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Psychodermatology - the effects of stress on skin conditions in adults

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ABSTRACT

Psychodermatology is an interdisciplinary field combining dermatology, psychiatry, and psychology, focusing on the impact of stress on skin conditions in adults. Both acute and chronic stress can exacerbate pre-existing skin disorders such as atopic dermatitis, psoriasis, and acne, and lead to new problems, including seborrheic dermatitis or stress-induced urticaria. Stress can also influence skin care behavior, such as excessive scratching or compulsive squeezing of skin lesions, worsening the skin condition and creating a continuous cycle of stress and dermatological manifestations. This study analyzed publications on the effects of stress on skin conditions and its association with dermatological problems in adults. Participants (n=210, 56% between 18-25 years of age, 53% female, and 63.3% tertiary education) completed a study survey. A total of 86.6% rated their stress levels as moderate or high. 56.7% frequently experienced stress symptoms such as fatigue or sleep problems. In stressful situations, 60% experienced worsening of skin conditions, while 76.7% experienced improvement of skin conditions during periods of low stress. The most frequent symptoms were redness, acne, itching, and peeling. More than 80% said their skin appearance affected their mood. Psychodermatology was mostly unknown (66.7%) but was considered a possible effective treatment of skin problems. The results indicate a strong association between stress and dermatological issues, highlighting the need for a holistic approach that integrates psychological support with dermatological therapy to improve therapeutic efficacy and quality of life in patients.

Keywords: Psychodermatology, psychological interventions, skin diseases, stress

1. INTRODUCTION

Psychodermatology is an interdisciplinary field that combines dermatology and psychology, studying the interaction between skin conditions and psychological factors, including stress. It encompasses the diagnosis and treatment of dermatological problems that have a psychological basis or are a result of psychological stress (Jafferany, 2007; Makowska and Gmitrowicz, 2014; Thompson and Montgomery, 2018; Jafferany et al., 2020). Stress is the body's response to physical, mental, or emotional pressure (Graubard et al., 2021). It arises from events beyond an individual's perceived coping ability (Thompson and Montgomery, 2018).

The stress response activates the endocrine, neurological, and immune systems, resulting in a cascade of effects that are both systemic and cutaneous (Graubard et al., 2021). In reaction to stress, the HPA axis (hypothalamic-pituitary-adrenal axis) is activated, causing the release of hormones such as cortisol. Although cortisol has an essential function in coping with sudden stress, in long-term it can impair skin defence functions, leading to skin barrier disruption and increased inflammation (Hunter et al., 2015; Graubard et al., 2021; Hanyi et al., 2024). By influencing changes in the immune balance, stress promotes the development of skin diseases such as acne, psoriasis, and atopic dermatitis, as well as symptoms such as itching, redness or flaking (Graubard et al., 2021; Alexopoulos and Chrousos, 2016; Sun and Rieder, 2021).

Psychiatric disorders account for 30% to 40% of comorbidities in dermatological patients (Jafferany et al., 2020; Tran et al., 2020). Furthermore, nearly all common psychiatric disorders can lead to skin disorders (Jafferany et al., 2020). The two-way relationship between the skin and the psyche makes it challenging to decide which one is the main issue (Makowska and Gmitrowicz, 2014; Jafferany et al., 2020). Psychological distress in dermatological patients is thought to be secondary to skin symptoms; nevertheless, in some cases, it may be the main problem or may have a direct impact on the course of skin disease (Makowska and Gmitrowicz, 2014). Moreover, stress may arise from the skin disease, leading to a self-perpetuating cycle (Graubard et al., 2021).

A division of psychodermatological conditions is present in the literature, which includes psychophysiological disorders, primary psychiatric conditions manifesting as skin problems, and primary dermatological conditions causing secondary psychiatric conditions (Makowska and Gmitrowicz, 2014; Jafferany et al., 2020; Hanyi et al., 2024). For a patient with skin lesions, a holistic approach that addresses all areas of their health is essential. Incorporating non-pharmacological methods, such as biofeedback, relaxation techniques, or behavioural-cognitive approaches, into dermatological therapy can support the effectiveness of biological treatment and result in better therapeutic outcomes (Makowska and Gmitrowicz, 2014).

Objective

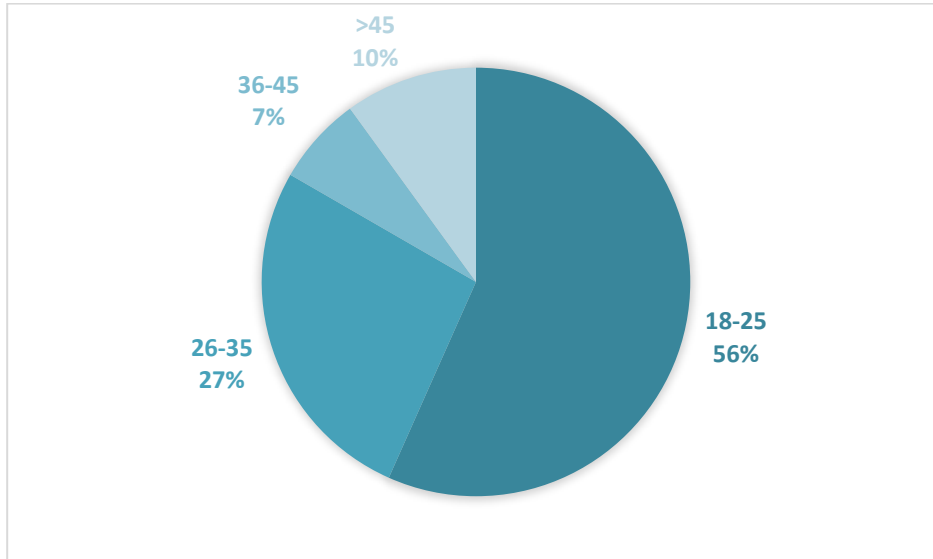
This study aimed to assess the impact of stress on the skin condition of adult respondents and to analyze how stress correlates with the occurrence and severity of dermatological problems in adults.

2. MATERIALS AND METHODS

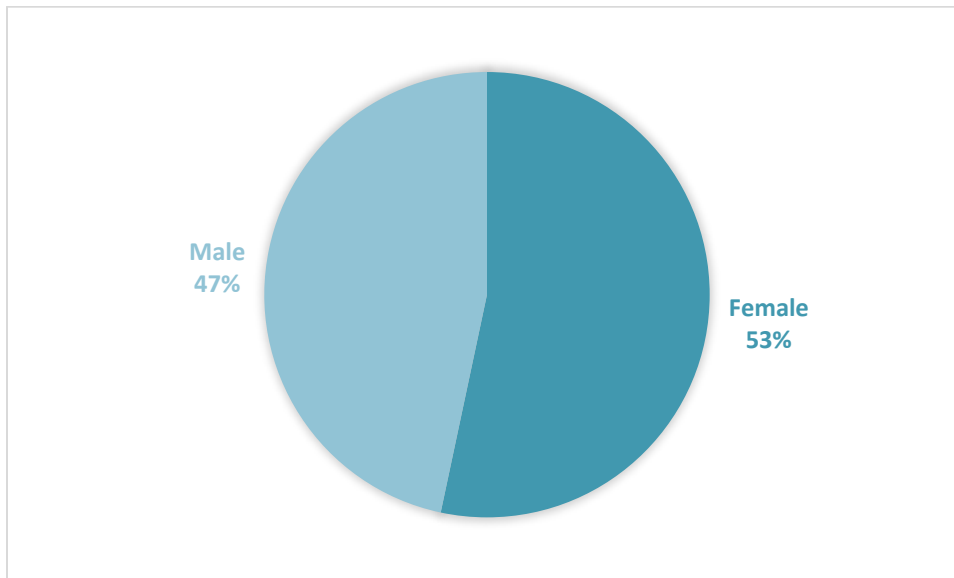
The survey was conducted online over a period of 3 weeks among 210 adults. It consisted of 17 single-choice, multiple-choice, and open-ended questions. The first part, i.e., 5 questions, referred to general information regarding the age, education, and health assessment of the respondents. 10 questions referred to stress, the patient's skin condition, and their correlations. The respondents answered questions regarding, among other things, the general level of stress in their lives, its frequency and triggers, and self-assessment of their skin condition or skin symptoms accompanying stressful situations. In addition, we included 2 questions assess psychodermatology and its significance. The results were analyzed and verified against the scientific literature available in online databases (PubMed, Google Scholar, Medline) and statistically processed using Microsoft Office Excel.

3. RESULTS

210 people aged 18 years or older participated in the survey. Considering the age range, the respondents were from the age groups 18-25 (56%), 26-35 (27%), 36-45 (7%) and >45 (10%) (Graph 1). The study group consisted of 112 (53%) women and 98 (47%) men (Graph 2).



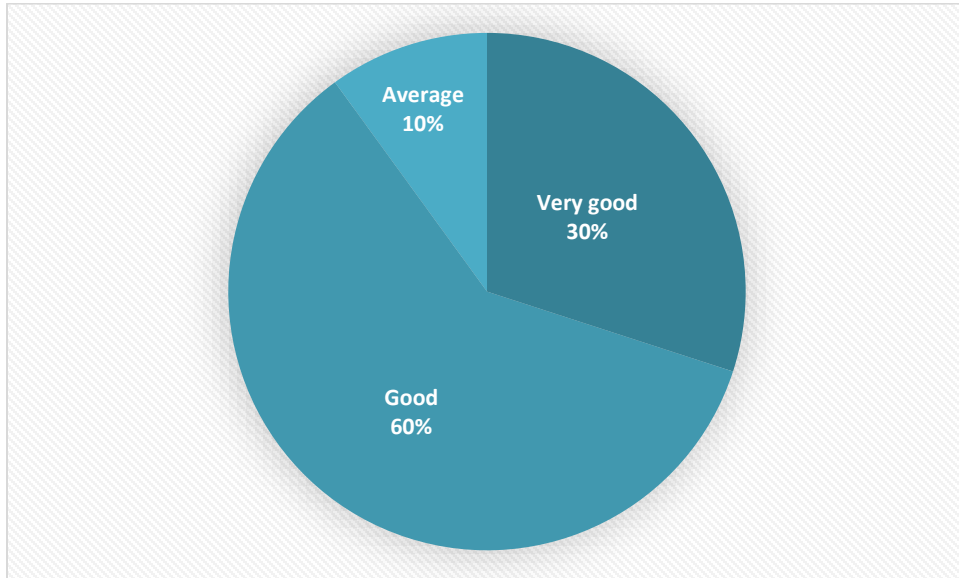
Graph 1 Age of respondents who took part in the survey.



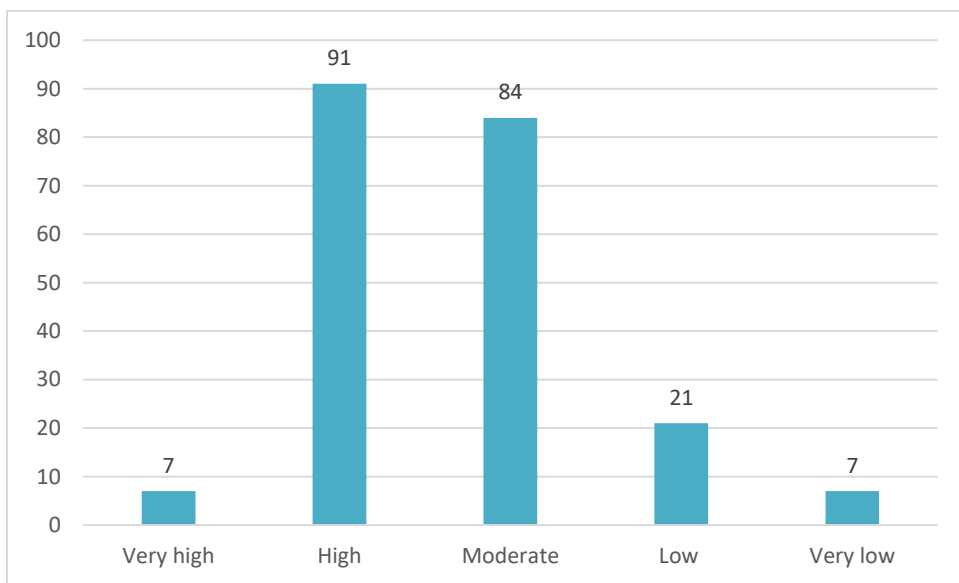
Graph 2 Distribution of respondents by gender.

Respondents with tertiary education accounted for 63.3%, while 36.7% had secondary education. There were no people with primary education among the respondents. Asked about their health status, 63 respondents (60%) described it as good, 126 people (30%) as very good and the rest as average (Graph 3). 93.3% of respondents indicated that lifestyle influences skin condition.

The second part of the questions focused on the respondents' experiences of stress and its relation to skin condition. Respondents were asked about the level of stress in their lives. As many as 182 people (86.6%) described their stress level as very high, high or moderate. Only 28 people (13.4%) defined their stress level as low or very low (Graph 4). In addition, when asked about the frequency of their stress symptoms, such as fatigue or sleep problems, they reported that these occur in 56.7% of cases (Graph 5). Respondents also reported that work, interpersonal relationships, health, and finances were the most common causes of stress for them.



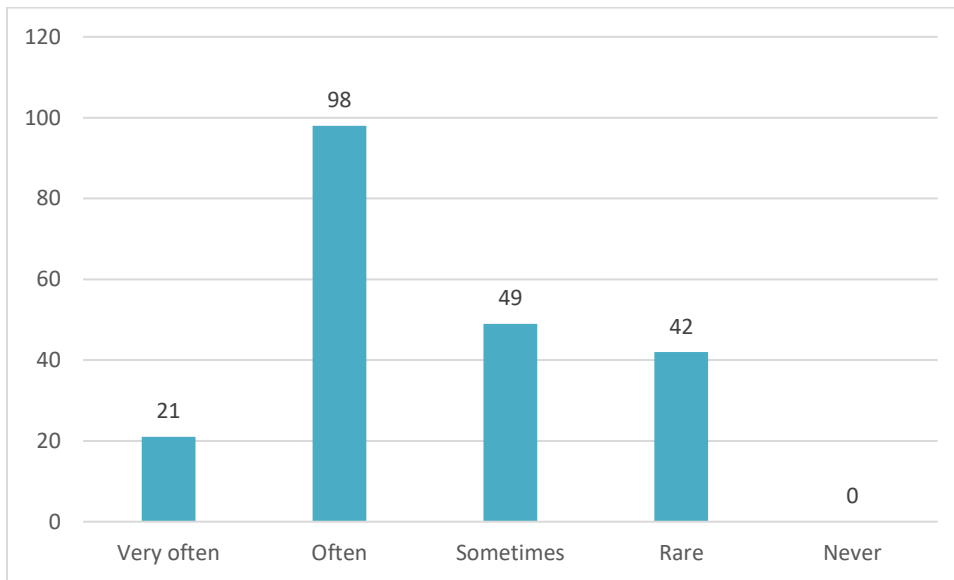
Graph 3 Respondents' assessment of their health status



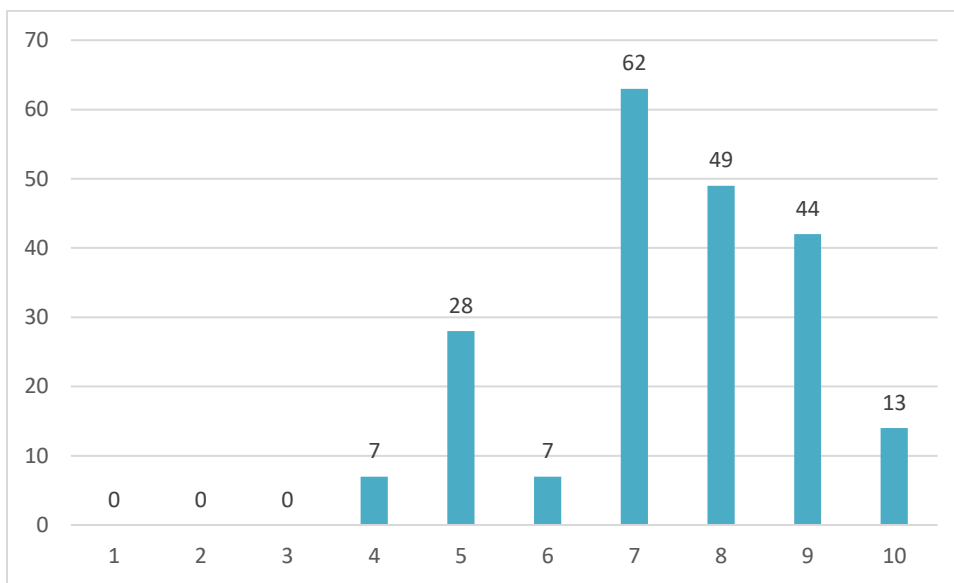
Graph 4 Respondents' assessment of the level of stress.

Respondents were asked to rate the condition of their skin on a scale of 1 (terrible) to 10 (excellent). 80% of respondents rated it as seven and above (Graph 6). 60% of the respondents noticed a deterioration of their skin condition due to stress. The remaining respondents did not notice any significant deviation. The multiple-choice question on skin changes during stressful situations indicated that redness, acne, itching, and peeling skin were the most common. 76.7% of the respondents noticed an improvement in their skin condition during periods of less stress.

In addition, up to 80% of respondents indicated that the appearance of their skin had a significant impact on their mood. 60% of patients had never used the help of a psychiatrist or psychologist in connection with stress, while 40% of respondents did. On the other hand, as many as 90% had never used a dermatologist for stress-related skin problems. Additionally, respondents were asked a question about psychodermatology - 140 people (66.7%) had never heard of the term before. Still, the majority of respondents (i.e., 140 people) mentioned the potential effectiveness of psychodermatology treating of skin problems.



Graph 5 Respondents' assessment of the frequency of stress.



Graph 6 Patients' assessment of their skin condition.

4. DISCUSSION

The analysis of the above results indicates a strong connection between stress and skin conditions. As many as 60 percent of respondents reported a worsening of their skin condition in stressful situations, with the majority indicating specific skin changes such as redness, acne, itching, or peeling. Reports correlating with the results of our study can be found in the literature. It has been reported in the literature that stress exacerbates symptoms of conditions such as acne, psoriasis, and atopic dermatitis (Hanyi et al., 2024; Pondeljak and Lugović-Mihić, 2020; Evers and Buegen, 2021). It also affects the skin barrier and increases inflammatory reactions, which may be responsible for the exacerbation of symptoms such as redness or pruritus (Sun and Rieder, 2021).

At the same time, 76.7% of respondents confirmed an improvement in skin condition during periods of reduced stress, which highlights the importance of stress control in the context of dermatological health and is in line with data presented in the literature that emphasizes the importance of stress management in the treatment of skin diseases such as psoriasis and eczema (Sun and Rieder, 2021). Studies demonstrating strong associations between dermatological diseases, quality of life, and self-esteem support the finding

that 80% of respondents believe their skin condition affects their well-being (Sun and Rieder, 2021; Evers and Buegen, 2021). This highlights the psychological consequences of dermatological problems, which may affect both quality of life and self-esteem. 93.3% of respondents felt that lifestyle influences skin condition.

Robinson, (2024) study indicates that stress triggers the release of cortisol, which impairs skin barrier function. Lifestyle factors such as smoking, excessive alcohol consumption, and poor diet also worsen skin conditions by contributing to oxidative stress and inflammation (Robinson, 2024). Correlating the results of the two studies confirms the importance of a holistic approach to skin care, including stress reduction, healthy eating habits, and appropriate skin care, to improve skin health. Despite the link between stress and skin conditions observed by respondents, up to 90% had never sought help from a dermatologist in this area, and 60% had not sought psychological support. One source investigated awareness of psychological comorbidities in dermatology.

61.7% of respondents reported seeing patients with known psychological problems over once a week, 79% discussed stress reduction techniques with their patients, but only 6.38% of dermatologists conducted psychiatric questionnaires at each visit (Tran et al., 2020). Dermatological and psychological interventions are key in the treatment of stress-induced skin lesions, and dermatological interventions supported by psychological stress management techniques may result in better therapeutic outcomes Alexopoulos and Chrousos, (2016), Sun and Rieder, (2021); however, people with skin problems may not be aware of the comprehensive treatment options associated with the use of psychodermatology. This may also be due to a lack of awareness of available treatments or financial or organizational barriers.

In addition, 66.7% of respondents had never heard of psychodermatology, although most respondents (66.7%) identified the possible efficacy of its application in the management of cutaneous disorders. In a survey of 102 local dermatologists in Washington State, only 18% of dermatologists had a clear understanding of psychodermatology (Jafferany et al., 2010). This demonstrates the need to roll this subspecialty embracing this interdisciplinary field into clinical practice, educate both clinicians and patients, and explore its efficacy in more depth. Respondents indicated that work and relationships are their biggest sources of stress, and to a lesser extent, health and finances, consistent with literature sources identifying work-life conflicts and social relationship problems as stressors (Robinson, 2024; Slimmen et al., 2022).

These findings highlight the need for systemic measures, such as support for employees in work stress management and educational initiatives on mental health. Even with the reported problems, as much as 80% of respondents rated their skin condition as 7 or more on a 10-point scale. This suggests that systemic interventions, such as helping employees manage work-related stress or programs for mental health awareness, are needed. Despite the reported skin problems, as many as 80% of the participants rated their skin condition as 7 or higher on a 10-point scale. This could reflect a positive view of one's physical appearance, but also a potential inadequacy of the rating compared to actual skin health.

5. CONCLUSIONS

A strong correlation between stress and skin conditions in the adult population can be concluded from the above study. Stress is one of the main factors exacerbating the symptoms of many skin diseases - it increases inflammatory reactions and leads to a deterioration of the skin barrier. Psychodermatology could become an important treatment strategy in stress-related skin disease. However, the results imply that even as these adverse effects are seen, stress on skin disorders, most patients do not benefit from comprehensive treatments such as dermatological therapy and psychological support. The results suggest that integrated dermatological and psychological interventions should focused on improving therapeutic efficacy and quality of life of patients in general. In conclusion, psychodermatology represents a promising avenue for treating people with stress-related skin problems, and its effectiveness requires further research and more education of the public about the forms of support available.

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All authors have read and agreed with the final, published version of the manuscript.

Ethical approval

The ethical guidelines for Human Subjects are followed in the study.

Informed consent

Oral informed consent was obtained from individual participants included in the study.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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