis of post-test scores of psychotherapy, pharmacotherapy, and waiting list groups in improvement of depression**

| Source | Sum of squares | Degree of freedom | Mean of squares | F | Significance level | Squared Eta |
|---|---|---|---|---|---|---|
| **Pre-test** | 861.178 | 1 | 861.178 | 19.452 | 0.001 | 0.581 |
| **Inter-group variance** | 1179.781 | 2 | 589.890 | 13.324 | 0.001 | 0.656 |
| **Intra-group variance** | 619.822 | 14 | 44.273 | | | |
| **Total variance** | 4740.000 | 18 | | | | |

According to Table 4, it can be seen that the amount of depression symptoms at the different levels of experimental groups and waiting list is significantly different (F=13.324; P= 0.001)

**Table 5: Modified means and standard errors of depression variable in three groups of psychotherapy, pharmacotherapy and waiting list**

| Group | Mean | Standard error |
|---|---|---|
| **Psychotherapy** | 0.826 | 2.768 |
| **Pharmacotherapy** | 13.204 | 2.737 |
| **Waiting list** | 21.637 | 2.850 |

According to the results in Table 5, it can be seen that the psychotherapy group has had a lower mean score of depression compared to the pharmacotherapy group (P= 0.006) and the waiting list (P= 0.001); and this difference is statistically significant. It can also be seen that pharmacotherapy group also compared to the waiting list has not obtained a significant difference in terms of depression (P= 0.055). This indicates more effectiveness of group therapy combination of habit reversal training and acceptance and commitment based treatment on symptoms of depression.

**Table 6: Descriptive statistics for anxiety variable in psychotherapy, pharmacotherapy, and waiting list groups in pre-test and post-test stages**

| Variable | Implementation stage | Psychotherapy group | | Pharmacotherapy group | | Waiting list | |
|---|---|---|---|---|---|---|---|
| | | M | SD | M | SD | M | SD |
| Anxiety | Pre-test | 30.500 | 15.069 | 19.166 | 10.943 | 15.166 | 9.826 |
| | Post-test | 6.500 | 4.722 | 11.333 | 4.718 | 13.000 | 9.338 |

According to Table 6, it can be seen that the mean anxiety scores in psychotherapy group has decreased in the post-test compared to the pre-test in the psychotherapy group compared to pharmacotherapy and waiting list groups.

Before implementation of univariate ANCOVA test to compare the experimental groups and the waiting list in anxiety score, pre-assumptions of this test were examined. Given that significance level of Kolmogorov-Smirnov test is above 0.05, therefore, the assumption of normality for doing final analysis exists. Given that significance level of F test is above 0.05, so, the assumption of homogeneity of variances for doing final analysis exists. Finally, given that significance level of F test is above 0.05, so, the assumption of homogeneity of regressions' slope for doing the final analysis exists. Therefore, based on compliance with all the three assumptions, it is possible to use covariance analysis.

**Table 7: Covariance analysis of post-test scores of psychotherapy, pharmacotherapy, and waiting list groups in improvement of anxiety**

| Source | Sum of squares | Degree of freedom | Mean of squares | F | Significance level | Squared Eta |
|---|---|---|---|---|---|---|
| **Pre-test** | 313.087 | 1 | 313.087 | 12.678 | 0.003 | 0.475 |
| **Inter-group variance** | 362.150 | 2 | 181.075 | 7.332 | 0.007 | 0.512 |
| **Intra-group variance** | 345.746 | 14 | 24.696 | | | |
| **Total variance** | 2697.000 | 18 | | | | |

According to Table 7, it can be seen that the amount of anxiety symptoms at the different levels of experimental groups and waiting list is significantly different (F= 13.324; P= 0.007).

**Table 8: Modified means and standard errors of anxiety variable in three groups of psychotherapy, pharmacotherapy and waiting list**

| Group | Mean | Standard error |
|---|---|---|
| **Psychotherapy** | 3.160 | 2.235 |
| **Pharmacotherapy** | 12.252 | 2.045 |
| **Waiting list** | 15.422 | 2.140 |

According to the results in Table 8, it can be seen that the psychotherapy group has had a lower mean score of anxiety compared to the pharmacotherapy group (P= 0.011) and the waiting list (P= 0.002); and this difference is statistically significant. It can also be seen that pharmacotherapy group also compared to the waiting list has not obtained a significant difference in terms of anxiety (P=0.293). This indicates more effectiveness of group therapy combination of habit reversal training and acceptance and commitment based treatment on symptoms of anxiety.

## Discussion and conclusion

The results of univariate covariance analysis used to evaluate the data of this study showed a significant decrease in depression and anxiety scores of patients in the psychotherapy group (group therapy combination of habit reversal training and acceptance and commitment based treatment) compared to the control group in the post-test. The results also showed a decrease in depression and anxiety scores of patients in the pharmacotherapy group compared to control group in the post-test. Consistent with these findings, Lappalainen et al. (2007), Forman et al. (2007), and Levitt et al. (2004) have reported effectiveness of ACT treatment in reducing depression and anxiety in patients [22-24]. ACT treatment, by increasing cognitive flexibility in patients undergoing treatment, increases acceptance of unpleasant events that cause anxiety and depressed mood; and moving along the path of values leads to behavioral activation in depressed and anxious patients; and finally, patients' score on these variables decreases. Depression and anxiety in patients with TTM are influenced by the shame and discomfort of hair-pulling behavior, the unpleasant appearance that hair-pulling behavior creates for them, and the fear of others' knowing about their behavior. In fact, depression and anxiety are added to TTM as a secondary disorder. Since psychotherapy by combining habit reversal training and acceptance and commitment-based treatment reduces symptoms of TTM, reduction of depression in TTM patients can be considered the result of reduction of symptoms of TTM in these patients. In fact, depression of patients has been reduced by decreasing symptoms of TTM. However, it should be noted that reducing symptoms of TTM disorder does not directly reduce depression, but it reduces depression by affecting variables such as self-esteem, increasing quality of life, and reducing sense of guilt and shame.

The results of univariate covariance analysis did not show any significant decrease in depression and anxiety scores of participants in pharmacotherapy group (citalopram treatment)

compared to control group in the post-test. Although the mean score of anxiety and depression has decreased compared to pre-test and waiting list, but this difference is not significant. However, the impact of pharmacotherapy in reducing anxiety score in patients with TTM disorder usually emerged in more long-term, and the difference between effectiveness of psychotherapy and pharmacotherapy will be more accurate in long-term follow-ups. In reviewing the literature of TTM disorder, no research was found investigating effectiveness of citalopram in reducing depression or anxiety in patients with TTM. Since citalopram is considered one of the serotonin reuptake inhibitor drugs and, by affecting serotonin reuptake cycle, can also affect symptoms of depression in patients with TTM disorder, and also since citalopram has clinical application in treatment of anxiety disorders and is used simultaneously to treat obsessive-compulsive disorders, it was predicted that it can also be effective in reducing mean anxiety score of patients with TTM.

As stated, depression and anxiety emerge as secondary disorders and consequences of TTM in patients with this disorder. Since psychotherapy as combination of habit reversal training and acceptance-based treatment is more effective than pharmacotherapy in reducing symptoms of TTM, reduction of depression and anxiety in patients with TTM will also be more in patients who have received this treatment. In explaining why and how group therapy combination of habit reversal training and acceptance and commitment based treatment are more effective than pharmacotherapy in reducing symptoms of depression and anxiety in patients with this disorder, variables such as increased self-esteem, improved quality of life, decreased sense of guilt and shame, increased acceptance and cognitive flexibility in patients receiving treatment can be mentioned. While pharmacotherapy only deals with biological aspects of the disorder and other important variables affecting mood of these patients are ignored.

In the present study, we used citalopram as a serotonin reuptake inhibitor (SSRIs) in comparison with group therapy combination of habit reversal training and acceptance and commitment based therapy. The results showed that there is a significant difference in reduction of symptoms of the disorder, depression, and anxiety in patients with TTM between the group receiving drug and the group going under psychotherapy; and psychotherapy is more effective than pharmacotherapy. However, given that effectiveness of pharmacotherapy will be better measured in long-term (an average of 6 months of drug use), the difference between effectiveness of psychotherapy and pharmacotherapy will be more accurate in long-term follow-ups.

Among the limitations of this study, the following can be mentioned: low sample size has reduced the possibility of generalizing the results to the whole population. Due to lack of time, it was not possible to express follow-up studies (especially long-term follow-ups). This study has only examined effectiveness of citalopram and does not allow us to examine effectiveness of other serotonin reuptake inhibitors. In this regard, it is recommended that further research will be conducted with more people, and effectiveness of combination therapy of habit reversal training and acceptance and commitment-based treatment will be compared with pharmacotherapy with a single- or multi-subject plan with individualized sessions in patients with TTM. Finally, psychotherapy sessions of habit reversal training and acceptance and commitment-based treatment will be compared with combination of habit reversal training and dialectical behavior therapy in patients with TTM. This study not only for the first time has compared effectiveness of group therapy combination of habit reversal training and acceptance and commitment based therapy with pharmacotherapy, but also examination of the two variables of depression and anxiety as two important disorders highly concurrent with TTM. In addition, examination of effectiveness of citalopram in treatment of these disorders can be considered among the strengths of this study.

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