



The influence of stress on atopic dermatitis: a study with university students.

The influence of the stress in atopic dermatitis: research with higher education students

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SUMMARY

Atopic dermatitis is a chronic, genetically based disease characterized by recurrent eczema flare-ups. Emotional factors, such as accumulated stress and poorly processed experiences, can trigger or worsen skin lesions, while environmental elements also contribute to the increased prevalence of the disease. This study aimed to analyze how stress influences the manifestations of atopic dermatitis in higher education students, investigating its impact on well-being, the main sources of stress, and its relationship with the severity of the disease. The research was conducted using an online questionnaire (Google Forms), composed of open and closed questions about dermatitis, stress, and the students' routines, seeking to understand the interaction between these factors. The results showed that most participants presented high levels of stress, mainly related to academic, professional, and personal issues. In 76% of cases, a worsening of dermatological symptoms, such as itching, redness, and scaling, was reported during periods of increased tension. To cope with these symptoms and associated emotional factors, students primarily resorted to physical activity, psychological support, and engaging in hobbies and leisure activities—strategies that contributed to stress reduction and the promotion of well-being. These findings demonstrate that stress exerts a significant influence on the worsening of atopic dermatitis, reinforcing the need for a multidisciplinary approach that includes both clinical management of symptoms and strategies for emotional support and stress control.

Keywords: Aesthetic conditions; dermatology; atopic eczema; public health

ABSTRACT

Atopic dermatitis is a chronic, genetically based disease characterized by recurrent eczema flare-ups. Emotional factors, such as accumulated stress and poorly processed experiences, can trigger or worsen skin injuries, while environmental elements also contribute to the increased prevalence of the disease. This study aimed to analyze how stress influences the manifestations of atopic dermatitis in higher education students, investigating its impact on well-being, the main sources of stress, and its relationship with the severity of the disease. The research was conducted using an online questionnaire (Google Forms), composed of open and closed questions about dermatitis, stress, and the students' routines, seeking to understand the interaction between these factors. The results showed that most participants presented high levels of stress, mainly related to academic, professional, and personal issues. In 76% of cases, a worsening of dermatological symptoms, such as itching, redness, and scaling, was reported during periods of increased tension. To cope with these symptoms and associated emotional factors, students primarily resorted to physical activity, psychological support, and engaging in hobbies and leisure activities—strategies that contributed to stress reduction and the promotion of well-being. These findings demonstrate that stress exerts a significant influence on the worsening of atopic dermatitis, reinforcing the need for a multidisciplinary approach that includes both clinical management of symptoms and strategies for emotional support and stress control.

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1. INTRODUCTION

The skin has many functions in the human body, protecting against aggressions. environmental factors, facilitating essential physiological exchanges, as well as defining body boundaries. Through From her, we can present desires and sufferings, in many cases not yet demonstrated, but being easily noticeable. However, much of this information about the reactions Psychological factors related to skin diseases are not yet understood (Neto et al., 2005).

Psychodermatoses comprise an important group of dermatological diseases. characterized primarily by the influence of psychological factors, which are aggravated or developed by these individuals. This group includes psoriasis, vitiligo, and atopic dermatitis. (DA), among other diseases (Andrade; Ferraz, 2025).

Atopic dermatitis is a chronic, genetic, multifactorial, and relapsing disease, with It is most prevalent in childhood. It is frequently associated with other manifestations of allergies. In atopic conditions, it is represented in the form of eczema, characterized as a poorly defined erythema. whose acute phase is marked by the presence of vesicles and edema, with the appearance of plaques. well-defined, scaly, erythematous lesions, and, in their chronic phase, with varying degrees of... liquefaction (Rios et al., 2021).

The pathophysiology of this disease does not follow a standardized consensus in clinical practice or laboratory tests. It is understood that dysfunction of the skin barrier, the alteration of The skin microbiome and immune system dysregulation contribute to this process. (Rios et al., 2021). Furthermore, a family history of atopic diseases is an important factor in However, several environmental factors are considered a risk to its development. important in its manifestation, showing a strong relationship with other atopic conditions. such as allergic rhinitis and asthma (Tabalipa et al., 2011).

The prevalence of the disease has been increasing over the years, due to the influence of environmental and lifestyle factors, even when the pathology presents itself in Childhood issues do not receive the attention they deserve to be investigated or treated, leading to a situation... more serious when the patient reaches adulthood (Lima et al., 2018). In Brazil, the prevalence The incidence of the disease in childhood and adolescence is approximately 443 cases per 100,000 people, if developing in 80% of children whose parents suffered from the disease and in 50% in the presence of pathology in one of the parents (Nunes, 2022).

The lifestyle of higher education students, which takes on characteristics own, mainly due to the increased decision-making power and autonomy of choices in this Age can end up affecting your lifestyle (diet, exercise, habits for

consumption of alcohol, tobacco, etc.), influencing personal relationships and their behaviors, which can later develop into a stressful period, leading to the emergence of mental illnesses (Martins; Pacheco; Jesus, 2008).

The diagnosis of atopic dermatitis is usually clinical, based on observation of the patient's history and... morphology, the distribution of skin lesions and clinical signs, associating the exclusion of other erythematous and eczematous conditions. Because there is great variability in Clinical presentation, diagnosis can be difficult, especially in the elderly and infants. However, Treatment will follow a varied approach depending on the severity of the disease, reducing The symptoms, treating infections, preventing them from worsening, and restoring the integrity of the skin, may to proceed with a drug-free treatment, using moisturizers, and undergoing therapy to treat emotional factors, among others, and drug treatment when using corticosteroids. topical treatments, such as ointments (Brazil, 2023).

Given the above, this work aims to understand and research how stress... impacts the manifestations of atopic dermatitis in higher education students, verifying also how these stimuli are generated and how we can reduce the damage they cause.

2. THEORETICAL FRAMEWORK

2.1 Skin

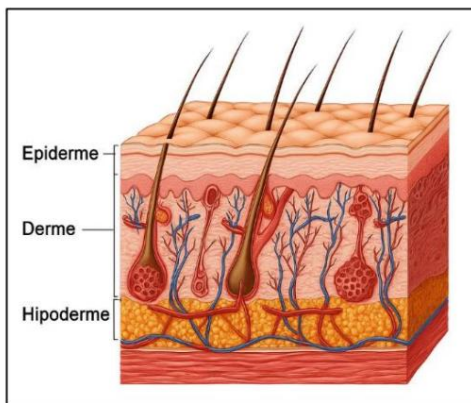
The skin is the largest organ in the human body, constituting a kind of anatomical and physiological barrier that protects the body against external elements. It is what gives the body its natural features. Characteristics of the breeds and retains the hair covering, being sensitive to cold, heat, pressure, pain and itching (Lucas, 2004). Responsible for 16% of body weight, the main function of Skin is the defense and protection of our body, and it is divided into two main layers: epidermis and dermis, in addition to the subcutaneous tissue – called the hypodermis (Lima, 2018).

The epidermis is the outermost layer of the skin; it is avascular and has as its... Its main function is protection against external agents (Figure 1). It is composed of epithelial cells and keratinocytes, which migrate to the surface synthesizing keratin and giving rise to the layer The cornea. Keratin is a fibrous, filamentous protein that contributes to the firmness of the cornea. epidermis, ensuring its protection. Melanocytes are responsible for the synthesis of Melanin, while Langerhans cells contribute to the activation of the immune system against foreign substances. Finally, Merkel cells or discs, responsible for binding the sensory nerve endings, being receptors for pressure and touch (Bernardo; Santos; Silva, 2019).

The second layer of skin is the dermis, which is slightly deeper and composed of dense, irregular connective tissue. It is located between the epidermis and the subcutaneous tissue and is composed of collagen and elastin fibers, providing support for the epidermis and participating in physiological and pathological processes of the cutaneous organ. Finally, we have the hypodermis, or subcutaneous tissue, composed of adipocytes, which has the function of storing energy, protect against shocks and form a thermal blanket, shaping the body (Bernardo; Santos; Silva, 2019).

The skin can be affected by skin diseases and psychological factors without explanation. plausible, which is why the individual becomes frustrated by not finding a diagnosis. necessary, and because of this, many unnecessary procedures and referrals end up being... However, in the vast majority of cases, the triggering factor lies in the person's life situation. such as difficulties at work, not meeting expectations, disagreements, illnesses, losses, among several other factors (LIMA, 2018).

Figure 1 – Layers of the skin: epidermis (outermost layer), dermis (middle layer) and hypodermis (deepest layer)



Source: Alves, 2019.

2.2 Stress

One of the most studied and mentioned concepts in psychology is stress, since... In everyday life, it presents itself as a factor that can pose risks to psychological health. and the physical characteristics of people (Gondim; Hirschle, 2020).

Stress is characterized as a specific syndrome of biological factors. which may present itself as a nonspecific response of the body to the demands of which is being subjected to this, which can manifest in a positive way (eustress), where it will motivate and to provoke an appropriate response to stimuli, or a negative one (distress), where it intimidates the

an individual facing a threatening situation, with a greater predominance of emotions such as anxiety, fear, anger and sadness (Do Prado, 2016).

The response to a stressful stimulus is a consequence of the differences between the environment. external and internal factors and the individual's understanding according to their ability to respond to this stimulus. Glucocorticoids are important components involved in this response. mediated primarily by physiological mechanisms, involving the nervous system and endocrine, with the aim of restoring homeostasis after stress stimulus (Boff; Oliveira, 2021).

Approximately 60% of depressive episodes are preceded by occurrences of Stressful factors, mainly of psychosocial origin, therefore, it is perceived that the Stress is one of the main factors that predispose an individual to depression (Joca; Padovan; Guimarães, 2003).

The acceptance that psychosocial stress is a precipitating factor for illness, as well Understanding how stress is a component present in various diseases has gained importance. Strong acceptance among scientists through studies. Emotional or physical stress, on the other hand, It directly influences various types of dermatological diseases, just as they also... cause stress (Ludwig, 2007).

Anxiety and stress have become major health concerns. since they cause a greater risk of cardiovascular events, such as heart attacks, hypertension, among other various diseases. However, in addition to these, it can also be observed that these two Factors can be major aggravating factors for dermatological diseases, since they affect our The immune system and the central nervous system, which can lead to a worsening or emergence of dermatological conditions (Ribeiro et al., 2023).

2.3 The skin and stress

Skin diseases resulting from stress and/or anxiety are called Psychodermatoses (Souza et al., 2021). The effects of stress on health are not something discovered. More recently, at the end of the 19th century, Louis Pasteur conducted an experiment with chickens, where This demonstrated the impact of stress on their health. The chickens that were exposed to conditions Those who were stressed became more vulnerable to infections and diseases than those who were not. exposed to stress. Stress ends up interfering with the injury repair process, being Thus, individuals who experience stressful conditions take longer to heal, due to due to increased cortisol (Souza et al., 2022).

When not expressed and processed in the right ways, the accumulation of emotions and Past experiences can lead to the appearance of skin lesions or even worsen existing conditions. Pre-existing injuries, since this is a consequence of when stress stimuli occur. Anxiety signals reach the central nervous system and are sent to the lymphocytes via the nerves and... bloodstream generating an immune condition that produces a physiological response (Ribeiro et al., 2023). Given this, when present very frequently in an individual's life, Stress ends up affecting the immune system, causing the defense cells to be... triggered towards the epidermis, releasing pro-inflammatory cytokines and activating the system. endocrine, leading to the production of skin lesions and/or the worsening of these (Souza et al., 2021).

Stress on the skin can lead to consequences such as vasoconstriction or vasodilation, itching, psoriasis, capillary fragility, atopic dermatitis, vitiligo, hives, among others. various others, therefore, each individual may express one or more unique conditions. depending on how they deal with stress and anxiety factors (Souza et al., 2022).

Therapeutic approaches to psychodermatological disorders should be multidisciplinary teams, involving dermatologists, psychologists, primary care physicians and psychiatrists, including in treatments cognitive behavioral methods, drugs Psychotropic drugs, herbs, and others, and when the treatment does not produce the expected result, they should- combining medications and other non-drug therapies to increase the chances of success. Furthermore, these diseases are something that directly affects the well-being of In this sense, factors that will contribute to the patient's quality of life are associated with psychological support provided, acceptance within the social group and individual acceptance of one's own body with the disease and the success of treatment for improvement of lesions (Coelho; Malheiros; Cavalcante, 2021).

2.4 Atopic Dermatitis

Defined as an inflammation of the skin, atopic dermatitis is a chronic disease that It develops in outbreaks, predominantly in childhood, with the main symptoms being itching. Variable intensity and signs such as xerosis and eczematous lesions. The stimulus This abnormal response is usually external, due to alterations in the skin barrier. (Addor; Aoki, 2010).

In Brazil, the disease affects an average of 6.3% of the population, but rates can reach two. four times higher than in other countries in the world. Marked by clinical manifestations. Although symptoms appear during childhood, the pathology has a higher incidence during the first year of life.

lifelong (although it is prevalent up to age 5), and can extend into adulthood.

(Addor; Aoki, 2010).

Its etiology is multifactorial, including defects in the skin barrier, alterations in microbiota, immunological dysfunctions and influences of the psychological field (Rios; et al., 2021).

Among the main risk factors in the development of the disease, the following stand out:

hereditary, environmental and immunological factors, with the presence of siblings being a considerable factor.

Parents with atopy have approximately a 70% chance of their child developing atopic dermatitis.

in cases where both parents have the disease (Vilefort et al., 2022).

Regarding the immunological factors characteristic of the disease's manifestations, the following stand out:

Abnormalities in the skin barrier and dysregulated immune activity. These abnormalities in

Damage to the stratum corneum of the epidermis leads to hypersensitivity in the skin, and once compromised,

The function of the epithelial barrier triggers increased irritability, raising the chances of...

development of inflammation and sensitization to allergens. These changes in functions

These occur due to mutations in filaggrin expression, leading to water loss.

Constant and significant transepidermal damage, resulting in the deterioration of intercellular lipids.

of the stratum corneum and decreased ceramides and excessive cutaneous xerosis, causing a

Constant itching and inflammation of the patient's skin. In addition to serum IgE and...

Specific IgE antibodies, excessive activity of T helper 2 cells in the pathways (Th2 and Th22),

These are markers of this pathology, since serum IgE levels increase in response to

expression of the disease (Silva et al., 2024).

Atopic dermatitis is well known for its association with psychosocial factors.

Stress, when experienced in childhood, can destabilize the immune system, leading to

a worsening of the disease symptoms, in addition to the physical impact of itching and lesions.

Skin problems interfere with sleep quality, causing a cycle of stress and worsening inflammation.

Some recent studies show that patients who have the pathology are more prone to

developing depression and anxiety, as the central nervous and immune systems then

interconnected. When inflammatory mediators cross the blood-brain barrier,

They worsen the emotional state of patients; in addition, the visible skin lesions contribute

for low self-esteem and the development of depressive symptoms (Teixeira; Nunes;

Medeiros, 2024).

The disease is diagnosed clinically, through medical history and physical examination.

appropriate, meeting the necessary clinical criteria. The disease may manifest clinically.

in three distinct phases: (1) acute phase: characterized by vesicular eruptions and crusts; (2) phase

subacute, where dry, scaly, and erythematous papules and plaques can be observed; and (3) phase



chronic, characterized by lichenification and thickening of the skin. These lesions appear with greater intensity. frequency in flexor areas, such as the anterior and lateral regions of the neck, wrists, eyelids, The back of the hands and feet and forehead, and it is also essential to take the patient's age into account. because this can vary the clinical form of the lesions (Silva et al., 2024).

One of the main shortcomings in the approach to atopic dermatitis is in relation to Treatment, because it is a chronic disease, must be planned for the long term. which often doesn't happen. Some approaches used to treat the disease. This includes the use of moisturizers and emollients, helping to improve the epidermal barrier. which needs maintenance of its integrity due to water loss, antihistamines, preferably used to control skin itching, helping to improve sleep quality, due to its central sedative action, aiding in allergic comorbidities (Guillen et al., 2021).

Also, in some cases, antimicrobials are used because of the deficiency. in the epidermal barrier and immune imbalance, the predisposition for patients with Atopic dermatitis tends to worsen when accompanied by a bacterial infection. Topical corticosteroids are used in acute episodes as anti-inflammatory medications, typically presenting a faster action and improved effectiveness when the epidermis is properly treated. hydrated. However, understanding the types of treatment and their relationship with genetic factors and Psychological factors contribute to a better choice of treatment (Guillen et al., 2021).

3. MATERIALS AND METHODS

3.1 Study design

This is an observational, descriptive, cross-sectional study with the objective of analyzing The relationship between stress levels and the incidence of atopic dermatitis in high school students. superior.

3.2 Ethical criteria

Following the favorable opinion of the Ethics Committee for Research with Human Beings (CEP) of The target audience was the State University of Western Paraná – UNIOESTE, number 7,805,560. invited to participate in the research, subject to agreement with the Informed Consent Form. Free and Informed Consent (TCLE).



3.3 Experimental strategy and sample

This research was directed towards evaluating and understanding how stress can interfere with the pathogenesis of atopic dermatitis. For this, the inclusion criteria and target audience consisted of students enrolled in higher education courses who were of legal age. Between 18 and 50 years old, with a history and diagnosis of atopic dermatitis (proven by a medical report) medical referral or self-referral, in cases where the participant presents all symptoms characteristic of the condition and recognizes himself as having it) and that would be in accordance with the free and informed consent form (TCLE). The following were excluded from the study: students with a prior diagnosis of other dermatological conditions that could interfere in the evaluation and students who did not have a diagnosed atopic dermatitis, or even, who They disagreed with some information in the informed consent form.

3.4 Methodological Procedures

The research was conducted using a digital questionnaire developed by the authors. using the Google Forms® platform. The instrument consisted of 16 questions, 5 of which were There were 11 open-ended and 11 closed-ended questions. The stress-related questions were developed based on the Es- Perceived Stress Scale (PSS), developed by Cohen, Kamarck and Mermelstein (1983), serving as a theoretical reference to ensure scientific basis. and validity to the instrument used.

This was released digitally and was available for completion for 30 days. days. The form was structured in accordance with ethical guidelines for research involving human beings, requiring agreement with the Free and Informed Consent Form- clarified so that the volunteer could participate in the research.

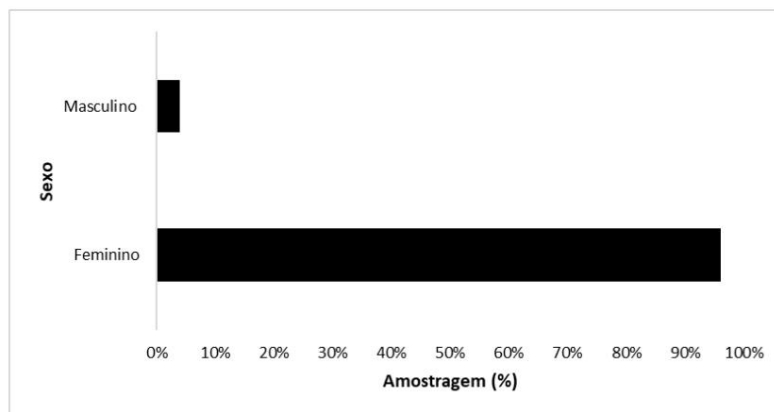
3. RESULTS AND DISCUSSION

The sample consisted of 25 participants, 96% (n = 24) of whom were female. and 4% (n = 1) male, aged between 17 and 29 years, predominantly in the age range Age group aged 20 to 21 years. Regarding stress, it was observed that 96% of the participants They reported feeling stressed easily, while 4% stated they did not experience this. this characteristic (Figure 2). It can be observed that the percentages relating to sex and perception The levels of stress coincide numerically; however, it is not possible to establish any relationship. among these variables, since the responses were analyzed in a holistic way, without the

Individual identification of participants. Therefore, it is impossible to determine if the The distribution of responses regarding stress is associated with the respondents' gender.

According to Torquato (2010), females demonstrate more stress compared to males. The male sex, with three explanations for the finding: women are more spontaneous Those who admit to stress may be more susceptible to it, or in fact, suffer more from it. than men.

Figure 2 – Percentage of participants in relation to stress, ease, and sex.



Source: Author, 2025

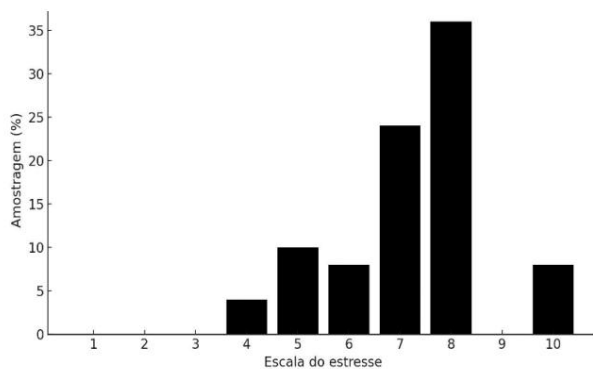
The stress levels reported by the participants ranged on a scale of 0 to 10. (where 0 means not stressed at all and 10 means very stressed), with predominance in scores of 7 and 8, which demonstrates a significant trend towards a high perception of stress among students. evaluated (Figure 3). This response pattern reinforces the group's sensitivity to factors stressful aspects of daily life, such as academic and personal demands, indicating a predisposition to emotional overload. These findings are consistent with the study by Torquato (2010), which identified high levels of stress among medical students, associated with low Self-esteem, insecurities, anxiety, and other psychological disorders. The author also highlights... that lack of leisure time and constant pressure to perform are among the main stressors, which corroborates the relationship observed in this research between the academic environment, daily pressure, and the emotional impact on students.

The main factors associated with this situation primarily involved demands. academic and professional contexts, characterized by tight deadlines, excessive workload, and... Difficulty in balancing multiple responsibilities. In addition, personal relationships. Conflicts, financial problems, and family issues were also highlighted by participants. These elements contribute to a constant feeling of being overwhelmed,

often mentioned as a factor that negatively impacts mental health and well-being student living area (Figure 4).

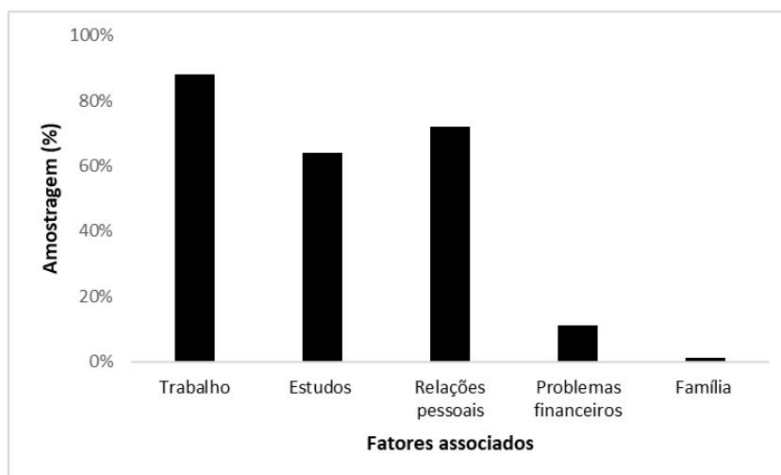
These data reinforce the increase in stress and anxiety levels among... Furthermore, among Brazilian university students, the search for psychological support is still very limited. whether due to lack of information or unavailability of these services in the institutions or because stigma (De Souza, Nascimento, Dos Santos, 2025).

Figure 3 – Scale of participants' stress levels



Source: Author, 2025

Figure 4 – Factors that contribute to participants' stress



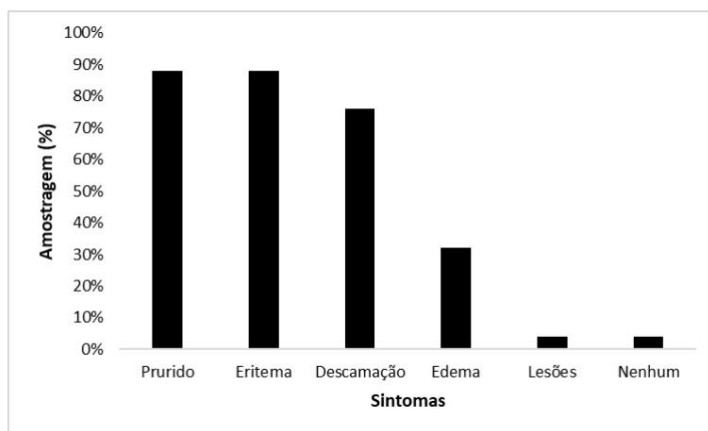
Source: Author, 2025.

Regarding atopic dermatitis, it was found that 76% of the students identified a clear association exists between stress and the intensification of symptoms of the condition, being the The most frequently reported signs are: intense itching, erythema, and edema, symptoms that They tend to worsen during periods of increased emotional stress (Figure 5). Furthermore, 72% of Participants reported noticing a significant worsening of dermatitis, especially in

moments leading up to important events, such as academic presentations or weeks of tests, when the stress load is usually higher. This data suggests a strong link between emotional factors and the worsening of dermatological symptoms points to... the need for approaches that integrate physical care with management strategies stress, in order to improve the quality of life of these individuals and minimize the impact of illness in their daily lives.

In line with this perspective, the study by Nunes (2022) demonstrated that A large proportion of people with atopic dermatitis have experienced negative emotional experiences and experienced a worsening of symptoms in situations of stress, anxiety, or worry. The author It highlights that chronic stress, especially when present since childhood, can compromise the balance of the immune system, raising adrenaline levels and Norepinephrine is produced in the body and, consequently, the manifestations of the disease are intensified.

Figure 5 – Symptoms most frequently reported by participants



Source: Author, 2025

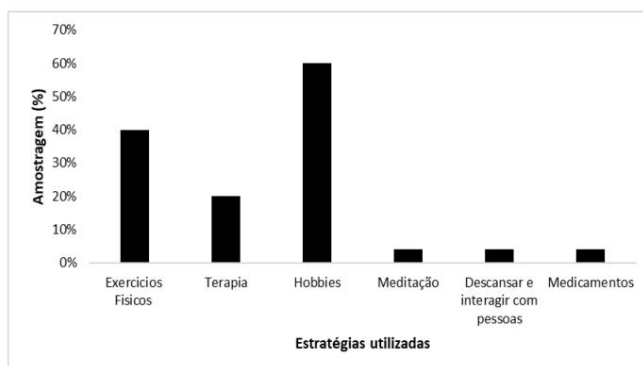
Regarding the coping strategies adopted by the participants to deal with the Symptoms of atopic dermatitis and associated emotional factors were highlighted. primarily the regular practice of physical activities, therapeutic follow-up with psychologists or other mental health professionals, and dedication to hobbies and moments of Leisure as a way to relieve stress and promote well-being (Figure 6).

According to Dos Santos et al. (2025), stress and anxiety are part of life. daily life, in such a way that each individual deals with their adverse situations in order to maintain the Emotional balance, in this sense, emotional intelligence and self-efficacy perception are... fundamental, since students with a greater sense of self-efficacy tend to seek strategies

some may be more assertive and lasting in their approach to confrontation, while others may be more susceptible to mental illness.

Furthermore, it was found that 76% of participants had already sought care. A specialized professional, whether dermatologists, general practitioners, or therapists, resorting to various treatments. Among the most cited measures are the use of controlled medications, application of specific ointments to relieve symptoms, adoption of dietary restrictions and other measures aimed at reducing crises and preventing new episodes. In agreement with these results, the study by Da Conceição et al. (2024) highlights that the Treatment of atopic dermatitis requires a multifactorial approach, involving hydration. Constant skin care, identification and control of triggering factors, in addition to the use of Topical therapies. In more severe cases, immunobiological therapies may be indicated. Complementary treatments for associated infections. Therefore, clinical management should be Individualized treatment, taking into account the severity of the disease, the therapeutic response, and the patient's preferences of the patient.

Figure 6 – Stress management strategies



Source: Author, 2025

FINAL CONSIDERATIONS

The present research aimed to analyze the relationship between stress and... The manifestation of atopic dermatitis in higher education students. The results showed that most participants presented high levels of stress, mainly related to academic, professional, and personal factors. In 76% of cases, students They reported noticing a worsening of dermatological symptoms, such as itching, redness, and Peeling, during periods of increased stress.

These findings demonstrate that stress exerts a significant influence on worsening of atopic dermatitis, reinforcing the need for a more holistic approach. multidisciplinary approach that includes both clinical management of symptoms and supportive strategies. Emotional intelligence and stress management. It is recommended that future studies expand the number of participants. participants and consider variables such as gender, family history, and forms of treatment, the in order to deepen the understanding of this relationship.

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