

FACTORS ASSOCIATED WITH THE OCCURRENCE OF ATOPIC DERMATITIS IN CHILDREN**A. Putri Aulia Alam PS¹, Dian Amelia Abdi², A.Husni Esa Darussalam³, Nurelly N. Waspodo², Lisa Yuniati²**¹Faculty of Medicine, Universitas Muslim Indonesia, Makassar, Indonesia²Department of Dermatology and Venereology, Faculty of Medicine, Universitas Muslim Indonesia, Makassar, Indonesia³Department of Pediatrics, Faculty of Medicine, Universitas Muslim Indonesia, Makassar, Indonesia

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ABSTRACT

Background: Atopic dermatitis is a chronic relapsing inflammatory skin disease that commonly affects infants and children and significantly impairs quality of life. The disease is multifactorial and influenced by interactions among genetic, triggering, and environmental factors. **Methods:** This descriptive cross-sectional study was conducted at the Skin, Venereal, and Cosmetic Health Center in Makassar from September to October 2025. The sample consisted of 61 children aged 0–18 years diagnosed with atopic dermatitis based on medical records and selected using purposive sampling. Data were collected from medical records and validated structured questionnaires, then analyzed using univariate analysis. **Results:** Most respondents were female (50.82%) and belonged to the 2–12-year age group (59.02%). Genetic factors were identified in 62.30% of respondents, triggering factors in 67.21%, and environmental factors in 52.46%. Family history of atopic dermatitis was the most frequent genetic indicator. Major triggering factors included processed foods, eggs, and seafood. Important environmental contributors were poor home ventilation, extreme room temperature, and exposure to cigarette smoke. **Conclusions:** Atopic dermatitis in children is a multifactorial condition influenced by genetic predisposition, triggering factors, and environmental conditions. Comprehensive risk-factor management is essential for effective disease control and prevention of recurrence.

Keywords : topic dermatitis, children, determinant factors**INTRODUCTION**

Atopic dermatitis is a multifactorial disease influenced by complex interactions between genetic factors, triggering factors, and environmental factors¹. Genetic factors play an important role in increasing a child's susceptibility to atopic dermatitis, especially in children with a family history of atopic diseases such as atopic dermatitis, bronchial asthma, allergic rhinitis, or skin allergies². This genetic predisposition is associated with impairment of the skin barrier function and dysregulation of the immune system, which facilitates the occurrence of chronic inflammation³.

In addition to genetic factors, various triggering factors are known to initiate or exacerbate the symptoms of atopic dermatitis in children⁴. These triggering factors include the consumption of certain foods, exposure to inhalant allergens, the use of skin-care products that are irritating, and certain types of clothing that can cause skin irritation. In some children, the consumption of foods such as eggs, cow's milk, and processed foods is frequently associated with the onset or worsening of atopic dermatitis symptoms⁵.

Environmental factors also play an important role in the course of atopic dermatitis. Household environmental conditions such as poor ventilation, exposure to air pollution, high humidity, room temperatures that are too hot or too cold, and the presence of family members who smoke can worsen skin conditions and trigger disease recurrence⁶. These environmental factors

contribute to damage to the skin barrier and increased inflammatory responses in children with atopic predisposition⁷.

The impact of atopic dermatitis is not limited to clinical manifestations on the skin, but also affects the quality of life of children and their families. Persistent pruritus can cause sleep disturbances, decreased learning concentration, and behavioral changes in children⁸. In addition, the chronic and relapsing course of the disease often creates psychological and emotional burdens for parents in caring for children with atopic dermatitis⁹.

Based on the high prevalence of atopic dermatitis in children, the significant impact of the disease on quality of life, and the role of various risk factors involved, further research is needed to describe the determinants associated with the occurrence of atopic dermatitis in children¹⁰. This study aims to identify genetic factors, triggering factors, and environmental factors associated with the incidence of atopic dermatitis in children at the Skin, Venereal, and Cosmetic Health Center in Makassar¹¹.

MATERIALS AND METHODS

This study was a quantitative descriptive study with a cross-sectional design. The research was conducted at the Skin, Venereal, and Cosmetic Health Center in Makassar from September 8 to October 8, 2025. The study population consisted of all children aged 0–18 years who had attended follow-up visits and had been diagnosed with atopic dermatitis. The study sample comprised 61 children selected

using purposive sampling based on predetermined inclusion and exclusion criteria¹².

The variables in this study included independent variables, namely genetic factors, triggering factors, and environmental factors, as well as the dependent variable, namely the occurrence of atopic dermatitis, which was determined based on medical record diagnosis. Data were collected from two sources: medical records to confirm the diagnosis of atopic dermatitis and structured questionnaires to obtain information regarding genetic, triggering, and environmental factors. The questionnaire used had undergone validity and reliability testing according to established standards.

The population in this study consisted of all children aged 0–18 years who had attended follow-up visits and had been diagnosed with atopic dermatitis at the Skin, Venereal, and Cosmetic Health Center in Makassar. Based on medical record data, the total population of children diagnosed with atopic dermatitis during the study period was recorded as 72 individuals.

Sample selection was performed using purposive sampling, which involved selecting study subjects based on predetermined inclusion and exclusion criteria. The process of identifying samples began with reviewing patient medical records at the Skin, Venereal, and Cosmetic Health Center

in Makassar to identify children who had a clinically documented diagnosis of atopic dermatitis. Subjects who met the inclusion criteria were then further screened by applying the exclusion criteria, such as the presence of other skin diseases that could affect the assessment of atopic dermatitis or incomplete data.

After potential study subjects were identified, the researchers contacted the parents or guardians to explain the objectives and procedures of the study and to obtain written informed consent. Children whose parents or guardians agreed to participate and were able to complete the questionnaire fully were then included as study samples. Through this selection process, a final sample size of 61 children was obtained, all of whom met the inclusion and exclusion criteria and agreed to participate in the study.

The collected data were analyzed using univariate analysis to describe the frequency distribution of each variable. Data processing was conducted through the stages of editing, coding, data entry, cleaning, and saving using Microsoft Excel.

This study received ethical approval from the Health Research Ethics Committee of the Faculty of Medicine, Universitas Muslim Indonesia with approval number: 704/A.1/KEP-UMI/IX/2025. All medical record data were kept confidential and used solely for research purposes.

RESULTS

Table 1. Frequency Distribution of Respondent Characteristics

Variable	n	%
Sex		
Male	30	49,18
Female	31	50,82
Age		
0-2	21	34,43
3 – 12	36	59,02
>12	4	6,56
Genetic Factors		
Yes	38	62,3
No	23	37,7
Triggering Factors		
Yes	41	67,21
No	20	32,79
Environmental Factors		
Yes	32	52,46
No	29	47,54
Total	61	100,00

Source, primary data 2025.

Table 2. Frequency Distribution of Questionnaire Variables

Factors	Yes	No
Genetic		
1. Family history of atopic dermatitis	36	25
2. Family history of skin allergy	29	32
3. Family history of bronchial asthma	24	37
4. Family history of allergic rhinitis	27	34
Triggering		
1. Egg consumption	20	41
2. Cow's milk consumption	17	44
3. Peanut consumption	7	54
4. Soy consumption	7	54
5. Seafood consumption	15	46
6. Chocolate consumption	13	48
7. Processed food consumption	29	32
8. Acute inhalant allergen exposure	29	32
9. When the child is ill	22	39
10. Use of certain bath soaps causing irritation or dryness	34	27
11. Use of products (perfume, lotion, or powder)	27	34
12. Wearing tight or coarse-textured clothing (wool)	34	27
13. Frequently wearing synthetic-fabric clothing	19	42
Environmental		
1. Living in a house with poor ventilation	30	31
2. Living in an area with high air pollution	22	39
3. Frequent dampness or mold on walls or floors	22	39
4. Living in a house with furry pets	19	42
5. Frequent exposure to excessively cold or hot room temperature	30	31
6. Presence of smoking family members	27	34

DISCUSSION

The results showed that most respondents were female (50.82%). Although the difference was not substantial compared to males, this finding is consistent with several studies reporting that females in childhood and adolescence tend to be more frequently affected by atopic dermatitis than males¹³. This is not attributed to specific biological factors described in this study, but rather may be associated with the clinical characteristics of atopic dermatitis, which demonstrate variations according to growth phases, in which female children often present more complaints of dry and sensitive skin, as described in the literature review¹¹. These findings indicate that the sex distribution observed in this study remains within the range commonly reported among pediatric populations with atopic dermatitis.

With respect to age distribution, the 2–12-year age group constituted the largest proportion of children with atopic dermatitis (59.02%). This finding is consistent with the theoretical framework presented in this study, which states that atopic dermatitis is frequently observed during childhood (2–12 years), when symptoms tend to be more chronic and persistent¹³. At this stage, lesions most commonly involve flexural areas such as the elbows and knees, as described in the literature review. The results of this study further reinforce the understanding that childhood represents the most vulnerable period for atopic dermatitis¹⁴ and support the theory that most cases appear early in

life and may persist into school age before improving during adolescence¹⁵.

Genetic factors were identified in the majority of respondents (62.30%), indicating that family history constitutes an important determinant in the development of atopic dermatitis. The study demonstrates that children with a family history of atopic diseases such as atopic dermatitis, asthma, allergic rhinitis, or skin allergies are at higher risk of developing similar conditions. The most frequently reported genetic indicator in this study was a family history of atopic dermatitis (59.02%), followed by family history of skin allergy (47.54%), allergic rhinitis (44.26%), and bronchial asthma (39.34%). This pattern aligns with the concept of the atopic march, whereby familial atopic history strongly influences the development of atopic diseases in children¹⁶. Therefore, the findings of this study are consistent with the theory that genetic predisposition constitutes one of the dominant factors in atopic dermatitis.

Triggering factors were also identified in most respondents (67.21%). The data indicate that food was the primary triggering factor, with 65.57% of children reporting symptom onset after consuming certain foods. The types of food most frequently associated with symptom exacerbation were processed foods (47.54%), eggs (32.79%), seafood (24.59%), and cow's milk (27.87%). This pattern corresponds with the literature reviewed in this study, which states that certain foods particularly common allergens in children such as eggs, milk, peanuts, and processed

foods may exacerbate or trigger atopic dermatitis¹⁷. Although individual sensitivity to food varies, the findings of this study demonstrate that dietary factors play a significant role as triggers in most children at the study site¹⁸. These results support the theory that triggering factors, especially food-related factors, must be considered in the management of pediatric atopic dermatitis¹⁹.

Environmental factors were found in 52.46% of respondents. The most frequently reported environmental conditions included poor ventilation (49.18%), exposure to excessively hot or cold room temperatures (49.18%), exposure to cigarette smoke from family members (44.26%), and damp or moldy household environments (36.07%). These findings are consistent with the literature cited in this study, which suggests that air pollution, extreme temperatures, high humidity, and exposure to irritants such as cigarette smoke may aggravate the symptoms of atopic dermatitis²⁰. These environmental conditions are known to disrupt the skin barrier and increase inflammatory responses, in accordance with the pathophysiological mechanisms of atopic dermatitis described in the literature review²¹. Thus, the results of this study support existing evidence that household environmental quality plays an important role in the onset and exacerbation of atopic dermatitis in children.

Overall, the findings of this study indicate that atopic dermatitis in children is influenced by a combination of genetic, triggering, and environmental factors. All three factors have been extensively described in the literature review of this study, and the present results are consistent with these theoretical frameworks. The interaction between genetic predisposition, dietary and environmental triggers, and household environmental conditions strengthens the likelihood of atopic dermatitis development in children. Therefore, this study provides evidence consistent with existing literature that atopic dermatitis is a multifactorial disease requiring attention to family history, dietary patterns, and environmental conditions in efforts to prevent disease occurrence and control symptom recurrence²².

SIMPULAN DAN SARAN

This study demonstrates that the occurrence of atopic dermatitis in children at the Skin, Venereal, and Cosmetic Health Center in Makassar is influenced by several major determinants, namely genetic factors, triggering factors, and environmental factors. Most respondents had a family history of atopic disease, which constituted the dominant factor in this study. Triggering factors were primarily derived from the consumption of certain foods, such as processed foods, eggs, seafood, and cow's milk, which were frequently associated with the onset of symptoms. In addition, environmental factors including poor home ventilation, exposure to extreme temperatures, and the presence of cigarette smoke also played a role in exacerbating atopic dermatitis symptoms. Overall, this study reinforces the understanding that atopic dermatitis is a multifactorial condition influenced by the interaction between genetic predisposition, triggering exposures, and environmental conditions.

Based on these findings, it is recommended that parents increase awareness of familial atopic history, avoid potential food

triggers, and improve household environmental conditions. Future studies are expected to employ analytical study designs and larger sample sizes in order to strengthen the understanding of relationships among variables influencing atopic dermatitis

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