

Skin Picking Disorder

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Although skin picking has been documented in the medical literature since the 19th century, only now is it receiving serious consideration as a DSM psychiatric disorder in discussions for DSM-5. Recent community prevalence studies suggest that skin picking disorder appears to be as common as many other psychiatric disorders, with reported prevalences ranging from 1.4% to 5.4%. Clinical evaluation of patients with skin picking disorder entails a broad physical

and psychiatric examination, encouraging an interdisciplinary approach to evaluation and treatment. Approaches to treatment should include cognitive-behavioral therapy (including habit reversal or acceptance-enhanced behavior therapy) and medication (serotonin reuptake inhibitors, *N*-acetylcysteine, or naltrexone). Based on clinical experience and research findings, the authors recommend several management approaches to skin picking disorder.

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Skin picking disorder, also referred to as pathological skin picking, neurotic excoriation, dermatillomania, or psychogenic excoriation, is characterized by the repetitive and compulsive picking of skin, leading to tissue damage (1). The medical literature has long noted compulsive picking as a health problem. Erasmus Wilson first coined the term “neurotic excoriation” in 1875 to describe excessive picking behaviors in neurotic patients that were extremely difficult, if not impossible, to control (2).

Even with a long history in the medical literature, skin picking disorder is not explicitly listed in DSM-IV. The following diagnostic criteria, however, have been proposed and studied in a field trial for skin picking disorder: 1) recurrent skin picking resulting in skin lesions; 2) repeated attempts to decrease or stop skin picking; 3) the skin picking causes clinically significant distress or impairment in social, occupational, or other important areas of functioning; 4) the skin picking is not attributable to the direct physiological effects of a substance (e.g., cocaine) or another medical condition (e.g., scabies); and 5) the skin picking is not better accounted for by symptoms of another DSM-5 disorder (e.g., skin picking due to delusions or tactile hallucinations in a psychotic disorder, preoccupation with appearance in body dysmorphic disorder).

Epidemiology

Two community prevalence studies have found that skin picking disorder is fairly common. In a nonclinical

community sample of 354 people, 19 respondents (5.4%) reported significant picking with associated distress or impact and thereby met the criteria for skin picking disorder (3). The study demonstrated that although 63% of respondents overall engaged in some form of picking, only a small percentage met criteria for skin picking disorder. Another study, based on 2,513 telephone interviews, found that 10% of respondents picked to the point of having noticeable skin damage that was not attributable to a medical condition (4). When distress or impairment was included as a diagnostic criterion, 1.4% met criteria for skin picking disorder.

These studies demonstrate that as a behavior, skin picking appears to be quite common and presents along a continuum from mild to severe. Mild cases of picking presumably rarely require intervention. When picking meets the criteria for skin picking disorder, however, as in the case vignette, intervention is needed.

Clinical Description

Research suggests that the onset age for skin picking disorder varies substantially; it may occur during childhood (<10 years old), adolescence (mean age, approximately 13–15 years), or later (between the ages of 30 and 45) (4–9). The clinical characteristics of the disorder are the same across age cohorts and across cultures—in Europe (6), Africa (10), North America (11), South America (12), and the Middle East (13).

Individuals with skin picking disorder spend a significant amount of time each day picking their skin; many

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A young woman with compulsive skin picking that causes disfigurement and embarrassment seeks treatment.

"Ms. B" is a 24-year-old single female who picks at her face, arms, and legs on a daily basis. She began picking sporadically at age 13, but in the past 2 years the picking has been a daily routine. During times of boredom or right before bed, Ms. B checks her body to find some bump or inconsistency in the skin. When she finds one, she begins picking with her fingernails and stops only when she starts to bleed or when she feels that the bump has been removed. Ms. B often picks for 2 to 3 hours each day. The "need" or "urge" to pick immediately precedes or is simultaneous with touching the skin, and she reports feeling unable to resist this urge. The picking episode usually ends with a sense of accomplishment, which quickly transforms into shame and embarrassment. Because of the time she spends picking, as well as the

disfigurement and embarrassment from picking (scarring, scabs), Ms. B is often late for work or unable to work given the open wounds on her face. She has not dated or socialized with friends for the past year. She had never sought help for her picking, but then found information about it on a web site and decided to consult a mental health provider.

On examination, Ms. B is covered with scars and scabs in various stages of healing. Urine toxicology screening is negative. Ms. B meets the proposed diagnostic criteria for skin picking disorder, and over the course of the next several weeks undergoes eight sessions of habit reversal therapy and is treated with *N*-acetylcysteine. Ms. B is soon able to reduce her picking to 5–10 minutes every few days. A year later her picking remains at this low level.

report that the picking behavior takes up several hours each day (11, 14–17). Because of the amount of time spent picking, individuals report missing or being late for work, school, or social activities (9).

Triggers to pick vary greatly, and multiple triggers are the norm. Stress, anxiety, time away from scheduled activities (e.g., sitting on the couch, watching television, reading, and so on), boredom, and feeling tired or angry have all been reported as triggers (1, 7, 15, 18). Emotion regulation difficulties and emotion reactivity have been shown to predict picking behavior after controlling for depression, anxiety, and worry (19). Picking can also be triggered by the feel (e.g., a bump or unevenness) or look (e.g., a blemish or discoloration) of the skin.

Picking often begins unconsciously but becomes conscious after a period of time (15, 17). This is similar to the characteristics of other grooming disorders, such as trichotillomania (10), in which the act of pulling has been described as automatic (i.e., unconscious) or focused (i.e., conscious) (20). The proportion of time patients with skin picking disorder report being aware of their picking behavior ranges from 68.9% to 78.1% (2). In many cases, however, the picking behavior only becomes conscious when someone else brings it to their attention or a picking site begins to bleed.

Importance of Screening

Although the course of illness may vary, when untreated, skin picking disorder is most often considered a chronic disorder with fluctuations in intensity over time (2). One study of 29 patients with the disorder found a mean illness duration of 20.1 years (17), which is similar to the mean duration of 18.9 years reported in another study, with 24 patients (15). Individuals report that the symptoms of their picking, although waxing and waning in intensity over many years, are essentially unchanged with time. Seeking medical help from a physician is uncommon among

individuals who pick their skin (15). In fact, some studies suggest that less than 20% of skin pickers seek treatment (9, 15). Individuals with skin picking disorder often report being unaware that viable treatments are available (15).

Screening in Mental Health Settings

Skin picking disorder occurs with a variety of other disorders, such as major depressive disorder (12.5%–48%), anxiety disorders (8%–23%), and substance use disorders (14%–36%) (5, 10, 14–16). Data on age at onset suggest that skin picking disorder generally begins at an earlier age than these co-occurring disorders (9). A study of 92 individuals with skin picking disorder found that 17.4% used illegal drugs, 22.8% used tobacco products, and 25.0% used alcohol to relieve feelings associated with picking. Additionally, 85.9% of subjects reported anxiety and 66.3% reported depression due to picking (9). Therefore, clinicians must screen for both skin picking disorder as well as the secondary manifestations of the disorder if treatment of either disorder is to be successful.

Skin picking disorder is often misdiagnosed as either obsessive-compulsive disorder (OCD) or body dysmorphic disorder. Rates of co-occurring OCD are significantly higher in individuals with skin picking disorder (6%–52%) (5, 8, 11) than rates observed in the community (1%–3%), and reported rates of skin picking disorder among individuals with OCD have ranged from 8.9% to 24.0% (21, 22), markedly higher than the range of 1.4%–5.4% found in the community (3, 4). The repetitive motor symptoms of skin picking disorder have some similarities to the repetitive compulsive rituals in OCD. These findings raise the possibility of an underlying common neurobiological pathway, but several lines of evidence suggest that skin picking disorder is distinct from OCD. Individuals with skin picking disorder are more likely to be female, they report higher rates of co-occurring grooming disorders

(such as hair pulling or compulsive nail biting), and they are more likely to have first-degree relatives with grooming disorders (2). Neurocognitive data also demonstrate a distinction between individuals with skin picking disorder (i.e., demonstrating poor motor inhibition) and individuals with OCD (problems with cognitive flexibility) (2).

Reports have also indicated substantial comorbidity of skin picking disorder with body dysmorphic disorder (5, 23, 24). One study found that 44.9% of a sample with body dysmorphic disorder met criteria for lifetime skin picking disorder, and 36.9% met criteria for a current disorder (23). An earlier study found that 26.8% of individuals with body dysmorphic disorder engaged in skin pick secondary to their body dysmorphic disorder (24). Arnold et al. (5) found that 11 (32%) of 34 patients with skin picking disorder had co-occurring body dysmorphic disorder. Although there appears to be overlap between skin picking disorder and body dysmorphic disorder, patients with body dysmorphic disorder pick at their skin to improve their appearance (24), and these individuals would not meet criteria for skin picking disorder if the skin picking is secondary to body dysmorphic disorder. Many individuals with skin picking disorder, however, do not pick their skin because of their appearance and do not meet criteria for body dysmorphic disorder. Several lines of evidence further delimit these disorders. Whereas skin picking disorder is largely a female disorder, body dysmorphic disorder is seen equally in men and women (24). Individuals with skin picking disorder are less likely than those with OCD to have first-degree relatives with body dysmorphic disorder (23). Additionally, whereas body dysmorphic disorder has demonstrated good response to serotonin reuptake inhibitors (24), the response of skin picking disorder to antidepressants has been mixed.

Other grooming disorders, such as trichotillomania, are common in individuals with skin picking disorder (2, 5, 10). A study of 60 patients with skin picking disorder found a lifetime rate of co-occurring trichotillomania of 38.3% (20), which is substantially higher than the rate of trichotillomania in the general population (0.6%–3.9%) (20). Although few studies have compared these behaviors within and against each other, one comparative study of 33 individuals with skin picking disorder, 24 with trichotillomania, and 20 with co-occurring disorders found significant similarities across all groups (2). Onset age, gender ratio, prevalence of both current and lifetime comorbid psychiatric disorders, and overall symptom severity were similar across all three groups (2). Neurocognitive data, however, suggest that while there is overlap overall between skin picking disorder and trichotillomania, these are not manifestations of the same disorder. A direct comparison of skin picking disorder and trichotillomania (25) demonstrated that while skin picking disorder was associated with significantly impaired stop-signal

reaction times but intact cognitive flexibility relative to healthy comparison subjects, trichotillomania occupied an intermediate position in terms of stop-signal reaction times between comparison subjects and individuals with skin picking disorder.

Screening in Medical Settings

Many individuals with skin picking disorder begin picking at the onset of a dermatological condition such as acne (17), but the picking continues even after the dermatological condition clears. Although the face is the most commonly reported site of picking, other areas, such as the hands, fingers, torso, arms, and legs, are also common targets (2, 5, 6, 8, 15, 17, 18). In a study of 60 individuals with skin picking disorder, respondents reported picking an average of 4.5 sites (11). Many individuals report having a primary body area for picking but may pick at other areas to allow the most significantly excoriated areas to heal (2, 6). For most individuals with skin picking disorder, a variety of picking lesions can be seen, ranging from a few to hundreds (18). Although most individuals pick at areas they can reach with their fingernails, many report using knives, tweezers, pins, and other objects to pick (15, 18).

Picking may result in significant tissue damage and often leads to medical complications such as localized infections and septicemia (2, 17, 18). Patients are often too ashamed to report areas that have become infected or where picking is particularly severe. A thorough physical examination is often needed to accurately assess the extent and severity of picking. Topical or oral antibiotics may be needed. The repetitive, excoriative nature of picking in severe cases may even warrant skin grafting (2, 5) and has resulted in the development of an epidural abscess and paralysis (26). In rare cases, the behavior can be life-threatening, as demonstrated by the case report of a 55-year old man whose picking on his back required multiple blood transfusions because of excessive blood loss (27).

Possible Pathophysiology of Skin Picking Disorder

Although the data are limited, existing family history data suggest that skin picking disorder is familial. In a study of 60 patients with skin picking disorder, 28.3% of their first-degree family members had the disorder (2). Another study of 40 patients with skin picking disorder found that 43% had a first-degree relative with skin picking (18). Although family studies of OCD have found that skin picking disorder occurs more frequently in case relatives (28), a comparison between probands with skin picking disorder and those with OCD found that individuals with skin picking disorder were significantly more likely to have at least one first-degree relative with skin picking disorder or compulsive nail biting compared with OCD subjects (2).

In a study examining the prevalence and heritability of skin picking in a sample of 2,518 twins from the Twins UK

adult twin registry, Monzani and colleagues (29) reported that clinically significant skin picking was endorsed by 1.2% of twins. Significantly higher concordance rates for the monozygotic versus dizygotic twin pairs indicated a strong genetic influence on skin picking. Additive and nonadditive genetic factors accounted for slightly over 40% of the variance in skin picking, with the remaining variance attributable to nonshared environmental factors (with shared environmental factors negligible and nonsignificant).

Animal models are a useful tool for investigating the pathophysiology of skin picking disorder, particularly models that mimic the behavioral and clinical manifestations of the disorder. One candidate model of skin picking disorder is the *Hoxb8* gene knockout mouse. Greer and Capecchi (30) reported that mice with mutations of the *Hoxb8* gene groomed excessively, to the point of developing skin lesions. These mice demonstrated normal cutaneous sensation, and there was no evidence of an inflammatory response, which suggests that this behavior was not due to abnormalities of the skin or the peripheral nervous system. The *Hoxb8* gene knockout model is promising because the excessive grooming of these mice is similar to that of individuals with skin picking disorder, thus offering face similarity to symptoms observed in the disorder. Moreover, the *Hoxb8* gene is expressed in the orbital cortex, the anterior cingulate, the striatum, and the limbic system.

Dufour et al. (31) reported the unexpected finding that dietary elevation of brain serotonin levels in a mouse model of trichotillomania increased hair pulling and scratching behavior and also led to ulcerative dermatitis. They have proposed ulcerative dermatitis in mice as an animal model of compulsive skin picking.

A possible genetic model for skin picking disorder can be found in the animal research on the gene encoding SAPAP3, a scaffolding protein found in excitatory glutamate-responsive synapses largely in the striatum. SAPAP3-deficient mice demonstrated extreme excessive grooming (32). This research has been reinforced by the finding in a human genetic association study that a variation in the SAPAP3 gene is associated with grooming disorders (33). The study, which examined 383 families phenotyped for OCD genetics studies ($N=1,618$) using a family-based association analysis, found that 32% of the participants met criteria for a grooming disorder (20% overall for skin picking disorder). Skin picking disorder was associated with a variant of the SAPAP3 gene that was not associated with OCD.

These animal models hint at an underlying dysregulation of cortico-subcortical circuitry, and there is a tentative body of research examining neuropsychological deficits in skin picking disorder. One critical issue concerns the trait-versus-state nature of cognitive dysfunction in skin picking disorder—that is, whether any reported deficits occur in people who are at an increased genetic risk of the

condition, perhaps reflecting a vulnerability marker, or rather occur as a consequence of symptoms themselves. This issue is important because if objective vulnerability markers (endophenotypes) can be identified, they can be used to drive research on etiological factors contributing to the condition. The repetitive physical symptoms of skin picking disorder suggest an underlying dysfunction of motor inhibitory control processes. Motor impulsivity is classically assessed using tasks that require volunteers to make simple motor responses on some computer trials but not others. Stop-signal tasks use an individually tailored tracking algorithm to estimate the time taken by the brain to suppress an already initiated response. Response inhibition as a cognitive function is dependent on neural circuitry including the right inferior frontal gyrus. One study indicated impaired stop-signal inhibitory control in patients with skin picking disorder compared with healthy volunteers (2). Another found that individuals with skin picking disorder had greater impairment of inhibitory control compared with patients with trichotillomania (25).

Also exploring impulsivity in skin picking disorder, Snorrason et al. (34) reported that skin pickers scored significantly higher than healthy volunteers on the positive and negative urgency subscales of the Urgency, Premeditation, Perseverance, Sensation-Seeking (UPPS) Impulsive Behavior Scale but not on the other subscales measuring impulsivity (34). The authors concluded that more circumscribed emotion-based impulsivity characterizes skin pickers.

An EEG study of 54 individuals with skin picking disorder demonstrated significant abnormalities (51.9%) relative to comparison subjects (25%) in (specifically non-focal) theta activity bilaterally (35). Similar findings of reduced anterior theta power have been associated with impulsive task-performance in individuals with addictive behaviors. Further EEG examinations with larger groups of patients with skin picking disorder and with measures that are more sensitive to motor impulsivity are necessary to properly evaluate these findings.

Evaluation and Interventions

Evaluation

The clinical evaluation of a patient with skin picking disorder entails a broad physical and psychiatric examination. The physical examination serves two purposes: first, to assess the extent of the picking and to develop appropriate interventions based on the damage to the skin (for example, does the person need antibiotics? Has a more systemic illness resulted from the picking, such as bacteremia, cellulitis, or joint infection?), and second, to assess for possible dermatological or infectious etiologies of the skin picking. There are many dermatological conditions that result in scratching or picking—scabies, atopic dermatitis, psoriasis, and blistering skin disorders, to name only a few (36). Patients should be sent for a thorough

dermatological consultation, which may include microscopic examination of lesions for scabies, a Wood's lamp examination for fungal infections, patch testing for allergies, skin biopsies, and laboratory investigations of thyroid, parathyroid, liver, and kidney function (36).

A thorough psychiatric evaluation is required to screen for the co-occurring disorders listed above and to examine the relationship of skin picking to those other disorders. For example, does the person exhibit social anxiety as a result of the picking, or are they independent problems? In addition, patients must be assessed for substance use and use of other medications. Skin picking may develop as a result of cocaine or methamphetamine use or may be secondary to stimulant medications used to treat attention deficit hyperactivity disorder (37).

In children, the examination should also focus on the possibility that skin picking is associated with a pervasive developmental disorder or Prader-Willi syndrome. Prader-Willi syndrome is a rare genetic disorder that is often associated with hyperphagia, hypogonadism, and frequent skin picking (38). Picking in individuals with Prader-Willi syndrome or with developmental disabilities may require specialized treatment interventions, such as combinations of differential reinforcement, providing preferred items and activities (e.g., toys), use of protective clothing (e.g., helmets, gloves), response interruption and redirection, punishment, and extinction (39).

Interventions

Individuals with skin picking disorder rarely seek dermatological or psychiatric treatment for their condition. Patients avoid seeking treatment because of social embarrassment or the belief that their condition is just a "bad habit" or is untreatable.

Treatment for skin picking disorder has largely focused on cognitive-behavioral interventions and pharmacology. Early psychosocial treatment studies provided preliminary evidence for skin picking reduction with habit reversal or acceptance-enhanced behavior therapy (40). Teng et al. (41) conducted a waiting-list-controlled study of habit reversal therapy and demonstrated significantly greater reductions in skin picking in the active treatment group at posttreatment and follow-up assessments. Similarly, Schuck et al. (42) demonstrated the efficacy of a brief (four sessions) cognitive-behavioral therapy protocol for skin picking disorder in comparison with a waiting list control, with treatment effects maintained at 2-month follow-up.

Double-blind placebo-controlled clinical trials in patients with skin picking disorder have been conducted during the past decade (43). Data regarding the efficacy of serotonin reuptake inhibitors have been mixed, with some demonstrating improvement on certain measures of picking behavior (43). One study of fluoxetine in skin picking disorder found that, among the 17 (of 21) participants who completed the trial (six treated with fluoxetine, 11 with placebo), the fluoxetine group improved

significantly more than the placebo group at a mean dosage of 55 mg/day after 10 weeks of treatment, but participants responded on only one of the three measures and none experienced full remission (7). In another fluoxetine study, 15 patients received 6 weeks of open-label fluoxetine followed by a 6-week double-blind discontinuation phase for those who responded. At the end of the open-label phase, the eight participants (53.3%) who met the threshold for response were randomly assigned to receive fluoxetine or placebo. The four patients in the fluoxetine group maintained their improvement during the double-blind discontinuation phase, whereas the four in the placebo group returned to baseline levels of picking severity (44). In a double-blind study of 45 patients with skin picking disorder treated with citalopram (20 mg/day) for 4 weeks, scores on the Yale-Brown Obsessive Compulsive Scale modified for skin picking disorder decreased significantly for the citalopram group but not for the placebo group (45). However, there was no significant medication effect on the primary outcome measure, a visual analogue scale of picking behavior (33).

The anticonvulsant lamotrigine has been investigated in skin picking disorder; although an open-label study demonstrated some benefit (15), a follow-up double-blind placebo-controlled study failed to demonstrate greater benefit than placebo (46).

Opioid antagonists reduce self-licking or self-chewing in 63%–91% of dogs with acral lick dermatitis, a possible animal model of skin picking disorder (43, 47, 48). In humans with skin picking disorder, the efficacy of opioid antagonists is supported only by case reports. Similarly, glutamatergic agents have shown early promise in case reports for the treatment of skin picking disorder. One example is *N*-acetylcysteine, which has demonstrated benefit for skin picking disorder, trichotillomania, and nail biting (49).

Summary and Recommendations

If untreated, skin picking disorder is a chronic illness that often results in substantial psychosocial dysfunction and may lead to life-threatening medical problems. Control of the skin picking is critical for maintaining long-term health and quality of life. Based on our clinical experience and research findings, we suggest the following management strategies:

1. Begin with a thorough psychiatric assessment to establish an accurate diagnosis of skin picking disorder and to assess for co-occurring psychiatric disorders.
2. Obtain a thorough evaluation from a dermatologist with knowledge about skin picking disorder to assess for underlying dermatological conditions that may cause or worsen skin picking.
3. Maintain collaboration between internal medicine and psychiatric management teams for monitoring and rapid intervention if serious medical sequelae result from the picking.

4. Provide the patient with education about the disorder, including possible etiologies and treatment risks and benefits.

5. Provide cognitive-behavioral therapy (including habit reversal or acceptance-enhanced behavior therapy) and medication (serotonin reuptake inhibitors, *N*-acetylcysteine, or naltrexone) to treat skin picking disorder. The choice of medication should be informed by the existence of co-occurring disorders and the patient history.

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Clinical Guidance: Skin Picking Disorder

Skin picking consumes hours a day for some individuals, causing disfigurement and interfering with social or work life. Grant et al. note that skin picking disorder has a prevalence of 1%–5% and can arise at any age, often after the onset of a dermatological condition. Although it has similarities to obsessive-compulsive disorder and body dysmorphic disorder, it is distinguished by a personal or family history of grooming disorders and a lack of preoccupation with appearance. A dermatologist should determine whether the patient has an underlying skin condition and whether medical treatment is needed. Skin picking disorder can be treated with cognitive-behavioral therapy, particularly habit reversal and acceptance-enhanced behavior therapy. Naltrexone and N-acetylcysteine, a glutamatergic agent, have shown promise in case reports. Clinical trials of selective serotonin reuptake inhibitors have had mixed results.