

# Body-focused repetitive behaviors: Beyond bad habits

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## ABSTRACT

Body-focused repetitive behavior (BFRB) is a significantly underrecognized phenomenon that can cause physical complications and marked mental distress. Understanding the condition and offering patients pharmacologic as well as psychotherapeutic support may effectively reduce adverse health outcomes. This article reviews BFRBs, which can present clinically in multiple settings.

**Keywords:** body-focused repetitive behaviors, nongrooming behaviors, trichotillomania, excoriation disorder, skin picking disorder, obsessive-compulsive disorder

## Learning objectives

- Describe the broad diagnosis of BFRBs based on *DSM-5* criteria for trichotillomania and excoriation disorder.
- Identify potential complications of untreated BFRBs.
- List effective treatments for BFRBs.

When patients engage in habitual nongrooming behaviors that rise to the level of causing distress, their behaviors may fall under the umbrella term of *body-focused repetitive behaviors (BFRBs)*. Although this term is not officially recognized by the *Diagnostic and Statistical Manual of Mental Disorders, 5th ed. (DSM-5)* or with an International Classification of Diseases (ICD) code, two BFRBs—trichotillomania and excoriation disorder—are included in the *DSM-5*. In this latest iteration of the *DSM*, trichotillomania was changed from being categorized as an impulse control disorder to an obsessive-compulsive and related disorder.<sup>1,2</sup> Trichotillomania is recurrent hair pulling resulting in hair loss; patients also must meet other diagnostic criteria as outlined

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in Table 1. Another change in the *DSM-5* was the development of the individual diagnostic label of excoriation disorder for repetitive picking of the skin; this condition also has been called dermatillomania, pathologic skin picking, skin picking disorder, and neurotic excoriation. Both these conditions were previously considered impulse control disorders (similar to kleptomania and pyromania) because of patients' inability to control the behavior with a focus on releasing internal tensions. Impulse control disorders are mindful and the person is aware of performing the acts, termed *focused behaviors*. Conversely, as with many obsessive-compulsive disorder (OCD) behaviors, patients may not be aware of what patterns they are engaging in, termed *automatic behaviors*.<sup>3</sup> Patients with trichotillomania or excoriation disorder may report both focused and automatic behavior patterns, which is part of the reason for their reclassification in the *DSM-5*.

Other conditions related to trichotillomania and excoriation disorder follow the same pattern of behavior and distress but are not included in the *DSM-5*. These include thumb/finger sucking, onychotillomania (also referred to as onychophagia), rhinotillexomania, morsicatio labiorum, morsicatio linguarum, and morsicatio buccarum (chewing of the lips, tongue, cheek).

The highest prevalence rate for BFRBs when using standard diagnostic criteria has been 5.4% for excoriation disorder.<sup>4</sup> However, when expanding screening questions to include a broader definition of nongrooming behaviors, a survey of nearly 4,000 undergraduate students indicated that almost 60% engaged in BFRBs.<sup>5</sup> Considering this high

### Key points

- Trichotillomania and excoriation disorder fall under the umbrella term *body-focused repetitive behaviors* (BFRBs), or habitual nongrooming behaviors that rise to the level of causing distress.
- BFRBs may have a genetic component, though studies are hampered by limited sample sizes.
- Complications of excoriation disorder include hypo- and hyperpigmented scarring, keloid formation, and chronic infections leading to sepsis and osteomyelitis.
- The gold standard treatment for BFRBs is habit reversal therapy, a form of CBT.
- Given the reclassification of BFRBs to an OCD-related behavior, drugs for OCD may be effective for BFRBs, but results are mixed.

rate of subclinical BFRBs, clinicians must be aware of these conditions and their various presentations. The effects of BFRBs most commonly present in primary care, psychiatry, and dermatology. However, oral complaints, nonhealing or advancing wounds, and gastrointestinal complications mean that clinicians in many more practice settings should be aware of these conditions.

### PATHOPHYSIOLOGY

Animal models bred for research based on OCD often have increased grooming behaviors as the phenotype for a genetic source of OCD, which is actually reflective of a BFRB.<sup>6</sup> Further evidence of a genetic component is found in high heritability rates for trichotillomania and excoriation disorder, though studies are hampered by limited sample sizes.<sup>7</sup> Family members of patients with trichotillomania often also suffer from higher rates of other mental health conditions, most commonly substance use, depression, and anxiety.<sup>8</sup> Furthermore, neuroimaging studies have identified areas of difference between patients with trichotillomania compared with controls; a similar study found differences for excoriation disorder.<sup>9,10</sup> The size of the studies precludes asserting a causal association with BFRB behavior but does support the need for further research.

### PREVALENCE

General community prevalence data for trichotillomania have been limited, but a published 2020 convenience sample of more than 10,000 adults found that 1.7% of patients met diagnostic criteria for trichotillomania.<sup>11</sup> Some studies have shown similar rates between sexes in children, but higher rates in females than males in adults.<sup>6</sup> Conversely, another study has found that this difference in sex seems to be present in only clinical sampling, with a community survey having similar overall sex rates.<sup>11</sup> This same community survey did not find any difference between prevalence rates of trichotillomania based on



**FIGURE 1.** Excoriation disorder

household income, level of education, or racial-ethnic group.<sup>11</sup> When expanding questions to encompass just general nongrooming hair-pulling behaviors, termed subclinical behaviors, the prevalence rate jumped to 6% to 15%.<sup>11</sup>

A study by Lochner and colleagues showed that 1.4% to 5.4% of patients meet diagnostic criteria for excoriation disorder, which usually first appears in adolescence and primarily in women.<sup>4</sup> In a nonclinical sample, 14% of respondents indicated engaging in some form of skin-picking behavior.<sup>12</sup> Despite this frequency, it is estimated that fewer than 20% of patients with excoriation disorder seek treatment.<sup>4</sup> Both excoriation disorder and trichotillomania have a significant relationship with other mental health conditions, such as depression, anxiety, OCD, body dysmorphic disorder, post-traumatic stress disorder, attention-deficit hyperactivity disorder, and substance use disorder.<sup>4,11,12</sup>

As with many mental health conditions, severity is on a spectrum, with only the most significant behaviors being categorized as pathologic or warranting a formal *DSM-5* diagnosis. Studies have shown a much higher prevalence of subclinical behaviors that may fluctuate in severity and are less likely to be brought to the clinician's attention. In the nonclinical survey of nearly 1,400 adults referenced above, 23% indicated some form of BFRB.<sup>12</sup> As previously stated, a large study of undergraduate students indicated that nearly 60% had subclinical BFRB behaviors and 12% met diagnostic criteria.<sup>5</sup> Also of note, patients may experience multiple BFRB behavior patterns and develop a waxing/waning profile of behaviors over their lifetime.<sup>6,12</sup>

**SCREENING**

Several validated tools can be used to screen for trichotillomania and excoriation disorder, but no screening tools exist for the other BFRBs (Table 2). If needed, clinicians can use existing screening tools and simply replace the language in the tool with the patient’s behavior.<sup>12</sup> Although many of the existing screening tools were based on *DSM-IV* criteria, they still basically hold true because much of the diagnostic criteria were not changed (Table 1). One caveat is that the tools were developed on the assumption that there is overt evidence of the behavior occurring, which may not always be obvious or reported. Clinicians may ask patients an initial question as simple as, “Do you find yourself pulling your hair when you are stressed or bored?” (or any specific BFRB behavior) and, if the answer is yes, proceeding with a formal assessment tool may be indicated.<sup>11</sup> Consider screening for BFRBs whenever patients present with new-onset hair loss, wounds in various stages of healing, nonhealing lesions, or mental health conditions with high rates of comorbid BFRBs.

**PRESENTATION AND COMPLICATIONS**

Patients may seek care for the complications of BFRBs in a variety of settings, making it necessary for a wide range of clinicians to be mindful of this potential pathology underlying the complaint. For example, clinicians may first encounter patients presenting with wound infections or parents bringing a child in with patchy areas of hair loss. Patients with hair loss from trichotillomania, in contrast

to those with hair loss from other causes, have variable hair lengths with broken ends, at times excoriations of the skin surrounding the area of hair loss, and hair loss in atypical locations such as unilateral eyebrow, forearm, or pubic area.<sup>13</sup>

Trichotillomania is strictly the pulling of hair. A related condition, trichophagia, can be present in up to 50% of patients with trichotillomania.<sup>6</sup> A person with trichopha-

**TABLE 2. BFRB clinical screening tools<sup>3,10,32</sup>**

The Premonitory Urge for Tics Score is not specific for any BFRB but is frequently used.

**Trichotillomania**

- NIMH Trichotillomania Severity Scale
- NIMH Trichotillomania Impairment Scale
- Yale-Brown Obsessive-Compulsive Scale—Trichotillomania
- Psychiatric Institute Trichotillomania Scale
- Massachusetts General Hospital Hairpulling Scale
- Trichotillomania Scale for Children
- Milwaukee Inventory for Styles of Trichotillomania

**Excoriation disorder**

- Yale-Brown Obsessive Compulsive Scale modified for Neurotic Excoriation
- Skin Picking Self Assessment Scale
- Skin Picking Scale—Revised

**TABLE 1. Classification criteria comparison for trichotillomania<sup>2</sup>**

<i>DSM-IV</i>	<i>DSM-5</i>
Disorder class: Impulse-control disorders not classified elsewhere	Disorder class: Obsessive-compulsive and related disorders
A. Recurrent pulling out of one’s hair resulting in noticeable hair loss.	A. Recurrent pulling out of one’s hair resulting in hair loss. [Unchanged]
B. An increasing sense of tension immediately before pulling out the hair or when attempting to resist the behavior.	Replaced with: B. Repeated attempts to decrease or stop hair pulling.
C. Pleasure, gratification, or relief when pulling out the hair.	Replaced with: C. The hair pulling cannot be better explained by the symptoms of another mental disorder (such as attempts to improve a perceived defect or flaw in appearance, such as may be observed in body dysmorphic disorder).
D. The disturbance is not better accounted for by another mental disorder and is not due to a general medical condition (e.g., a dermatologic condition).	Replaced with: D. The hair pulling or hair loss cannot be attributed to another medical condition (such as a dermatologic condition).
E. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.	E. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning. [Unchanged]

**TABLE 3.** Comparison of treatment interventions for BFRBs

Intervention	Evidence for one or more BFRB types	Caveats	Reference
Habit reversal therapy	++		6,22
CBT	++		6,22
Dialectical behavioral therapy	+++	Results confounded by increase in therapeutic contact compared with habit reversal therapy or CBT	6,22,23
Acceptance and commitment therapy	+++	Results confounded by increase in therapeutic contact compared with habit reversal therapy or CBT	6,22,23
Comprehensive behavioral treatment	+	Limited controlled trials	24
Clomipramine	++		22,29,31
SSRIs: Fluoxetine Sertraline Citalopram Escitalopram	+/- +/- - -	Mixed evidence of efficacy, studies show fluoxetine has more positive evidence than other SSRIs	8,22,29
Second-generation antipsychotics: Aripiprazole Olanzapine Quetiapine Risperidone	 + ++ + +	Best studies/most evidence is for olanzapine	8,22,29
N-acetyl-cystine	++		4,6,8
Naltrexone	++		8
Topiramate	+	Limited studies	32
Lamotrigine	+/-	Limited studies; evidence of efficacy only when open label	8,29,33
Inositol	-	Very limited research for BFRB, only randomized controlled trial showed no improvement for trichotillomania	29
Wearable technology Mobile applications	? +	Limited to no independent research	25
Yoga Aerobic exercise Acupuncture Biofeedback Hypnosis	+ ? ? + +	Some limited evidence but also limited potential for adverse reactions	26

gia chews and at times swallows hair, which is not easily digested. Over time, this may result in the formation of a trichobezoar that can cause pain, nausea, vomiting, unintentional weight loss, failure to thrive, anemia, or even full intestinal obstruction. Trichobezoars may be found on physical examination or imaging. When the trichobezoar trails from the stomach further into the intestinal tract—referred to as *Rapunzel syndrome*—it may make removal more challenging. Compared with other types of bezoars, such as those formed by food or medications, trichobezoars are less likely to respond to enzymatic or chemical breakdown. Based on its size, location, and any complications, the bezoar may need to be removed via endoscopic, laparoscopic, or open surgical procedure.<sup>14</sup>

Complications of excoriation disorder include hypo- and hyperpigmented scarring, keloid formation, and chronic infections leading to sepsis and osteomyelitis.<sup>15</sup> Case reports have described excoriation disorder leading to chronic anemia, acute hemorrhage, and intracranial pathology when the wounds progress.<sup>16,17</sup> The interplay between skin and hair conditions and mental distress is in fact so common that the burgeoning field of *psychodermatology* focuses on the understanding that these conditions cannot be managed by a single specialist type.<sup>18</sup>

Clinicians performing an oral health assessment or working in otolaryngology may encounter patients with soft tissue growths in the mouth or tongue secondary to the repetitive trauma of chewing or picking. Unfortunately,

simple excision of the growth may not resolve the problem; mouth guards or other protective devices may allow healing while the underlying behavior is addressed.<sup>19</sup> Relatedly, rhinotillexomania can cause infection, nasal septum perforation, or complete loss of septal tissue.<sup>20</sup>

One important point is the effect BFRBs can have on patient quality of life and family dynamics. A relationship appears to exist between having a BFRB and having problems with physical functioning and emotional well-being. Unfortunately, the research available is not yet able to differentiate what may cause BFRBs, because of the significant overlap with other mental health conditions such as depression.<sup>12</sup> Having a child with a mental health condition is known to increase the stress felt by all family members, and BFRBs are no different. Interestingly, a study looking at trichotillomania and OCD showed that the severity of the pulling behavior was not directly related to the degree of conflict or impairment in cohesiveness experienced by the identified patient or their family.<sup>21</sup> Also, parents and children may have different perceptions of how the BFRB affects the child's ability to function.<sup>3</sup> Clinicians should be mindful of these points when discussing how to best support patients and their family members.

### PSYCHOTHERAPEUTIC TREATMENT

Treatment for all the BFRBs remains understudied, with limited evidence for psychotherapeutic and pharmacologic treatments; **Table 3** summarizes the treatments investigated to date. The gold standard is habit reversal therapy, a form of cognitive behavioral therapy (CBT).<sup>6,22</sup> Other psychotherapeutic treatments that have also proven to be effective include comprehensive behavioral treatment, acceptance and commitment therapy, and dialectical behavioral therapy.<sup>6,23,24</sup> The underlying theme with these psychotherapeutic modalities is focused on developing awareness of triggers, including reducing the guilt or shame that may accompany the condition, while developing improved distraction and coping skills.

Increased access to handheld and wearable technology has created new opportunities for therapeutic interventions for patients with mental health conditions, particularly BFRBs. Originating with websites to help increase mindfulness related to pulling and picking behaviors (StopPicking.com, StopPulling.com), several mobile applications are now available to help users track and extinguish undesired behaviors. Specific to BFRBs are TrichStop, PullFree, and SkinPick; QUIT That and Coach.me are more generic but still useful. Limited formal studies have evaluated effectiveness of these interventions.<sup>25</sup>

One of the newest innovations is a motion sensor bracelet that can be programmed to vibrate whenever wearers engage in the BFRB behavior. During the priming or training period, patients move their arm to mimic their most common BFRB and then alert the mobile or web applica-

tion that this movement is the behavior to be eliminated. Thereafter, every time the patient moves the arm in that same pattern, a small vibration will occur, alerting the patient to the behavior. This is particularly helpful for patients who engage in automatic behavior patterns. Two public versions of this device are available: Habit by Immutouch (previously called Slightly Robot) and Keen by HabitAware. Formal treatment studies with these modalities have not been published.

Alternative therapies may be beneficial, but efficacy data are limited.<sup>26</sup> As with any therapy for which evidence is not available, a careful discussion of the risks and benefits, including cost, must be undertaken.

### PHARMACOLOGIC TREATMENT

No medications have been approved by the FDA for any BFRB, though many have been investigated (**Table 3**). Given the reclassification of BFRBs to an OCD-related behavior, one would hope that evidence-based pharmacologic treatments for OCD would be effective for BFRBs as well, but the results are mixed.<sup>22</sup> Clomipramine, a tricyclic antidepressant, shows the best evidence for BFRB treatment, but needs to be used cautiously because of its anticholinergic adverse reactions and because overdoses can be fatal.

Researchers using the argument that BFRBs are more neurologically similar to an impulse or tic disorder have hypothesized that dopaminergic agents such as atypical or second-generation antipsychotics may be of benefit. With this category of medications, larger, more formal studies are lacking, and the potential metabolic effect and extrapyramidal symptoms must be weighed against the potential for improvement.<sup>27</sup>

Some clinicians in research and the clinical realm consider BFRBs to be a form of behavioral addiction, on par with compulsive gambling, shopping, or viewing of pornography.<sup>28</sup> Given the similarities between addiction, impulse control, and OCD, clinicians may consider off-label uses of medications that have shown promise for these other conditions, in particular if both are present in the same patient, with the idea that the medications affect the reward pathway.<sup>4,6,8,29,30</sup>

A Cochrane review conducted in 2013 noted that no one particular class of medications showed superior efficacy for trichotillomania, but the review also cited limited research to guide recommendations.<sup>31</sup> Given this dearth of research, clinicians may be forced to try multiple medications off-label before the patient has improvement. Note that the vast majority of studies focus on adults; for these reasons, behavioral interventions are often the first-line treatment for children and adolescents.<sup>3</sup> Objective measures of improvement may be helpful and can rely on photographs or measurements of skin lesions or areas of hair loss, or repeated use of distress measurement tools over time.

## CONCLUSION

Although BFRBs are not a recognized classification in the *DSM*, this umbrella term encompasses behaviors that affect a range of patients, though the hidden burden of disease likely is much higher. Unfortunately, this lack of recognition of the spectrum of the condition also means that large, high-quality studies examining treatments are lacking. Keeping a high index of suspicion whenever unusual dermatologic or nonhealing lesions are encountered is important, as is screening for BFRBs in patients with other psychiatric conditions. Consider the off-label use of medications paired with validated therapeutic support and some of the newest technology offerings, as a combination approach may be needed to give the patient the best chance at recovery. **JAAPA**

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