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Analysis of The Relationship Allergic Contact Dermatitis on Scavengers

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Abstract

Occupational skin disease is the second most common occupational disease in Europe after musculoskeletal injuries, while the most common occupational skin disease is contact dermatitis, accounting for 70-90%. Determining the cause of contact dermatitis in the work environment is very important, because avoiding the causative agent will lead to a cure and reduce the recurrence rate. This study aims to analyze the relationship between personal hygiene, knowledge, use of personal protective equipment, and working period of allergic contact dermatitis in scavengers at the Piyungan Yogyakarta garbage dumpsite. This type of research is an observational analytic study with a cross sectional design. The research sample was 112 scavengers. The analysis of this research uses Path Analysis. The results showed that there was a direct relationship of personal hygiene to allergic contact dermatitis with a path coefficient of 0.243 ($p = 0.003 < 0.05$), there was a direct relationship of knowledge of allergic contact dermatitis with a path coefficient of 0.216 ($p = 0.000 < 0.05$), There was a correlation between the use of PPE on allergic contact dermatitis with a path coefficient of 0.124 ($p = 0.001 < 0.05$). There was a relationship between working period and allergic contact dermatitis with a path coefficient of 0.253 ($p = 0.000 < 0.05$). Scavengers should increase knowledge about allergic contact dermatitis, especially regarding the impact and prevention of allergic contact dermatitis and pay more attention to regular individual hygiene.

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INTRODUCTION

Waste is the residue of human daily activities and / or from natural processes in the form of a solid, the source of waste is the initial or first place where the waste occurs (Ministry of the Environment of the Republic of Indonesia, 2008). Waste becomes an important problem for a densely populated city. This is due to factors, one of which is the very large volume of waste that exceeds the capacity of the final waste disposal sites (TPAS) (Sudrajat, 2006). Waste produced by the community consists of various kinds, such as wet waste (garbage) or organic waste which is very easy to decompose or decompose such as food scraps, and dry waste (rubbish) or inorganic waste that is difficult to decompose such as used food cans, cans. milk, broken glass, plastic wrapping, hazardous or toxic waste such as used stone batteries, pesticide cans used for plant pests, and others. All of these types of waste each have a very large contribution to environmental pollution and can cause disease. Garbage will not be dangerous if it is managed properly and correctly, but if the waste is left alone without proper management, it will gradually become dangerous and risk causing health problems for humans. Currently, waste separation work still relies heavily on human assistance. One of the jobs that is always side by side with waste processing is scavenger.

Scavengers are people who work to pick up used or certain trash for the recycling process. Scavengers have also helped reduce government costs for collecting, accruing and processing waste from the community. Scavengers are people who work to pick up used or certain trash for the recycling process. Scavengers have also helped reduce government costs for collecting, accruing and processing waste from the community. Scavenger workers who are always in contact with waste give rise to the view that the scavenger's way of life is a dirty way of life (Mulyanasari & Mulyono, 2019). The effects of waste on health are classified into direct and indirect effects. Direct contact with toxic waste, waste that is corrosive to the body, which is carcinogenic or teratogenic, and waste that contains pathogenic germs, can cause diseases, one of which is dermatitis (Ambarsari & Mulasari, 2018).

Dermatitis is a skin disorder with symptoms of itching and is objectively marked by patches, rashes, or inflammation (Bieber, 2017). Symptoms include reddening of the skin due to burdening of the blood vessels, swelling / bruising due to fluid build-up in the tissues, thickening of the skin and scratching marks and changes in skin color. Meanwhile, several factors that influence the clinical condition of a dermatitis are itching, scratching and drug reactions. Contact dermatitis is an inflammation of the skin caused by a material that sticks to a person's skin caused by contact with a certain substance, the rash is limited to certain areas and often has clear boundaries (Anggraitya Dhera, 2017). One of the main functions of the skin for protection (protection), the protective capacity between one individual and another individual is different. So that cases of dermatitis are closely related to individual susceptibility conditions. Some of the factors that trigger dermatitis include various substances and irritants due to one's work (Pramantara and Brathiarta, 2013).

Based on data from the International Labor Organization (ILO) in 2013, 1 worker worldwide dies every 15 seconds due to work accidents and 160 workers experience occupational diseases. Surveillance research in America states that 80% of occupational skin diseases are contact dermatitis (Rashid & Shim, 2016). Among contact dermatitis, irritant contact dermatitis ranks first with 80% and allergic contact dermatitis ranks second with 14% -20% (Brasch et al., 2014). Incidence of contact dermatitis in the Netherlands, an incidence of 7.9 per 1000 per-child-years was observed for contact dermatitis which was not etiologically determined (Mowad et al., 2016).

Globally, dermatitis affects about 230 million people or 3.5% of the world's population. The prevalence is dominated by women in the period of age 15-49 years

(Nassau & Fonacier, 2020). Data in the United Kingdom and the United States of America are dominated by children, namely about 20% and 10.7% of the total population, while the adult group in the United States is around 17.8 million (10%) people (Silverberg & Hanifin, 2013). The expected prevalence of contact dermatitis in Germany by some forms of contact dermatitis is estimated to be 15% -20% (Tan, Rasool, & Johnston, 2014).

This is common in affected children and some incidence of such incidence is increasing among the pediatric population (Kim et al., 2016). Contact eczema is also seen frequently seen in older adults as a result of age-related exposure, changes in epidermal barrier function, and changes in immune reactivity (Maier et al, 2011). According to a German health survey conducted in the 2000 Gesundheits Survey, the survival prevalence of allergic contact dermatitis is around 15% and the annual prevalence is around 7% (Johnston et al., 2017).

The prevalence of dermatitis in Indonesia of 6.78% contact dermatitis varies widely, therefore occupational contact is one of the most frequently reported incidents and the incidence varies between 50-190 cases per 100,000 workers per year. Dermatitis that often occurs in the human body is Atopic, Seborrheic, Intertrigo, Numalaris (wet eczema), Neurodermatitis (dry eczema), Prurigo, and Contact Dermatitis (Susanto, 2013). An epidemiological study, Indonesia, showed that 97% of 389 cases were contact dermatitis, of which 66.3% were irritant contact dermatitis and 33.7% were allergic contact dermatitis. The incidence of irritant contact dermatitis diagnosed by the Polyclinic of Dermatology and Venereology, FK UI, Dr. Cipto Magunkusomo Hospital, Jakarta. Based on Basic Health Research by the Ministry of Health in 2014, the national prevalence of dermatitis is 6.8% (based on complaints).

Occupational dermatitis is dermatitis that occurs due to contact with chemicals in the workplace, more than 75% of occupational contact dermatitis is irritant and allergic contact dermatitis (Jeyaratnam, 2010). Meanwhile, according to (Denis, 2004), dermatitis disease 90% of all cases of skin disorders related to work. The incidence of occupational skin diseases was contact dermatitis, which was 92.5%, about 5.4% due to skin infections and 2.1% due to other skin diseases. The incidence of dermatitis was mostly found in the type of tutoring work (Azhar and Hananto, 2011). However, allergic contact dermatitis from topical use of essential oils is not as widespread as an occupational risk report (Bleasel et al, 2002). By always being reliable and struggling with waste, it is even used as a source of search added by scavengers (Eka Lestari, 2012)

Garbage scavengers have a very high risk of contracting contact dermatitis because they experience direct exposure to garbage while working. The factors that play a role in the transmission of dermatitis are inadequate personal hygiene, an unsanitary environment, and behaviors that support health. The most dominant factors are behavior and personal hygiene (Tuti, 2010).

Personal hygiene (personal / individual hygiene) is an effort of individuals or groups to maintain health through individual hygiene by controlling environmental conditions (MOH, 2006). According to (Laily, 2012) personal hygiene is an action to maintain one's hygiene and health for physical and psychological well-being. Personal hygiene includes skin hygiene, hair hygiene, eye hygiene, ear hygiene and hand, foot and nail hygiene. Skin cleanliness is a major factor that can cause skin disease. As well as the use of inappropriate personal protective equipment which is another cause of disease. Personal hygiene issues are daily things that must be done, but sometimes they are still considered less important. This opinion occurs because of the lack of socialization on the importance of personal hygiene. Also, the lack of knowledge of scavengers about personal hygiene makes it difficult to implement healthy living habits in the work environment.

The more frequent and prolonged contact with hazardous materials and if you do

not pay attention to good personal health and the use of personal protective equipment, then you may be at risk of developing skin diseases. As well as in carrying out activities, scavengers do not pay much attention to their own health and the surrounding environment which results in scavengers experiencing unpleasant odors, dangerous objects that contain chemicals and bacteria in the landfill site which is considered a risk to their health (Jhon et al., 2017). The period of employment of a person at work affects the emergence of a disease due to work, namely work and / or work environment. Diseases that have several causative agents, where factors in workers play a role together with other risk factors in the development of diseases that have complex etiologies (Halajur, 2018).

As many as 13 provinces have a dermatitis prevalence above the national prevalence, one of which is the Yogyakarta Special Region. Based on the Health Profile of the Bantul District Health Office, the incidence of dermatitis in 2018 was 2489 cases from 27 Puskesmas in Bantul Regency and Piyungan Public Health Center data in 2018, 564 cases and dermatitis diseases were included in the top 10 diseases in the Bantul Regency Health Office and region Piyungan Health Center work. A preliminary study conducted in September 2019 was the result of initial interviews with scavengers at the Piyungan landfill regarding disease complaints from 10 scavengers, 8 of whom complained of redness, small bumps filled with water, wounds, swelling and itching of the skin on the body, hands and feet. Although dermatitis does not have an impact on a person or worker, there are other impacts if someone who has dermatitis is the main family member who earns a source of living in the family, it will seriously disrupt the economic conditions in the family. Another factor that can lead to occupational dermatitis is a previous history of illness that is still associated with occupational dermatitis.

With reference to the results of the initial survey conducted with the support of relevant previous studies, the authors are interested in conducting a study entitled "Analysis of the relationship allergic contact dermatitis on scavengers".

METHOD

This type of research uses an observational analytic method with a cross-sectional study design, namely the cause or risk and effect variables or cases that occur in the research object are measured or collected simultaneously or at the same time (Seekijo, 2010). The sample in this study using the Simple Random Sampling technique is a random sampling in a population consisting of units that have different or heterogeneous characteristics (Soekijo, 2010). Determination of the size or number of samples of this study, using the Solvin technique as follows:

The sample size or sample size of this study, using the Solvin Technique as described in (Siregar, 2014), is as follows:

$$n=\frac{N}{1+N.d^2}$$

n = Sample amount
N = Population amount
d^2 = Precision (Precision set at 5% = 0.05) then

The calculation of the number of samples was taken based on the number of workers who work as scavengers in Piyungan landfill as many as 154 scavengers, so that the number of research samples was determined as follows:

$$n=\frac{N}{1+N.d^2}$$
$$=\frac{154}{1+154\ (0,5)^2}=\frac{154}{1+154\ (0,0025)}$$
$$=\frac{154}{1.38}=111.59$$

Integrated 112

So, the number of samples in this study were 112 scavenger respondents.

RESULTS AND DISCUSSION

The type of data collected in this study is primary data, which is data that is directly taken or obtained from respondents by conducting interviews based on direct

questionnaires with scavengers at landfill Piyungan Yogyakarta.

Table 1. Frequency distribution of gender, age, last education, and length of work per day

Respondents Distribution		Amount	Percentage
Gender	Male	62	55.4
	Female	50	44.6
Total		112	100
Age	30-40 years	5	4.5
	41-50 years	39	34.8
	51-60 years	60	53,6
	61-70 years	8	7.1
Total		112	100
Last education	No school	53	44.6
	Elementary School	59	55.4
Total		112	100
Length of work per day	8 hours	91	81.2
	9 hours	4	3.6
	10 hours	16	14.3
	11 hours	1	.9
Total		112	100

Based on table 1, it shows that the characteristics of research respondents based on the gender of male respondents were more in this study, namely by the number of 62 respondents or (55.4%). While the female gender is 50 respondents or (44.6%). Most of the respondents' ages were in the age range of 51-60 years, namely 60 respondents or (53.6%), while the least was found in the 30-40 years age range, namely 5 respondents or (4.5%). Most of the respondents' last education was elementary school, which amounted to 59 respondents or (55.4%), while at least 53 respondents or (44.6%) did not attend school. The respondent's length of work per day is 8 hours per day as many as 91 respondents or (81.2%) and the length of time working per day is 11 hours as much as 1 respondent (0.9%).

Table 2. Distribution of respondents based on the relationship between personal hygiene, knowledge, use of personal protective equipment and working period

Characteristics	Category	Total	Percentage
Personal hygiene	Good	0	0
	Sufficient	70	62.5
	Less	42	37.6
Knowledge	Good	22	19.6
	Sufficient	90	80.4
	Less	0	0%
Use of PPE	Good	4	3.6
	Sufficient	66	58.9
	Less	42	37.5
Working period	New	16	14.3
	Medium	66	58.9
	Long	30	26.8

From a total of 112 respondents, 70 respondents or (62.5%) had quite good personal hygiene regarding allergic contact dermatitis while 74 respondents or (37.6%) had less personal hygiene. While 90 respondents or (80.4%) have sufficient knowledge, while respondents with good knowledge are 22 respondents or (19.6%). As many as 4 respondents or (3.6%) the use of good personal protective equipment regarding the prevention of allergic contact dermatitis, the use of personal protective equipment was enough as many as 66 or (58.9%) while the respondents with the less category were 42 respondents or (28.0%). And the new working period was 16 respondents or (14.3%), the moderate category was 66 respondents or (58.9%) and the old work period was 30 respondents or (26.8%).

Table 3. Analysis of Path I Table of the relationship between personal hygiene, knowledge, use of personal protective equipment and working period

Variable	Regression Coefficient (B)	t count	Sig t
Constanta	0.943	4.130	.000
Knowledge (X1)	.879	2.529	.002
PPE (X2)	.952	3.251	.000
Working period (X3)	.676	2.431	.003
R Square	= 0.379		
R	= 0.281		

Dependent Variable: Personal Hygiene (X4)

Based on table 3, the results of the analysis of the influence of knowledge (X1), PPE (X2), working period (X3), on personal hygiene (X4) are analyzed. The result of path analysis shows that knowledge is proven to be related to allergic contact dermatitis through personal hygiene with a path coefficient of 0.109 with a total effect of 0.325, so the eighth hypothesis which says "knowledge is related to allergic contact dermatitis through personal hygiene as an intervening variable" is accepted. In line with the research, the results of the study (Dafriani, 2016) show that there is an effect of health education on students' knowledge about preventing dermatitis (p = 0.000). Based on the results of the path analysis shows that the use of personal protective equipment is related to allergic contact dermatitis through personal hygiene with a path coefficient of 0.079 with a total effect of 0.203, so the ninth hypothesis which says "the use of personal protective equipment is related to allergic contact dermatitis through personal hygiene as an intervening variable" is accepted. . In line with research conducted by In line with research (Chafidz & Dwiyanti, 2018) there is a relationship between PPE use (p = 0.000) with the incidence of dermatosis. research from (Widianingsih, 2017) the use of personal protective equipment (P = 0.015), research results from (Suryani et al., 2017) the use of personal protection devices (p = 0.042).

The result of path analysis showed that working period was proven to be associated with allergic contact dermatitis with a path coefficient of 0.067 with a total effect of 0.32, so the tenth hypothesis which reads "working period is related to allergic contact dermatitis through personal hygiene as an intervening variable" is accepted. In line with the research conducted by (Putri et al., 2017) there is a relationship between work working period and complaints of respiratory problems in scavengers at Jatibarang landfill Semarang, research with a p value of 0.039, research from (Singga, 2014) has a relationship with Health problems for scavengers in Alak landfill, Kupang City with a p value of 0.002 have a significant effect on the number of health problems experienced by scavengers in Alak landfill.

Table 4. Path Analysis II Table of the relationship between personal hygiene, knowledge, use of PPE, and working period against allergic contact dermatitis in scavengers

Variable	Regression Coefficient (B)	t count	Sig t
Constanta	0.931	1.208	.000
Knowledge (X1)	.979	1.464	.000
PPE (X2)	.872	1.809	.003
Working period (X3)	.931	2.959	.000
Personal Hygiene (X4)	.903	1.438	.001
R Square = 0,394			
R = 0,307			

Dependent Variable: Allergic Contact Dermatitis (Y).

Based on table 4, the results of the analysis of the influence test of knowledge (X1), the use of personal protective equipment (X2), work period (X3), and personal hygiene (X4), affect the incidence of premarital sex (Y). The result of path analysis shows that knowledge is proven to be directly related to allergic contact dermatitis with a path coefficient of 0.216 (p = 0.002 <0.00), so the first hypothesis which states "Knowledge of allergic contact dermatitis in scavengers in Piyungan landfill" is accepted. In line with research studies (Nuraga et al, 2008), there is a relationship between knowledge and the incidence of contact dermatitis in workers exposed to chemicals.

Based on the results of the path analysis shows that the use of personal protective equipment (PPE) is shown to be directly related to allergic contact dermatitis with a path coefficient of 0.124 (p = 0.003 <0.05), so the second hypothesis which states "the use of personal protective equipment is related to contact dermatitis. allergy to scavengers at Piyungan landfill "accepted. In line with research conducted by research (Chafidz & Dwiyanti, 2018) there is a

relationship between the use of PPE (p = 0.000) with the incidence of dermatosis.

Based on the results of the path analysis, it shows that the working period is proven to be directly related to allergic contact dermatitis with a path coefficient of 0.253 (p = 0.001 <0.05), so the third hypothesis which states "working period is related to allergic contact dermamtitis in scavengers in Piyungan landfill" received. In line with the research conducted by (Hartini & Roselina Jayanti, 2014) there is a significant relationship between working period (pvalue = 0.002) with complaints of health problems among scavengers at Jatibarang landfill.

Based on the results of the path analysis shows that personal hygiene is proven to be directly related to allergic contact dermatitis with a path coefficient of 0.243 (p = 0.003 <0.05), then the fourth hypothesis which states "personal hygiene is directly related to allergic contact dermatitis in scavengers in landfill. Piyungan "accepted. In line with research conducted by (Nurcandra, 2019), foot and nail hygiene (P = 0.046; PR = 1.375: 95% CI 1.058-1.787) and cleanliness of hair and scalp (P = 0.014; PR = 1.442: 95% CI 1,080-1,924) shows a significant relationship with skin disorders.

CONCLUSION

Based on the results of research conducted at Piyungan landfill Yogyakarta, it is concluded that personal hygiene, knowledge, use of personal protective equipment and working period are related either directly or indirectly to the incidence of allergic contact dermatitis in scavengers.

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