Skin Picking as a Form of Self-Injurious Behavior

Fugen Neziroglu, PhD, ABBP; and Maria Mancebo, MA

Self-injurious behavior is a symptom that has been associated with numerous psychiatric conditions. There are many different terms and forms described in the literature because the conceptualization of self-injurious behavior often differs according to the social and functional roles of the behavior. For example, “self-mutilation” and “deliberate self-harm” are terms often used when describing intentional infliction of bodily injuries to oneself without intent to die. Traditionally, these behaviors were sometimes misidentified by terms such as “suicide attempts” or “parasuicidal acts.”

Favazza reviewed the different types of self-injurious behaviors and their classification into categories based on severity, frequency, and the pattern of behavior. There are three broad types of self-injurious behavior according to his classification. Major self-mutilation refers to severe but infrequent acts (generally associated with psychosis), such as enucleation or amputation. Stereotypic self-mutilation refers to repetitive, rhythmic acts that appear to function as self-stimulation, such as head banging or self-biting. Superficial or moderate self-mutilation is divided into episodic (e.g., self-cutting) and compulsive (e.g., trichotillomania and skin picking) types. For the purposes of this article, the primary focus is on skin picking, although at times general data on self-injurious behavior are provided because the literature on skin picking is extremely scarce.

Pathological skin picking has been described as “neurotic excoriation,” “self-inflicted dermatoses,” and “dermatillomania.” Until recently, skin picking was not referred to as a symptom of psychiatric conditions, but was instead mentioned more in the dermatology literature. Skin picking continues to be an understudied phenomenon that plagues individuals and results in substantial occupational and social impairment and physical complications.

CLINICAL CHARACTERISTICS

Patients who skin pick often are too embarrassed to discuss this symptom during the initial psychiatric consultation. Patients may also hide the damage caused by self-injurious behavior underneath clothing or apply cosmetics to cover lesions. A few studies have examined the clinical characteristics of patients who skin pick.

Wilhelm et al. assessed 31 individuals recruited through advertisements for skin picking. They found that the most common part of the body to be targeted by patients who skin pick is the face. Other areas that may also be targeted are the lips, scalp, arms, hands, and legs. Many individuals may simply use their fingernails to scratch, pick, dig, or bruise their skin, but some may use their teeth or instruments such as tweezers or pins. Recently, when Wilhelm et al. compared their clinical population with a population of skin-
picking students, they found that the students used pins or instruments less often and preferred methods such as squeezing, scratching, and rubbing the skin. In addition, for the students, the skin picking did not function to regulate uncomfortable emotions, whereas in the clinical population, it often served as a means of reducing tension.

The most frequently targeted sites of skin picking include pimples and scabs, mosquito bites, and red, swollen, or infected areas. More than half of all individuals who skin pick also report histories of stereotypic behaviors such as body rocking, nail biting, thumb sucking, knuckle cracking, cheek chewing, head banging, teeth flicking, or lip biting. Checking for bumps, possibly pimples, by touching the skin and by looking at body parts appears to be a trigger to skin picking.

Patients vary substantially in the length of time that they spend picking their skin, with reports of anywhere from 5 minutes up to 12 hours daily. Once again, the average skin-picking time in the student population was 15 minutes. Skin picking may fluctuate throughout the day and is usually 5 minutes per episode. Many patients report that skin picking occurs in the evening or when they are tired.

Instead of seeking psychiatric treatment, individuals often seek dermatologic services in an effort to alleviate their symptoms. They report sensations (e.g., itching, burning, and tingling) and uncontrollable urges to pick their skin. The disorder progresses and results in the individual’s experiencing distressing feelings of shame, lack of control, and low self-esteem. Individuals often begin to avoid social interaction or activities where the damage to their skin may be detected (e.g., sports) and wear clothes that will hide the scars or wounds. Physical consequences include permanent disfigurement, soreness, bleeding, and infections.

PREVALENCE

It is difficult to estimate the lifetime prevalence rates of self-injurious behavior because many patients do not volunteer this information. Favazza and Conterio estimate the prevalence rate of self-mutilation in the general U.S. population to be between 1% and 2%. In a sample of college students, the rate of self-injurious behavior was 12%. Studies of hospital emergency departments indicate a rate of 2.4% of patients presenting with self-injurious behavior. The rates are higher in psychiatric settings, ranging between 3% to 5%, and 4% to 20% of psychiatric inpatients. Adolescents present the highest risk, with reported prevalence rates among psychiatric inpatient admissions between 40% and 60%. Although there is little information on the prevalence of self-injurious behavior in general, there is even less information on skin picking specifically.

To our knowledge, there are no published reports of the incidence of skin picking in a psychiatric population or in the general population. In one study of 123 patients with body dysmorphic disorder, skin picking was present in 27% of them. In a population with body dysmorphic disorder, 33% of the patients reported skin picking as related to attempts to improve their physical appearance (F. Neziroglu, PhD, ABBP, and S. Khemlani-Patel, PhD, unpublished data, 2000). In a recent study of college students, 78% endorsed skin picking to some degree.

Skin picking is reported to occur more often in women than in men. However, men are underrepresented in most samples and dermatologic literature and it is difficult to estimate prevalence rates based on the sampling methods used in the existing empirical studies.

COURSE OF ILLNESS AND MAINTENANCE OF SKIN-PICKING BEHAVIOR

The onset of self-injurious behavior is usually gradual and follows a long-term course. The mean age of onset for skin picking has been reported to be in adolescence and early to mid adulthood. As more data are collected, it will be interesting to note whether the onset of skin picking and its course vary with the comorbid Axis I diagnosis or whether picking behavior follows its own course.

It is unknown with certainty how skin picking is acquired and maintained. It seems that patients engage in compulsive skin picking for a variety of
reasons. The picking may be present in the form of a ritual in response to obsessions or preoccupations with imagined or slight defects in appearance, as in body dysmorphic disorder (e.g., mild acne). Patients may pick to remove actual visible defects (e.g., pimples) or perceived slight imperfections in their skin (e.g., hypopigmentation or hyperpigmentation). Although there is initial relief of discomfort, which maintains the picking behavior, the compulsion to pick is persistent. The severity of the damage caused by picking varies from mild to severe lesions resulting in medical morbidity. The damage is upsetting to patients and often leads to lowered self-esteem and shame. However, the compulsion is too difficult to resist.

Researchers have emphasized the similarities between skin picking and impulse-control disorders such as trichotillomania. Most patients report increasing levels of tension prior to skin picking and a sense of relief or satisfaction following the skin picking, as is reported in trichotillomania. The literature on repetitive self-injurious behavior in some patients with borderline personality disorder suggests that the self-injurious behavior allows them to dissociate and thus functions as an escape mechanism. As with some types of self-mutilation, some patients experience an altered state of consciousness while picking, resembling a dissociative state, and report that they do not experience pain while picking. Thus, dissociative states are observed not only in self-mutilation, but also in skin picking.

Another explanation for the maintenance of skin picking is affect regulation. One study assessed the intensity of various emotions before, during, and after skin picking. The authors found that patients reported significant changes in shame, tension, “feeling mesmerized,” satisfaction, and physical pain during the course of skin picking. Although there were changes in the various affects during different periods of the picking, these changes do not indicate that skin picking is maintained because of them. In fact, some emotions are a consequence of the picking (i.e., shame and guilt). Further research is needed to determine whether individuals learn to pick as a means of alleviating specific discomfort states and how this learning process actually occurs.

**SKIN PICKING AS A SYMPTOM OF AXIS I AND AXIS II DISORDERS**

Skin picking is not included in the *DSM-IV*’s impulse-control disorders or in the International Classification of Diseases, 10th edition, under habit and impulse disorders. Researchers disagree on whether self-injurious behavior is a symptom or whether it can be a syndrome.

Self-injurious behavior in the form of skin picking has been hypothesized to be related to obsessive–compulsive disorder (OCD) and body dysmorphic disorder. Two studies of patients with compulsive skin picking reported that half of the sample met criteria for OCD. However, another study of 34 patients who reported skin picking found that only 2 met criteria for OCD. Patients with OCD describe skin picking as a response to obsessions (e.g., symmetry or fear of harming others). The skin picking is performed in a compulsive and ritualistic manner. In a descriptive study of 19 women with OCD who later had anorexia, self-mutilation and skin picking were reported after a return of menses and improvement of the anorexia.

In a study of 123 patients with body dysmorphic disorder, 27% engaged in skin-picking behaviors. Most of these patients were preoccupied with the skin. They were also more likely to engage in camouflaging and excessive grooming behaviors and to seek treatment from a dermatologist. Patients with body dysmorphic disorder who skin pick were also found to have more personality psychopathology than patients who did not report skin picking.

Skin picking has been reported to be present in monosymptomatic hypochondriasis, which is now referred to as delusional disorder, somatic type in the *DSM-IV*. Specifically, Bishop described delusions of parasitosis in which the patient presented with skin sensations such as itchiness and a conviction of having a disease. Patients with delusional disorders typically scratch their skin and cause skin damage and inflammation in response to imagined parasites.
A high rate of mood disorders, ranging from 48% to 79% of skin-picking samples, has also been reported.\textsuperscript{3,16} It is unclear whether skin picking precipitates or is secondary to the onset of mood disorders. Rates of anxiety disorders also vary from 56% to 65% of the samples.

Tactile sensations may be produced by cocaine, methylphenidate, phentolamine, amphetamine, and anticholinergic drugs,\textsuperscript{29} thus leading to skin picking. The comorbidity rate of substance use is reported to be approximately 38% in clinical studies of skin picking.\textsuperscript{3,16}

Skin picking may also be a symptom of genetic disorders. Self-injurious behavior is a symptom of Lesch–Nyhan syndrome, Prader–Willi syndrome, and mental retardation.\textsuperscript{30,31}

Comorbid skin picking may also be present in patients with personality disorders. One study of individuals with skin picking responding to advertisements found that 71% of them met criteria for a personality disorder,\textsuperscript{3} with OCD and borderline personality disorders being more frequent. Patients with body dysmorphic disorder who skin pick are more likely to have personality pathology compared with those without skin-picking behaviors.\textsuperscript{6}

**ASSESSMENT**

There are currently no validated scales that assess the severity of self-injurious skin picking. Because skin picking can cause substantial damage, assessments of severity and change in condition need to take into account the intensity of urges, the severity of picking, the control the individual has over the behavior, and the impairment in functioning.

Simeon et al.\textsuperscript{2} have done preliminary work using a clinician-administered 5-item rating scale called the Skin Picking Treatment Scale. This scale is modeled after the Yale–Brown Obsessive Compulsive Scale, but psychometric properties have not yet been reported. Preliminary work on an assessment tool to identify skin-picking phenomenology, triggers, associated cognitions and emotions, and psychosocial consequences of skin picking has also been presented.\textsuperscript{3,22} We have also developed an assessment tool to better understand skin picking and self-mutilation, but no reliability and validity data are currently available.\textsuperscript{5}

**ETIOLOGY**

**Biological**

Biological factors have been observed in avian and animal species. For example, compulsive feather picking has been documented in birds\textsuperscript{33} and compulsive paw licking (canine acral lick) and hair pulling in dogs\textsuperscript{34} and felines. A neuroethological review has also been published.\textsuperscript{35} Experimental research results also show that the administration of amphetamines can result in self-injurious behaviors in rats,\textsuperscript{36,37} horses,\textsuperscript{35} and dogs.\textsuperscript{38}

Hypothetically, the pathology of skin picking may involve an anatomic and a neurochemical connection. Three major biochemical systems (catecholaminergic, serotonergic, and opiate), purine metabolism derivates, and genetic factors seem to be involved in self-injurious behavior.\textsuperscript{39} Research studies linking a lack of pain sensations during self-harm to depersonalization, borderline personality, or transient analgesic states lead to theoretical explanations emerging from studies performed on the opioid system.\textsuperscript{39} Current literature indicates that the opioid neuropeptide regulatory system may be faulty in individuals with self-injurious behavior. For example, painful stimulation causes an increased release of endorphins in humans and in mice.\textsuperscript{40,41}

Furthermore, elevated levels of B-endorphin in the cerebrospinal fluid of patients with self-injurious behavior suggest that victims of childhood physical abuse may have elevated levels of endorphins because of repeated exposure to pain and injury or being prohibited from reacting physically to the infliction of pain.\textsuperscript{42} Kirkmayer and Carrol\textsuperscript{43} offer empirical evidence to support their hypothesis that self-injury stimulates the release of endorphins and results in a reduction of tension. This reduction in built-up tension is reinforcing to the individual and leads to maintenance of the self-injurious behavior.

Animal and human research indicates that serotonin (5-HT) dysregulation is associated with self-injurious behavior. In humans, 5-HT is associated with obsessive–compulsive,\textsuperscript{27} impulsive,\textsuperscript{44,45} and aggressive self-injurious behavior.\textsuperscript{46} The effectiveness of serotonin reuptake inhibitors
in treating these self-injurious behaviors also serves as evidence supporting 5-HT dysregulation.

Aggression as a factor contributing to self-harm suggests the presence of a cerebral circuit in self-injurious behavior. It has been postulated that this circuit is a loop involving the amygdala, the basal ganglia, the thalamus, the hypothalamus, and the frontal lobe, in which rage is regulated by the amygdala, appetite and fear are regulated by the hypothalamus, and the frontal lobe establishes a connection with a higher level of cortical activity. Of note, OCD with self-injurious behavior is mostly associated with rage, fear, appetite, compulsivity, and motor activity. These functions seem to pertain mostly to the hypothalamic and the basal ganglia systems.

Psychological

Mowrer’s two-factor theory may help to explain the acquisition and maintenance of compulsive skin picking. In the classic conditioning stage, a previously neutral stimulus becomes a conditioned stimulus by pairing with an unconditioned stimulus that innately evokes anxiety or discomfort. In the second operant conditioning stage, negative reinforcement occurs in which new responses are learned to decrease the anxiety in the presence of the conditioned stimulus. These avoidance or escape responses are negatively reinforcing. If we apply this to skin picking, we can conceptualize any compulsion or innate urge as giving rise to anxiety. Various environmental cues, such as looking in the mirror and touching one’s skin, may coincidentally occur at the time of the urge and thus become the conditioned stimulus. Therefore, the act of skin picking, a motor act, is negatively reinforcing because it reduces the anxiety. We have theorized elsewhere that the urge is an innate drive that leads to anxiety rather than anxiety leading to the urge.

Psychodynamic theories have linked self-injurious behavior to coping mechanisms, sexuality, early parental relationships, and environmental factors. Suyemoto reviews theories on the ambivalence of the patient’s desire for life and death, and an “antisuicide” model that is an active coping mechanism. The acts are intended to alleviate feelings of guilt by sacrificing a body part while allowing the patient to live. Self-injurious behavior as a coping mechanism may also be manifested by the isolationist qualities of detachment, dissociation, or both. For some patients, self-injurious behavior is used to end or even to cause dissociation, depending on which condition is more reinforcing.

Self-injurious behavior can also be a coping mechanism for dealing with emotional pain because the physical pain distracts the individual. However, this theory does not hold for those patients who report analgesia during the act of self-injurious behavior. Childhood abuse may also result in feelings of self-hatred or self-directed anger as a consequence of neglect or abuse by caretakers. The individual learns that self-injurious behavior is reinforcing through family modeling of abuse where pain is linked to caring or to control. Then, self-injurious behavior is maintained because it is reinforced by the environment. Further, researchers have described “contagion effects” in inpatient wards that stem from observations that self-injurious behavior is rewarded, thus causing other patients to imitate it.

Treatment

Much of the published literature on the treatment of pathological skin picking consists of pharmacotherapy and is descriptive in nature or retrospective. Serotonin reuptake inhibitors have been reported to have good results. For example, patients with body dysmorphic disorder and skin picking respond to serotonin reuptake inhibitors more often than they do to other medication. However, this study used retrospective data and lacked a placebo-control group.

One double-blind, placebo-controlled study investigating the efficacy of a 10-week trial of fluoxetine found that it resulted in significantly more improvement than did placebo. Fluoxetine was also effective in reducing skin picking in two individuals with Prader–Willi syndrome and three women. The successful use of fluvoxamine in the treatment of delusional body dysmorphic disorder was reported in a case study.

There has been little published regarding psy-
Psychological treatments of skin picking. Cognitive therapy may be used to focus on underlying distorted thoughts leading to skin picking, such as preoccupations with appearance. Behavioral therapy with a focus on habit reversal may be helpful for impulsive types of skin picking. The patient undergoes competing response training, and learns self-monitoring techniques and how to identify triggers of skin picking. The patient then learns relaxation techniques that later may be induced as competing responses to skin picking. Skills training may be effective for patients who identify affect regulation functions for their skin picking. For example, stress management or anger management skills may decrease skin picking.

CONCLUSION

Skin picking has been classified as a stereotypic form of self-injurious behavior. Researchers have recently begun to examine skin picking as a symptom of diverse psychiatric conditions. The literature contains a few studies examining the clinical characteristics of individuals who engage in this behavior. However, methodologic issues such as small sample sizes and convenience sampling are barriers to reaching conclusions regarding skin picking.

It appears that much variability exists in terms of the frequency, length, targeted sites, and triggers of skin picking. Research is needed to determine the prevalence of skin picking among various diagnostic categories, such as mood and anxiety disorders, delusional disorder, somatoform disorders, and personality disorders. There may be subtypes of skin picking because some patients report skin picking as a compulsion as in OCD and body dysmorphic disorder and others report it to be more of an impulsive behavior. In light of the biological and psychological factors involved in skin picking, a biopsychosocial approach to treatment should be examined for effectiveness.

REFERENCES

26. Yaryura-Tobias JA, Neziroglu F. Compulsions, aggres-
Skin Picking as a Form of Self-Injurious Behavior


