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Factors Associated With Cases Of Dermatitis In Children (Aged 11-18 Years) In The Working Area Of The Semula Jadi Community Health Center In Tanjungbalai City

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ABSTRACT

One of the most common skin health problems is dermatitis. Dermatitis can affect people of all races and ages, but it tends to be more prevalent in children. According to data from the International League & Societies in 2022, there were 130 million cases of dermatitis in the world. This study aims to identify factors associated with the incidence of dermatitis in children in the working area of the Semula Jadi Community Health Center in Tanjungbalai City. The method used is an observational quantitative analytical study with a case-control design approach. Data analysis was performed using univariate and bivariate analysis with the chi-square test using SPSS software. The study population consisted of 75 cases of dermatitis in children, with a sample size of 72 respondents, consisting of 36 cases and 36 controls. The selection was made using a two-proportion formula and applying inclusion and exclusion criteria. The sampling technique was simple random sampling. Data collection was conducted through questionnaires and observation sheets. The results showed a significant relationship between a history of allergies and cases of dermatitis ($p = 0.015 < 0.005$) in children, a significant relationship between personal hygiene and cases of dermatitis in children ($p = 0.002 < 0.005$), a significant relationship between knowledge and cases of dermatitis in children ($p = 0.004 < 0.005$), and a significant relationship between environmental sanitation and cases of dermatitis in children ($p = 0.002 < 0.005$). This study concluded that the factors of allergy history, personal hygiene, knowledge

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INTRODUCTION

Dermatitis is a skin disease that remains a public health problem, especially among children (WHO, 2018). Global and national data show that dermatitis is among the skin diseases with the highest number of cases (International League, 2022). In Indonesia, dermatitis is among the ten most common diseases, including in North Sumatra and Tanjungbalai City (Kemenkes RI, 2020). Data from the Semula Jadi Community Health Center shows that cases of dermatitis continue to increase year after year and consistently rank among the top diseases suffered by children.

Based on data from the Semula Jadi Community Health Center, the number of cases of dermatitis in children in 2024 reached 585 cases, and in the first quarter of 2025, there were 75 cases. This condition shows that dermatitis is still a significant health problem in the region. The results of the researchers' initial survey in the Semula Jadi Community Health Center working area found that most children had poor personal hygiene habits, such as bathing and playing in rivers without immediately cleaning their bodies with clean water, sharing clothes and toiletries, and not maintaining nail hygiene. In addition, the environmental conditions of communities living in coastal areas show inadequate environmental sanitation, such as poor waste management, use of murky river water and shallow wells, and high population density.

Previous studies have shown that various factors are associated with the occurrence of dermatitis. A study by Suryanda et al. (2025) found a significant association between a history of allergies and the occurrence of dermatitis in children (Rustiati, 2025). Arif et al.'s (2024) research also found that personal hygiene is significantly related to the incidence of dermatitis (Noviyanti, Nova WO, 2019). In addition, research by Abdurrauf et al. (2024) proves that poor environmental sanitation contributes to an increase in the incidence of dermatitis (Sapitri I, Yasnani, 2022). Diana's (2021) research confirms that low levels of public knowledge are associated with high rates of dermatitis (Diana CP, Marniati, Husna A, 2021).

Based on the high incidence of dermatitis in children in the working area of the Semula Jadi Community Health Center and supported by previous research results, research is needed to analyze the relationship between gender, allergy history, personal hygiene, knowledge, and environmental sanitation with the incidence of dermatitis in children. The results of this study are expected to form the basis for planning more targeted dermatitis promotion and prevention programs.

METHOD

This study is an observational analytical quantitative study with a case-control design, which aims to analyze the relationship between the incidence of dermatitis in children and factors such as gender, history of allergies, personal hygiene, level of knowledge, and environmental sanitation. The case group consisted of children aged 11–18 years who were diagnosed with dermatitis by a doctor and treated at the Semula Jadi Community Health Center, while the control group consisted of children with diagnoses other than dermatitis.

The study was conducted in the working area of the Semula Jadi Community Health Center in Tanjungbalai City from January to July 2025. Samples were selected based on inclusion and exclusion criteria with a case-control ratio of 1:1, with 36 respondents each, for a total sample of 72 children. Data collection was conducted using questionnaires and environmental sanitation observation sheets. Data were analyzed univariately and bivariately using the chi-square test, while the magnitude of the risk factor for dermatitis was calculated using the odds ratio (OR) to determine whether there was a relationship between the variables studied.

RESEARCH RESULTH

Description of Research Location

Datuk Bandar Timur Subdistrict is one of six subdistricts that make up the city of Tanjungbalai on the east coast of North Sumatra. This area covers six villages: Semula Jadi, Pulau Simardan, Bunga Tanjung, Selat Tanjung Medan (STM), and Selat Lancang. In 2023, the population of this subdistrict was recorded at 32,287 people. Bunga Tanjung Village is the most densely populated with 8,157 people, while Selat Lancang Village has the smallest population, at 5,763 people.

Health services for all residents in this subdistrict are centered at the Semula Jadi Community Health Center, located at Jalan Putri Malu No. 3, Kelurahan Semula Jadi. To reach a wider area, this health center is supported by three auxiliary health centers. Geographically, the working area of the Semula Jadi Community Health Center covers an area of 14.57 km². This subdistrict is located southwest of Tanjungbalai City, at coordinates 2°56' - 2°58' North Latitude and 99°48' - 99°50' East Longitude.

Characteristics of Research Respondents

Table 1. Characteristics of Research Respondents

Characteristics of Research Respondents	Case	Coyhuntrol	Total	
			N	%
Age				
11 Years	9	3	12	16,7
12 Years	9	5	14	19,4
13 Years	7	3	10	13,9
14 Years	3	3	6	8,3
15 Years	2	8	10	13,9
16 Years	1	7	8	11,1
17 Years	3	6	9	12,5
18 Years	2	1	3	4,2
Education				
Elementary School	19	8	27	37,5
Junior High School	10	12	22	30,6
Senior High School	7	16	23	31,9
Total	36	36	72	100

Based on Table 1 above, it can be seen that the majority of respondents were 12 years old, totaling 14 people (19.4%). Meanwhile, the smallest number of respondents were in the 18-year-old age group, namely 3 people (4.2%). In terms of education, most respondents had elementary school education, namely 27 people (33.3%). Conversely, respondents with junior high school education were the smallest group, with 22 people (30.6%).

Univariate Analysis

Table 2. Univariate Analysis

Variable	Case	Control	Total	
			N	%
Gender				
Man	21	17	38	52,8
Woman	15	19	34	47,2
Allergy History				
History of Allergies	19	8	27	37,5
No History of Allergies	17	28	45	62,5
Personal hygiene				
Not Good	23	9	32	44,4
Good	13	27	40	55,6
Knowledge				
Not Good	28	20	48	66,7
Good	8	16	24	33,3
Environmental Sanitation				
Not Qualified	35	29	64	88,9
Qualified	1	7	8	11,1

Based on the characteristics of respondents by gender, out of a total of 72 respondents, it was found that most respondents were male, namely 38 people (52.8%), while female respondents numbered 34 people (47.2%). In the dermatitis case group, there were more male respondents than female respondents, namely 21 and 15 people, respectively. Meanwhile, in the control group, there were slightly more female respondents than male respondents. Based on allergy history, most respondents had no history of allergies, namely 45 people (62.5%), while 27 people (37.5%) had a history of allergies. However, in the dermatitis case group, there were more respondents with a history of allergies, namely 19 people compared to 17 people without a history of allergies. Conversely, in the control group, the majority of respondents did not have a history of allergies.

In terms of personal hygiene, most respondents had good personal hygiene, namely 40 people (55.6%), while 32 respondents (44.4%) had poor personal hygiene. However, in the dermatitis case group, respondents with poor personal hygiene were more dominant, namely 23 people, while in the control group, the majority of respondents had good personal hygiene. Based on knowledge level, the majority of respondents had poor knowledge, namely 48 people (66.7%), while 24 respondents (33.3%) had good knowledge. In the case group, most respondents had poor knowledge, namely 28 people, while in the control group, the number of respondents with poor and good knowledge was relatively more balanced.

Based on environmental sanitation conditions, most respondents lived in environments that did not meet health requirements, namely 64 people (88.9%), while only 8 people (11.1%) lived in environments with adequate sanitation. In the dermatitis case group, almost all respondents lived in environments with unsanitary conditions, namely 35 people, and only 1 person lived in an environment with sanitary conditions. A similar pattern was also seen in the control group, although the proportion was slightly lower.

Bivariate Analysis

Table 3. Bivariate Analysis

Variable	Dermatitis				Total		*p.value*	OR (95% CI)
	Case		Control		N	%		
	n	%	n	%				
Gender								
Man	21	58,3	17	47,2	38	52,8	0,479	565 (0,617 – 3,917)
Woman	15	41,7	19	52,8	34	47,2		
Allergy History								
Yes	19	52,8	8	22,2	27	37,5	0,015	12 (1,407 – 10,875)
No	17	47,2	28	77,8	45	62,5		

Personal hygiene								
Not Good	23	63,9	9	25,0	32	44,4	0,002	08 (1,922 – 14,656)
Good	13	36,1	27	75,0	40	55,6		
Knowledge								
Not Good	28	77,8	15	41,7	43	59,7	0,004	00 (1,753 – 13,695)
Good	8	22,2	21	58,3	29	40,3		
Environmental Sanitation								
Not Qualified	35	97,2	24	66,7	59	31,9	0,002	17,500 (2,132 – 143,6375)
Qualified	1	2,8	12	13,3	13	18,1		

Based on the table above, the results of the bivariate analysis show that gender has no significant relationship with the incidence of dermatitis in children. This is indicated by a p-value of 0.479 (>0.05). Although the odds ratio (OR) value of 1.565 indicates that boys have a 1.6 times greater risk of developing dermatitis than girls, the confidence interval (95% CI: 0.617–3.917) still crosses the number 1, so the relationship is not statistically significant.

Unlike gender, a history of allergies showed a significant association with the occurrence of dermatitis (p-value = 0.015). Children with a history of allergies are 3.9 times more likely to develop dermatitis than children without a history of allergies (OR = 3.912; 95% CI: 1.407–10.875). This indicates that genetic factors or a tendency toward allergies play an important role in the development of dermatitis in children.

Based on personal hygiene variables, the analysis results show a significant relationship with the incidence of dermatitis (p-value = 0.002). Children with poor personal hygiene have a 5.3 times greater risk of developing dermatitis than children with good personal hygiene (OR = 5.308; 95% CI: 1.922–14.656). These findings indicate that personal hygiene habits play a major role in preventing dermatitis.

Furthermore, the results of the analysis of knowledge levels show a significant relationship with the incidence of dermatitis (p-value = 0.004). Children with poor knowledge levels had a 4.9 times greater risk of developing dermatitis compared to children with good knowledge (OR = 4.900; 95% CI: 1.753–13.695). This shows that knowledge plays an important role in shaping skin disease prevention behaviors..

Analysis of environmental sanitation shows a highly significant association with the incidence of dermatitis (p-value = 0.002). Children living in environments with inadequate sanitation have a 17.5 times greater risk of developing dermatitis compared to children living in environments with adequate sanitation (OR = 17.500; 95% CI: 2.132–143.638). Although the CI range is quite wide, these results confirm that environmental conditions are a very strong risk factor for the incidence of dermatitis in children.

DISCUSSION

The Relationship Between Gender and Cases of Dermatitis in Children at the Semula Jadi Community Health Center in Tanjungbalai City

The results of this study indicate that there is no significant relationship between gender and cases of dermatitis in children in the working area of the Semula Jadi Community Health Center in Tanjungbalai City. This shows that both boys and girls have the same chance of developing dermatitis during childhood. Gender is not a dominant factor in influencing the incidence of this disease.

This study is consistent with the findings (Masruri Jasri, 2024) who also observed no significant relationship between gender and cases of dermatitis. Based on bivariate tests on outpatients at the Aceh Police Medical and Health Clinic, their results showed a p-value of 0.572, indicating that there was no significant correlation.

These findings are in line with the research conducted by Ernyasih et al. (2022). In their study, no significant relationship was found between gender and the incidence of dermatitis in the working area of the Poris Gaga Lama Community Health Center in 2021 (p-value = 1.000).

The field conditions in this study also support the insignificant relationship between gender and dermatitis. Both boys and girls in the study location had relatively similar habits, such as bathing in rivers, sharing soap, not changing clothes after getting wet, and rarely cutting their nails. Furthermore, exposure to irritants or allergens, which are the main causes of dermatitis, was more commonly found in the respondents' environment and habits. The use of harsh soap, as well as exposure to water and chemicals, are conditions that can be experienced by anyone regardless of gender. This is because there are other factors that have a greater influence than biological differences between genders, such as allergy history, personal hygiene, and environmental factors.

The Relationship Between Allergy History and Cases of Dermatitis in Children at the Semula Jadi Community Health Center in Tanjungbalai City

The results of this study indicate that there is a significant relationship between a history of allergies and cases of dermatitis in children in the working area of the Semula Jadi Community Health Center in Tanjungbalai City. Children with a family history of allergies experience dermatitis more often than those without a history of allergies.

This is in line with research conducted (Rustiati, 2025) stated that there was a relationship between allergy history and the incidence of dermatitis (p. value = 0.001).

Support for these findings was also found in studies (Manurung Merllina, Putri Eka Fitria, Fitri Adelina, Sari Ena Rumita, 2024). which indicates a significant influence between allergy history and the appearance of dermatitis symptoms (p-value = 0.000). This is reinforced by research (Andina et al., 2025), which also found a link between a history of allergies and the occurrence of dermatitis (p-value = 0.001). Most dermatitis patients, between half and two-thirds, were identified as having a history of allergies in one or both of their parents. This percentage was even higher if the patient's siblings also had a history of allergies.

Theoretically, dermatitis more often affects individuals with a history of allergies. This disease has a genetic tendency, especially in families with a history of allergies to certain foods or objects. Allergic reactions to dust, metals, plants, medications, or foods such as milk, meat, eggs, or seafood play an important role in the development of this condition.

At the research site, it was observed that some children experienced itching or skin rashes after consuming certain foods such as shrimp, eggs, milk, or seafood. There are also children who often sneeze or experience itching when exposed to house dust. This reinforces the evidence that a family history of allergies contributes to the onset of dermatitis. Therefore, understanding and identifying an individual's allergy history is an important aspect in the prevention and treatment of dermatitis in the 11-18 age group at the Semula Jadi Community Health Center, Tanjungbalai City.

The Relationship Between Personal Hygiene and Cases of Dermatitis in Children at the Semula Jadi Community Health Center in Tanjungbalai City

The results of the study show a significant relationship between personal hygiene and the incidence of dermatitis in children in the working area of the Semula Jadi Community Health Center in Tanjungbalai City. Children who have poor personal hygiene habits tend to experience more dermatitis than children who practice good personal hygiene.

Poor personal hygiene, such as infrequent bathing, not changing clothes regularly, and not maintaining skin cleanliness, can cause dirt and microorganisms to accumulate on the skin's surface. This condition contributes to skin irritation and infection, including dermatitis. In addition, a moist skin environment due to poor personal hygiene provides an ideal medium for the growth of fungi and bacteria that cause skin disorders.

The findings of this study are in line with previous research. Merarie et al. (2024) found a significant relationship between personal hygiene and the incidence of dermatitis at the Cempaka Banjarmasin Community Health Center with a p-value of 0.001. Similar results were also reported by (Rimi et al., 2025), which shows a significant relationship between personal hygiene and dermatitis at the Kawatuna Community Health Center (p = 0.007). In addition, research by Novitasari et al. (2023) also revealed a strong correlation between personal hygiene and the incidence of dermatitis at the Passi Barat Community Health Center (p = 0.000).

Based on conditions in the field, children with dermatitis generally have poor personal hygiene. This is due to a low awareness of the importance of maintaining hygiene, such as bathing in rivers with murky water, sharing towels with family members, rarely cutting their nails less than once a week, not washing their hands before and after activities, and wearing unclean clothes. Additionally, habits such as rarely cleaning bedding and not washing feet before bedtime are still prevalent. These conditions serve as risk factors that can trigger the onset of dermatitis in children..

These findings are consistent with research (Daeli, 2024), which states that lifestyle habits that do not support personal hygiene, such as not washing hands before eating and wearing the same clothes for a whole day, can increase the risk of infection and skin irritation, leading to dermatitis.

Personal hygiene plays a very important role in preventing dermatitis. Habits of maintaining personal hygiene, such as cleaning the skin regularly, washing hands and nails, changing clothes regularly, using personal soap and towels, and changing bed sheets periodically, have been proven to reduce the risk of dermatitis. In general, the better a person's personal hygiene, the lower the risk of developing dermatitis.

Therefore, health education and promotion that emphasizes the importance of personal hygiene is an effective preventive measure. Children need to be taught how to maintain clean skin, hair, hands, feet, and nails, as well as clean clothes, towels, and bedding. With increased knowledge and awareness, the risk of dermatitis in children can be significantly reduced.

The Relationship Between Knowledge and Cases of Dermatitis in Children at the Semula Jadi Community Health Center in Tanjungbalai City

This study shows a significant relationship between the level of knowledge and the incidence of dermatitis in children in the working area of the Semula Jadi Community Health Center, Tanjungbalai City. Children and families with low knowledge about dermatitis tend to experience this disease more often than those who have a good understanding. The results of this study are in line with the findings of Pefbrianti and Fadhilah (2022), (Susan et al., 2022), and Diana (2021) stated that low knowledge is associated with an increased risk of dermatitis in children. According to Notoatmodjo (2010), knowledge plays an important role in shaping health attitudes and behaviors, including an individual's ability to prevent disease and seek appropriate treatment.

Health behavior is also influenced by internal factors such as age, education, and self-efficacy. In this study, the majority of respondents were aged 11–13 years and had elementary school education, which could affect their ability to receive and understand health information. Conditions in the field show that children and some parents still consider skin complaints to be a minor problem, so they do not apply clean and healthy living behaviors.

In line with Muzakir's (2016) opinion, a lack of health knowledge and information contributes to behaviors that do not support disease prevention. Therefore, low levels of knowledge are one of the factors contributing to the increase in the incidence of dermatitis in children in the working area of the Semula Jadi Community Health Center.

The Relationship Between Environmental Sanitation and Cases of Dermatitis in Children at the Semula Jadi Community Health Center in Tanjungbalai City

This study shows a significant relationship between environmental sanitation conditions and the incidence of dermatitis in children in the working area of the Semula Jadi Community Health Center, Tanjungbalai City. Children living in environments with poor sanitation have a higher risk of developing dermatitis than those living in environments with good sanitation.

These findings are consistent with research Ginting et al. (2023), (Hairani & Santi, 2025), and (Restuastuti et al., 2022) which states that there is a significant relationship between environmental sanitation and the incidence of dermatitis. Environmental sanitation that does not meet standards, such as limited clean water, unsanitary toilets, and poor waste disposal systems, can increase exposure to germs, irritants, and allergens that trigger skin disorders..

Conditions in the field show that most respondents still use murky river water or shallow wells for their daily needs, and live in environments with poor drainage and garbage accumulation. These conditions contribute to the emergence of dermatitis symptoms in children, ranging from dry skin to signs of acute dermatitis. Therefore, improving environmental sanitation and promoting clean and healthy living behaviors among families and communities are important efforts in preventing dermatitis in children.

CONCLUSION

The results of the study indicate that there are several factors that are significantly associated with the incidence of dermatitis in children. A history of allergies has a significant association with the incidence of dermatitis (p-value = 0.015), indicating that children with a history of allergies have a greater risk of developing dermatitis. In addition, personal hygiene is also significantly associated with the incidence of dermatitis (p-value = 0.002), where poor personal hygiene habits increase the risk of skin disorders. Knowledge is also significantly associated with the incidence of dermatitis (p-value = 0.004), indicating that a lack of understanding of dermatitis among children and their families contributes to an increase in cases of this disease. Environmental sanitation was also found to have a significant relationship with the incidence of dermatitis (p-value = 0.002), meaning that unhealthy environmental conditions can increase the risk of dermatitis in children. Meanwhile, gender did not show a significant relationship with the incidence of dermatitis (p-value = 0.479), meaning that the risk of dermatitis is relatively the same in both boys and girls.

Based on the results of this study, it is recommended that community health centers and related parties increase their promotional and preventive efforts through health education on personal hygiene, healthy environmental management, and increasing families' knowledge about risk factors and prevention of dermatitis. In addition, parents are expected to pay more attention to their children's clean and healthy lifestyle habits, especially for children with a history of allergies, in order to reduce the risk of dermatitis.

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