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Factors Related to Contact Dermatitis Symptoms in Sorting Workers at The Talang Gulo TPA

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Abstract: *Based on Indonesian epidemiological data, 66.3% of 97% of cases are irritant contact dermatitis. Data from the Jambi Province Health Service in 2020, the percentage of contact dermatitis was 4.98% and in 2022 it will increase by 5.96%. The aim of this research is to determine the factors associated with symptoms of contact dermatitis in sorting officers at Talang Gulo TPA, Jambi City in 2024. This research is a quantitative study using a cross sectional study des The technique used in this research sample was total sampling, the sample size was 40 respondents. From the results of this study, the symptoms of contact dermatitis in sorting officers were 12% symptomatic and 70% asymptomatic. ctors related to symptoms of contact dermatitis in sorting officers at Talang Gulo TPA were skin cleanline (p value = 0.000), personal hygiene (p value = 0.001), and cleanliness of clothing (p value = 0.003) and those that were not related to dermatitis symptoms contact, habit of using APD (p value = 0.142). It was found that skin cleanliness, personal hygiene, and cleanliness of clothing were related to symptoms of dermatitis at Talang Gulo TPA, Jambi City.*

Keywords: *contact dermatitis, sorting officer, research*

1. INTRODUCTION

Waste is goods or objects that are no longer used, either from homes or leftovers from industrial processes. In everyday life, the waste produced by the community consists of various kinds, such as wet waste (trash) or organic waste which is very easy to reduce or decompose such as food scraps, and dry waste (garbage) or inorganic waste which is difficult to decompose such as used cans. food, milk cans, broken glass, plastic wrappers, scrap metal, dangerous or toxic waste (hazardous waste) such as used batteries, used baygon cans, used pesticide cans, used plant pest medicine packaging, and etc.

Occupational contact dermatitis is contact dermatitis acquired from work due to interactions between the skin and substances used in the work environment. Contact dermatitis is one of the most common occupational skin diseases. Contact dermatitis accounts for 50% of all occupational diseases (PAK), and constitutes 85-95% of cases of occupational skin diseases in America. Contact dermatitis is a dermatitis (skin inflammation) accompanied by spongiosis of intercellular edema in the epidermis due to interaction with chemicals that come into contact with or are exposed to the skin. Contact dermatitis is characterized by symptoms such as itching, red rash, inflammation, sometimes very itchy, swelling or thickening of the skin, dry, scaly skin, blisters, permeability, cracking, pain and even pain when touched.

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The factors of contact dermatitis include work period, level of education, personal hygiene and use of APD as well as length of contact and frequency of contact also influence the occurrence of contact dermatitis. Work-related contact dermatitis is one of the most common work-related diseases. This skin disorder can be found around 85% to 98% of all occupational skin diseases. The incidence of occupational contact dermatitis is estimated at 0.5 to 0.7 cases per 1000 workers per year. Skin diseases are estimated to account for 9% to 34% of work-related illnesses5. The prevalence of occupational contact dermatitis varies from country to country, this occurs due to the lack of standardized case definitions, diagnostic methods and clear recording systems.

According to the Global Burden of Disease (GBD), of the 10 most common skin diseases, they are fungal skin diseases where there are symptoms such as white circles and spots, moist scaly skin, and itching. According to the World Health Organization (WHO), in 2018, almost 900 million people worldwide experienced skin disease problems, and 80% of them experienced dermatitis. Based on data obtained from WHO, dermatitis is common in five countries, with the highest level of dermatitis found in the United States, where up to 15 million people suffer from this disease. Some people consult a dermatologist, as many as 4-7% are caused by contact dermatitis. Hand dermatitis affects 2% of the population and 20% of women will be affected at least once in their lifetime. Up to 30% of children with dermatitis will have positive patch test results.

Epidemiological data in Indonesia shows that 97% of skin diseases are contact dermatitis, 66.3% of these cases are irritant contact dermatitis and 33.7% are allergic contact dermatitis. The data obtained on dermatitis cases in Indonesia is increasing every year, with cases found to be 60.79% in 2019. Contact dermatitis is a skin disorder that is polymorphic as a result of contact with exogenous substances.

Based on data obtained from the Jambi Provincial Health Service in 2020, contact dermatitis is included in the 10 most common diseases and is in 9th place with a percentage of 4.98% 8. In 2021 it will rise to 8th place with a percentage of 5.03% . And in 2022 contact dermatitis will be included in the 10 most common diseases, ranking 6th with a percentage of 5.96%. Based on data obtained from the Jambi City Health Service in 2019, irritant contact dermatitis is in 3rd place out of the 10 most common diseases with a percentage of 8.53% with 21,710 cases recorded.

Based on the results of the initial service at the location through interviews with 5 TPA officers, it was observed that when working, generally the sorting officers did not maintain personal hygiene, such as not using complete personal protective equipment in accordance with

the SOP, the officers did not bring a change of clothes, some provided a change of clothes in the lockers used. During prayer, there are no wash basins near the sorting area, there is only a tap in the sorting area, several sorting officers also experience complaints of itching, and a bathroom has been provided for the sorting officers, but none of the sorting officers showers in the place provided by the TPA. Based on this description, the author will conduct research on factors related to symptoms of contact dermatitis in sorting officers at Talang Gulo TPA, Jambi City in 2024.

2. LITERATURE REVIEW

Dermatitis is inflammation of the skin (epidermis and dermis) in response to the influence of exogenous or endogenous factors, causing clinical abnormalities in the form of polymorphic efflorescence (erythema, edema, papules, vesicles, scale, lichenification) and complaints of itching. Contact dermatitis is a dermatitis (skin inflammation) accompanied by intercellular edema spongiosis in the epidermis due to interaction with chemicals that come into contact with or are exposed to the skin.

Contact dermatitis is characterized by symptoms such as itching, red rash, inflammation, sometimes very itchy, swelling or thickening of the skin, dry, scaled skin, blisters, permeability, cracking, pain and even pain when touched. The severity can cause the wound to burst, blister, and form a hard brown layer covering the blister on the skin. Contact dermatitis factors are classified into internal and external causes. Internal causes include age (children 8 years and under and the elderly are very easily irritated), gender (the incidence of DKI is dominant in women), race (dark skin is more resistant than white skin), history of allergies/atopics and history of disease. While external factors consist of irritants, the environment (temperature, humidity).

Other factors include length of service, level of education, personal hygiene and use of APD as well as length of contact and frequency of contact also influence the occurrence of contact dermatitis4. There are two types of contact dermatitis, namely irritant contact dermatitis which is a non-immunological response and allergic contact dermatitis which is caused by specific immunological mechanisms. Both can be acute or chronic. The ingredients that cause allergic contact dermatitis are generally the chemicals contained in them. in tools worn by sufferers, related to work/hobbies or by materials around them.

The risk factors for contact dermatitis generally consist of two types, namely exogenous factors and endogenous factors. These exogenous factors consist of the type of irritant, penetration of the irritant, body temperature, mechanical factors, environment and other factors. Meanwhile, the endogenous factors are atopic dermatitis, skin permeability, race, age,

skin hypersensitivity. According to the World Health Organization (WHO) (2020), hygiene or cleanliness is a cleanliness action that refers to conditions for maintaining health and preventing the spread of disease. Personal hygiene is the act of taking care of oneself, including maintaining the cleanliness of body parts such as hair, eyes, nose, mouth, teeth and skin. Personal Hygiene is an effort made by a person to maintain and maintain personal hygiene so that individual comfort is maintained. Personal Hygiene needs do not look at age, because disease-causing organisms can breed anywhere.

The use of APD is the last alternative for preventing work accidents. In the hierarchy of hazard control or hazard control, the use of personal protective equipment is the final hazard control method. This means that before deciding to use APD, other methods must be used first by making optimal efforts so that the danger can be eliminated or at least minimized. Implementing good occupational safety and health requires workers to wear personal protective equipment (APD). Personal Protective Equipment is equipment that can provide protection against the dangers of accidents, or can also be called equipment that must be used when working according to the dangers and risks of work to maintain the safety of the worker himself and those around him. However, APD does not eliminate or reduce existing dangers. This equipment is only able to reduce the amount of contact with hazards by placing a barrier between the workforce and the hazard. The effectiveness of using personal protective equipment depends on the workforce itself.

Based on general rules, changing underwear should be done once or twice a day to avoid the buildup of bacteria, sweat and moisture which can cause infection or skin irritation in more sensitive areas. If we are forced to wear clothes that do not absorb sweat, we must change these clothes as often as possible. Apart from that, after being exposed to water, it is best to dry it immediately, because fungus likes damp places. It is also recommended to use clothes or towels separately between families.

According to WHO, waste is something that is not used, is not worn, is not liked or something that is thrown away comes from human activities and does not occur by itself. The population that continues to increase will significantly increase the amount of waste production, especially household waste. Where household waste is waste that comes from daily activities in the household which does not include dirt and special waste (PP No. 81 of 2012). According to Law Number 18 of 2008 concerning waste management, it is stated that waste is a national problem so that its management needs to be carried out in a comprehensive and integrated manner from upstream to downstream so that it provides economic benefits, is healthy for the community and safe for the environment, and can change people's behavior.

Based on the 1990 SNI Decree, waste is solid waste consisting of organic and inorganic substances which are considered no longer useful and must be managed so as not to endanger and protect development infestations.

Sorting officers are officers who are at risk of experiencing complaints of symptoms of skin disease. Sorting officers are people who carry out work every day with direct contact with various types of waste and a hot and humid work environment, making them susceptible to skin disorders. Factors related to the high prevalence of skin diseases are a hot and humid climate which allows the growth of fungi to thrive, poor personal hygiene, and inadequate socio-economic factors. The more frequent and prolonged contact with waste and if you do not pay attention to good personal health and the use of personal protective equipment, the risk of developing skin diseases can be increased. Sorting officers must use personal protective equipment such as boots when working and gloves to protect themselves from disease.

3. RESEARCH METHOD(S)

This type of research is quantitative, analytical research with a cross sectional design, namely an approach that is momentary at a time and not followed for a certain period of time, with the aim of finding out factors related to symptoms of contact dermatitis in sorting officers at TPA Talang. Gulo Jambi City in 2024.

The population in this study were all sorting officers who worked at the Talang Gulo final waste disposal site, totaling 40 people. The sample in this study was waste sorting officers at the Talang Gulo TPA, Jambi City. The technique used in this research sample is total sampling, where this technique is used when the research population is classified as a small population numbering under 100 people. The number of samples in this study was 40 sorting officers. The formula used to determine the minimum sample in this research is the Lameshow formula, where this formula is able to determine the sample size to be studied.

This study uses univariate analysis aims to explain or describe the variables studied, namely symptoms of contact dermatitis, skin cleanliness, personal hygiene (cleanliness of hands, feet and nails), cleanliness of clothing and habits of using APD) which are presented in the form of frequency distribution tables and percentages for each variable. Bivariate analysis aims to determine the relationship between two variables, namely estimating factors related to symptoms of contact dermatitis in sorting officers using a statistical test, namely the Chi-square test with a confidence level of 95% ($\alpha = 0.05$).

4. FINDINGS AND DUSCUSSION

a Univariate Analysis

Univariate analysis was carried out to determine the frequency distribution of skin cleanliness, personal hygiene (hands, nails and feet), clothing cleanliness, and APD usage habits at the Talang Gulo TPA, Jambi City.

Table 4.1. Frequency Distribution of Respondents from Talang Gulo TPA Sorting Officers

Variable	Category	*f*	%
Symptoms of Contact Dermatitis	symptomatic	12	30
	asymptomatic	28	70
skin cleanliness	Not good	15	37,5
	Good	25	62,5
personal hygiene (hands, nails and feet)	Not good	16	40
	Good	24	60
clothing cleanliness	Not good	15	37,5
	Baik	25	62,5
APD usage habits	Not eligible	9	30
	qualify	31	70

Based on the table 4.1, the distribution results for each variable studied among Sorting Officer Respondents at Talang Gulo TPA, Jambi City, 2024 are obtained. Table 4.2 shows that 12 (30%) respondents experienced symptoms of dermatitis. Respondents in the poor skin hygiene category were 15 (37.5%) Respondents in the poor personal hygiene category were 16 (40%) respondents. Respondents in the clothing cleanliness category were 15 (37.5%) respondents. Respondents in the habitual category of using APD did not meet the requirements as many as 9 (30%).

b Bivariate Analysis

Table 4.2. Relationship between Skin Cleanliness and Symptoms of Contact Dermatitis in Sorting Workers at Talang Gulo Landfill

Skin Cleanliness	Dermatitis Symptoms				Total		*p-value*	PR *CI-95%*
	symptomatic		asymptomatic					
	n	%	n	%	n	%		
Not good	12	80	3	20	15	100		21,000
good	4	16	24	84	25	100	0,000	4,007-110,057

Based on table 4.2, it shows that of the 15 respondents in the poor skin hygiene category, 12 (80%) respondents had symptoms of contact dermatitis, while 3 (20%) respondents had no symptoms. The results of statistical tests using chi-square showed a p value of 0.000 (p-value < 0.05), which means there is a relationship between skin cleanliness and symptoms of contact dermatitis. The results of risk calculations obtained a PR value = 21,000 (95% CI: 4.007-110.057) which means that respondents with poor knowledge could increase the prevalence of dermatitis symptoms 21,000 times compared to respondents with good knowledge. And the CI is at a risk of 4.007-

110.057, which means that skin cleanliness is a risk factor for symptoms of contact dermatitis.

Table 4.3. Relationship between Personal Hygiene (Cleanliness of Hands, Feet and Nails) with Dermatitis Symptoms in Sorting Officers at Talang Gulo Landfill

Personal Hygiene (Cleanliness of Hands, Feet and Nails)	Dermatitis Symptoms				Total		*p-value*	PR *CI-95%*
	symptomatic		asymptomatic					
	n	%	n	%	n	%		
Not good	12	75	4	25	16	100	0,001	15,000 3,153-71,367
good	4	16,7	24	60	35	100		

Based on table 4.3, it shows that of the 16 respondents with poor personal hygiene (hands, feet and nails) category, 12 (75%) respondents had symptoms of contact dermatitis, while 4 (25%) respondents had no symptoms. The results of statistical tests using chi-square showed a p value of 0.001 (p-value < 0.05), which means there is a relationship between personal hygiene (hands, feet and nails) and symptoms of contact dermatitis. The results of risk calculations obtained a PR value = 15,000 (95% CI: 3.153-71.367) which means that respondents with poor personal hygiene (hands, feet and nails) could increase 15,000 times the prevalence of contact dermatitis symptoms compared to respondents with poor personal hygiene (nails, feet, and hands) good. And the CI is at risk of 3.153-71.367, which means that personal hygiene (hands, feet and nails) is a risk factor for symptoms of contact dermatitis.

Table 4.4. Relationship between Clothing Cleanliness and Dermatitis Symptoms in sorting officers at Talang Gulo landfill

Clothing Cleanliness	Dermatitis Symptoms				Total		*p-value*	PR *CI-95%*
	symptomatic		asymptomatic					
	n	%	n	%	n	%		
Not good	11	73,3	4	26,7	15	100	0,003	11,000 2,438-49,627
Good	5	20	20	80	25	100		

Based on table 4.4, it shows that of the 15 respondents in the category of poor clothing hygiene, 11 (73.3%) respondents had symptoms of contact dermatitis, while 4 (26.7%) respondents had no symptoms. The results of statistical tests using chi-square showed a p value of 0.003 (p-value > 0.05), which means there is a relationship between cleanliness of clothing and symptoms of contact dermatitis. The risk calculation results obtained a PR value = 11,000 (95% CI: 2.438-49.627), which means that respondents with poor clothing hygiene could increase the prevalence of contact dermatitis symptoms 11,000 times compared to respondents with good clothing hygiene. And the CI is at risk of 2.438-49.627, which means that cleanliness of clothing is a risk factor for symptoms of contact dermatitis.

Table 4.5. Relationship between the habit of using APD and symptoms of contact dermatitis among sorting workers at Talang Gulo landfill

Habit of using APD	Dermatitis Symptoms				Total		*p-value*	PR *CI-95%*
	symptomatic		asymptomatic					
	n	%	n	%	n	%		
Not Eligible	6	66,7	3	33,3	9	100	0,142	4,200 0,867-20,335
Qualify	10	32,3	21	67,7	31	100		

Based on table 4.5, it shows that of the 9 respondents whose habit of using APD did not meet the requirements, 6 (66.7%) respondents had symptoms of contact dermatitis, while 3 (33.3%) respondents had no symptoms. The results of statistical tests using chi-square showed a p value of 0.142 (p-value < 0.05), which means that there is no relationship between the habit of using APD and symptoms of dermatitis, nor is it a risk factor for the incidence of dermatitis among sorting officers at the Talang Gulo TPA, Jambi City.

5. DISCUSSION

a Relationship between Skin Cleanliness and Symptoms of Contact Dermatitis

The results of the research show that the p-value is 0.000, so the p-value <0.05 is obtained, so there is a relationship between skin cleanliness and symptoms of contact dermatitis in sorting officers at Talang Gulo TPA, Jambi City. Because 77.5% of respondents do not bring towels when working. The risk calculation results obtained a value of PR=21,000, which means that respondents with poor skin hygiene could increase the prevalence 21,000 times compared to respondents with good skin hygiene.

This is in line with research conducted by Janah DL. et al (2020) with analysis results of p-value = 0.018 which shows that there is a relationship between skin cleanliness and the incidence of contact dermatitis in scavengers at the Blondo TPA, Semarang Regency. Other research conducted by Ernyasih et al (2022) also shows that there is a relationship between skin cleanliness and the incidence of dermatitis in the work area of the Poris Gaga Lama Community Health Center with the analysis result of p-value = 0.02651.

In contrast to research conducted by Avita and Sahani 2020, regarding the relationship between personal hygiene and dermatitis at the Babul Khaer KAB Islamic Boarding School. Bulukumba, the results of statistical tests using the chi-square test obtained a p-value = 0.39, it can be concluded that there is no relationship between skin cleanliness and the incidence of irritant contact dermatitis.

From the results of observations, it was found that there were still many respondents who did not know how to keep their skin clean. It was found that the sorting officers did not bring towels when working, some even shared towels. Personal hygiene, including skin cleanliness, is very important in health maintenance efforts, such as bathing twice a day using soap and clean water. One part of the body that is quite sensitive to various diseases is the skin. A healthy and clean environment will have a good effect on the skin. Likewise, vice versa, a dirty environment will be a source of various diseases, including skin diseases.

b Relationship between Personal Hygiene (Cleanliness of Hands, Feet and Nails) with Dermatitis Symptoms

The results of the research show that the p-value is 0.001, so the p-value is <0.05, so there is a relationship between personal hygiene (cleanliness of hands, feet and nails) with symptoms of contact dermatitis in sorting officers at Talang Gulo TPA, Jambi City. Because 55% of respondents' fingernails and toenails were not short and clean, 50% of respondents cut their nails only when their nails were long. The risk calculation results obtained a value of PR=15,000, which means that respondents with poor personal hygiene (hands, feet and nails) could increase the prevalence 15,000 times compared to respondents with good personal hygiene (hands, feet and nails).

This is in line with research conducted by Sholeha et al (2021) with analysis results of p-value = 0.000. Other research conducted by Fatia Sarah (2022) also shows that the p-value analysis results = 0.000. In contrast to research conducted by Ernyasih at el 2022, the results of statistical tests using the chi-square test obtained a p-value = 1,000 which can be concluded that there is no significant relationship between hand and nail cleanliness and the incidence of dermatitis in the working area of the Poris Health Center. Old Gaga 2021.

Personal hygiene is a form of self-care consisting of cleanliness of the scalp and hair, eyes, nose, ears, toenails and hands, skin and overall body care. The aim of personal hygiene is to improve health status, maintain personal hygiene, prevent disease. There needs to be self-awareness for each individual to maintain personal hygiene from the risks of an unfavorable work environment, for example the large amount of dirt, bacteria, fungi and germs which can trigger skin diseases in sorting officers.

c Relationship between Clothing Cleanliness and Dermatitis Symptoms

The results of the research show that the p-value is 0.003, so the p-value <0.05 is obtained, so there is a relationship between clothing cleanliness and symptoms of contact dermatitis in sorting officers at Talang Gulo TPA, Jambi City. Because 65% of respondents do not bring a change of clothes when working. The risk calculation results obtained a value of PR=11,000, which means that respondents with poor skin hygiene could increase the prevalence 11,000 times compared to respondents with good clothing hygiene.

This is in line with research conducted by Apriliani et al (2020) with analysis results of p-value = 0.000. Other research conducted by Ernyasih et al (2022) also showed analysis results of p value = 0.038. In contrast to research conducted by Gafur (2018), regarding the determinants of the incidence of dermatitis. The results of statistical tests using the chi-square test obtained a p-value = 1,000, it can be concluded that there is no relationship between cleanliness of clothing and the incidence of contact dermatitis.

Carrying out habits such as changing clothes, not wearing damp clothes, wearing clean clothes, separating clean clothes from dirty clothes, and not borrowing friends' clothes can reduce the risk of getting dermatitis. Apart from that, if you sweat excessively, immediately shower or wipe and change clothes if they are wet. Avoid sharing personal items with other people, such as clothes or towels, and clothes that have been worn must be washed immediately and then dried and not worn repeatedly before washing. This is because Indonesia is a tropical area so people sweat easily and get damp, these conditions can cause fungus to grow easily.

d Relationship between the habit of using APD and symptoms of contact dermatitis

The research results showed that the p-value was 0.0142, so the p-value was <0.05, so there was no relationship between the habit of using PPE and symptoms of contact dermatitis in sorting officers at the Talang Gulo TPA, Jambi City. The risk calculation results obtained a value of PR=4,200, which means that respondents with the habit of using PPE did not meet the requirements 4,200 times compared to respondents whose habit of using PPE met the requirements.This is in line with research conducted by Suwandi et al (2022), with analysis results of p-value = 0.663.

In contrast to research conducted by Sholeha et al (2021), the results of statistical tests using the chi-square test obtained a p-value = 0.015, which shows that there is a relationship between the habit of using PPE and symptoms of contact dermatitis. Other research conducted by Marbun et al (2023) also shows that there is a significant

relationship between the habit of using PPE and the incidence of dermatitis in waste transport workers at the Tadukan Raga Deli Serdang landfill in 2023 with p value = 0.013.

The use of PPE is very important, viewed based on the purpose of using PPE, namely to protect oneself from occupational hazards which result in Occupational Diseases (PAK) or Occupational Accidents (CAC), therefore the use of PPE has a very important role, because this is important, isn't it? only for workers but also for companies/agencies.

6. CONCLUSION AND RECOMMENDATION

Based on the results of research conducted at the Talang Gulo TPA, Jambi City, it can be concluded that 12 (30%) of the respondents had symptoms of contact dermatitis and 28 (70%) of the respondents had no symptoms of dermatitis. Respondents in the poor skin hygiene category were 15 (37.5%), respondents in the poor personal hygiene category were 16 (40%), respondents in the clothing hygiene category were 15 (35.5) poor, and 31 (70%) respondents in the category of habit of using APD did not meet the requirements. There is a relationship between skin cleanliness, personal cleanliness (hands, feet and nails), and cleanliness of clothing and symptoms of contact dermatitis at Talang Gulo TPA with statistical tests obtained p value < 0.05. There is no relationship between the habit of using APD and symptoms of contact dermatitis at Talang Gulo TPA. The statistical test obtained p value = 0.142 and is not a risk factor for dermatitis among sorting officers at Talang Gulo TPA, Jambi City.

Suggestions for the Talang Gulo TPA, Jambi City, are expected to provide educational briefings before work regarding skin hygiene, provide hand washing soap in every sink or tap at the TPA, provide education to sorting officers to routinely change clothes after work or before going home and provide APD, such as sarongs. hands, boots, and long-sleeved shirt or trousers. Sorting Officers are expected to always maintain personal hygiene by showering after working at the processing site, washing their hands with soap, regularly cutting their nails, bringing a change of clothes for work and using appropriate APD to avoid symptoms or dermatitis. Future researchers are expected to carry out further research on the factors that influence dermatitis symptoms, because there are many other factors that could possibly cause symptoms such as temperature and humidity, and infrastructure and hygiene problems.

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PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9

PAGE 10

PAGE 11

PAGE 12

PAGE 13

PAGE 14

PAGE 15