

THE RELATIONSHIP BETWEEN STRESS LEVELS AND THE INCIDENCE OF ATOPIC DERMATITIS IN ADULTS AGED 18-59 YEARS

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ABSTRAK

Stres psikologis pada usia dewasa dapat mempengaruhi kesehatan, termasuk dermatitis atopik. Namun, hubungan antara tingkat stres dan kejadian dermatitis atopik masih menunjukkan hasil yang tidak konsisten. Penelitian ini bertujuan untuk mengetahui hubungan tingkat stres terhadap kejadian dermatitis atopik pada dewasa usia 18–59 tahun. Penelitian ini merupakan studi analitik observasional dengan desain cross-sectional yang dilakukan di RSUP Dr. Sitanala Tangerang pada 81 responden yang dipilih menggunakan metode consecutive sampling. Tingkat stres diukur menggunakan kuesioner Perceived Stress Scale (PSS), sedangkan data dermatitis atopik diperoleh dari rekam medis. Analisis data menggunakan uji Fisher's Exact Test. Hasil menunjukkan stres sedang paling banyak ditemukan (88,9%) dan dermatitis atopik terjadi pada 66,7% responden. Tidak terdapat hubungan signifikan antara tingkat stres dan kejadian dermatitis atopik ($p = 1,000$).

ABSTRACT

The Relationship Between Stress Levels and The Incidence of Atopic Dermatitis in Adults Aged 18-59 Years. Psychological stress in adults may affect health, including atopic dermatitis, but evidence regarding its association remains inconsistent. This study aimed to determine the relationship between stress level and the incidence of atopic dermatitis in adults aged 18–59 years. This observational, analytic, cross-sectional study was conducted at RSUP Dr. Sitanala Tangerang, involving 81 respondents selected by consecutive sampling. Stress levels were measured using the Perceived Stress Scale (PSS), and atopic dermatitis data were obtained from medical records. Data were analyzed using Fisher's Exact Test. The results showed that most respondents had moderate stress levels (88.9%), and 66.7% had atopic dermatitis. No significant association was found between stress level and atopic dermatitis ($p = 1.000$).

INTRODUCTION

According to the 2017 Global Burden of Disease (GBD), atopic dermatitis (AD) ranks 15th among all non-fatal diseases and has the highest disease burden among skin diseases measured by disability-adjusted life years.¹ The prevalence of atopic dermatitis ranges between 0.3% and 20.5% in 56 countries. The prevalence of AD in adults ranges from 1:3:1 in other industrialized countries, and 10-20% in children in the United States, Northern and Western Europe, Africa, Japan, and Australia.² Currently, AD symptoms have decreased in several countries where the prevalence was previously high, such as the United Kingdom and New Zealand. However, AD remains a serious

health problem in many countries, especially in developing countries such as Indonesia, where the disease is still very high.³

The highest AD case prevalence in Indonesia is in Kalimantan Province, at around 11.3%, whereas the lowest prevalence is in West Sulawesi Province (2.57%). However, local evidence from Tangerang remains limited. A community-based study conducted in Sukatani Village reported low public awareness of AD, with the proportion of respondents demonstrating good knowledge increasing only from 2.9% to 9% following an educational intervention. Nevertheless, epidemiological data on the prevalence of AD among adults in Indonesia are still scarce, highlighting the need for further research based on local populations. This underscores the need for further research based on local data.³ The 18–59 age group is a productive age and vulnerable to pressures from work, family, and social environments. Stress levels in this age range are quite high, and the prevalence of adult AD remains significant (1–3%), but many AD studies focus more on children and the elderly.⁴

Golpanian et al. reported that medical students in Saudi Arabia with higher levels of psychological stress experienced more severe itching than those with lower stress levels, suggesting a possible association between stress and skin symptoms.⁵ In contrast, Wibowo et al. found no significant association between psychological stress and atopic dermatitis among older adults ($p = 1.000$), indicating that these findings may not be generalizable to younger adult populations.⁶ With the increasing rate of atopic dermatitis recurrence in adults and the negative impact of stress that can contribute to worsening the course of the disease, it is important to conduct more extensive research on the relationship between stress levels and the incidence of atopic dermatitis in the 18–59 age group. This study is expected to provide broader insight into the role of psychological factors, thereby supporting a more comprehensive and integrated therapeutic approach to improve the quality of life for sufferers.

METHODS

This quantitative study, with an observational-analytic design, employed a cross-sectional approach to examine the relationship between stress levels (independent variable) and the incidence of atopic dermatitis (dependent variable). The study was conducted at Dr. Sitanala General Hospital in Tangerang, Banten, with data collection from September to November 2025. The study population comprised patients who met the inclusion and exclusion criteria. Inclusion criteria included adult patients aged 18–59 years who visited the Dermatology and Venereology Polyclinic with complaints of dermatitis. Exclusion criteria included patients undergoing psychiatric therapy, such as selective serotonin reuptake inhibitor (SSRI) antidepressants, for at least six weeks, and patients with communication or cognitive impairments that prevented them from completing the questionnaire independently.

The sample size was calculated using the formula for an infinite population with finite population correction, yielding a minimum required sample size of 81 participants. Participants were recruited using a consecutive non-probability sampling technique, whereby all eligible individuals who met the inclusion criteria were enrolled sequentially until the required sample size was achieved.

Study data were obtained from two sources: patient medical records (January 2024 to November 2025) and stress assessments conducted using the Perceived Stress Scale (PSS-10) questionnaire. Based on the PSS scoring guidelines, total scores were categorized as mild stress (0–13), moderate stress (14–26), and severe stress (27–40). The PSS-10 has demonstrated good psychometric properties, with a construct reliability (CR) value of 0.85.

Descriptive (univariate) analysis was performed to summarize participants' characteristics, including age, sex, occupation, stress level, and the presence of atopic dermatitis. The association between stress level and atopic dermatitis was evaluated using Fisher's Exact Test.

This study received ethical approval from the Research Ethics Committee of the Faculty of Medicine, Universitas Trisakti (No. 040/KER/FK/08/2025) and from the Research Ethics Committee of Dr. Sitanala General Hospital, Tangerang (Ethics Approval No. DP.02.01/XXXI.2.1/11308/2025).

RESULTS

Table 1 summarizes the demographic characteristics of the study participants, including age, sex, occupation, stress level, and the presence of atopic dermatitis. The largest age group was 39–59 years, comprising 41 participants (50.6%). Female participants accounted for the majority of the sample (61, 75.3%), while housewives represented the largest occupational group (36, 44.4%). Most participants reported moderate stress levels (72, 88.9%), and 54 participants (66.7%) were diagnosed with atopic dermatitis.

Table 1. Distribution of respondent characteristics and stress levels (n=81)

Variable	n (%)
Age	
18-28	23 (28.4%)
29-38	17 (21.10%)
39-59	41 (50.6%)
Gender	
Male	20 (24.7%)
Female	61 (75.3%)
Occupation	
Housewives	36 (44.4%)
Civil servants	9(11.1%)
Private sector	29 (35.8%)
Students	7 (8.6%)
Stress Level	
Mild	6 (7.4%)
Moderate	72 (88.9%)
Severe	3 (3.7%)
Atopic dermatitis	
Yes	54 (66.7%)
No	27 (33.3%)

The relationship between individual characteristics and the incidence of atopic dermatitis

Respondents were categorized into three age groups. Among participants aged 18–28 years, 18 (22.2%) had atopic dermatitis, whereas 5 (6.2%) did not. In the 29–38-year age group, 10 participants (12.3%) had atopic dermatitis and 7 (8.6%) did not. The 39–59-year age group comprised the largest proportion of participants, with 26 (32.1%) diagnosed with atopic dermatitis and 15 (18.5%) without the condition. Chi-square analysis showed no significant association between age and the incidence of atopic dermatitis ($p = 0.358$).

Table 2. Relationship between age, gender, and occupation with the incidence of atopic dermatitis

Variable	Atopic Dermatitis		P value
	Yes (n=54)	No (n=27)	
Age			0.358*
18-28	18 (22.2)	5 (6.2)	
29-38	10 (12.3)	7 (8.6)	
39-59	26 (32.1)	15 (18.5)	
Gender			0.068*
Male	10 (12.3)	10 (12.3)	
Female	44 (54.3)	17 (21.0)	
Occupation			0.508 [#]
Housewives	23 (28.4)	13 (16.0)	
Civil servants	8 (9.9)	1 (1.2)	
Private sector	19 (23.5)	10 (12.3)	
Students	4 (4.9)	3 (3.7)	
Stress Level			1,000 [#]
Mild	4 (4.9)	2 (2.5)	
Moderate	48 (59.3)	24 (29.6)	
Severe	2 (2.5)	1 (1.2)	

Note: * Chi-Square test $p < 0,05$ [#] Fisher's exact test $p < 0,05$

Although the proportion of atopic dermatitis was higher among female participants than among male participants, the difference was not statistically significant. Overall, 54.3% female participants and 12.3% male participants had atopic dermatitis. Chi-square analysis demonstrated no significant association between sex and the incidence of atopic dermatitis ($p = 0.068$).

The occupational variable showed quite a wide range of categories. The most common occupational group among respondents experiencing atopic dermatitis was housewives (23%, 28.4%), followed by private-sector workers (19%, 23%, 8%, 9.9%) and students (4%, 4.9%). Among respondents who did not experience atopic dermatitis, housewives remained the largest group, with 13 (16.0%), followed by private sector workers (10 (12.3%)), students (3 (3.7%)), and civil servants (1.2%). The analysis using Fisher's Exact Test yielded a p-value of 0.508, indicating that occupation is not significantly associated with the incidence of atopic dermatitis.

The relationship between stress levels and the incidence of atopic dermatitis

This study showed no significant association between stress levels and the incidence of atopic dermatitis. The analysis using Fisher's Exact Test (Table 2) showed a p-value of 1.000, greater than 0.05.

DISCUSSION

The relationship between individual characteristics and the incidence of atopic dermatitis

Atopic dermatitis, also known as atopic eczema, is a chronic, recurring inflammatory skin condition accompanied by itching that commonly occurs in infancy and childhood.⁷ Several factors can trigger the onset of atopic dermatitis, including environmental factors, genetics, immunological factors, and other triggers such as colonization with *Staphylococcus aureus* bacteria.⁸ Diagnosis is generally straightforward in infants and young children; more severe cases and AD in adults are more difficult to recognize. AD that appears in adulthood has clinical characteristics that differ from those of AD in children.⁹

This study evaluated the association between participant characteristics, including age, sex, occupation, and stress level, and the incidence of atopic dermatitis. A total of 81 adults aged 18–59 years were included, with the largest proportion belonging to the 39–59-year age group (Table 1). No significant association was observed between age and the incidence of atopic dermatitis ($p = 0.358$), suggesting that the likelihood of developing the condition was comparable across adult age groups. Previous studies have shown that the prevalence of atopic dermatitis remains relatively stable throughout adulthood, with no substantial differences across adult age groups.¹⁰ Our findings are consistent with those of Nur et al., who also reported no significant association between age and atopic dermatitis ($p = 0.253$).¹¹ Furthermore, although atopic dermatitis commonly begins during childhood, it may persist into adulthood or develop later in life owing to genetic susceptibility, environmental exposures, and impaired skin barrier function.¹² These findings suggest that age alone is unlikely to be an independent determinant of atopic dermatitis among adults.

Female participants outnumbered male participants in the present study. Previous studies have suggested that women are more likely to seek medical attention for skin conditions and may therefore be diagnosed with atopic dermatitis more frequently than men.¹² However, from this study, it was found that gender did not have a significant relationship with atopic dermatitis $p = 0.068$. This is in line with research by Masruri et al., who used the Chi-square test and reported a p -value of 0.572 (>0.05), indicating no significant association between gender and atopic dermatitis.¹³ Physiologically, women are more influenced by hormones, such as cortisol, progesterone, and adrenaline, which can affect skin conditions and trigger the emergence of allergic symptoms. Fluctuations in progesterone, especially when the menstrual cycle is irregular, can cause allergic reactions or worsen atopic complaints. This study is also consistent with the literature, indicating that gender is not the primary determinant of atopic dermatitis in adults.¹²

By occupation, the majority of respondents were housewives and private-sector workers. In theory, exposure to irritants such as detergents, chemicals, or dust in some occupations, including domestic work, can trigger skin irritation and increase the risk of dermatitis.¹⁴ However, this study showed no significant association between occupation and atopic dermatitis ($p = 0.508$). This is consistent with research by Suryanda et al., which reported a p -value of 0.762 (>0.05), indicating no significant association between occupation and atopic dermatitis.¹⁵

Most participants were classified as having moderate stress levels, consistent with the psychological demands commonly encountered during adulthood.¹⁶ However, stress level was not significantly associated with the incidence of atopic dermatitis in the present study. This finding should be interpreted with caution because the distribution of stress categories was highly imbalanced, with 88.9% of participants classified as having moderate stress and relatively few in the mild and severe stress groups. Consequently, the limited variability in stress levels may have reduced the statistical power to identify a significant association.

The relationship between stress levels and the incidence of atopic dermatitis

Stress can affect everyone, from children to the elderly. In other words, there is no age or location limit on experiencing stress.¹⁷ In a cross-sectional study of medical students in Saudi Arabia that evaluated the relationship between psychological stress and skin symptoms, students with high levels of stress experienced higher levels of itching than those with lower levels.⁵ Research has shown that stress can contribute to the development of itchy skin conditions.¹⁸ Psychological stress has been shown to activate neuroimmune pathways, promoting the release of pro-inflammatory cytokines and other inflammatory mediators that exacerbate skin inflammation, erythema, edema, and pruritus. Persistent pruritus may trigger repetitive scratching, leading to excoriation, lichenification, skin barrier disruption, and delayed lesion healing.¹⁹

The results of this study, analyzed using Fisher's Exact Test, showed no significant association between stress levels and the incidence of atopic dermatitis ($p = 1.000$). Descriptively, 54 respondents (66.7%) had atopic dermatitis and moderately high stress. Meanwhile, 27 (33.3%) respondents did not have atopic dermatitis but did experience stress. Most participants were classified as having moderate stress (72, 88.9%), and 48 (59.3%) of these participants had atopic dermatitis. Although the moderate stress group accounted for the largest proportion of cases, this finding largely reflects the predominance of participants in that category rather than a statistically significant association. Accordingly, the results do not provide evidence that stress level was associated with the incidence of atopic dermatitis in this study.

Although the results of this study did not show a link, several studies have found that stress plays a role in exacerbating skin conditions in people with atopic dermatitis. According to Almutawa et al., people with atopic dermatitis are at higher risk of stress than the general population, and stress can increase itching, disrupt sleep, and worsen skin inflammation. This study suggests that stress may influence the course of the disease through biological mechanisms, such as inflammatory mediators that worsen symptoms.²⁰

Conversely, several studies have also reported no significant association between psychological stress and the development of atopic dermatitis. For example, Andina et al. found no significant relationship between stress level and atopic dermatitis in a case-control study ($p = 0.369$).²¹ These findings are consistent with the results of the present study.

The absence of a significant association should, however, be interpreted cautiously. The limited variability in stress levels and the relatively small number of participants in the mild and severe stress categories may have reduced the statistical power to detect a true association. Therefore, future studies involving larger sample sizes and a more balanced distribution of stress levels are needed to further clarify this relationship.

The inconsistent findings across studies suggest that the influence of psychological stress on atopic dermatitis is likely multifactorial and may vary according to individual susceptibility, environmental exposures, immunological mechanisms, and disease severity. Although no significant association was identified in the present study, stress management remains an important component of comprehensive care for patients with atopic dermatitis because it may help reduce symptom exacerbations and improve quality of life.

This study has several limitations. First, its cross-sectional design precludes any inference of a causal relationship between psychological stress and the incidence of atopic dermatitis. Second, stress levels were measured using the Perceived Stress Scale (PSS-10) during the study period, whereas information on atopic dermatitis was obtained retrospectively from medical records covering January 2024 to November 2025. Consequently, the measured stress levels may not accurately reflect participants' psychological status at the time of disease onset or exacerbation. Third, the study was conducted at a single tertiary hospital, which may limit the generalizability of the findings to other populations. Finally, the relatively small number of participants in the mild and severe stress categories resulted in an imbalanced distribution of stress levels, potentially reducing the statistical power to detect a significant association.

CONCLUSION

No statistically significant association was observed between psychological stress and the incidence of atopic dermatitis among adults aged 18–59 years in this study. However, these findings should be interpreted with caution because the marked imbalance in stress categories, particularly the small number of participants with mild and severe stress, may have limited the statistical power to detect a true association. Future studies should include larger and more diverse populations, ensure a more balanced distribution of stress levels, and assess psychological stress concurrently with disease activity to better clarify the relationship between stress and atopic dermatitis.

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