

Trichotillomania: an integrative review of clinical, diagnostic and therapeutic aspects

Tricotilomania: revisão de literatura sobre aspectos clínicos e terapêuticos

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Abstract

Trichotillomania is a chronic neuropsychiatric condition belonging to the spectrum of Obsessive-Compulsive and Related Disorders, characterized by recurrent hair-pulling behavior, usually associated with prior tension and a subsequent sense of relief. This behavior results in functional impairment, psychosocial distress, and a significant negative impact on quality of life. An integrative review was conducted using PubMed/MEDLINE, SciELO, LILACS, and Google Scholar databases, prioritizing systematic reviews, randomized trials, and contemporary clinical guidelines. This review synthesizes historical, epidemiological, clinical, diagnostic, and therapeutic evidence, as well as the high prevalence of comorbidities such as anxiety, depression, obsessive-compulsive disorder, and excoriation disorder. The interface with dermatology is essential, considering the wide range of differential diagnoses, including alopecia areata, tinea capitis, and traumatic alopecias. Regarding treatment, behavioral interventions, especially Habit Reversal Training and the ComB model, constitute the gold standard, supported by robust evidence of efficacy. Pharmacotherapy, despite the absence of agents specifically approved for this disorder, has demonstrated promising results with glutamatergic modulators such as N-acetylcysteine and memantine; however, clinical trials are limited by methodological weaknesses, small sample sizes, and inconsistent findings, particularly in pediatric populations. This review aims to systematize the available knowledge, promote early diagnosis, guide evidence-based therapeutic strategies, and stimulate the development of future research, contributing to greater awareness and interdisciplinary management of trichotillomania.

Keywords: Trichotillomania. Alopecia. Dermatology. Psychiatry.

Resumo

A tricotilomania é uma condição neuropsiquiátrica crônica pertencente ao espectro das Perturbações Obsessivo-Compulsivas e Relacionadas, caracterizada pelo ato recorrente de arrancar fios de cabelo, geralmente associado a tensão prévia e sensação de alívio subsequente. Esse comportamento resulta em prejuízo funcional, comprometimento psicossocial e impacto significativo na qualidade de vida. Foi realizada uma revisão integrativa utilizando as bases de dados PubMed/MEDLINE, SciELO, LILACS e Google Scholar, priorizando revisões sistemáticas, ensaios randomizados e diretrizes clínicas contemporâneas. Esta revisão sintetiza evidências históricas, epidemiológicas, clínicas, diagnósticas, terapêuticas e a elevada prevalência de comorbidades, como ansiedade, depressão, transtorno obsessivo-compulsivo e transtorno de escoriação. A interface

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com a dermatologia é essencial, considerando a ampla gama de diagnósticos diferenciais, incluindo alopecia areata, tinea capitis e alopecias traumáticas. Quanto ao tratamento, as intervenções comportamentais, especialmente o Habit Reversal Training e o modelo ComB, constituem o tratamento de primeira linha, apresentando evidências robustas de eficácia. A farmacoterapia, ainda sem agentes aprovados especificamente para o transtorno, demonstra resultados promissores com moduladores glutamatérgicos, como N-acetilcisteína e memantina, embora ensaios clínicos apresentem limitações metodológicas, amostras pequenas e inconsistências, sobretudo em populações pediátricas. A presente revisão procura sistematizar o conhecimento disponível, favorecer o diagnóstico precoce, orientar estratégias terapêuticas baseadas em evidências e estimular o desenvolvimento de pesquisas futuras, contribuindo para maior conscientização e gestão interdisciplinar da tricotilomania.

Palavras-chave: Tricotilomania. Alopecia. Dermatologia. Psiquiatria.

Introduction

Trichotillomania, currently identified in the diagnostic and statistical manual of mental disorders – Fifth edition, text revision (DSM-5-TR) as Hair-Pulling Disorder, is best understood as a core body-focused repetitive behavior (BFRB). BFRBs are a family of conditions defined by repetitive, non-functional self-directed behaviors targeting the body (for example, hair, skin, or nails). Although the DSM-5-TR classifies hair-pulling disorder as an obsessive-compulsive and related disorder, considering trichotillomania within the BFRB framework highlights the similarities it shares with other body-directed repetitive behaviors. Trichotillomania is characterized by recurrent hair-pulling from any body region, typically preceded by a sense of mounting tension and followed by relief or gratification after the act, and it is associated with significant functional impairment, emotional distress, and deterioration in quality of life.¹

Although initially described by Hallopeau in 1889, trichotillomania remained for decades as a marginal condition within psychiatry, often misunderstood and inconsistently diagnosed.² Modern epidemiological studies reveal that its prevalence is underestimated, ranging between 1% and 2% of the general population, with a typical onset in childhood or adolescence and female predominance in adulthood. These findings reinforce that the disorder is more common than previously recognized and follows a chronic, fluctuating course, often marked by relapses.³

Understanding trichotillomania requires a multidimensional approach integrating behavioral, emotional, cognitive, neurobiological, and sensory components, as emphasized by contemporary models such as the comprehensive behavioral model (ComB).^{4,5} This model highlights that hair-pulling behavior may serve multiple functions, ranging from sensory stimulation seeking to emotional regulation, involving specific

cognitive patterns, environmental triggers, and impulsivity. These factors partly explain the heterogeneity among patients and the challenge of developing standardized therapeutic strategies.⁵

From a clinical standpoint, hair-pulling episodes may occur in two main phenomenological patterns: focused pulling – associated with full awareness of the act, often preceded by anxiety, behavioral urgency, or internal discomfort – and automatic pulling – performed with little conscious awareness, typically during passive activities such as watching television, studying, or using electronic devices. These patterns may coexist within the same individual and vary according to emotional and environmental context.^{1,4,5}

The psychosocial repercussions of the disorder are widely documented. Patients frequently report feelings of shame, social isolation, low self-esteem, fear of negative evaluation, academic underperformance, and interpersonal difficulties.^{1,3,5} In children and adolescents, school impact and changes in family dynamics are particularly notable. Trichophagia, present in a small proportion of cases, may lead to severe complications such as trichobezoar formation, subocclusion, and even the need for surgical intervention, making early diagnosis essential.³

The literature also demonstrates a high rate of psychiatric comorbidities, notably depressive disorders, anxiety disorders, obsessive-compulsive disorder, excoriation (skin-picking) disorder, attention-deficit/hyperactivity disorder (ADHD), and substance misuse.^{1,3,5} These associated conditions complicate clinical management, influence prognosis, and may significantly increase symptom severity. Several studies further suggest that impulsivity markers, impaired emotional regulation, and altered neurobiological stress responses play an important role in maintaining hair-pulling behavior.^{1,5}

Beyond psychiatric aspects, the dermatology interface plays a central role. Long-standing trichotillomania

may evolve into a form of cicatricial alopecia, and differential diagnosis with conditions such as alopecia areata, tinea capitis, telogen effluvium, and other cicatricial alopecias is essential, as diagnostic confusion is common.^{2,6} Brazilian literature, as demonstrated by Toledo et al., highlights that many patients undergo prolonged trajectories across different specialties before the disorder is identified, underscoring the need for interdisciplinary training.²

Regarding treatment, the most robust advances are concentrated in behavioral interventions. Habit reversal training (HRT), often incorporated into Cognitive Behavioral Therapy protocols, shows the largest effect sizes in controlled trials and meta-analyses and is considered the first-line intervention.^{5,7,8} HRT involves awareness training, competing responses, trigger identification, stress management, and generalization to daily life. A meta-analysis conducted by Farhat et al., confirms that HRT demonstrates consistent efficacy, with significant reductions in hair-pulling frequency and intensity.⁷

Regarding pharmacotherapy, although no medication is specifically approved for trichotillomania, there is growing investigation into glutamatergic modulators. The landmark study by Grant et al., demonstrated that N-acetylcysteine (NAC) significantly reduced symptoms in adults,⁹ a finding supported by systematic reviews and the Cochrane review on pharmacotherapy for trichotillomania.^{7,8} However, pediatric trials failed to replicate these results, suggesting age-related differences in response. More recently, a double-blind trial with memantine showed significant benefits in patients with trichotillomania and excoriation disorder, reinforcing the neurobiological hypothesis involving glutamatergic system dysfunction.¹⁰

Despite advances in behavioral and pharmacological interventions, important knowledge gaps persist. Most pharmacological trials feature small samples, short duration, and methodological heterogeneity, limiting generalizability.^{5,7,8} In addition, there is a relative scarcity of research in pediatric populations, as well as limited investigation into combined interventions, digital therapies, and long-term prognostic factors.^{3,5,7,8}

In Brazil, the literature highlights additional challenges such as underdiagnosis, limited clinical awareness in dermatology and primary care, restricted access to specialized behavioral therapies, and stigma associated with the disorder, making integrative reviews essential to facilitate a comprehensive understanding of the phenomenon.^{2,7}

Given the multidimensional complexity of trichotillomania and the continuous evolution of scientific evidence, critically synthesizing the current literature is relevant to support clinical practice, contribute to the development of therapeutic guidelines, and guide future research. This context justifies the present review, which aims to integrate phenomenological, diagnostic, epidemiological, therapeutic, and conceptual aspects, offering a comprehensive and updated overview of the topic.

The present study aims to review and critically analyze the current scientific literature on trichotillomania, addressing key clinical and diagnostic aspects, therapeutic interventions with the strongest empirical support, existing knowledge gaps, and the contributions that literature synthesis can offer to clinical practice and future research development.

Methodology

To develop this literature review, a narrative integrative method was adopted, appropriate when the objective is to gather, analyze, and critically interpret evidence from different study types, providing a holistic and contextualized view of a complex phenomenon such as trichotillomania. Considering the plurality of therapeutic approaches, heterogeneity of methodological designs, and remaining gaps in the literature, the integrative review was deemed the most suitable strategy to allow articulation among clinical, experimental, and observational evidence.

The bibliographic search was systematically conducted in PubMed/MEDLINE, SciELO, LILACS, and Google Scholar, in addition to consulting clinical update chapters frequently used in professional practice, including syntheses from internationally respected platforms. The search period was not initially restricted to retrieve both classical publications and contemporary studies, encompassing pioneering clinical trials and recent publications related to glutamatergic modulators and dermatopsychiatric advances.

Search terms were selected to cover different clinical, diagnostic, and therapeutic dimensions of trichotillomania. The following descriptors in Portuguese and English were used: “trichotillomania,” “trichotillomania,” “hair pulling disorder,” “body-focused repetitive behaviors,” “diagnosis,” “clinical features,” “treatment,” “habit reversal training,” “cognitive behavioral therapy,” “N-acetylcysteine,” “memantine,” “glutamate modulators,” “pediatric trichotillomania,” and “dermatology and psychiatry interface.”

The combination of these descriptors enabled the retrieval of publications addressing disorder phenomenology, modern behavioral interventions, pharmacological studies, and clinical consensus updates.

Randomized clinical trials were included, especially those evaluating NAC, memantine, clomipramine, olanzapine, and psychotherapeutic protocols; systematic reviews and meta-analyses such as those by Farhat et al.,⁷ and Hoffman et al.;⁸ broad narrative reviews essential for historical, epidemiological, and conceptual understanding; case studies and clinical series with phenomenological or diagnostic relevance; national publications (SciELO/LILACS) addressing differential diagnosis, prevalence, or clinical analysis in the Brazilian context; and articles fully available in English, Spanish, or Portuguese.

Articles not directly related to trichotillomania or addressing alopecias without psychiatric interface, texts unavailable in full, studies with insufficient methodology for critical analysis (overly succinct descriptions lacking minimal clinical or diagnostic data), and exclusively anecdotal publications without descriptive rigor were excluded.

Diagnostic approach

The diagnostic evaluation of trichotillomania requires a detailed understanding of DSM-5-TR criteria, phenomenology, and the multiple clinical manifestations the disorder may assume. Diagnosis is essentially clinical, requiring structured interviews, analysis of behavioral patterns, and exclusion of concurrent dermatological or psychiatric causes.¹

From a dermatological perspective, it typically appears as an irregular alopecic patch most commonly in the vertex and parietal scalp regions, although other body areas may be affected. The hair pull test is negative, and hair and scalp trichoscopy has become an important diagnostic tool. Trichoscopic findings described in studies include: broken hairs at different lengths, trichoptilosis (longitudinal splitting of the distal hair shaft), hook-shaped or coiled hairs (partially coiled hairs with hook-like or irregular tips), tulip hairs (short hairs with tulip-leaf-like hyperpigmentation at the distal end), flame hairs (semi-transparent, wavy, cone-shaped hair residues resembling flames), the “V-sign” (two or more hairs emerging from one follicular unit pulled simultaneously and broken at the same level above the scalp surface), and hair powder (residue of completely damaged hairs).¹¹⁻¹³

The phenomenology of the disorder involves two main behavioral axes: automatic pulling and focused pulling.

The former is characterized by low situational awareness and frequently occurs during routine activities; the latter involves anticipatory tension and subsequent relief after hair pulling, resembling compulsive-impulsive behaviors. Both modalities may coexist and fluctuate over time.^{1,4,5}

Diagnostic assessment should also include investigation of emotional triggers (anxiety, boredom, frustration), specific environmental contexts (places, routines, schedules), antecedent bodily sensations (itching, scalp irregularities, sensory seeking), and psychosocial impact (social avoidance, use of accessories to hide alopecia, subjective distress, academic or occupational decline).^{1,3,5}

The dermatology interface is crucial to exclude conditions such as alopecia areata, tinea capitis, and telogen effluvium, which frequently confound diagnosis and delay referral for psychiatric evaluation. Brazilian studies reinforce this difficulty, highlighting prolonged clinical trajectories involving multiple professionals prior to definitive diagnosis.²

Epidemiology and comorbidities

The estimated lifetime prevalence of 1–2% suggests that trichotillomania is more frequent than traditionally recognized. Onset is typically in childhood or adolescence; in these early life stages, there is no consistent sex difference in prevalence. In adulthood, however, females are more commonly affected than males. Typical onset during childhood and adolescence, combined with chronicity and relapse tendency, makes the disorder particularly relevant in young populations.^{1,3}

Psychiatric comorbidities are highly prevalent and include anxiety disorders, major depression, obsessive-compulsive disorder, excoriation (skin-picking) disorder, ADHD, stress-related disorders, non-suicidal self-injurious behaviors, autism-spectrum overlap, and suicidality (including suicidal ideation and attempts).^{1,3,5-7}

The presence of comorbidities significantly alters the clinical course, potentially increasing symptom severity, reducing therapeutic response, and impacting functional prognosis.^{1,5-7} Beyond psychiatric aspects, dermatological and gastroenterological impacts exist, including risk of trichophagia and trichobezoar formation, a potentially severe condition.³

Assessment instruments

Objective evaluation of trichotillomania severity, frequency, and functional impact is essential for diagnosis

and therapeutic monitoring. Several standardized instruments have been developed to quantify relevant clinical indicators, allowing greater comparability across studies and providing useful parameters for longitudinal follow-up.^{1,5,7,8}

Among the most commonly used scales are:

Massachusetts general hospital hairpulling scale (MGH-HPS)^{1,5}

MGH-HPS is one of the most widely used tools in clinical practice and research. It is a self-report scale consisting of seven items assessing frequency and intensity of urges, perceived control over urges, frequency of hair-pulling behavior, difficulty resisting the act, perceived control over behavior, degree of interference, and subjective distress. Each item is scored from 0 to 4, yielding a total score from 0 to 28, with higher values indicating greater severity. The scale effectively distinguishes urge and behavior, allowing integrated assessment of impulsive and compulsive components. It is sensitive to treatment-related changes and widely used in trials involving NAC, memantine, and behavioral therapies, reinforcing its clinical and psychometric validity.

National institute of mental health – trichotillomania severity scale (NIMH-TSS)^{1,5}

NIMH-TSS is a clinician-rated instrument with greater clinical depth and sensitivity for global severity assessment. It includes items assessing intensity and frequency of urges, intensity and frequency of pulling behavior, attempts to resist, emotional distress, social, academic, and occupational impairment, extent of hair loss, and aesthetic impact. Its score provides a dimensional severity measure and is useful in studies requiring structured evaluation. Being clinician-administered, it allows qualified clinical judgment, essential in complex or comorbid cases.

Psychiatric institute trichotillomania scale (PITS)¹

Although less used in recent research, PITS was one of the first standardized scales and still has utility in some contexts. It assesses episode duration, voluntary control over the act, intensity of precursor sensations, presence of associated rituals, and psychosocial impact. Its structure allows a more phenomenological

analysis, useful for detailed characterization of behavioral presentation.

Milwaukee inventory for subtypes of trichotillomania – adult version (MIST-A) and MIST-C (child version)^{4,5}

MIST-A and MIST-C are modern tools aimed at identifying behavioral subtypes – automatic and focused pulling. They help delineate the predominant behavioral profile, guiding personalized interventions, especially when using the ComB model. They are essential for differentiating patients requiring greater focus on emotional regulation from those needing techniques to increase situational awareness.

Complementary scales for comorbidities

Given the high psychiatric comorbidity of trichotillomania, auxiliary scales are frequently used to assess anxiety (BAI, SCARED, HAM-A), depression (BDI-II, PHQ-9, CDI), impulsivity (Barratt impulsiveness scale), compulsions and need for control (Y-BOCS/Y-BOCS-BFRB), and global functioning (CGI-S and CGI-I). These tools allow an integrated understanding of the clinical picture, assisting in prognosis definition and therapeutic planning.^{1,5,7}

Differential diagnosis

Identifying trichotillomania requires accurate differential diagnosis, as several medical, dermatological, and psychiatric conditions may mimic or coexist with hair-pulling behavior.

Alopecia areata is characterized by well-demarcated alopecic patches, “exclamation mark hairs,” “black dots,” and/or “yellow dots,” with unpredictable evolution and possible spontaneous regrowth, and autoimmune etiology. Unlike trichotillomania, alopecia areata does not present hairs of varying lengths or mechanical manipulation-related irregularities. Trichogram and dermoscopy assist differentiation.^{1,2,6}

Tinea capitis is a fungal scalp infection, more common in children. It may be confused with trichotillomania when alopecic areas present with scaling, pruritus, enlarged cervical lymph nodes, “black dots” from fungal shaft breakage, and inflammation (kerion). Direct mycological examination and culture are diagnostic.^{2,6}

Telogen effluvium is diffuse, non-traumatic hair shedding. It differs from trichotillomania by its diffuse pattern, absence of irregular patches, association with

triggering factors (stress, fever, childbirth, nutritional disorders), and typically positive hair pull test.^{1,2,6}

Non-psychiatric traumatic alopecias include traction alopecia due to hairstyles or cultural habits and trichoptilosis (hair shaft breakage without voluntary pulling). Detailed history and dermoscopic features aid differentiation.^{1,2,6}

Trichoteiomania involves rubbing or scratching the scalp, representing a type of lichen simplex chronicus and is also associated with obsessive-compulsive disorder, trichodynia, and pruritus. Main trichoscopic findings include broken hairs, broom hairs, and the “V-sign.”¹⁴

Although trichobezoar is not a differential diagnosis but a complication, it deserves mention due to clinical impact. Trichophagia should raise suspicion of trichotillomania even when hair pulling is not directly observed. Gastrointestinal evaluation may be required.

Compulsive symptoms may involve hair manipulation; however, in trichotillomania, behavior is not associated with elaborate rituals, does not aim to neutralize obsessions, and has a distinct sensory and impulsive function. OCD and trichotillomania may coexist, complicating clinical differentiation.

Therapeutic approach

Contemporary literature highlights HRT as the primary intervention with the greatest efficacy. Clinical trials and meta-analyses demonstrate significant reductions in hair-pulling frequency and intensity. Core components of HRT include detailed awareness training, competing response (behavior incompatible with hair pulling), stimulus control, relapse prevention strategies, and generalization training for real-world environments.^{7,8}

Advanced models such as ComB expand intervention by addressing multiple functional domains of behavior, allowing personalized approaches.^{4,5} The model encompasses five modalities: sensory (tactile, visual, oral, olfactory, or auditory triggers), cognitive (thoughts initiating or maintaining behavior), affective (emotional states such as boredom, stress, or anxiety), motor (postural patterns and unconscious motor habits), and place (external or environmental cues). In children and adolescents, psychosocial adaptations and family involvement are essential due to behavioral plasticity and the role of family dynamics in maintaining or interrupting the cycle.^{3,5,6}

Although no medication has specific approval, several agents show increasing evidence, including NAC, which demonstrated significant symptom reduction in adults, reinforcing glutamatergic alteration hypotheses.

In pediatrics, however, results were negative, indicating age-related or methodological differences.⁹ Another agent described is memantine, which showed significant symptom improvement in trichotillomania and skin-picking disorder in a double-blind clinical trial, reinforcing the role of the glutamatergic system in pathophysiology.¹⁰

Clomipramine showed some efficacy in early studies, but adverse effects limit its use. Selective serotonin reuptake inhibitors show inconsistent results and are more useful for managing comorbidities. Olanzapine demonstrated positive results in small samples, but with significant restrictions due to metabolic profile.⁵⁻⁸

Pharmacotherapy, therefore, plays an adjunctive role, being particularly useful in moderate to severe cases with significant comorbidities or when access to structured psychotherapy is limited.

Critical synthesis

The literature demonstrates robust efficacy of HRT, promising evidence for glutamatergic modulators, and methodological limitations in pharmacological trials. Significant underdiagnosis persists, particularly in pediatrics and in contexts with limited therapeutic resources.

Knowledge gaps

Global analysis of the literature reveals important advances but also substantial limitations. Trichotillomania phenomenology is relatively well described; however, marked interindividual variability still hinders intervention standardization and development of universally applicable therapeutic algorithms. Behavioral therapies, particularly HRT and the ComB model, represent treatments with the strongest empirical support; nevertheless, availability of adequately trained professionals remains limited, especially in low-resource contexts. In the pharmacological field, results remain inconsistent yet promising, particularly with glutamate-modulating agents, while most clinical trials feature small samples, short follow-up, and heterogeneous methodology. In pediatric populations, the lack of robust studies is particularly critical, limiting extrapolation of adult evidence to children and adolescents. Brazilian literature highlights persistent underdiagnosis associated with structural and educational challenges and scarcity of specialized services. In this context, relevant scientific gaps remain, including the need for large multicenter trials – especially involving glutamatergic modulators – longitudinal studies assessing maintenance of

therapeutic gains and relapse risk, pediatric-specific research elucidating early course and guiding early interventions, neurobiological investigations focusing on potential response biomarkers, and development and evaluation of digital and telepsychotherapy interventions and treatment models adapted to low-resource settings, particularly in primary care.

Expected contribution

This review is expected to contribute to systematizing current knowledge on trichotillomania by integrating historical, clinical, and therapeutic evidence. It aims to promote early clinical recognition, reducing prolonged diagnostic trajectories and associated impacts. By offering an organized synthesis of interventions with stronger scientific support, it seeks to guide objective, evidence-based, and context-applicable clinical practice. This review also aims to establish solid foundations for future research by highlighting priority gaps and directing investigative efforts. Another central goal is to strengthen interdisciplinary dialogue – especially among psychiatry, dermatology, pediatrics, and primary care – promoting greater integration in disorder management. Finally, it seeks to increase awareness of the psychosocial impact of trichotillomania, encouraging comprehensive, patient-centered therapeutic approaches.

Conclusion

Trichotillomania is a chronic and often underdiagnosed disorder that significantly impacts patients' quality of life. Current evidence points to behavioral interventions, especially Habit Reversal Training (HRT), as the first-line treatment, while glutamatergic modulators show promising results, though they still need more research. So, early diagnosis, an interdisciplinary approach, and the development of more robust studies are key to improving clinical management and treatment outcomes.

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Conflicts of interest

None.

Ethical considerations

Protection of human subjects and animals. The authors declare that no experiments on humans or animals were performed for this research.

Confidentiality, informed consent, and ethical approval. This study does not involve personal patient data, medical records, or biological samples, and does not require ethical approval. SAGER guidelines do not apply.

Declaration on the use of artificial intelligence. The authors declare that no generative artificial intelligence was used in the writing or creation of the content of this manuscript.

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