Group Treatment for Trichotillomania: Cognitive-Behavioral Therapy Versus Supportive Therapy

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ABSTRACT

Objective: Trichotillomania is a psychiatric condition characterized by the chronic pulling and plucking of one's own hair. Cognitive-behavioral therapy shows promise as a treatment for trichotillomania and might be preferable to pharmacotherapy. However, there have been no randomized, controlled studies of the efficacy of group cognitive-behavioral therapy.

Method: We evaluated 44 subjects, recruited from April 2009 to May 2010, all of whom met *DSM-IV* criteria for a diagnosis of trichotillomania. Subjects were randomized to receive 22 sessions of either group cognitive-behavioral therapy or group supportive therapy (control). Treatment evaluation was non-blind and used self-report scales. The primary outcome measure was the improvement of hair-plucking behavior as assessed by the Massachusetts General Hospital Hairpulling Scale. Secondary measures included scores on the Beck Depression Inventory, the Beck Anxiety Inventory, and the Social Adjustment Scale–Self-Report.

Results: Both groups showed significant posttreatment improvement in the scores from the Massachusetts General Hospital Hairpulling Scale ($F = 23.762$, $P < .001$) and the Beck Depression Inventory ($F = 6.579$, $P = .003$). The decrease in hair-plucking behavior over time was significantly greater in the study group than in the control group ($F = 3.545$, $P < .038$). There were no significant differences between the pretreatment and posttreatment time points or between the groups in the scores from the Beck Anxiety Inventory and the Social Adjustment Scale–Self-Report.

Conclusions: We conclude that group cognitive-behavioral therapy is a valid treatment for trichotillomania. This treatment model should be further revised and expanded to address comorbidities such as anxiety and social maladjustment.

Trial Registration: ClinicalTrials.gov identifier: NCT01968343

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Trichotillomania is a disorder characterized by alopecia caused by the chronic plucking of one's own hair despite attempts by the patient to slow or stop the behavior. Ultimately, the disorder causes significant distress, as well as impaired social adjustment or functional impairment. Trichotillomania has been included in the *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition (*DSM-5*) in the category Obsessive-Compulsive and Related Disorders.[1] Prior to the publication of the *DSM-5*, trichotillomania was coded as an impulse-control disorder (*International Classification of Diseases*).

In studies using the *Diagnostic and Statistical Manual of Mental Disorders,* Fourth Edition, Text Revision (*DSM-IV-TR*), the reported prevalence of trichotillomania in the general population ranges from 0.6% to 3.0%,[2] and women are more often affected than men at a ratio of 10:1.[1] In a study involving 186 patients with trichotillomania, the authors found that 51.6% had major depressive disorder (MDD) and 27.0% had generalized anxiety disorder (GAD).[3]

The main goals of treatment are remission of hair plucking, resolution of medical comorbidities (eg, trichobezoar, carpal tunnel syndrome, and scalp injury), and improvement of psychiatric disorders.[3–6] Other related objectives include improving patient quality of life, resolving personal and family problems, and easing the psychological pain generated by the stigma that trichotillomania carries.[7] Therefore, the treatment is complex, and there is a consensus that multidisciplinary approaches are needed.[8]

Recently, a double-blind, placebo-controlled trial compared olanzapine to placebo. The results were promising with the response rate for olanzapine being 85%, versus a 17% response rate for placebo at the global clinical assessment. However, no significant difference in primary measures of hair pulling was found, and an average 5-kg difference in weight gain could have partially unblinded the outcome assessment.[9] So, considering the chronic nature of trichotillomania and the risks of weight gain and metabolic syndrome associated with long-term administration of second-generation antipsychotics,[10] the enthusiasm for olanzapine has been somewhat dampened. *N*-Acetylcysteine, an amino-acid that supposedly modulates glutamate activity in the brain, could be an alternative. Indeed, a placebo-controlled trial found a significant, albeit lower, response rate of 56%.[11] Conversely, a recent double-blind trial for pediatric trichotillomania found no differences between *N*-acetylcysteine and placebo treatment.[12] Therefore, although the future holds the promise of better pharmacologic treatments, psychotherapeutic approaches are still strategic and central in the treatment of trichotillomania.

Previously to the above-mentioned trials, a 2007 meta-analysis of controlled trials for trichotillomania found only 7 studies methodologically sound enough for evaluation.[13] With the exception of clomipramine, none of the pharmacologic approaches showed any clear superiority over placebo. Thus, the remaining analyses focused mainly on psychosocial interventions, among which only habit reversal training (HRT) has been consistently studied over time.[14] In 1 of the studies included in the abovementioned meta-analysis,[15] the authors compared a so-called

cognitive-behavioral therapy (CBT), clomipramine, and placebo. However, the psychotherapeutic intervention was primarily based on behavioral techniques from HRT, thus deviating from what is usually understood as CBT according to Beck's model.[16,17] This HRT-based treatment reduced the severity of trichotillomania and the degree of impairment associated with the hair-plucking behavior, as reflected by the significantly higher treatment response rate than that obtained under the other conditions. However, that study was limited by a small sample size (n = 16).[15] Likewise, another study drew comparisons among behavioral therapy, fluoxetine, and being on a waiting list. Patients in the behavioral therapy group showed a greater, significant reduction in trichotillomania symptoms than did patients in the other 2 groups.[18] Another controlled trial compared the results obtained from acceptance and commitment therapy combined with HRT with those obtained for a waiting-list group,[19] the response rate being 66% for the former and 8% for the latter. In both cases, the choice to compare the therapeutic programs with being on a waiting list, rather than comparing them with any kind of active psychotherapy, limits the appreciation of the comparative efficacy of these programs.

One critique of HRT is that its focus is exclusively on the behavioral aspect (ie, the hair plucking) despite the fact that trichotillomania has been shown to include other symptoms, as well as considerable psychosocial suffering.[7] In general, this restriction is countered by combining HRT with ancillary techniques.[19] However, determining whether any therapeutic gain achieved is attributable to the use of HRT, the use of the ancillary technique, or a synergistic effect of the 2 becomes impossible. Conversely, the classic CBT model is less narrowly focused than HRT and could be an alternative to encompass the psychopathological aspects of trichotillomania that go beyond hair plucking and alopecia as its immediate consequence.

To our knowledge, there have been no controlled studies of the use of a classical model of group cognitive-behavioral therapy (GCBT) for the treatment of trichotillomania. In addition, the control condition used in previous studies of trichotillomania (being on a waiting list) does not allow the specificity of the experimental intervention to be determined, as would comparison with a generic intervention, such as supportive group therapy (SGT).

The present study aimed to investigate the effectiveness of manual-based GCBT, compared with SGT, in reducing hair-plucking behavior; relieving the symptoms of depression and anxiety; and improving social adjustment in a sample of patients with trichotillomania treated at a tertiary health care facility.

Clinical Points

- This is the first study to test the efficacy of group cognitive-behavioral therapy in trichotillomania using an active intervention as the control condition.
- Group cognitive-behavioral therapy may be particularly helpful for trichotillomania patients since they receive large amounts of feedback concerning their dysfunctional behavior, which has the potential to be even more persuasive in changing the dysfunctional behavior than individual psychotherapy.
- Potential barriers to the applicability of the psychotherapy treatment model are the need for learning the theoretical basis of cognitive-behavioral therapy and professional training in group techniques.

METHOD

Subjects

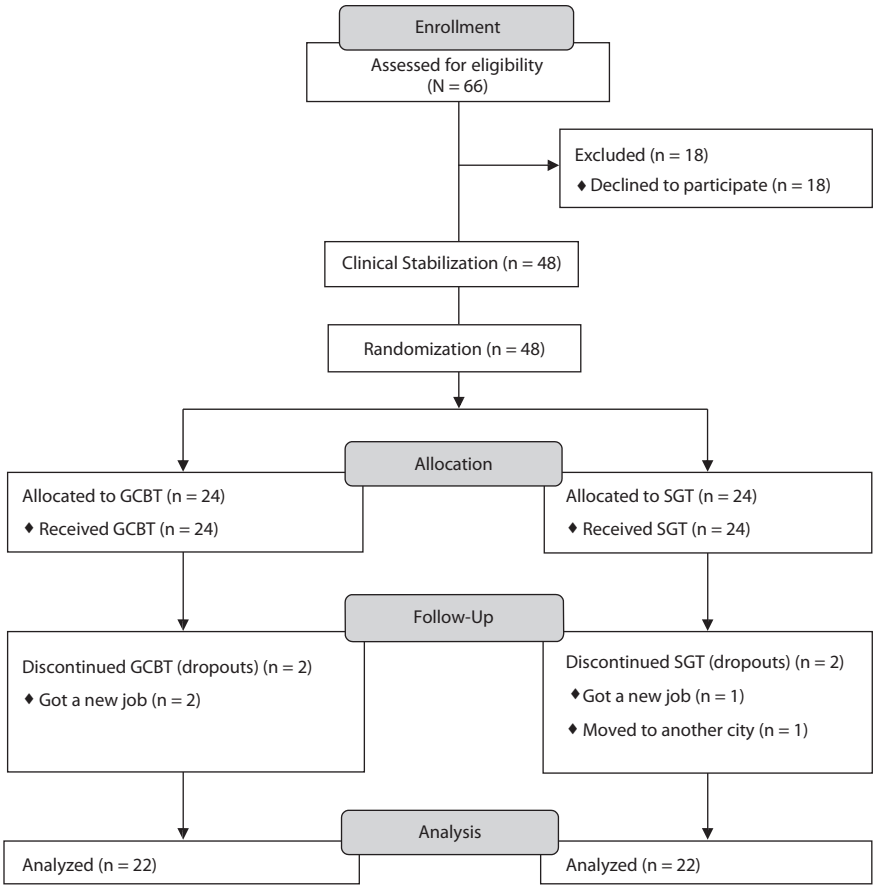
We recruited patients who voluntarily sought treatment via the Impulse Control Disorders Outpatient Unit at the University of São Paulo–Institute of Psychiatry located in the city of São Paulo, Brazil, from April 2009 to May 2010. Over the 7 years that our trichotillomania program has been in existence, some of the specialists affiliated with it have been interviewed in the media. However, no active recruitment for this study was done outside of the institute. Most of the patients learned about the program from the website or by word-of-mouth. The study was approved by the institutional research ethics committee, and all participants gave written informed consent. The patients were informed that refusal to sign the consent form would exclude them from the research protocol, but in any circumstance would preclude them from continuing to receive treatment. Eighteen patients refused to participate. The remaining 48 patients had never received specific treatment for trichotillomania and were all medication free by the time of the first assessment. The trial was registered at ClinicalTrials.gov (identifier: NCT01968343).

We applied the following inclusion criteria: having been diagnosed with trichotillomania according to *DSM-IV* criteria, being at least 18 years of age, and having had 4 or more years of schooling. Patients with a history of suicidal ideation were excluded, as were those with any clinical pathology requiring emergency treatment at admission, those with mental retardation or any other disorder that severely impairs cognitive function, or those with a psychotic disorder.

Instruments

In evaluating the patients, we employed a standardized sociodemographic and medical history questionnaire (to determine the homogeneity of the sample at baseline),[20] the Mini-International Neuropsychiatric Interview (MINI),[21] the Clinical Global Impression (CGI) scale,[22] the Massachusetts General Hospital Hairpulling Scale (MGH-HPS),[23] the Beck Depression Inventory (BDI),[24] the Beck Anxiety Inventory (BAI),[25] and the Social Adjustment Scale–Self-Report (SAS-SR).[26] All of the scales employed have been translated to Portuguese and adapted for use in Brazil.[27–30] The sociodemographic questionnaire and the MINI were applied only in the initial screening; the BDI, BAI, and SAS-SR were applied in the initial screening and at the end of the treatment period (week 22); and the CGI scale was applied only at week 22.

Figure 1. Study Flow Diagram



Abbreviations: GCBT = group cognitive-behavioral therapy, SGT = supportive group therapy.

The MINI is a brief, standardized diagnostic interview consistent with the criteria established in the *DSM-IV* and intended for use in clinical practice and research.[21] In the present study, we used the MINI to identify psychiatric comorbidities. The MGH-HPS comprises 7 self-report items that are scored on a Likert scale (0–4 points).[23] Higher MGH-HPS scores correspond to greater severity of trichotillomania symptoms. The MGH-HPS total score was set as the primary outcome measure. The CGI scale quantifies the severity of disease and the effects of treatment, as well as overall clinical improvement.[22] Because it is rapidly and easily applied, the CGI scale is widely used in naturalistic studies and in clinical practice. The BDI consists of 21 items scored from 0 to 3 with higher scores corresponding to greater severity of depression,[24] and is a self-report measure of depression that is widely used in research and in clinical practice. The BAI comprises 21 questions about how the individual has felt in the last week expressed as common symptoms of anxiety[25] scored from 0 to 3 with higher scores indicating greater severity of anxiety. The SAS-SR is a self-report scale consisting of 54 questions addressing 7 specific areas in relation to the last 2 weeks[26]: work, social life and leisure, family relationships, marital relationship, relationships with children, home life, and financial status. Each area corresponds to a partial score. The partial scores are then summed and divided by the number of valid scores to provide the SAS-SR final score with higher scores indicating poorer social adjustment. The CGI, BDI, BAI, and SAS-SR final scores were set as secondary outcome measures.

Procedures and Psychiatric Intervention

After the initial screening, all patients went through a clinical assessment with a psychiatrist, who prescribed monotherapy with antidepressants (fluoxetine, sertraline, or venlafaxine), as necessary, mainly due to comorbidity with depressive or anxiety disorders. The antidepressant dosage was set at the psychiatrist's discretion. This was called the stabilization phase, which lasted for a minimum of 4 weeks and a maximum of 12 weeks. The stabilization phase was concluded when depression/anxiety symptoms had subsided according to clinical assessment and when medication prescription remained the same for at least 4 weeks. The type and amount of medication prescribed were recorded for ad hoc statistical control. The patients who concluded the stabilization phase were grouped in pairs according to the order of admittance in the protocol. The patient in the pair who was first admitted was randomly assigned to

Table 1. Summary of Activities of 2 Intervention Protocols

Group Cognitive-Behavioral Therapy (Study Group)	
Session	Activities
1	Therapeutic contract: Filling out questionnaires/scales Defining the rules of participation Handing out and discussing the "Therapy Manual"
2–4	Psychoeducation: Characteristics of trichotillomania: habit or disorder Physical, emotional, and social needs Factors involved in the persistence of hair-pulling behavior
5–10	Cognitive approach: Beliefs' formation in trichotillomania Most common dysfunctional thoughts and cognitive styles that hamper the change process
10	Behavioral approach: Situational and emotional triggers of trichotillomania Dysfunctional strategies of coping with interpersonal conflicts
11–14	Self-monitoring: Quantifying the amount of hair pulled over the course of the week Determination of the ability to cope with the potential triggers and assessment of current self-efficacy
15–19	Social skill training: Dysfunctional beliefs and their association with the inability to maintain one's emotional equilibrium in social situations What is understood from the term "social skills" Types of responses: assertive, passive, and aggressive Ways of initiating and maintaining a conversation Defensive and combative postures
20–21	Relapse prevention: Determination of the reduction/elimination of trichotillomania symptoms Evaluation of self-efficacy Myths regarding the chance of relapse How to deal with worries related to relapse Guidance for self-therapy
22	Closure: Question and answer session Final determination of the reduction/elimination of trichotillomania symptoms Filling out follow-up questionnaires/scales
Supportive Group Therapy (Control Group)	
Sessions	Activities
1–22	Clarification to strengthen ego defenses Confrontation to increase integration of mental processes Advice through suggestion, persuasion, and reassurance Active control by temporarily assuming functions of authority and decision-making Confrontation to promote self-knowledge and sense of reality Ventilation to get control of intense affections that have been repressed by verbal expression

either GCBT or SGT according to a random numbers table applied by the executive investigator and first author of this communication (E.L.T); the second patient from the pair was allocated to the other group. Figure 1 shows the Consolidated Standards of Reporting Trials (CONSORT) diagram describing the subjects' flow through the trial.

The GCBT protocol has been described and standardized in a manual formulated by the authors. The use of the manual was previously tested in a pilot study involving 12 patients (data not shown). The GCBT adopts a model that regards trichotillomania as a behavioral response to emotional distress that is elicited by several cognitive distortions that usually involve perfectionism and unreasonable goals, such as pleasing everyone every time in a typical all-or-nothing type of thinking.[31] The GCBT intervention invites the patients to reflect upon motivating and maintaining factors of trichotillomania and their reasons to pursue behavioral change while raising awareness to the distress-relief nature of the hair-pulling behavior. Our model includes no HRT component, and it differs from HRT by not prescribing specific alternative motor responses or specific behaviors to inhibit hair pulling. Instead, the GCBT works with the patients to elaborate an array of alternative behaviors aiming not just at restraining hair pulling, but also at helping them deal with a wider array of social and emotional scenarios that are likely to trigger hair pulling. Finally, generic components of the CBT model are added, ie, self-monitoring techniques, social skill training, and relapse prevention to enhance coping abilities.[32] The SGT protocol, used in this trial as an active control condition, differs from the GCBT by being a non-directive intervention. Whenever the burden of trichotillomania was raised, which happened in all sessions, the discussion was welcomed, but the therapist refrained from transmitting specific information on the nature and treatment of the disorder. The intervention was mostly based upon empathic listening, validation of one's feelings and perceptions, and encouragement to persist and face the stressful events of daily routine. The SGT was standardized by means of a checklist of interventions to be implemented at each session as proposed by Cordioli.[33] Techniques present in GCBT, such as weighing "pros and cons" of behavioral change, bringing maladjusted self-concepts and cognitions to awareness, and coping skills training, were specifically avoided. The therapists met on a weekly basis just after the group sessions and monthly with an external supervisor (C.N.A) who helped in developing the models applied in this study, to ascertain treatment integrity. Table 1 summarizes the elements of the 2 protocols.

The pilot study took place from August 2008 to December 2008. The GCBT and SGT protocols were finalized in the beginning of 2009. The first group of candidates for the trial (N = 31, 7 refused to participate) were admitted for initial assessment and stabilization from April 2009 until June 2009 and proceeded to randomization and treatment from July 2008 until December 2008. After summer break, assessment and stabilization of the second group of candidates (N = 35, 11 refused to participate) went from March 2010 until May 2010 with randomization and treatment from late June 2010 until early December 2010. Each psychotherapy group had 12 patients, initially. The psychotherapeutic interventions (GCBT and SGT) were performed by 2 psychotherapists, each with over 5 years of experience, who had received prior training in the application of the protocols. The professionals responsible for the pretreatment and posttreatment evaluations were blinded to the type of treatment received by patients.

Statistical Analysis

To estimate the sample size, we adopted the mean and SD values reported by van Minnen et al,[18] who also used the MGH-HPS scores as the main outcome measure, employing the following equation[34]:

$$n = \sigma^2 \times (Z_{1-\beta} + Z_{1-\alpha/2})^2 / (\mu_0 - \mu_1)^2$$

where σ is the harmonic mean of the standard deviation described for μ_0 and μ_1, Z refers to the Z distribution value assigned to the designated sample power $(1-\beta)$ and the 2-tailed significance level $(\alpha/2)$, and μ is the mean; μ_0 is the reported mean for the control group (16.07), and μ_1 is the reported mean of the primary outcome measure for the experimental group (11.67). We thus projected a difference in the mean MGH-HPS score $(\mu_0 - \mu_1)$ between the study and control groups of 4.4 points with a significance level of 5% and a sample power of 80%. Consequently, the initial estimate predicted the need for at least 13 subjects per group.

Patients who missed more than 2 sessions were considered dropouts. Whenever a patient reached the dropout criterion, contact preferably by phone call, otherwise e-mail, was attempted to investigate reasons for quitting treatment. At the end of treatment, another contact was attempted to assess the clinical status of the dropout patients. A comparison of the pretreatment profiles between those who quit and those who completed treatment was conducted. Finally, a missing completely at random (MCAR) test was performed with pre- and post-intervention measures of clinical status (except the CGI) to test whether any imputation technique was needed to account for dropout and related missing data bias.[35,36]

The normal distribution of the continuous variables was tested by the Kolmogorov-Smirnov test. The GCBT and SGT groups were then compared in order to determine their homogeneity at baseline for demographic variables and clinical history. Continuous and categorical variables were compared using Student *t* tests (or the Mann-Whitney *U* test when applicable) and χ^2 tests, respectively.

Finally, we performed repeated measures analysis of variance (ANOVA), having time in 3 levels (stabilization vs start of treatment vs end of treatment) and group (GCBT = 1 and SGT = 0), respectively, as within- and between-subjects factors. The dependent variables were the scores on the MGH-HPS, BDI, BAI, and SAS-SR. Cohen effect sizes based on *f* statistics were computed for the ANOVA; the effect being considered small for values below 0.15, moderate for values between 0.15 and 0.35, and large for values above 0.35.[37] Additional post hoc analyses were performed using paired-samples *t* tests to compare the progression of the outcome variables throughout the observation points and using independent-samples *t* tests to compare the groups' performance at each observation point. The CGI scores at the end of treatment were compared between the 2 groups with the Mann-Whitney *U* test.

Statistical analyses were performed with the Statistical Package for the Social Sciences, version 16.0 for Windows (SPSS Inc, Chicago, Illinois). In all tests, values of $P < .05$ were considered statistically significant.

RESULTS

Four of 48 selected patients dropped out of the study, which is 8.3% of the whole sample. The 2 dropouts from the GCBT were a 28-year-old male and a 22-year-old female. In the STG, the dropouts were both female, 29 and 32 years old. The reasons indicated for quitting were all extrinsic to treatment (see Figure 1). All dropouts occurred before the first half of treatment was completed (the earliest occurred at the fourth session and the latest at the tenth). Attempts at reassessing the clinical status of the dropout patients at the end of the trial failed. The analysis comparing pretreatment profiles of those who did not complete treatment with the remaining sample did not reveal significant differences. Similarly, the MCAR did not reject the null hypothesis that the missing data on the clinical status for treatment dropouts by the end of the trial were at random ($\chi^2_{16} = 22.537$, $P = .127$). Thus, no missing data replacement nor imputation techniques were applied, and the remaining analysis presented below was based only on those who completed treatment (N = 44).

The final analysis involved 44 patients (22 in each group). Demographic and socioeconomic characteristics are shown in Table 2. The mean age at the onset of trichotillomania was 16.4 years (SD = 9.0). Thirty-nine patients (88.6%) had moderate to severe trichotillomania. Of the 44 patients evaluated, 40 (90.9%) plucked hair primarily from their scalp. In the investigation of *DSM-IV-TR* Axis I comorbidities, only 8 (18.2%) of the patients had trichotillomania alone, 14 (31.8%) had 1 Axis I comorbidity, 13 (29.5%) had 2 or 3, and 9 (20.5%) had 4 or more. The most common comorbidities were MDD (56.8%), social phobia (15.9%), GAD (15.9%), agoraphobia (15.9%), panic disorder (13.6%), and obsessive-compulsive disorder (11.4%). As a group, anxiety disorders were present in 28 (63.6%) of the subjects. No differences were found regarding the comorbidity profiles of both groups.

At the stabilization phase, 21 of the eligible subjects received sertraline (50–200 mg/d), 10 received fluoxetine (20–80 mg/d), and 10 received venlafaxine (75–300 mg/d). Between the 2 groups, no differences were found in terms of the type and dose of the medications prescribed: sertraline ($U = 182.5$, $P = .129$); fluoxetine ($U = 234.5$, $P = .810$); or venlafaxine ($U = 224.0$, $P = .564$). Therefore, medication use was homogeneous between GCBT and SGT patients.

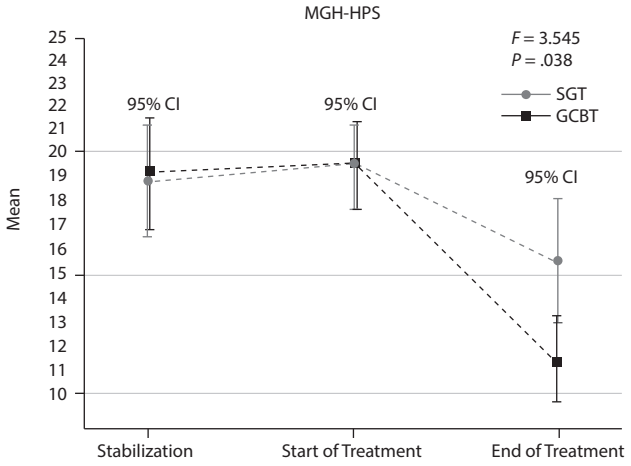
The repeated measures ANOVA showed that, over time, the reduction in the mean MGH-HPS score was significantly greater in the GCBT group than in the SGT group ($P < .038$). The paired-samples *t* tests revealed that no significant changes in the MGH-HPS occurred from the stabilization to the start of treatment points and that the significant reduction in hair-pulling behavior occurred from the start to the end of treatment points for both GCBT ($t = 8.630$, $P < .001$) and SGT ($t = 2.480$, $P = .022$). Moreover, independent-samples *t* tests showed that the MGH-HPS scores were not different between groups at stabilization

Table 2. Sociodemographic Characteristics of Patients With Trichotillomania Treated With GCBT and SGT

Characteristic	Group GCBT (n = 22)	Group SGT (n = 22)	Total (N = 44)	Test	*P* Value
Gender, n (%)				0.193[a]	.660
Male	4 (18.2)	2 (9.1)	6 (13.6)		
Female	18 (81.8)	20 (90.0)	38 (86.4)		
Age (y), mean (SD)	32.9 (8.1)	31.1 (11.3)	32 (9.7)	0.600[b]	.552
Ethnicity, n (%)				< 0.001[a]	1.000
White	16 (72.7)	16.6 (72.7)	32 (72.7)		
Other	6 (27.3)	6 (27.3)	12 (27.3)		
Place of birth, n (%)				< .001[a]	1.000
City of São Paulo	20 (90.9)	21 (95.5)	41 (93.2)		
Other	2 (9.1)	1 (4.5)	3 (6.8)		
Years of schooling, mean (SD)	14.9 (3.8)	13.3 (4.4)	14.1 (4.1)	1.281[b]	.207
Marital status, n (%)				0.193[a]	.543
Married	8 (36.4)	11 (50)	19 (43.2)		
Other	14 (63.6)	11 (50)	25 (56.8)		
Employment status, n (%)				1.458[a]	.227
Employed	14 (63.6)	9 (40.9)	23 (52.3)		
Other	8 (36.4)	13 (59.1)	21 (47.7)		
Household income,[c] mean (SD)	1,834 (1,228)	1,855 (1,490)	1,844 (1,349)	0.050[b]	.961
Religious affiliation, n (%)				0.988[a]	.610
Catholic	8 (36.4)	9 (40.9)	17 (38.6)		
Protestant	4 (18.2)	6 (27.3)	10 (22.7)		
Other	10 (45.5)	7 (31.8)	17 (38.6)		

[a]χ^2 test.
[b]Student *t* test.
[c]In US dollars.
Abbreviations: GCBT = group cognitive-behavioral therapy, SGT = supportive group therapy.

Figure 2. Massachusetts General Hospital Hairpulling Scale (MGH-HPS) Score Across Time for Group Cognitive-Behavioral Therapy (GCBT) and Supportive Group Therapy (SGT)[a]



[a]Analysis of variance for repeated measures.

(*t* = −0.191, *P* = .850) and start of treatment (*t* = −0.028, *P* = .978), but that they significantly differed at the end of treatment point (*t* = 2.445, *P* = .019). Figure 2 summarizes the main findings. In both groups, there was a reduction in the mean BDI score (*P* = .003), but without significant difference between the groups (*P* > .05). The paired-samples *t* tests revealed a similar progression pattern with no significant changes on the BDI scores from the stabilization to the start of treatment, but with a significant reduction from the start to the end of treatment point for both GCBT (*t* = 2.299, *P* = .032) and SGT (*t* = 3.020, *P* = .007). However, the independent-samples *t* tests did not reveal differences between groups at any of the 3 assessment points (all *P* > .05). The mean BAI and SAS-SR scores did not differ significantly throughout the trial or between the groups (*P* > .05), as can be seen in Table 3. At treatment completion, all 3 CGI scores were higher for GCBT compared to SGT. Table 4 shows the main results.

DISCUSSION

Our results show that, although GCBT and SGT were both effective in reducing the symptoms of trichotillomania and depression, GCBT was more effective in relieving the symptoms of trichotillomania. The post hoc analysis further confirmed that no significant changes on trichotillomania status occurred during the stabilization phase and that the main changes occurred throughout treatment. Moreover, GCBT patients had a lower score on the MGH-HPS than SGT patients only at the end of treatment rendering unlikely that variation on pretreatment status and time interactions could account for the observed differences in performance between groups. Although not specifically measured, the patients' alliance with both group therapies was considerably good, hence the low and balanced dropout rate for both GCBT and SGT. Besides, the patients who dropped out were not statistically different from those who remained. Treatment quitting occurred early during the intervention, and the reasons were unrelated to the nature of both treatment modalities. Thus, the dropouts and related missing data seemed to have little, if any, effect over the treatment efficacy analysis.

Table 3. Baseline Values and Outcomes for Psychosocial Scale Scores Among Patients With Trichotillomania Treated With GCBT and SGT

	Time Point						Time (Within-Subjects Analysis)			Group × Time Interaction[a]		
	Stabilization		Start of Treatment		End of Treatment							
Scale	SGT (n = 22), Mean (SD)	GCBT (n = 22), Mean (SD)	SGT (n = 22), Mean (SD)	GCBT (n = 22), Mean (SD)	SGT (n = 22), Mean (SD)	GCBT (n = 22), Mean (SD)	*F*	*P*	η[b]	*F*	*P*	η[b]
MGH-HPS	18.0 (7.6)	19.9 (4.7)	20.0 (5.1)	19.0 (5.6)	14.4 (6.3)	12.3 (6.6)	23.762	< .001	0.536	3.545	.038	0.15
BDI	18.4 (10.7)	17.5 (11.0)	21.9 (10.2)	21.9 (10.2)	16.3 (10.4)	16.3 (10.4)	6.579	.003	0.248	0.007	.993	< 0.01
BAI	17.8 (12.4)	17.5 (11.6)	19.6 (13.2)	16.5 (12.4)	16.0 (12.5)	16.4 (11.8)	0.828	.444	0.040	0.385	.683	0.02
SAS-SR	2.3 (0.6)	2.5 (0.6)	2.4 (0.6)	2.4 (0.6)	2.3 (0.7)	2.1 (0.4)	1.745	.187	0.078	2.164	.128	0.10

[a]Repeated measures analysis of variance.
[b]Cohen *f*–based statistics effect size.
Abbreviations: BAI = Beck Anxiety Inventory, BDI = Beck Depression Inventory, GCBT = group cognitive-behavioral therapy, MGH-HPS = Massachusetts General Hospital Hairpulling Scale, SAS-SR = Social Adjustment Scale–Self-Report, SGT = supportive group therapy.

Table 4. Assessment by the Clinical Global Impression Scale for Patients Treated With GCBT and SGT at the End of Treatment

Variable	SGT (n = 22), n %	GCBT (n = 22), n %	Total (N = 44), n %	Test	*P*
Severity of illness				*U* = 90.0	< .001
Normal	0	3 (13.6)	3 (6.8)		
Borderline	1 (4.5)	8 (36.4)	9 (20.5)		
Mild	10 (45.5)	9 (40.9)	19 (43.2)		
Moderate	10 (45.5)	2 (9.1)	12 (27.3)		
Marked/severe	1 (4.5)	0	1 (2.3)		
Global improvement				*U* = 103.5	< .001
Very much improved	0	10 (45.5)	10 (22.7)		
Much improved	13 (59.1)	10 (45.5)	23 (52.3)		
Minimally improved	7 (31.8)	1 (4.5)	8 (18.2)		
No change	2 (9.1)	0	2 (4.5)		
Worse	0	1 (4.5)	1 (2.3)		
Efficacy index				*U* = 107.0	.001
Marked	2 (9.1)	12 (54.5)	14 (31.8)		
Moderate	11 (50)	8 (36.4)	19 (43.2)		
Minimum	9 (40.9)	2 (9.1)	11 (25)		

Abbreviations: GCBT = group cognitive-behavioral therapy, SGT = supportive group therapy.

Our finding that trichotillomania was more common among the female patients is consistent with data in the literature,[4,38–41] as is our finding that hair was plucked primarily from the scalp.[3,19,38] Therefore, we believe that our results are generalizable to other populations of patients with trichotillomania.

In 1965, Greenberg and Sarner[42] reported a 68% prevalence of depression among patients with trichotillomania. Subsequent reports have shown rates that are still high but somewhat lower, although varying widely across studies.[2,3,19,43] In our sample, that prevalence was 56.8%. However, taken together, anxiety disorders were more common among our patients than was depression. Although trichotillomania is now coded as an obsessive-compulsive spectrum disorder,[1] obsessive-compulsive disorder was only the fourth most common anxiety disorder in our sample at a prevalence of 11.4%, which is similar to that reported in various other studies,[3,16,39,44,45] although lower than the 27% reported by Schlosser et al.[4]

The effect size reported for hair pulling and other specific symptoms of trichotillomania was borderline moderate, which was somewhat expected given that the control condition in the present study was another form of active psychotherapy, rather than minimal treatment or remaining on a waiting list, as has been the case in previous investigations. What we found more surprising was the differential effect of this combined approach (antidepressant plus GCBT or SGT) on depression and anxiety. Despite the observed patients' improvements in depression and anxiety symptoms at the clinical assessment, which led to prescription stabilization and referral to psychotherapy, the scores on the BDI and the BAI did not mirror this supposed improvement during the stabilization phase. Indeed, depressive symptoms showed a significant reduction only after group psychotherapy was introduced suggesting a delayed effect of the medication, a potential synergistic interaction between the medication and psychotherapy, or maybe ineffective medication, and only psychotherapy accounted for the relief of depressive symptoms. Conversely, we observed no influence on pretreatment anxiety levels. Therefore, anxiety disorders in trichotillomania merit further investigation, especially because selective serotonin reuptake inhibitors, usually prescribed for anxiety disorders, are not very effective for the symptoms of trichotillomania.[9] One possible explanation is that in patients with trichotillomania, anxiety symptoms could be derived from a particular psychobiological process in which interventions targeting serotonin have little effect, whereas better results in this regard might come from a different approach, focusing on the modulation of glutamatergic pathways.[11]

One possible critique of our investigation and of others similarly based on cognitive and behavioral techniques is that such interventions are overly focused on the control instances of target and associated behaviors and are to some degree neglectful of the core structure of trichotillomania (ie, the affective instability that prompts repetitive and unrestrainable plucking of one's own hair), as evidenced by the persistence of anxiety symptoms despite the generally acceptable reduction of trichotillomania specific symptoms. However, the clinical assessment provided by the CGI shows that roughly 90% of the patients completing GCBT were much or very much globally

improved, suggesting that therapeutic gains have gone beyond the domains assessed by our primary and secondary outcome measures. In addition, the same proportion of patients receiving GCBT had mild to no trichotillomania symptoms and reported moderate to marked treatment efficacy. Nevertheless, the social adjustment, which is reputed to be closely related to quality of life, did not vary between the pretreatment and posttreatment periods for GCBT or SGT patients. The relatively short follow-up could be a factor in this case, because variables related to positive aspects of quality of life, such as social adjustment, might require longer periods to show observable effects.

The small follow-up period and the relatively small sample size (albeit larger than initially estimated) are the most evident limitations of the current study that hinder the observation of potential long-term treatment benefits and the generalization of the present findings to other individuals with trichotillomania. Other important methodological limitations are (1) Patients cannot be blinded to psychotherapy. The fact that they knew what kind of therapy they received could have biased their self-assessment, although this is unlikely because the denomination of the treatment modalities, GCBT and SGT, did not indicate which one was the experimental versus the control condition, and therapists were explicitly oriented to not hint their expectations toward either psychotherapy model. Furthermore, the clinical assessment with the CGI, which was rater blinded, concurs with the primary outcome assessment in indicating that GCBT was superior to SGT; (2) The findings regarding treatment efficacy are solely based on subjects who completed treatment. Fortunately, the high rate of treatment adherence decreases this potential bias; (3) Roughly 90% of the sample was started on medication. Despite the fact that the prescription was stable for at least 1 month prior to the psychotherapeutic intervention, there is no safe way to exclude the possibility that synergistic interactions between psychotherapy and long-term effects of medication may have contributed to the observed results; and (4) Finally, specific measures on therapeutic alliance could uncover mediating factors for treatment adherence and response. Thus, further assessments of GCBT for trichotillomania are warranted. Such studies should involve larger samples, with longer follow-up periods, and should employ revised protocols that encompass interventions beyond conventional psychotherapy in order to promote mental health and quality of life. Future studies should evaluate the relative effectiveness of pharmacologic and behavioral treatments of trichotillomania, applied in isolation and in combination, as well as document the patient and therapist variables that predict effective and sustainable responses to treatment. Despite the fact that trichotillomania affects one's appearance, thus resulting in higher social sensitivity for the patients, the adoption of a group format did not hamper the observation of positive results. Surprisingly, previous reports on trichotillomania psychotherapy are unclear about the treatment format. Since trichotillomania is a highly prevalent disorder, treatment based upon groups could be of interest; thus future studies should compare the cost-effectiveness relationship of group and individual treatments.

We conclude that, despite its limitations, GCBT is a useful, effective treatment for trichotillomania. With minor adjustments and appropriate staff training, our protocol could be employed by health personnel beyond the limits of tertiary care facilities thus increasing the coverage of mental health programs as well as improving the treatment of trichotillomania itself.

Drug names: clomipramine (Anafranil and others), fluoxetine (Prozac and others), olanzapine (Zyprexa), sertraline (Zoloft and others), venlafaxine (Effexor and others).

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