

RESEARCH ARTICLE

# Beyond the Surface: Exploring the Mind-Skin Dynamics of Psychodermatology

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## ABSTRACT

Psychodermatology is an emerging interdisciplinary field that combines dermatology and psychiatry, focusing on the complex interactions between psychological factors and skin disorders. Despite its significance, this area has historically received limited attention due to inadequate training for healthcare professionals. The field is evolving, acknowledging that biological, psychological, and social elements contribute to skin disease development. Recent studies have explored the connections between the skin and nervous system, revealing how these interactions manifest in various skin conditions. Although classifications for psychodermatological disorders exist, there is no consensus on definitions. Many dermatology patients experience secondary psychiatric issues, which are frequently overlooked. It is crucial for dermatologists to be equipped to initiate basic pharmacological treatments, understand various non-pharmacological options, and know when to refer patients to psychiatrists. An integrated approach involving dermatologists, psychiatrists, and psychologists is essential for effectively addressing these complex disorders.



## Introduction

More than two thousand years ago, the Greek physician Hippocrates observed individuals who would pull out their hair as a result of emotional distress, a historical recognition of what we understand today as trichotillomania in modern medicine.<sup>1</sup> Ancient medical systems recognized early on that a "healthy mind in a healthy body" was essential for overall health. Therefore, healthcare focused on promoting both mental and physical well-being, and treating the psychosomatic entity rather than disease symptoms alone.<sup>2</sup> Traditional medical practices emphasized the need for harmony between the body, psyche and social environment of the individual. This fundamental understanding set the stage for later research into psychosomatic medicine, which aimed to bridge the gap between physical and psychological health.

By the mid-20th century, scientific advancements in psychology and dermatology drew attention to the connections between skin disorders and psychological conditions, and highlighted the need for an approach that considered both psychological and dermatological factors. Psychodermatology began to gain recognition in both specialities as the understanding of mind-body relationship increased. The recent decades saw the formation of specialized organizations dedicated to this field, with interdisciplinary collaboration among dermatologists, psychiatrists, psychologists, and other healthcare professionals.

Today, psychodermatology is emerging as a field with the potential to transform patient care, through a holistic approach that takes into account patients' psychological well-being in addition to their dermatological concerns. This can ensure better management strategies that can lead to improved treatment adherence and patient satisfaction. Providing psychological support along with dermatological care can help patients to take an active role in their treatment journey. This holistic perspective not only helps reduce the stigma associated with seeking mental health support, but also creates a more compassionate environment for healing. As research continues to evolve, psychodermatology is expected to expand its influence on daily clinical practice, paving the way for innovative therapies.

## Evolution of Psychodermatology

While psychodermatology emerged as a modern science only in the last century, references to the impact of psychological stress and psychiatric disorders on the skin can be found in medical and non-medical literature dating back thousands of years. Throughout history, philosophers, dermatologists, psychiatrists, and psychologists have observed the link between the skin and the mind.

Aristotle held the view that the mind and body were not distinct entities but rather complementary and inseparable.<sup>1</sup> Throughout history, instances of hair-pulling have consistently been associated with situations of emotional overwhelm and stress. Hippocrates addressed the relationship between stress and hair-pulling in his works, giving accounts of people who tore their hair out.<sup>1</sup> Numerous historical accounts of tearing out of hair can be

found in the Bible, as well as in renowned works by Shakespeare.<sup>1</sup>

In 1799, the English dermatologist Robert Willian first documented the condition now known as delusional infestation.<sup>4</sup> The English dermatologist Erasmus Wilson, in 1857 wrote the book "Diseases of the Skin", and he introduced the term "neurotic excoriation" to describe compulsive picking behaviors in patients which was highly challenging to manage.<sup>5</sup> Body dysmorphic disorder was first documented in 1886 by the Italian psychopathologist Enrique Morselli under the name "dysmorphophobia."<sup>1</sup> Sigmund Freud also described a case involving a Russian aristocrat constantly worried about the appearance of his nose, significantly affecting his quality of life.<sup>1</sup> In 1938, Karl Ekblom was the first to distinguish between delusional parasitosis and phobia to insects, referring to the former as "dermatozoic delusion" (Ekblom's syndrome).<sup>1</sup>

During the 1990s and early 2000s, psychodermatology gained interest in the scientific community, and several studies were published which raised awareness about this developing field.<sup>6</sup> In recent years, the formation of various associations, work groups, and the integration of subspecialties have facilitated research and the exchange of new scientific information.<sup>6</sup> These initiatives have advanced a global interest in the field of psychodermatology.

## The Relevance of Psychodermatology

In recent decades, various studies have underscored the significant association between dermatological disorders and psychiatric comorbidities. Around 30-40% of patients seeking treatment for skin disorders have an underlying psychiatric comorbidity that either triggers or aggravates their skin condition.<sup>7</sup> Depression is more prevalent among dermatological patients, affecting 30%, compared to a prevalence of 22% in patients seen in general practice.<sup>8</sup> In a systematic review on the prevalence of depression and depressive symptoms among outpatients of different clinical specialties, dermatology ranked the second highest, and 39.0% of outpatients visiting dermatology clinics were found to suffer from depression.<sup>9</sup> Skin diseases may increase the risk of developing comorbid psychiatric disorders within seven years by two to threefold, especially depression, anxiety, and alcohol use disorders, compared to the general population.<sup>10</sup> Body dysmorphic disorder is prevalent among patients, especially in cosmetology settings, characterized by a distorted awareness of others noticing perceived flaws in appearance. This heightened sensitivity can lead to misinterpretation of ambiguous social interactions and an increased perception of stigmatization.<sup>11,12</sup>

Though the awareness regarding psychiatric comorbidities associated with skin disorders has increased over the past years, this has not been matched by an increased focus on clinically addressing these issues by dermatologists.<sup>13</sup> The underestimation of depression and anxiety is particularly pronounced in patients with chronic dermatological disorders such as psoriasis and eczema. A review by Roberts et. al reported that only 13.75% of healthcare professionals from different parts of the world felt they had a clear understanding of

psychocutaneous disorders.<sup>14</sup> Many healthcare professionals report feeling neutral or uncomfortable when dealing with psychocutaneous disorders, with the majority of dermatologists describing their comfort level as "neutral," "somewhat uncomfortable," or "very uncomfortable." Additionally, a staggering 97-98% of providers surveyed expressed discomfort with initiating antipsychotic medications, and 58-89% with prescribing antidepressants.<sup>14</sup> When dermatologists suggest psychiatric referrals, many patients are reluctant to accept such interventions due to social stigma, lack of insight, preference for dermatologic treatment, or concerns about confidentiality. Unless the psychological factors in these patients are addressed by dermatologists, they can lead to a range of suboptimal to severe consequences that significantly affect their quality of life. Patients may experience heightened levels of anxiety and depression, which can exacerbate their skin disorders, creating a vicious cycle of worsening symptoms and increased psychological distress. This can further result in diminished self-esteem, social withdrawal, and feelings of isolation, thus compounding their mental health struggles. Additionally, untreated psychological problems can lead to self-injurious behaviour or even suicidal ideation, particularly in patients with visible skin conditions that contribute to social stigma.<sup>14</sup> Moreover, the lack of appropriate psychological support can hinder treatment adherence, making it difficult for patients to follow through with dermatological therapies, ultimately affecting their overall health and well-being. This underscores the need to pay special attention to patients with persistent conditions that do not improve, since adherence issues may arise due to neglected psychological comorbidity. Therefore, addressing the psychological issues is essential for improving patient outcomes and enhancing their quality of life. Patients may benefit from an interdisciplinary approach to their care, with standard dermatological therapies and psychopharmacological interventions.<sup>15</sup>

## Pathogenesis

There exists an intricate association between the mind and skin at both anatomical and molecular levels. This relationship can be traced back to the human embryonic development, as both the skin and the nervous system share a common origin from the ectoderm, and are influenced by the same hormones and neurotransmitters.<sup>16</sup>

The skin is a complex, interactive organ that goes beyond serving as a physical barrier, and actively participates in immune responses, neuroendocrine signaling, and overall homeostasis through the cross-communication between immune cells, nerve fibers, and endocrine factors.<sup>17</sup> The neuro-immuno-cutaneous-endocrine (NICE) network is a framework that highlights this interconnectedness of four organ systems that bridge the mind and body. These systems communicate through a shared language of neuropeptides, cytokines, glucocorticoids, and other signaling molecules.<sup>18</sup> The cutaneous nervous system detects external stimuli through sensory nerves and receptors, communicates with the central nervous system, and releases neuropeptides and neurotransmitters that can activate immune cells.<sup>18</sup> The cutaneous immune system consists of innate immune cells, adaptive immune cells,

and keratinocytes. It recognizes danger signals, participates in inflammation, and communicates with the systemic immune system through cytokines and immune cell migration and homing.<sup>18</sup> The cutaneous endocrine system, particularly the keratinocytes, can synthesize enzymes like glucocorticoids and vitamin D, and regulate local and systemic homeostasis. This intricate interplay contributes to the regulation of stress adaptation and maintenance of homeostasis.<sup>18</sup>

Psychological stress activates the hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic nervous system. Activation of the HPA axis triggers a series of hormonal cascades, leading to the upregulation of stress hormones. The primary component of the HPA axis is corticotrophin-releasing hormone (CRH), which is produced by the paraventricular nuclei of hypothalamus.<sup>19</sup> CRH regulates the release of pro-opiomelanocortin (POMC) and POMC-derived peptides like adrenocorticotrophin (ACTH),  $\alpha$ -melanocyte-stimulating hormone ( $\alpha$ -MSH), and  $\beta$ -endorphin from the anterior pituitary gland.<sup>19</sup> ACTH promotes the production of glucocorticoids from the adrenal cortex. Additionally, CRH plays a role in activating the sympathetic nervous system, leading to elevated catecholamine levels. This is also accompanied by a neurogenic inflammatory response, with the release of neurotrophins and neuropeptides like substance P, calcitonin gene-related peptide, nerve growth factor and pituitary adenylate-cyclase activating polypeptides.<sup>19-20</sup>

In addition, the skin possesses its own equivalent of HPA axis, and can produce the same mediators seen in central neuroendocrine response to stress.<sup>21</sup> CRH, urocortin, ACTH,  $\alpha$ -MSH,  $\beta$ -endorphin can be produced by the skin cells and appendages, and they also express the receptors necessary for the various signalling molecules.<sup>22</sup>

Studies have demonstrated the relationship between HPA axis hormones and cytokines. During periods of acute stress, skin exhibits immune-enhancement by augmentation of leukocyte trafficking and cytokine expression. Acute and mild stressors boost acquired immunity, and increase the circulating levels of TNF- $\alpha$ , IL-1, IL-10 and IL-6. Glucocorticoids facilitate the formation of migration inhibitory factor, and the induction of acute-phase proteins by IL-1 and IL-6. In addition, glucocorticoids synergistically amplify the responses of other cytokines such as IL-2, IFN- $\gamma$ , granulocyte macrophage colony-stimulating factor, and oncostatin-M.<sup>23,24</sup> The effectors of this system can influence epidermal, dermal, pigmentary, immunological and adnexal components of skin.

Although activation of the HPA axis is crucial for overcoming stress, prolonged exposure to these hormones can lead to psychological, metabolic, and immunological disturbances. Therefore, it is vital to promptly terminate the stress response to prevent the detrimental effects of elevated levels of stress hormones.<sup>25</sup> Chronic stress causes immune dysregulation by shifting the cytokine balance from type-1 to type-2 immune response, and accelerating immune senescence. It also suppresses the trafficking and function of protective immune cells, while enhancing regulatory or suppressor T cells. There is an

increase in Th2 cytokines like IL-4, IL-10, and IL13, and a reduction in CD4/CD8 ratio, B-cells, salivary IgA, IFN $\gamma$ , and NK-cells, along with diminished memory T-cell response, TH-1 cytokines IFN-gamma, IL-2, and TNF-beta production.<sup>26,27</sup>

These neurohumoral changes that occur in response to stress often fuel the fire of inflammation, exacerbating or initiating the development of many diseases.<sup>28</sup> Psychological stressors have been found to precede the onset or exacerbation of numerous dermatological disorders like psoriasis,<sup>29</sup> atopic dermatitis,<sup>30</sup> vitiligo,<sup>31</sup> pemphigus,<sup>32,33</sup> acne,<sup>34</sup> rosacea,<sup>35</sup> alopecia areata,<sup>36</sup> urticaria,<sup>37</sup> and herpes simplex infection.<sup>38</sup>

Another mechanism contributing to skin disorders is the impairment of skin barrier homeostasis. There is substantial evidence indicating that stress negatively impacts the function of the skin barrier, especially in vulnerable groups such as those with atopy and chronic diseases. Stress hormones reduce the epidermal lipids and structural proteins, decrease stratum corneum hydration, and accelerate transepidermal water loss.<sup>39</sup> Disruption of the skin barrier is linked to an increase in keratinocyte proliferation and local production of inflammatory cytokines, and increased delivery of TNF- $\alpha$ , IL-1 $\beta$ , and IL-10 to the skin via the intradermal vasculature during psychological stress. These effects can potentially trigger or exacerbate cutaneous inflammation.<sup>40</sup>

The skin is densely populated with various subtypes of nerve fibers, which carry numerous neuropeptides such as substance P (SP), calcitonin gene-related peptide (CGRP), and pituitary adenylate cyclase-activating polypeptide (PACAP). These neuronal mediators modulate neuronal communication and can be released in response to either central or peripheral stimulation. Stress-induced release of these peptides leads to neurogenic cutaneous inflammation.<sup>41,42</sup>

Mast cells are situated near blood vessels and closely associated with neurons, with a reported functional association as well between the two. These cells can be activated by neuropeptides from sensory afferents, as well as by keratinocyte-derived mediators. Mast cells act as functional "switchboards" of neurogenic inflammation during stress responses.<sup>21</sup>

The concept of the gut-brain-skin axis suggests that the gut, psychological stress, and the skin are interconnected. Psychological stress can lead to gut barrier dysfunction through the action of glucocorticoids, resulting in an imbalance in the gut microbiome. This imbalance increases the absorption of proinflammatory mediators from the gut, which plays a key role in many psychodermatologic conditions.<sup>41,43</sup>

## Classification of Psychodermatological Disorders

There is no single universally accepted classification for psychodermatological disorders, and there is often an overlap of disorders in different groups.<sup>44</sup>

Psychodermatologic disorders can be categorized based on either clinical symptom complexes, or the pathophysiology of the psychiatric condition.<sup>45</sup> The former method is useful since understanding the psychopathologic manifestations (such as anxiety, depression, psychosis, or obsessive-compulsive disorder) allows clinicians to select the most suitable psychopharmacologic interventions.

1. **Psychosis** – These patients lack insight and often carry persistent false beliefs. Delusional beliefs are typically "encapsulated," i.e, they are narrowly and specifically focused on a perceived skin infestation. Examples include delusion of parasitosis and body dysmorphic disorder.<sup>45</sup>
2. **Anxiety** – It is characterized by subjective symptoms of excessive worrying, agitation, sleep disturbance, difficulty in concentrating, and inability to relax. It can exacerbate, or occur as sequelae to certain skin disorders.<sup>45</sup>
3. **Depression** – It manifests as anhedonia, low mood, change in weight or appetite, sleep disturbance, fatigue, lack of energy, difficulty to concentrate, psychomotor agitation, feelings of hopelessness, worthlessness, guilt, and suicidal ideation. It can occur secondary to skin disorders like psoriasis, atopic dermatitis, and vitiligo. Pruritus, glossodynia and trichodynia can be depressive equivalents.<sup>45</sup>
4. **Obsessive compulsive disorder** - Patient suffers from intrusive obsessive thoughts and compulsive behaviors. It is different from delusion in that the patients are aware of their irrational behavior and often desire help. Examples include trichotillomania, prurigo nodularis and body-focused repetitive behaviors.<sup>45</sup>

Based on the second method of categorization by pathophysiology of skin-psyche interaction, psychodermatological disorders can be divided into:

1. Primary psychiatric disorders (where the mental health disorder is responsible for the skin symptoms)
2. Dermatologic disorders with psychiatric symptoms (secondary psychiatric disorders developing as a result of a skin disease, such as depression and anxiety)
3. Psychophysiological skin disorders (those that are induced or worsened by psychological stress)
4. Miscellaneous disorders - includes conditions that cannot be fully classified into the previous three groups such as cutaneous sensory disorders, and psychiatric and cutaneous side effects of dermatological and psychotropic drugs.<sup>46-49</sup>

## Primary Psychiatric Disorders

This group comprises skin conditions that originate from psychiatric issues but present to dermatology professionals as perceived dermatological disorders, where the dermatological symptoms are secondary to self-manipulation. They can resemble skin disorders, necessitating a high level of suspicion to reach an accurate diagnosis.



## Disorder of Delusional Beliefs

Delusional infestation (DI), also known as Ekbohm's Syndrome, is a delusional disorder of somatic type, in which patients believe they are infested with insects or parasites.<sup>51</sup> Patients, typically middle-aged or elderly women, often with a history of consulting multiple doctors, present with anxiety and persistent beliefs of parasites crawling, itching, and biting, leading to self-inflicted skin excoriations and even ulcers, and lichenification in chronic cases.<sup>51</sup> They often bring in material like lint or skin debris, mistakenly believing it to be evidence of parasitic infestation. Morgellons disease is widely considered a form of DI in which the patient believes fibers are being extruded from the skin.<sup>52</sup>

It is crucial to rule out actual infestation first and consider differential diagnoses such as schizophrenia, psychotic depression, substance abuse and organic causes. Dermatologists should express empathy, address their symptoms without dismissing or challenging the nature of their experiences, establish rapport, and counsel the patient as well as the caregivers.<sup>50,51</sup> First line management is with antipsychotic medication and psychiatrist referral may be sought if necessary. However, over 25% of patients might experience a relapse after stopping treatment, with the highest risk occurring within the initial months of discontinuation. To manage symptoms effectively, these individuals may need extended treatment periods or ongoing maintenance therapy.<sup>53</sup>

## Obsessive-Compulsive and Related Disorders

### BODY DYSMORPHIC DISORDER

Body dysmorphic disorder (BDD), also known as dysmorphophobia or dermatological non-disease, involves a distorted perception of one's body image. Patients with BDD are preoccupied and obsessed by an imagined defect in their appearance or an excessively concerned over a minor unapparent defect.<sup>54</sup> It often coexists with other mental health conditions such as depression, avoidant personality disorder and delusions of reference. These preoccupations lead to emotional distress, low self-esteem, and impaired social interactions. Patients often engage in repetitive behaviors such as reassurance-seeking, mirror gazing and excessive grooming to hide perceived defects.<sup>54</sup> The severity of patients' beliefs can vary, and if these beliefs are of delusional variant, the condition is categorized as psychotic type.<sup>55</sup> Patients frequently seek multiple medical consultations and procedures, usually with dissatisfaction. It has a high incidence in aesthetic clinical settings, and failure in recognition may lead to unnecessary elective procedures with ethical and medicolegal consequences.<sup>56</sup>

The prevalence of body dysmorphic disorder in the general population is 1-2%, and in cosmetic or dermatology settings, the estimate is as high as 26.0%.<sup>57</sup> Most patients are young with a female preponderance.<sup>57</sup> Suicidal ideations are common, with about 24-28% attempting suicide.<sup>58</sup>

Management includes pharmacotherapy with antidepressants such as SSRIs, as well as supportive psychotherapy like cognitive behavioural therapy (CBT).<sup>59</sup> Managing BDD is challenging as explaining the trivial nature of the concerns is ineffective. Patients without insight often require approaches similar to those used for delusional disorders.

## Body-Focused Repetitive Behaviour Disorders

Body-focused repetitive behavior disorders (BFRBDs) are a group of disorders characterized by repetitive, compulsive behaviors that cause physical damage to the body.<sup>60</sup> These behaviors often include hair-pulling (trichotillomania), skin-picking (excoriation disorder), nail-biting (onychophagia), nail picking (onychotillomania), cuticle pulling, skin biting (dermatophagia), and cheek, tongue, or lip-biting (morsicatio buccarum, linguarum, and labiorum).<sup>60</sup> Individuals with BFRBDs typically engage in these behaviors as a response to stress, anxiety, or other emotional states, and the behaviors can result in significant physical harm though it is not the primary intention. The treatment of choice is cognitive-behavioral therapy.<sup>60</sup>

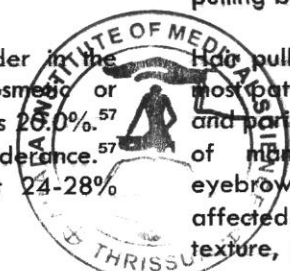
Trichotillomania and skin-picking, while both involving repetitive behaviors, are categorized separately in the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5).<sup>54</sup>

### TRICHOTILLOMANIA

Trichotillomania is an often disabling disorder characterized by compulsive recurrent pulling out of one's hair leading to hair loss.<sup>54</sup> Patient experiences a sense of increasing tension prior to pulling the hair, and relief or gratification when pulling out the hair.<sup>54</sup> However, the relief experienced is often replaced by negative feelings of guilt and hopelessness. The behavior is frequently concealed from family members. It is more common in children and adolescents.<sup>61</sup> When occurring later in adulthood or among older patients, it is linked to greater psychopathology and poorer prognosis.<sup>61</sup> It can be a conscious, intentional action happening in awareness known as "focused pulling", or a subconscious behavior, sometimes occurring in a hypnagogic state which is known as "automatic" pulling.<sup>61</sup>

The cause of trichotillomania is not completely understood but appears to be linked to several factors like underlying anxiety, depression, psychosocial stress, family dysfunction, and other body-focused habits like nail biting and nail pulling. Psychological explanatory models propose that hair-pulling may help regulate emotional or stressful states, offering temporary relief from negative emotions, which can reinforce the hair-pulling behavior.<sup>62</sup>

Hair pulling most frequently occurs on the scalp. While most patients tend to pull hair from the vertex, temporal and parietal hair loss can be more noticeable on the side of right-hand dominance.<sup>63</sup> Additionally, eyelashes, eyebrows, facial hair and pubic hair may also be affected.<sup>63</sup> Triggers for hair pulling can be sensory (e.g., texture, and location of hair, sensations on the scalp),



emotional (e.g., feelings of anxiety, boredom), or cognitive (e.g., preoccupations with hair and appearance, rigid thought patterns, or cognitive distortions).<sup>63</sup>

Behavioral therapy is the most effective treatment, particularly habit reversal therapy.<sup>64</sup> This approach involves four main components: awareness (enhancing recognition of hair-pulling behavior), competing response training (engaging in a specific action when the urge to pull arises), social support or contingency management (having someone to reinforce the desired behavior), and stimulus control (reducing environmental triggers for pulling).<sup>64</sup> The recent development of electronic habit-monitoring devices could enhance the effectiveness of Habit Reversal Therapy (HRT).<sup>65</sup> For instance, an electronic necklace emits inaudible sound waves around the head and signals a bracelet to vibrate if the head region is crossed for more than three seconds.<sup>65</sup> No drugs are specifically approved for treating trichotillomania. However, certain medications such as selective serotonin reuptake inhibitors (SSRIs) and the tricyclic antidepressant clomipramine, may help manage symptoms.<sup>66</sup> Their effectiveness is likely more related to addressing psychiatric comorbidities rather than directly treating trichotillomania.<sup>66</sup> Clinical trials suggest that there may be beneficial effects for N-acetylcysteine and olanzapine in adults, although the sample sizes in these studies were relatively small.<sup>67</sup>

#### SKIN PICKING DISORDER (EXCORIATION DISORDER)

Excoriation disorder (ED), also known as dermatillomania or neurotic excoriation, is characterized by recurrent conscious urge to pick the skin, leading to cutaneous lesions and significant distress or functional impairment.<sup>54</sup> It can occur at any age, but the peak onset coincides with adolescence, with a female preponderance.<sup>68</sup>

An inability to stop picking despite repeated efforts is common and can result in feelings of shame, anxiety, and depression.<sup>69</sup> Various psychosocial consequences, such as social embarrassment, avoidance of situations where skin lesions might be noticed, and decreased productivity in multiple areas of life, have been reported.<sup>69</sup> Medical complications include pain and irritation, bleeding, secondary infection, ulcers, scars, and even disfigurement.<sup>70</sup> These patients have other associated repetitive behaviors, such as onychophagia, onychotillomania, lip sucking, chewing on the cheek, and stereotypic movements.<sup>71</sup> Common triggering factors include observing and touching the skin, fatigue, and stress.<sup>71</sup> Approximately 66.7% of patients are aware that they engage in skin picking at least half the time, whereas up to 33.3% of patients engage in skin picking automatically or unconsciously.<sup>71</sup> The pattern of distribution of the lesions provides a clue to their self-inflicted nature, with lesions being concentrated over the most accessible sites like the dorsal hands and forearms, scalp, face, upper outer arms, and buttocks, especially on the dominant side.<sup>71</sup>

The treatment of choice is cognitive-behavioral therapy; significant benefit is seen with habit reversal therapy.<sup>72</sup> It is of utmost importance to assess the psychosocial well-

being of the patient, and to screen for psychiatric comorbidities such as depression, anxiety, or psychosis.<sup>72</sup> Pharmacological agents like SSRIs can be useful especially in adults and there is growing interest in the use of glutamatergic agents like NAC as a potential intervention.<sup>72</sup>

### Factitious Skin Diseases

#### DERMATITIS ARTEFACTA

Dermatitis artefacta (DA) is a disorder where lesions are caused intentionally by patients who are fully aware of their actions, on their skin, hair, nails, or mucosa.<sup>73</sup> DA involves: a) intentional feigning of symptoms, b) motivation to assume a sick role, and c) absence of external incentives like economic gain.<sup>73</sup>

The core psychopathology is the desire to assume a sick role and a need to be taken care of, triggered by a psychosocial stressor.<sup>73</sup> Affected patients often have immature coping mechanisms and dysfunctional interpersonal relationships, and may even have associated generalized anxiety, major depression, or borderline personality disorder.<sup>74</sup> The onset typically occurs in adolescence or in adults under 30 years old, with a higher prevalence in females.<sup>75</sup> The patient usually gives a hollow history, and denies responsibility for their actions, as they often dissociate while causing the lesions.<sup>75</sup> Unlike other dermatoses where the progression can be traced from the initial skin changes to fully developed lesions, dermatitis artefacta lesions appear fully formed, without a credible sequence of development.<sup>75</sup> The patient is often described as being indifferent to the condition ("la belle indifference").<sup>75</sup> Commonly involved sites include accessible areas like the face, dorsum of hands and forearms, particularly on the non-dominant limb, or on covered areas like chest and abdomen. Presentation can vary widely from ulcers, erosions, crusts, blisters, purpura, or dermatitis to scars and mutilation, to name a few, depending on the method used to induce them. The lesions are often polymorphic and well-demarcated with sharp borders.<sup>75</sup>

Emotional support should be given by avoiding direct confrontation about the patient's role in creating the lesions.<sup>76</sup> If suspected, the patient may be admitted for covert observation to determine if they are self-inflicting the lesions.<sup>76</sup> Treatment should involve both medication and behavioural therapy, addressing the underlying psychiatric issue, as well as managing the cutaneous lesions. A long-term follow-up is required, as the condition can relapse with psychological triggers.<sup>76</sup>

It is important to distinguish dermatitis artefacta from malingering. Malingering involves an intentional motivation of secondary gain, such as obtaining monetary benefits or evading responsibilities.<sup>77</sup> It differs from other factitious disorders in being opportunistic. It may be at times associated with conversion disorders or personality disorders.<sup>77</sup>

#### OTHER FACTITIOUS SKIN DISORDERS

Dermatological pathomimicry involves deliberate exacerbation of a pre-existing dermatosis by the patient. It should be suspected when patients suffer unexplained

aggravation of disease, or is unresponsive even after adequate supervised treatment.<sup>78</sup>

Dermatitis simulata is another differential diagnosis in which the patient uses external agents like make-up or dyes to mimic disease without causing significant damage to the skin. These lesions can be removed by alcohol soaked swabs.<sup>79</sup>

Dermatitis passivata (dermatitis neglecta) is seen in patients with self-neglect.<sup>80</sup> Lack of skin cleansing leads to accumulation of keratin debris and crusts and resembles a carapace.<sup>80</sup> This is more often seen in elderly population and in patients with comorb psychiatric disorders or dementia.

Munchausen syndrome, a severe variant of factitious disorder, involves fabricating illnesses to attract attention or sympathy.<sup>79</sup> Dermatological complaints are infrequently observed in this syndrome.<sup>79</sup>

Munchausen syndrome by proxy involves a parent inducing illness in a child to fulfill their own psychological needs by assuming the sick role.<sup>81</sup> This syndrome is seen predominantly in infants and toddlers, with skin manifestations being rare but potentially including bruises, blisters, and burns on areas like the arms and legs.<sup>81</sup> The face and head may also be impacted, while the buttocks and outer thighs can serve as punishment sites.<sup>81</sup>

Deliberate self-harm differs from dermatitis artefacta in that patients will often acknowledge that they are intentionally mutilating their skin.<sup>82</sup>

### Psychogenic Pruritus

Psychogenic pruritus (PP) is a condition characterized by a persistent itch that cannot be attributed to any underlying systemic or dermatological cause. Misery et al. have proposed a diagnostic criteria for PP with three compulsory criteria: localized or generalized pruritus sine materia, chronic pruritus (>6 weeks) and the absence of a somatic cause; and three of seven optional criteria: temporal relation between pruritus and life events that could have psychological repercussions, variations in intensity associated with stress, worsening at night, predominance during rest, associated psychological disorder, improvement by psychotropic drugs, or improvement by psychotherapy.<sup>83</sup> PP can be either generalized or localized, with common sites including the legs, arms, and genitals. Many patients have comorbid anxiety or depression.<sup>84</sup> A thorough cutaneous and systemic examination, along with routine baseline investigations, should be conducted to rule out other causes of pruritus before diagnosing PP.

### Secondary Psychiatric Disorders

Skin disorders, though seldom life-threatening, can significantly impact quality of life and lead to considerable suffering. If the level of distress is greater than what is typically expected or if it significantly disrupts daily life, it is important to consider the possibility of a secondary psychodermatologic issue. These are more commonly encountered in conditions like psoriasis

atopic dermatitis, vitiligo, alopecia areata, hand eczema and acne.<sup>85,86</sup>

Chronic skin diseases, particularly those affecting visible areas, often cause embarrassment, depression, anxiety, poor self-image, and suicidal thoughts. These issues can also result in societal discrimination, and difficulties in finding employment.<sup>87,88</sup> A cross-sectional study among patients with vitiligo revealed that 54.5% of patients had some depressive symptoms, with moderate and/or severe depression being significantly higher among children and adolescents.<sup>89</sup> The effects of vitiligo on appearance can cause individuals to become socially withdrawn, sensitive to perceived societal judgments, and experience declines in both personal and professional areas of life, ultimately diminishing their self-esteem and quality of life.<sup>90</sup> A recent study by Bakar et al. revealed that 16.9% of patients with psoriasis had anxiety and 8.5% had depressive symptoms.<sup>91</sup> Psychiatric comorbidities in psoriasis are associated with poor treatment compliance and therapeutic response.

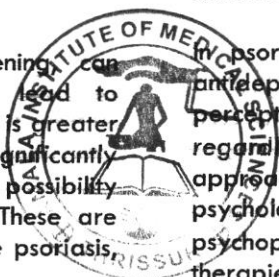
The symptoms of atopic dermatitis (AD) in children, especially pruritus, are linked to a decreased health-related quality of life.<sup>92</sup> It significantly affects mental health, leading to higher rates of anxiety, depression, ADHD, and suicidal thoughts.<sup>92</sup> This adversely affects not just the child, but the primary caregivers as well due to impaired personal relationships, work absence or decreased work productivity, reduced psychosocial functioning, and sleep loss.

Alexithymia is a psychological trait characterized by difficulty in recognizing and expressing one's emotions.<sup>93</sup> Research indicates that alexithymia is significantly more prevalent and severe in individuals with alopecia, vitiligo, psoriasis, hidradenitis suppurativa, atopic dermatitis, and chronic urticaria, compared to healthy individuals.<sup>93</sup>

### Psychophysiological Disorders

Psychophysiological disorders are skin conditions triggered or influenced by a patient's psychological state, often worsened by emotional stress. Conditions like psoriasis, acne, rosacea, urticaria, atopic dermatitis, mucocutaneous herpes simplex infection, hyperhidrosis, and chronic telogen effluvium fall into this category.<sup>95</sup> A notable number of patients with these conditions are 'stress-responders', indicating that the presence of stressors often leads to a worsening of their disease symptoms.<sup>94</sup> These patients generally have a good understanding of their diseases, but the perception of stress can vary widely from person to person.<sup>95</sup> While treating patients with these diseases, dermatologists should assess the impact of psychosocial stress on the disease state.<sup>95</sup>

Psoriasis patients, psychological interventions and antidepressants have been found to enhance symptom perception, treatment adherence, and quality of life, regardless of changes in clinical severity.<sup>96</sup> Thus, a holistic approach addressing both dermatological and psychological aspects can benefit patients with psychophysiological disorders.<sup>95</sup> Both non-pharmacological therapies and medications like benzodiazepines and



SSRIs can be beneficial, and psychiatric referrals may be necessary for non-responders, with clear communication about the goals and benefits of such referrals.<sup>95</sup>

## Approach to the Patient and Principles of Management

Most patients with psychocutaneous disorders are seen first by a dermatologist, and these patients often concentrate solely on their dermatological complaints.<sup>49</sup> As long as the dermatologist does not consider the psychological aspects of the disease, the management remains incomplete.<sup>45</sup> While some conditions like delusion of parasitosis are relatively easy to diagnose, secondary psychiatric and psychophysiological disorders often are not. Therefore, taking a thorough psychosocial history is essential, and evaluation should include a detailed psychiatric history to identify common comorbidities such as depression, anxiety, and obsessive-compulsive disorder. Every patient should be assessed for potential psychological components, and in addition to reaching a dermatological diagnosis, a psychiatric diagnosis should also be considered. This involves focused questioning to uncover psychiatric symptoms and assess the impact on the patient's quality of life.

The evaluation commences as soon as the physician encounters the patient, allowing for immediate observations. The patient's appearance, demeanor, speech, and interactions can provide clues to their emotional and mental state.<sup>97</sup> A patient's appearance can be assessed within the initial moments of the clinical introduction and should be observed throughout the interview. Patients exhibiting poor hygiene and grooming often indicate impaired functioning.<sup>97</sup> Conversely, excessive grooming or specific grooming rituals could indicate obsessive-compulsive disorder. The clinician should note how the patient interacts—whether they are cooperative, agitated or avoidant.<sup>97</sup> Understanding the patient's behavior around caregivers can also highlight interpersonal relationship issues. Observation of the patient's interactions with other healthcare staff can also provide valuable insights.<sup>49</sup> A flat affect or lack of emotional expression can also suggest depression or other mood disorders. A patient experiencing depression or a neurocognitive disorder may exhibit psychomotor retardation, which is characterized by slowed movements.<sup>97</sup> The patient's speech should be passively observed with regard to the amount of verbalization, fluency, volume, and tone. If the patient speaks less than normal, it may indicate depression or anxiety.<sup>97</sup> Conversely, an increased or hypervocal amount of speech may also suggest some level of anxiety or mania.<sup>97</sup> Unusual behaviors such as excessive fixation or worry about appearance can point to underlying body dysmorphic disorder or anxiety. The patient's mood and affect can also be evaluated during the clinical assessment.<sup>97</sup> By carefully observing these aspects throughout the interview, the clinician can gather valuable information about potential mental health issues and guide further evaluation and treatment alongside their dermatological management.

Building a strong therapeutic alliance is essential, which can be achieved through empathy and respect.<sup>49</sup> Patients

should be informed that a complete evaluation may require several appointments and that treatment may require an extended period of time to achieve desired results.<sup>49</sup> The initial visit should prioritize gathering a comprehensive medical history and conducting a thorough physical examination to foster trust. Practitioners should discuss how skin conditions can impact mental health, normalizing the experience by sharing that approximately 30% of dermatology patients may have psychiatric comorbidities.<sup>49</sup> Tools like the Modified Mini Screen (MMS) can help evaluate depression and anxiety levels.<sup>49</sup> For those lacking insight, such as in cases of delusional infestation, it is counterproductive to directly challenge or refute their delusional beliefs, as they, by definition, cannot be persuaded otherwise.<sup>49</sup> Patients experiencing significant mental health issues may benefit from psychiatric referrals for counseling or medication.<sup>49</sup> The dermatologist's role is to support the patient while focusing on their skin condition. If a patient declines a referral, the dermatologist should remain supportive, possibly prescribing psychiatric medication if appropriate, and encourage evaluation by a mental health professional.<sup>49</sup> For patients with insight, discussions about mental health referrals should be straightforward and non-threatening to the patient.<sup>49</sup>

The strategy for managing psychodermatologic disorders should focus on the following general outline:<sup>98</sup>

- Classification of the disorder into a main group, such as psychophysiological disorders or primary psychiatric disorders with dermatologic symptoms.
- Assessment of any associated anxiety, depressive, obsessive-compulsive, or psychotic symptoms.
- Evaluation of the severity of these symptoms using screening scales and questionnaires, along with identification of psychiatric risk factors, including suicidal ideation.
- Referral to psychiatrist, if required.

## Models of Care in Psychodermatology

In their review of care models for patients with dermatologic and psychological disorders, Patel and Jafferany identified seven distinct categories of psychodermatology clinics, each highlighting the roles of different specialties involved.<sup>99</sup> These categories include: Psychologist alone, Dermatologist and Psychiatrist together, Dermatologist and Psychologist together, Psychiatrist alone, Dermatologist alone, Psychiatrist, Psychologist, and Dermatologist separately, and Multidisciplinary Team.<sup>99</sup>

A specialized clinic model where dermatologists conduct psychosocial assessments during patient evaluations can be particularly beneficial for individuals reluctant to see a psychiatrist due to sociocultural stigma. In this context, dermatologists need to embody the role of psychodermatologists, and hence should possess a foundational understanding of psychodermatology and familiarity with essential psychotropic medications.<sup>100,101</sup>

The implementation of a combined-clinic multidisciplinary approach in patient management has proven highly beneficial in comparison.<sup>99</sup> This model enhances the management of both dermatologic diseases and

psychosocial comorbidities by reducing inaccurate diagnoses, ineffective treatments, unnecessary referrals, and the tendency for patients to doctor shop.<sup>99</sup>

Psychodermatology liaison clinics have been effectively established in several healthcare centres, where patients are initially evaluated by a dermatologist.<sup>102-106</sup> After screening for psychological issues, patients are then assessed by a psychiatrist and/or clinical psychologist. The psychiatrist evaluates for any associated psychiatric disorders, while the clinical psychologist provides supportive counseling and psychoeducation. Thus, patients benefit from the expertise of all specialists in a single consultation, and helps alleviate the reluctance to visit a psychiatrist for what may seem like a dermatological issue. Consequently, the treatment plan includes standard dermatological care, along with necessary psychotropic medications and psychotherapy.

### Emerging Branches in Psychodermatology

With ongoing research and collaboration among various medical fields, multiple subspecialties have emerged within psychodermatology:<sup>5</sup>

- **Pediatric Psychodermatology:** Focuses on the evaluation, diagnosis, and treatment of children with psychodermatologic conditions.
- **Geriatric Psychodermatology:** Combines geriatrics, psychiatry, and dermatology to address psychodermatological issues in the elderly, impacting their psychological and physical well-being.
- **Trichopsychodermatology:** Studies the psychological and social effects of hair disorders, and strategies to combat associated anxiety, depression, and stigma.
- **Psychodermato-oncology:** Examines the psychological impact of skin cancer, including disfigurement, fear, and the role of stress in the development of skin cancers.
- **Cosmetic Psychodermatology:** Evaluates the psychological aspects of patients seeking cosmetic procedures, emphasizing the need for cosmetic dermatologists to conduct basic psychological assessments.
- **Tropical Psychodermatology:** Investigates the psychosocial and quality of life aspects of tropical skin diseases, including infections and endemic conditions.
- **Sports Psychodermatology:** Addresses the psychological and social impact of sports-related skin conditions on athletes, affecting their performance.
- **Environmental Psychodermatology:** Explores the interaction between environmental stressors, skin, and psychology, considering biological, physical, and chemical influences.

### Challenges and Future Directions

Several knowledge gaps and unmet needs persist in psychodermatology. First, further research is needed to explore the pathophysiology linking psychological stress to skin diseases and to develop novel therapies targeting

key neuropeptides involved in these conditions.<sup>107</sup> Expanding research in this area has the potential to uncover new insights into the complex interplay between the nervous system, immune system, and skin.<sup>107</sup> Elucidating these interactions at a molecular level may reveal previously unknown pathways that can be leveraged therapeutically.<sup>107</sup>

In addition, many clinicians lack adequate training in psychodermatology, with dermatologists reporting low comfort levels in prescribing psychotropic medications despite often being the primary care providers for these patients.<sup>107</sup> A recent study among dermatologists revealed that approximately half of the participants had no formal training in psychodermatology, nearly 60% were unaware of available community resources, and about 75% expressed a willingness to seek educational activities related to psychodermatology.<sup>108</sup> Seale et al. highlighted that emphasizing education through the training of physicians, and the expansion of integrated teaching clinics can significantly enhance expertise in psychodermatology.<sup>104</sup> The incorporation of formal training and didactics on psychodermatology in dermatology residency programs can help address the existing knowledge gaps.<sup>109</sup> Formation of medical and psychological associations can help promote further awareness and research in this field.

### Conclusion

Psychodermatology represents a critical intersection of dermatology and psychiatry, emphasizing the profound connection between the mind and skin. With the development of various subspecialties, the field continues to expand, reflecting the diverse and complex nature of psychodermatologic conditions. Understanding the interplay of psychoneuroimmune-cutaneous-endocrine systems has provided valuable insights into how stress and psychological factors influence skin disorders. Despite the advances, universally accepted definitions and classifications in psychodermatology are still evolving. Ongoing research is essential to refine assessment techniques and therapeutic approaches, ultimately enhancing the management of these conditions. The establishment of dedicated psychodermatology clinics, although still in its infancy in many regions, is a promising step towards comprehensive care. Additionally, integrating psychodermatology into training programs for psychiatrists, dermatologists, and psychologists will ensure a holistic approach to treating patients, addressing both physical and psychological aspects to improve their quality of life. As the field progresses, continued collaboration and research will be vital in uncovering new insights and developing effective treatments. The holistic approach of psychodermatology has the potential to transform patient care, making it an indispensable part of modern medicine.

### Conflicts of Interest Statement

The authors have no conflicts of interest to declare.



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