



Effectiveness of Habit Reversal Training (HRT) on Anxiety and Trichotillomania (TTM)

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Abstract

Background: This study aimed to examine the effectiveness of habit reversal training (HRT) on anxiety and trichotillomania (TTM) symptoms

Methods: This experimental study was conducted using a pre-test-post-test design with a control group. The participants were 24 persons who were selected using convenience sampling from among female patients with trichotillomania (TTM) visiting medical clinics in Mashhad. The selected patients were randomly divided into intervention (n = 12) and control (n = 12) groups. The participants in the intervention group attended 8 habit reversal training (HRT) sessions, while the participants in the control group did not receive any intervention. All participants completed the items in the Massachusetts General Hospital (MGH) Hair pulling Scale and the State-Trait Anxiety Inventory (STAI) before and after the intervention. The collected data were analyzed using descriptive statistics (mean and standard deviation) and inferential statistics including paired and independent t-test and chi-square test in SPSS software (version 21).

Results: The results showed that after the HRT intervention, there was a significant difference between the intervention and control groups in terms of anxiety and trichotillomania (TTM) ($P < 0.001$). The mean scores of anxiety and trichotillomania (TTM) for the participants in the intervention group were significantly lower than those of the control group and compared to the pretest, indicating that HRT intervention had a positive effect on reducing anxiety and trichotillomania (TTM).

Conclusion: Habit reversal treatment has a positive effect on reducing anxiety and trichotillomania (TTM) symptoms in patients with TTM.

Keywords: Habit Reversal Training (HRT), Anxiety, Trichotillomania (TTM)



Background

Trichotillomania (TTM) is one of the mental disorders that despite its importance and relatively high prevalence, received less attention from mental health professionals until twenty years ago. People diagnosed with trichotillomania (TTM) are patients who have lost a large part of their scalp, eyebrows, eyelashes, and other parts of their body by pulling their hair out, and who eventually seek treatment after utmost helplessness and suffering (1). People with trichotillomania experience an increasing sense of tension before pulling, or when they try to resist pulling but they have a sense of pleasure or relief after the hair is pulled. In other words, pulling hair is a coping mechanism against stress, anxiety, and tension, and the sense of relief from pulling, through the process of conditioning, will reinforce this behavior (2).

Depending on the individual's knowledge of pulling the hair, TTM is divided into three styles: automatic, focused, and mixed. The first type is done unconsciously and involuntarily and occurs in situations where the person is doing a passive/sedentary activity such as thinking about something, solving a problem, watching TV, reading, or listening to music and he/she notices it after repeating it many times. Normally, after pulling the hair, the person will feel remorse and guilt, to the extent that he/she often decides to leave the action, but will fail. Focused TTM is a compulsive behavior done by the person in response to negative emotional states (anxiety, tension, anger, etc.), mental stress, or when trying to establish cognitive harmony. Research has shown that focused TTM represents an individual's attempt to reduce levels of negative emotions or to manage and regulate disturbing private experiences (3). This disorder usually causes many problems for the person. Decreased quality of life, difficulty in social life, low self-esteem, depression, and anxiety are some of the problems experienced by people with TMM (4). Trichotillomania (TTM) is classified as an obsessive-compulsive disorder (OCD) according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). This disorder is associated with negative socio-psychological consequences (2).

Anxiety is one of the most important comorbidities that is estimated to affect about 60% of patients with TTM (5). Anxiety and other comorbid disorders, such as depression, affect the whole life of these people, impairing various aspects of their quality of life. Thus, it is quite clear that this disorder needs more serious attention, and if the treatment and rehabilitation methods of this disorder are not considered, many of its consequences will become more prevalent for those suffering from it (6). The patients with TTM hurt themselves and suffer, but they cannot stop their self-destructive behavior, and the negative symptoms of this disorder and its complications lead to a decrease in the quality of life in these patients and thus life is less enjoyable for them. Quality of life is currently considered one of the most important health consequences. According to the World Health Organization (WHO), quality of life is an individual's perception of their position in life in the context of the culture and value systems in which they live and concerning their goals, expectations, standards, and concerns. Given the negative consequences of trichotillomania (TTM), it seems that quality of life is one of the variables that decreases in these patients in the first place and affects other aspects of life (7). However, trichotillomania (TTM), despite having many physical, psychological, and social complications, has been less diagnosed and treated, so there is a need for more research to identify the factors affecting it, as well as find new treatments. Studies have shown that trichotillomania (TTM) begins earlier than anxiety disorders, and TTM in some people leads to a reduction in unpleasant and anxious feelings (8). Adults with trichotillomania often report that pulling hair increases during periods of anxiety, and instead, for many of these people, TTM leads to feelings of shame and embarrassment and ultimately avoiding social activities. In general, TTM causes anxiety in social situations (9). There is a close resemblance between trichotillomania (TTM) and obsessive-compulsive disorder (OCD). For example, in both disorders, there are repetitive and uncontrollable actions and thoughts that are performed in conjunction with certain rituals and ceremonies. In general, TTM,

which leads to baldness, increases social anxiety, and increased anxiety leads to increased TTM. Anxiety and TTM have a reciprocal relationship (10). Studies have suggested that depression associated with TTM is a predictor of poor quality of life in people with this disorder (11). Moreover, TTM, in particular, has shown significant overlap with depression, anxiety, addiction, and other repetitive body-focused behaviors, and that depression with TTM predicts poor quality of life in people suffering from this disorder (12).

One of the new psychological therapies considered currently for the treatment of several obsessive-compulsive and tic disorders is cognitive-behavioral therapy with habit reversal. Habit reversal training (HRT) is one of the most important treatment methods and has been the first systematic method to treat this disorder and other habitual problems such as tic and nail-biting. The latter method was invented by Azrin and Nunn (13) and combines behavioral and cognitive techniques. For this reason, a group of psychologists consider HRT as cognitive-behavioral therapy. This therapy is a good way to reduce the problems caused by behavioral disorders and ultimately eliminate them. To apply this technique, the therapist only needs to help the patient make cognitive changes in his or her schemas and identify situations that cause him or her tension, and resort to pulling hair as a strategy to cope with stress. Besides, the client must be helped to adopt other strategies to relieve his/her tensions, solve his/her problems reversely, and replace new behaviors with previous ones. Although habit reversal training has a behavioral aspect, research has shown that there are changes in people's minds after doing it. This therapy is effective for many disorders and it seems to be one of the effective treatments for treating severe trichotillomania (TTM) symptoms (3).

Habit reversal training (HRT) has four main components. The first and most important component is awareness training whereby the client learns to be aware of all the instances and situations of trichotillomania, to describe the behavior to which he/she is accustomed, and to identify when the habit occurs or is imminent. The second component is competing

response training, in which the client learns to use a different behavior for hair pulling. In other words, the patient learns behavior that is inconsistent with the habitual behavior that he/she uses to prevent the dysfunctional behavior from occurring. The third component is social support, in which a significant other helps the client to successfully use alternative responses or behaviors to control trichotillomania. Finally, the fourth component is motivational strategies whereby the therapist helps the client to identify, examine, and control all the habit situations and emotions that occurred before, during, and after trichotillomania (7). Given the numerous problems experienced by TTM patients, it is necessary to use different treatment methods to treat this disorder. However, if left untreated, the disorder usually persists and turns into a chronic problem. Without treatment, less than 14% of TTM patients experience a reduction in symptoms. In contrast, with early diagnosis and treatment, about 50% of these patients experience a reduction in symptoms at least in the short term (12). Some therapists believe that feelings of stress and anxiety may be preconditions of TTM behaviors. To control and cope with these behaviors, the patient needs to overcome them through relaxation. Numerous studies have shown the effectiveness of habit reversal training in other countries in improving and reducing TTM symptoms. However, no study has addressed this disorder in Iran, and most treatments are often the treatment of other impulsive disorders. Thus, the present study aimed to evaluate the effectiveness of habit reversal training (HRT) on reducing anxiety and TTM symptoms. The results of this study can provide useful insights for specialists and psychotherapists in Iran about the effectiveness of one of the treatment methods for habitual disorders and impulse control. Considering the importance of habit reversal training in trichotillomania (TTM) and the lack of previous studies in this field in Iran, the present study investigated the effect of habit reversal training on patients with TTM.

Methods

This study was conducted using an experimental

design with pre-test, post-test, and control group, and the protocol of the study was approved with the code of ethics IR.AJUMS.REC.1396.820. The research population consisted of all female patients with trichotillomania (TTM) who visited medical clinics in Mashhad in 2018. A total of 24 patients were selected as a pilot sample and without estimating the sample size. The inclusion criteria were having trichotillomania (TTM) diagnosed following the criteria set out in the DSM-5 and the Massachusetts General Hospital (MGH) Hair pulling Scale, being 10 to 35 years old, no use of psychotropic medication at least two weeks before the treatment, and giving informed consent to participate in the study. The exclusion criteria were having acute physical and mental illness, unwillingness to participate in the study, and use of psychedelic and psychotropic drugs during treatment and two weeks before receiving the habitual reversal training intervention. The participants were selected through convenience sampling and randomly assigned to intervention and control groups each with 12 members. The participants in the intervention group attended the habit reversal training intervention for 8 one-hour sessions. However, the members of the control group did not receive any intervention. The participants in the two groups completed the items in the Massachusetts General Hospital (MGH) Hair pulling Scale and the State-Trait Anxiety Inventory (STAI) before and after the intervention.

The Massachusetts General Hospital (MGH) Hair pulling Scale is a 7-item self-report tool. The items are scored using five options, with a high score showing a higher severity of hair pulling. This scale measures the frequency of hair pulling tension, resistance, control, frequency, stress, and discomfort. The minimum and maximum scores on the scale are 0 and 28. This scale has good internal reliability (Cronbach's alpha equal to 0.89) and has a good validity in terms of structural correlation with anxiety and depression tests. Its reliability was measured through the test-retest method and the results confirmed its high reliability (0.97) (13). This

scale has been administered in Iran and its Cronbach's alpha value was reported to be 0.89 (14). In the present study, Cronbach's alpha for the scale was 0.87, confirming its acceptable reliability.

The Spielberger State-Trait Anxiety Inventory (STAI) is a 40-item instrument with two scales of State Anxiety and Trait Anxiety, each with 20 items. To measure state anxiety, the respondent should choose one of the very low (1), low (2), high (3), and very high (4) options that best express their feelings. Furthermore, to answer the Trait Anxiety Scale, the respondent should choose one of the options almost never (1), sometimes (2), most of the time (3), and almost always (4), which indicates their normal and predominant feeling. Since some items are scored in reverse, a respondent's score is calculated as the sum of the scores for each of the 20 items for each scale. Thus, the total score on each of the two state and trait anxiety scales can vary from 20 to 80. Spielberger et al. (15) reported Cronbach's alpha coefficient of the state anxiety scale as 0.92 and the trait anxiety scale as 0.90. Besides, they reported the test-retest reliability of the inventory as 0.86 and its Cronbach's alpha coefficient as 0.94. A study in Iran estimated the internal homogeneity coefficient of the inventory as 0.66 using Cronbach's alpha. Its validity was estimated as 0.86 using the internal consistency method for a sample of adults, students, and conscripts of the army and the corresponding value was 0.77 via the test-retest method for school students and 0.70 for college students (16). In an attempt to standardize the inventory for use in Iran, the test-retest validity for the Trait Anxiety Scale was 0.86, and Cronbach's alpha coefficient for the State Anxiety Scale was 0.92 (16). In the present study, Cronbach's alpha coefficient for the state anxiety scale was 0.78 and for trait anxiety was 0.79, indicating the acceptable reliability of this instrument.

In this study, the participants in the intervention group attended 8 habit reversal training (HRT) sessions for 1 hour and 2 times a week (17). Table 1 summarizes the protocol and content of HRT sessions.

Table 1. The protocol and content of HRT sessions

Session	Content
1	Introducing the group members, establishing rapport with the members, providing psychosocial training on the nature of TTM in a simple language to help the members come up with a general understanding of the disorder
2	Awareness training on the details of the behaviors targeted by the HRT therapy. Each symptom reported by the client was operationally defined through a precise behavioral image and classified for treatment focus in terms of severity and functioning.
3	Providing relaxation training for the client in a comfortable and quiet place to create contraction and expansion in all her muscles from head to toe.
4	Habit reversal training: They learned behaviors that were contrary to the target behavior in treatment. They also learned to engage in maladaptive behavior for about 1 minute (as long as it required suppression), provided they could predict the onset of symptoms. The competing response was practiced first by the therapist and then by the clients, and these responses should have been favored by the clients.
5	The clients were required to practice what they had learned in competing response training in the form of exercises as homework.
6	The therapist examined the clients' motivation. The therapist tried to help the clients to motivate themselves. The focus of the session was on the social support of other people around, especially family members, who also had to be trained in this field.
7	The clients were taught how to generalize the learned techniques through role-plays by the therapist or other clients. The clients had to imagine their ability to control other life situations.
8	The instructed techniques were reviewed and then the problems and issues that may have occurred during the implementation of the techniques for clients in the training sessions were reviewed and their questions were answered.

The collected data were analyzed using descriptive statistics (mean and standard deviation) inferential statistics including paired and independent t-test and chi-square test in SPSS software (version 21).

Results

Table 2 shows the demographic data of the participants in the intervention and control groups.

Table 2. The demographic data of the participants in the two groups

Variable	Category	Group		P-value
		Intervention Frequency (%)	Control Frequency (%)	
Education	Diploma and lower education	6(50%)	5(41.6%)	0.835
	Bachelor's and master's degree	6(50%)	7(58.4%)	
Age		Mean (SD)	Mean (SD)	0.548
		29.82 (6.89)	31.85 (10.83)	

As can be seen in Table 2, the participants in the intervention and control groups were not significantly different in terms of education

and age. Table 3 shows the mean TTM and anxiety scores for the participants in both groups.

Table 3. The mean TTM and anxiety scores for the participants in both groups

Variable	Stage	Intervention group		Control group		P-value
		Mean	SD	Mean	SD	
TTM	Pretest	23.08	3.58	22.75	2.73	0.089
	Posttest	16.92	2.15	21.01	3.26	0.001
	P-value	0.012		0.145		
Trait anxiety	Pretest	62.25	10.41	61.67	6.70	0.161
	Posttest	55.58	8.19	62.11	5.71	0.032
	P-value	0.001		0.065		
State anxiety	Pretest	61.17	4.93	61.92	8.12	0.197
	Posttest	51.25	5.10	59.08	6.32	0.023
	P-value	0.029		0.082		

As can be seen in Table 3, the mean scores of trait and state anxiety decreased for the participants in the intervention and control groups after the intervention. However, the participants in the intervention group who received habit reversal training reported significantly lower levels of trait anxiety and state anxiety than the members of the control group who did not receive any intervention. There was a significant difference between the intervention and control groups in the mean scores of TTM after the intervention and the TTM scores for the participants in the intervention group were significantly lower than the scores of the participants in the control group.

Discussion

The results of the present study showed that the TTM patients in the intervention group who received habit reversal training (HRT) reported significantly lower levels of anxiety compared to the patients in the control group who did not receive this type of training. Similarly, previous studies have shown that habit reversal training is effective in reducing emotional problems and impulses in patients with trichotillomania (18-21). The results of previous studies also showed that reversal habit therapy leads to an overall reduction in the symptoms of negative thoughts and the severity of TMM behavior (22). Another study showed that after habit reversal training sessions, the anxiety of TTM patients was reduced to moderate and lower-moderate levels (23).

As stated earlier, trichotillomania (TTM) leads to physical problems in affected persons and increases their levels of anxiety. Furthermore, phenomenological studies have shown that individuals with automatic TTM style have a high level of anxiety, which in turn exacerbates TTM behavior (24-25). The habit reversal training techniques are performed in the form of five main steps, including awareness training, relaxation training, competing response training, motivation training, and generalization training. In fact, using techniques such as relaxation training and motivating and coping strategies as part of the treatment process empowers the person to cope with anxiety and reduce it (26). In other words, a person who lacks effective skills to cope with anxiety uses ineffective methods such as hair pulling to reduce anxiety. However,

by learning effective anxiety control and management strategies, the person can reduce abnormal behaviors. Moreover, joining a group and receiving the benefits of group therapy such as receiving psychological and emotional support, understanding the existence of people with similar problems, learning successful experiences in dealing with the problem, receiving empathy, etc. can lead to increased self-confidence and self-esteem in participants in the training sessions and this will reduce anxiety in TTM patients.

The findings of the present study confirmed the results of other studies in this field (27-28) that have shown that habit reversal training reduces problems such as anxiety and depression and improves the social functioning of TTM patients. Accordingly, it can be argued that habit reversal techniques can reduce anxiety and destructive behaviors and increase patients' social functioning in addition to reducing TTM symptoms. As a person's social functioning increases, reduced levels of anxiety and destructive behaviors improve the quality of life. In addition, the results of this study showed that habit reversal treatment reduces TTM symptoms. Reducing the symptoms also leads to increased occupational, social, and interpersonal performance, which improves the well-being and quality of life of the patient. In fact, there is a positive relation between reducing TTM symptoms and increasing the quality of life of the affected person. In addition, habit reversal training includes components such as emotional, social, and family support, increased motivation, and self-confidence, which lead to increased job satisfaction and quality of life in TTM patients. In other words, the more social support a person receives during treatment and after treatment, the higher the rate of recovery. Social support and empowerment programs can reinforce techniques such as relaxation and competing responses in the person and thus he/she gains better mental conditions to reduce TTM symptoms (29-30). It should be noted that the most important features of habit reversal training are raising self-awareness in the person about TTM, teaching effective alternative coping skills such as maintaining motivation, and increased generalizability of newly learned behaviors. In particular, raising awareness and using the competing response play an effective

role in reducing disruptive habits (31). Therapists consider awareness and self-monitoring training to be the most important factor in the effectiveness of habit reversal training, because most behaviors related to habitual disorders and impulse control occur outside the person's consciousness, and therefore increasing awareness of the occurrence of behavior and its antecedents and consequences can increase self-monitoring behavior in the affected person. Learning the competing response using habit reversal therapy can reduce the symptoms of the disorder. Awareness training forces clients to identify examples of undesirable habits for implementing the competing response. Using the competing response entails two actions; preventing the habitual behavior and inducing competing behavior to replace it. The competing response may act as a punisher and prevent the behavior from occurring (32). Accordingly, researchers consider awareness training and self-monitoring as the most important factor in the effectiveness of this method, because most behaviors related to habitual disorders and impulse control occur outside the person's consciousness. Self-monitoring reduces TTM symptoms. Learning the competing response makes habitual disruptive behaviors less likely to occur (33). In fact, a person with TTM learns two basic skills by attending reversal training sessions: (1) Identifying and distinguishing the occurrence of each habit and 2) Using the competing response, which prevents abnormal habits (28, 29).

The most important limitations of the present study were the participants' unwillingness to

attend a follow-up stage to obtain more definite results and the low number of participants in the research sample due to the requirements for enrollment in the study. Given these limitations, future studies should be conducted on larger samples and other populations with extended intervention and follow-up periods. As one of the contributions of this study, habit reversal training can be used in clinics and psychotherapy centers to reduce the problems of people with TTM disorder.

Conclusion

Habit reversal training can be introduced as an effective technique to reduce TTM disorder and improve its psychological consequences. Since symptoms of anxiety and stress associated with TTM may persist for a long time in the patient and adversely affect all aspects of his/her life, habit reversal training, in addition to drug therapies can be used by specialists and psychotherapists to treat TTM patients.

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Conflict of interest

The authors declared no conflict of interest in this study.

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