

# Self-Injurious Skin Picking: Clinical Characteristics and Comorbidity

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**Background:** Repetitive skin picking, a self-injurious behavior that may cause severe tissue damage, has received scant empirical attention. The authors examined the demographics, phenomenology, and associated psychopathology in a series of 31 subjects with this problem.

**Method:** Subjects were administered the Structured Clinical Interview for DSM-IV for Axis I and Axis II disorders. They also completed several mood questionnaires and a new self-report inventory designed to assess phenomenology, triggers, cognitions, emotions, and consequences associated with skin picking.

**Results:** The mean age at onset on self-injurious skin picking was 15 years, and the mean duration of illness was 21 years. All subjects picked at more than one body area, and the most frequent sites of skin picking were pimples and scabs (87%). The most common comorbid Axis I diagnoses were obsessive-compulsive disorder (OCD; 52%), alcohol abuse/dependence (39%), and body dysmorphic disorder (32%). Forty-eight percent (N = 15) of the subjects met criteria for at least one mood disorder, and 65% (N = 20) for at least one anxiety disorder. The most common Axis II disorders were obsessive-compulsive personality disorder (48%) and borderline personality disorder (26%).

**Conclusion:** Self-injurious skin picking is a severe and chronic psychiatric and dermatologic problem associated with high rates of psychiatric comorbidity. It may be conceptualized as a variant of OCD or impulse-control disorder with self-injurious features and may, in some cases, represent an attempt to regulate intense emotions.

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**R**epetitive skin picking is a self-injurious behavior that may cause severe tissue damage. It has been described in the dermatologic literature under a variety of names (e.g., dermatillomania, neurotic excoriations) but has received little empirical attention. It often takes the form of a grooming ritual in which the individual attempts to remove small irregularities on the skin (e.g., blemishes). In more severe cases, the subjects dig deep into the skin, often resulting in visible disfigurement.<sup>1,2</sup>

To date, limited data are available on the rate of occurrence of self-injurious skin picking, with the incidence estimated to be 2% among dermatology patients<sup>3</sup> and 4% in college students (N.J.K., S.W., T.D., et al., unpublished data, 1999). Skin picking has been characterized as a condition that primarily affects females,<sup>4,5</sup> and several studies described subjects with self-injurious skin picking as "perfectionistic" or having "obsessive-compulsive traits, anxiety, or depressive symptoms."<sup>6</sup> However, the value of these studies is limited due to their lack of modern diagnostic criteria. Moreover, most references to self-injurious skin picking are single case studies and small case series; thus, we can only construct a fragmented clinical picture of its phenomenology and comorbidity.

The goal of the present study was to systematically investigate severe self-injurious skin picking and its associated psychopathology in a large sample. On the basis of the existing literature, we hypothesized that skin picking would occur in the context of significant psychiatric comorbidity. Furthermore, we hypothesized that it would occur predominantly in patients with obsessive-compulsive disorder (OCD) or obsessive-compulsive personality disorder. In addition, we expected that it would be highly comorbid with anxiety and mood disorders. We also assessed triggers, course of the intensity of associated emotions, and cognitive and behavioral consequences of skin picking.

## METHOD

Subjects were recruited through bulletin board notices at Massachusetts General Hospital, newspaper advertisements, and clinician referrals. To satisfy selection criteria, subjects had to engage in severe self-injurious skin pick-

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ing that either caused significant tissue damage or led to marked distress or impairment in daily functioning. Subjects under the age of 18 years were excluded from the study.

Thirty-three individuals were interested in participating in the study. One subject was excluded because she did not meet selection criteria and another because she did not complete the study. Thus, 31 outpatients (27 women) with self-injurious skin picking were studied. All subjects were administered 2 Structured Clinical Interviews for DSM-IV (SCID-I and SCID-II)<sup>7,8</sup> to obtain information about psychopathology associated with severe self-injurious skin picking. Subjects also filled out the Beck Depression Inventory (BDI),<sup>9</sup> the Beck Anxiety Inventory (BAI),<sup>10</sup> and a self-report skin-picking inventory (available from the authors upon request) that was designed for this study to assess the phenomenology, onset, and course of skin picking; family and treatment history; triggers; and the cognitions, emotions, and consequences associated with skin picking. After a complete description of the study was given, written informed consent was obtained from all subjects. Subjects were paid \$20 for their participation.

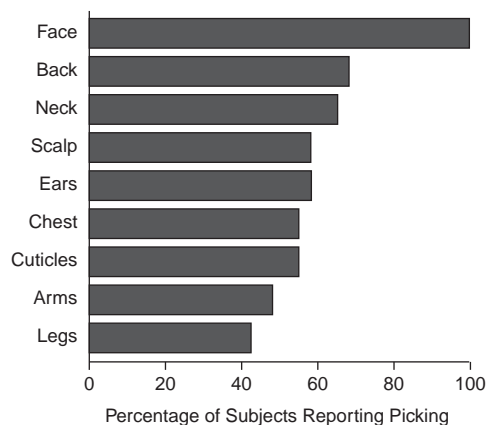
**RESULTS**

Subjects had a mean ± SD age of 40.2 ± 9.6 years (range, 18–53 years). Eighty-seven percent (N = 27) were female. Forty-eight percent (N = 15) were married, 19% (N = 6) were divorced, 29% (N = 9) were single, and 3% (N = 1) were widowed. Twenty-six percent (N = 8) had completed high school, 39% (N = 12) had finished college, and 35% (N = 11) had a graduate degree. The mean ± SD age at onset of skin picking was 15 ± 8 years. The course of skin picking tended to be chronic, with a mean ± SD duration of 21 ± 13 years. The intensity of skin-picking behavior waxed and waned over time, and complete periods of symptom remission were rare.

Thirty-nine percent (N = 12) had a dermatologic illness (mostly acne) when the first episode of skin picking occurred. Forty-five percent (N = 14) reported having first-degree relatives who also pick their skin. Subjects reported that their mother (N = 7, 23%) and father (N = 4, 13%) were also skin pickers. Three subjects (10%) reported having siblings with a skin-picking problem.

The most frequent sites of skin picking included pimples and scabs (N = 27, 87% each); red, swollen or infected areas (N = 18, 58%); mosquito bites (N = 15, 48%); and scars (N = 13, 42%). Fifty-two percent of the subjects (N = 16) reported picking at healthy skin. All subjects picked at more than one body area. The percentage of subjects reporting skin picking in different body areas is illustrated in Figure 1. Skin picking occurred in a wide array of body areas, with the face being the most frequent site.

**Figure 1. Percentage of Subjects Reporting Skin Picking in Different Body Areas**



**Table 1. Current Axis I Disorders in 31 Subjects With Self-Injurious Skin Picking**

DSM-IV Diagnosis	N	%
<b>Mood disorders</b>		
Major depression	8	26
Dysthymia	7	23
Bipolar I disorder	3	10
<b>Psychotic disorders</b>		
Schizophrenia	2	6
Schizoaffective disorder	1	3
<b>Anxiety disorders</b>		
Panic disorder with agoraphobia	4	13
Social phobia	7	23
Specific phobia	2	6
Obsessive-compulsive disorder	16	52
Posttraumatic stress disorder	4	13
Generalized anxiety disorder	5	16
<b>Eating disorders</b>		
Anorexia nervosa	2	6
Bulimia nervosa	6	19
Binge-eating disorder	1	3
<b>Substance abuse/dependence</b>		
Alcohol	12	39
Illicit drugs	8	26
<b>Somatoform disorders</b>		
Body dysmorphic disorder	10	32
Hypochondriasis	1	3
<b>Impulse-control disorders</b>		
Trichotillomania	7	23
Kleptomania	5	16

Most subjects used their fingernails (N = 28, 90%) and fingers (N = 26, 84%) to dig (N = 25, 81%) or squeeze (N = 23, 74%) their skin. Fifty-two percent (N = 16) also used implements including pins or tweezers (N = 14, 45% each) or other small instruments (N = 13, 42%).

Rates of psychiatric comorbidity were high. All subjects met DSM-IV criteria for at least one current or past Axis I disorder. Consistent with our hypotheses, the most common current Axis I diagnosis was OCD (Table 1), followed by alcohol abuse/dependence and body dysmorphic disorder (BDD). All OCD patients had nonpicking

**Table 2. Current Axis II Personality Disorders in 31 Subjects With Self-Injurious Skin Picking**

Personality Disorder DSM-IV Diagnosis	N	%
Obsessive-compulsive	15	48
Borderline	8	26
Avoidant	7	23
Dependent	3	10
Antisocial	2	6
Narcissistic	2	6
Passive-aggressive	1	3
Schizotypal	1	3
Histrionic	0	0
Paranoid	0	0
Schizoid	0	0

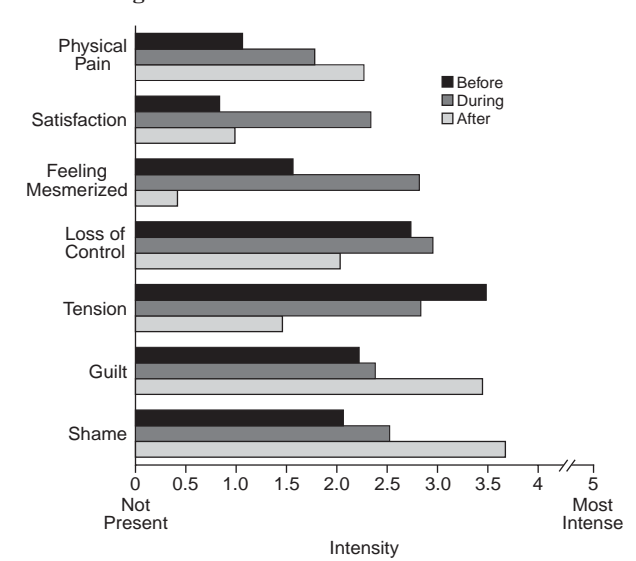
symptoms that warranted a diagnosis of OCD, and all BDD patients had symptoms other than the picking that warranted a diagnosis of BDD. Whenever a diagnosis of BDD was present, the skin-picking behavior could have been attributed to BDD. In all cases when BDD was present, the picking was usually motivated by an attempt to improve appearance. Forty-eight percent ( $N = 15$ ) of the subjects met criteria for at least one mood disorder, and 65% ( $N = 20$ ) met criteria for at least one anxiety disorder. Seventy-one percent of all subjects met criteria for at least one current personality disorder as assessed with the SCID, with obsessive-compulsive personality disorder being the most common, followed by borderline personality disorder (Table 2).

Many individuals reported current or past stereotypies such as body rocking ( $N = 20$ , 65%), nail biting ( $N = 19$ , 61%), thumb sucking ( $N = 15$ , 48%), knuckle cracking ( $N = 12$ , 39%), cheek chewing ( $N = 7$ , 23%), head banging ( $N = 6$ , 19%), teeth flicking ( $N = 4$ , 13%), or lip biting ( $N = 3$ , 10%). Fifteen (48%) had a history of repeated food binges, and 5 (16%) had a history of self-cutting severe enough to require stitches. Two subjects (6%) attempted suicide by asphyxiation, and 1 subject (3%) had tried to strangle herself.

Subjects retrospectively reported picking their skin for a mean of 83 minutes per day (mean daily range, 5–365 min/day). The duration of the individual skin-picking episodes tended to be rather short, and almost half of the subjects picked for less than 5 minutes per episode ( $N = 15$ , 48%). Subjects retrospectively rated the frequency and intensity of skin picking on a 6-point Likert scale ranging from 0 (no picking) to 5 (most frequent/intense) for different time periods of the day. Ratings indicated that skin picking was worse in the evening from 8 p.m. to midnight (mean  $\pm$  SD =  $4.4 \pm 1.12$ ). Ratings for other times included 8 a.m. to noon ( $2.35 \pm 1.58$ ), noon to 4 p.m. ( $2.14 \pm 1.39$ ), 4 to 8 p.m. ( $3.4 \pm 1.12$ ), and midnight to 8 a.m. ( $1.9 \pm 1.94$ ).

Forty-four percent ( $N = 12$ ) of the female subjects retrospectively rated the frequency of picking to vary with their menstrual cycle. Most women experienced a higher

**Figure 2. Intensity of Emotions Before, During, and After Skin Picking**



frequency of picking during menstruation or shortly before. Although all subjects tried to refrain from picking, they had different levels of success: 48% ( $N = 15$ ) were able to refrain from skin picking for consecutive periods of between 2 and 12 hours' duration the week before assessment, whereas 13% ( $N = 4$ ) had not been able to refrain for more than 1 hour.

We also investigated triggers, course of the intensity of emotions, and cognitive and behavioral consequences of skin picking. The most prominent environmental and/or behavioral triggers for skin picking included looking at ( $N = 27$ , 87%) or touching ( $N = 29$ , 94%) the skin. Most subjects ( $N = 19$ , 61%) reported being usually alone at home while picking their skin. The subjects rated the intensity of various emotions before, during, and after skin picking on a 6-point Likert scale ranging from 0 (not present) to 5 (most intense). Three subjects were excluded from data analysis because of missing data. Analyses of variance of these ratings with repeated measurement on the time factor (before, during, and after picking) yielded significant changes in shame ( $F = 9.49$ ,  $df = 2,54$ ;  $p < .001$ ), guilt ( $F = 7.57$ ,  $df = 2,54$ ;  $p < .01$ ), tension ( $F = 11.18$ ,  $df = 2,54$ ;  $p < .01$ ), "feeling mesmerized" ( $F = 19.3$ ,  $df = 2,54$ ;  $p < .001$ ), satisfaction ( $F = 8.25$ ,  $df = 2,54$ ;  $p < .01$ ), and physical pain ( $F = 8.07$ ,  $df = 2,54$ ;  $p < .01$ ) over the course of skin picking (Figure 2). Loss of control did not change significantly ( $F = 2.1$ ,  $df = 2,54$ ;  $p = .13$ ). A priori planned paired comparisons indicated that satisfaction increased significantly from "before" to "during" skin picking ( $t = 3.85$ ,  $df = 27$ ,  $p < .001$ ) and decreased significantly from "during" to "after" picking ( $t = 2.86$ ,  $df = 27$ ,  $p < .01$ ). Shame ( $t = 4.8$ ,  $df = 27$ ,  $p < .001$ ), guilt ( $t = 4.15$ ,  $df = 27$ ,  $p < .001$ ), and pain ( $t = 3.81$ ,  $df = 27$ ,

$p < .01$ ) increased significantly, whereas tension ( $t = 4.53$ ,  $df = 27$ ,  $p < .001$ ) decreased significantly, from "before" to "after" skin picking. "Feeling mesmerized" increased significantly from "before" to "during" ( $t = 3.23$ ,  $df = 27$ ,  $p < .01$ ) and decreased significantly from "during" to "after" picking ( $t = 5.8$ ,  $df = 27$ ,  $p < .01$ ). Most subjects ( $N = 29$ , 94%) reported that they did not stop picking until their skin was bleeding.

After a skin-picking episode, 45% ( $N = 14$ ) of the subjects reported rolling the skin picked in their fingers before dropping it on the floor ( $N = 14$ , 45%), wiping it in a towel ( $N = 16$ , 52%), or disposing of it in the trash ( $N = 13$ , 42%). Thirty-five percent of the subjects ( $N = 11$ ) reported eating the skin picked. These behaviors were not mutually exclusive, with some patients engaging in more than one activity.

The cognitive, social, and physical consequences of skin picking were often profound and long lasting. Cognitive consequences included worries that skin picking would be discovered ( $N = 16$ , 52%) and marked dissatisfaction with appearance ( $N = 17$ , 55%). Eighty-seven percent ( $N = 27$ ) of the subjects were socially embarrassed, and 58% ( $N = 18$ ) avoided social situations as a result of the skin picking. Further consequences included tissue damage in the form of minor sores ( $N = 28$ , 90%), scars ( $N = 25$ , 81%), infections ( $N = 19$ , 61%), or "deep craters" ( $N = 14$ , 45%). At the time of the interview, most subjects had lesions that had resulted from the skin picking. Severity and number of lesions varied from a few minimal but visible lesions to over 100 lesions. Lesions were often red or pink, crusted or weeping, and a few millimeters in diameter. Some of the subjects looked slightly disfigured because of the scarring that resulted from skin picking. Eighty-one percent ( $N = 25$ ) of the subjects reported wearing clothing to cover areas they had picked and to use cosmetics to cover tissue damage due to skin picking ( $N = 26$ , 84%). The use of bandages to cover tissue damage was also quite frequent ( $N = 12$ , 39%).

Although most subjects engaged in self-injurious skin picking for many years, about half of them had never been treated ( $N = 14$ , 45%). The main reason reported for not seeking treatment was social embarrassment. Patients had been treated with behavior therapy ( $N = 9$ , 12 trials), pharmacotherapy ( $N = 10$ , 15 trials), or combined treatment ( $N = 2$ , one trial each). A wide variety of medications were used, including selective serotonin reuptake inhibitors (SSRIs; fluvoxamine in 2 trials, fluoxetine in 3 trials, sertraline in 2 trials, and paroxetine in 1 trial) and clomipramine (4 trials). Further, patients were treated with imipramine (1 trial) and benzodiazepines (clonazepam in 1 trial, alprazolam in 1 trial). Subjects retrospectively rated the success of the interventions on a 5-point rating scale (1 = worse, 2 = not improved, 3 = slightly improved, 4 = partially improved, 5 = very much improved). The ratings (mean  $\pm$  SD) indicated that behavior therapy

( $2.9 \pm 0.93$ ), medication ( $3.3 \pm 1.2$ ) including serotonin reuptake inhibitors ( $3.06 \pm 0.94$ ), and the combined treatment ( $2.5 \pm 0.71$ ) produced only slight improvement. Six individuals received dermatologic treatment for their skin-picking problem.

## DISCUSSION

This study assessed the clinical characteristics of a sample of individuals with severe, self-injurious skin picking. Most of our subjects were female (7:1 female:male ratio), supporting suggestions in the literature that skin picking is more prevalent in women.<sup>4-6</sup> Previous investigators reported mean age at onset either in the range of 30 to 45 years<sup>4,5,11</sup> or in the 20s.<sup>12</sup> In contrast, our mean age at onset was much earlier at 15 years. As a result, the mean duration of symptoms reported in our study (21 years) is much higher than the 10 to 12 years reported previously.<sup>4</sup>

Our survey documents that skin picking often started when the subjects had facial acne, a common occurrence during adolescence. In addition, however, subjects also frequently picked at healthy skin, using pins and other small instruments. They often did not stop until pain, bleeding, and tissue damage were experienced. This suggests that skin picking is more than just a complication of a dermatologic illness.

Multiple factors seem to be involved in the etiology and maintenance of self-injurious skin picking. The majority of our subjects were women, and many reported fluctuations in skin-picking frequency over the course of the menstrual cycle, suggesting the involvement of biological factors. A large percentage of subjects had a family history of skin picking, suggesting that biological factors might play an important role in self-injurious skin picking. Alternatively, gender differences and the family history of skin picking could also indicate that psychological factors, such as socialization and observational learning, may be involved in the acquisition of the behavior. Psychological factors might also play an important role in the maintenance of self-injurious skin picking.

Emotions changed significantly over the course of individual skin-picking episodes. During skin picking, "feeling mesmerized" and satisfaction were increased, whereas after skin picking, tension was reduced. The increase of pleasurable feelings during and the decreased tension after the picking episode might explain why the behavior is so difficult to resist. After the picking episodes, the patients were consumed by increased shame, guilt, and physical pain. While the increase in negative feeling states could be involved in the cessation of picking, the increase in negative emotions may also trigger further picking episodes later.

The reported course of emotions during skin-picking episodes is strikingly similar to descriptions of bulimia

nervosa,<sup>13</sup> kleptomania,<sup>14</sup> and trichotillomania<sup>15</sup> episodes. In addition, our data reflect that the comorbidity with these disorders is relatively high. Furthermore, it is common for patients with borderline personality disorder to report substantial relief of intense negative affective states when cutting themselves.<sup>16</sup> These facts, coupled with the high prevalence of other self-injurious and impulsive behaviors in our subjects, indicate that skin picking may be only one way of regulating intense emotions. Thus, these individuals might see negative or painful emotions as a problem to be solved and might have a number of maladaptive or self-injurious behaviors as solutions to these emotions.<sup>17</sup> Further research with larger samples is needed to investigate whether this theory is relevant for all individuals with skin picking or only for specific subsets of individuals.

Skin picking is a heterogeneous behavior, and it is not possible to describe all individuals who engage in this behavior with one particular diagnosis. However, it can be diagnosed, in some cases, as a stereotypic movement disorder, since it is a motor behavior that is "repetitive, seemingly driven, and nonfunctional."<sup>14(p121)</sup> The participants in our study not only picked their skin but also exhibited a high rate of other stereotypic behaviors. Until recently, these stereotypies had been associated with mental retardation, but our study is another in a recent series showing that stereotypies can also be diagnosed in intellectually normal individuals.<sup>18,19</sup>

Recently, investigators suggested that skin picking may be a variant of OCD<sup>1,2,20,21</sup> or a symptom of BDD.<sup>22</sup> Fifty-two percent of the participants in our study met criteria for current OCD, and 32% met criteria for current BDD. Compulsive features in skin picking are not only suggested by the relatively high comorbidity between skin picking and OCD (or BDD), but also by the inability to inhibit a repetitive, ego-dystonic behavior. However, there are some important differences in the clinical picture between skin picking and classic OCD or BDD symptoms. More specifically, current research suggests an equal male to female ratio in OCD<sup>23</sup> and BDD,<sup>24,25</sup> whereas skin picking appears to be more common in females. Furthermore, our data suggest that skin picking serves predominately to regulate emotions, whereas compulsions in OCD serve to neutralize obsessions and repetitive behaviors in BDD serve to check on or improve appearance. Thus, although skin picking seems to be closely related to OCD and BDD, and often might occur as a symptom of BDD, it is not identical to these disorders and can occur independently.

Our results indicate that individuals with skin picking not only have compulsive but also impulsive features. Impulsivity is suggested by the pleasurable feelings the patients experience while picking, the poor control over the impulse, and the high rates of deliberate self-harm and substance abuse, borderline personality disorder, tricho-

tillomania, bulimia nervosa, and kleptomania. Thus, our subjects seem to exhibit a mixture of compulsive and impulsive features, providing further evidence for the existence of a compulsivity-impulsivity spectrum.<sup>26</sup>

About half of the subjects in our sample reported that they did not seek treatment for skin picking because of social embarrassment. Given the high comorbidity of skin picking and other psychiatric disorders, particularly core disorders in the impulsive-compulsive spectrum, clinicians should routinely inquire about both sets of symptoms when either is found to be present. Conversely, these disorders should also be investigated in patients presenting with skin picking.

Most subjects in our sample had a minimal clinical response to medications and behavior therapy. This result is in contrast with a number of case studies describing successful treatment outcomes, in particular with SSRIs.<sup>1,2</sup> However, our treatment outcome data have to be interpreted with caution, since they were gathered retrospectively. It may have been difficult to accurately recall specific techniques of the behavioral treatment, the duration of specific treatments, or the medication dosage that was prescribed. Although we do not know at this time what constitutes an appropriate behavior therapy or medication trial for skin picking, it seems that some of the medication trials might have been too short (e.g., 3 of the SSRI trials were terminated after only 4 weeks).

Our study has several other limitations. Most of our data, including our assessment of the fluctuations of the picking accompanying the menstrual cycle and the change of emotions over the course of skin picking, were assessed retrospectively. Thus, they might be somewhat biased. Further, the high prevalence of OCD in our sample might reflect, at least in part, a referral bias due to the fact that we work in an OCD clinic. Finally, the skin-picking inventory was specifically developed for this study, and we do not yet have any data on its psychometric properties. These limitations will have to be addressed in future research.

In sum, although the exact mechanism is unclear, our results indicate that skin picking seems to have important affect-regulation properties. This suggests that individuals with skin picking might benefit clinically from learning how to regulate their affect by means other than picking. Further research on skin picking is also needed to investigate cognitive-behavioral therapy that targets emotion-modulation skills<sup>16</sup> and pharmacotherapy.

*Drug names:* alprazolam (Xanax), clomipramine (Anafranil and others), clonazepam (Klonopin and others), fluoxetine (Prozac), fluvoxamine (Luvox), paroxetine (Paxil), sertraline (Zoloft).

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