# Analysis of Risk Factors for Skin Disease Symptom at The Waste Disposal Workerin Deli Serdang

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***Abstract***

*Disease risks associated with waste collection and transportation work include skin health problems, increased cases of diarrhea, and skeletal muscle disorders. These circumstances will support the risk of developing skin diseases in waste disposal workers. The purpose;of this study was to determine the relationship between length of service, use of Personal Protective Equipment (PPE), and personal hygiene with symptom of skin diseases among waste transport workers in Deli Serdang. This study is a quantitative study with a cross-sectional design. The sample amounted to 41 people with the sampling technique, namely total sampling. The research instrument was conducted by interview using a questionnaire and conducting field observations to observe waste transportation activities. Data analysis using univariate and bivariate, the statistical test used is the Chi-Square test. The results of research conducted on the relationship between the working period, the use of Personal Protective Equipment (PPE), and personal hygiene in waste transport workers in Deli Serdang, shows that workers who experience skin disease symptom are 41.5%. Based on the results of the chi-square analysis, it was found that there was a signicant relationship between the working period and symptom of skin diseases in waste transport workers where the value (pvalue=0.001), personal hygiene value (p-value=0.012), the use of Personal Protective Equipment (PPE) value (p-value=0.014). Conclusion: Based on the results of the study it can be concluded that there is a relationship between tenure, PPE, personal hygine with complaints of skin diseases in waste carriers. Waste haulers who have less than 5 years of service, compliant use of PPE, and good personal hygine are not at risk for skin disease complaints.*

***Keywords: Personal Hygiene, Personal Protective Equipment (PPE), Work Period***

## INTRODUCTION

Waste is a problem that exists in various parts of the world, especially in Indonesia. Indonesia is one of the second largest plastic waste contributors in the world after China. Indonesia generates around 3.22 million tons per year with waste that is discharged into the sea reaching 0.48-1.29 metric tons per year (Hendar et al., 2022). The amount of waste reaches 175,000 tons/day or equivalent to 64 million tons/year (Mustaghfiroh et al., 2020). Indonesia is also ranked fth in the world as a country with poorly managed plastic waste. Poorly managed waste is material that is disposed of carelessly or improperly and has a high risk of entering the ocean. There are approximately 820 thousand pieces of mismanaged plastic waste in Indonesia (Hendar et al., 2022).

Four out of five countries that generate 50 percent of all marine plastic debris are Southeast Asian countries, namely Indonesia, Vietnam, the Philippines, and Thailand. Data from the World Bank suggests that if 75 percent of land-based leakage in these countries could

be curbed, it could reduce the ow of waste into the oceans globally by 45 percent(Hendar et al., 2022). According to estimates, in 2016, the six ASEAN member countries (Indonesia, Thailand, Vietnam, the Philippines, Malaysia and Singapore) produced a total of 243 million tons of waste. It is estimated that currently around 53 percent of waste generated in ASEAN countries is not collected. Less than a quarter of the waste collected is recycled.

The rest of the money is either illegally disposed of after collection (approximately 34 percent of collected waste) or processed and disposed of (about 43% of collected waste). (Studi et al., 2023). In addition, waste that is just thrown away without proper handling can cause various dangerous diseases, such as skin disorders(Firda & Sudiadnyana, 2020). In addition to humans, animals will also be affected by the impact of waste, many animals consume waste, especially plastic if done continuously, it will cause problems with animal digestion and can lead to death (Dalilah, 2021). In addition, inorganic waste can have a negative impact on agriculture which can pollute the agricultural environment (Dalilah, 2021).Waste dispostal are workers who are at high risk of contracting occupational diseases.

Environmental conditions that are directly related to sunburn, dust, and odors from garbage (Salmariantity et al., 2021). The risk of diseases associated with the work of collecting and transporting waste, including skin health problems, increased cases of diarrhea, and skeletal muscle disorders. symptom of skin disorders that are often experienced by workers are itching and bumps and one of the causes is biological agents such as microorganisms, skin parasites, and so on (Lolowang et al., 2020). There are several ways of maintaining personal hygiene, namely maintaining the cleanliness of the skin, nails, feet, and hands in order to avoid health problems(Suteja et al., 2023). Waste pickers have the risk of coming into contact with various types of waste ranging from organic, and inorganic to hazardous waste(Khoiriyah, 2021).

Based on the composition of the waste transported and the time of work exposure, these workers can be said to be at risk of various diseases, when these workers are in direct contact with waste that contains irritants that have accumulated, where these substances have a very strong effect on health both direct and indirect effects(Ulva, 2020). In general, the incidence of skin diseases that are felt is itching when they start sweating, and after that redness appears(Angriyasa et al., 2019). However, the waste pickers consider the itching to be normal and do not seek medical attention(Pratama & Prasasti, 2018). They work every day and most of the waste pickers do not use private safety gear like rubber gloves, protective shoes, also facee cover. The more frequent and longer contact with garbage and if you do not pay attention

to personal hygiene and the use of PPE as needed, this situation will support the risk of developing skin diseases in waste transport workers.

Based on the observations and interviews conducted by the author, many waste collectors do not fully utilize Personal Protective Equipment (PPE), such as not using boots, masks, gloves, and so on. And some workers experience symptom of skin disorders. Factors causing the occurrence of dermatitis are human factors, worker age, length of work, length of service, Self-care and the utilization of PPE. Irritant contact dermatitis is contact dermatitis caused by irritant materials It might induce damage to cells as diagnostic irregularities in form pf poliform sparkle (drainage, blisters, acne, cells, flat, lichen growth) and the sense of itching. (Pradananingrum et al., 2018). Either may be abrupt or persistent. irritant contact dermatitis is caused by irritant resources like fluids, soaps, lube lipids, alkaline substances, and wood shavings, duration of proximity, rate (an ongoing or occasionally), obstruction triggering the flesh to be thinner, impact while physical trauma, climate, and humidity outside. (Ambarsari & Mulasari, 2018).

Dermatitis infections are frequently characterized by itching and red patches on garbage pickers' bodies. The high working period and length of work of waste pickers are some of the causes of skin diseases. Skin diseases (such as skin fungus) can occur because piles of garbage are a good place for fungal growth (Mahyuni, 2012). Many waste management studies in Indonesia have been conducted on waste transportation and disposal practices, but no studies have considered the hazards that may occur to workers in the waste transportation eet. Most waste collection in Indonesia is done by hand, without mechanization. (Jufrizal et al., 2023).

The goal of the investigation sought to examine the link between time spent at work, the usage of Personal Protective Equipment (PPE), and oral cleanliness with symptoms of skin diseases in trash laborers at Deli Serdang.

## METHODS

### Type of Research

It's an analysis of data using a longitudinal approach. Numerical data was collected to be analyzed statistically.

### Location and Place of Research, Date of Research

The research location is in Deli Tua District, Deli Serdang Regency, North Sumatra Province. The research time start from January-February 2024.

**Research Instruments and Variables**

It tool is carried via interrogating utilizing an application and performing fieldwork to investigate discarding processes. The independent variables of the study are length of service which refers to the period or duration that a person has spent in a job in a workplace with an indicator of work duration in years, personal hygine is an individual's habit of maintaining personal and body hygiene with indicators of good and bad maintenance of personal hygiene, hand hygiene, and personal contact management, and the use of personal protective equipment (PPE) tools that individuals use to protect themselves from potential hazards in the workplace with indicators of non-compliance conformity with the usage of personal protective equipment. The dependent variable by known as study was skin disease symptom arise redness of the skin, small vesicles or blisters appear and will release fluid when peeled off, itching, pain, stinging, burning skin, the skin becomes scaly and dry, thickening of the skin, the skin becomes cracked and cracked, white spots filled with liquid.Participants who have symptom will get a score of 1 and if they do not have symptom will get a score of 0.

**Population and Sample**

The sample is part of the population regarding an specimen size 41 people Applying the entire sampler approach. due to the relatively small population and reducing time and costs in the research process.

**Data Processing and Analysis**

Data processing by collecting field observation data and testing the questionnaire to evaluate the clarity, suitability, and accuracy of the questions. The analysis technique is inferential analysis. Data analysis using the Chi-Square test is used in both unilateral and bimodal computations.

## RESULTS

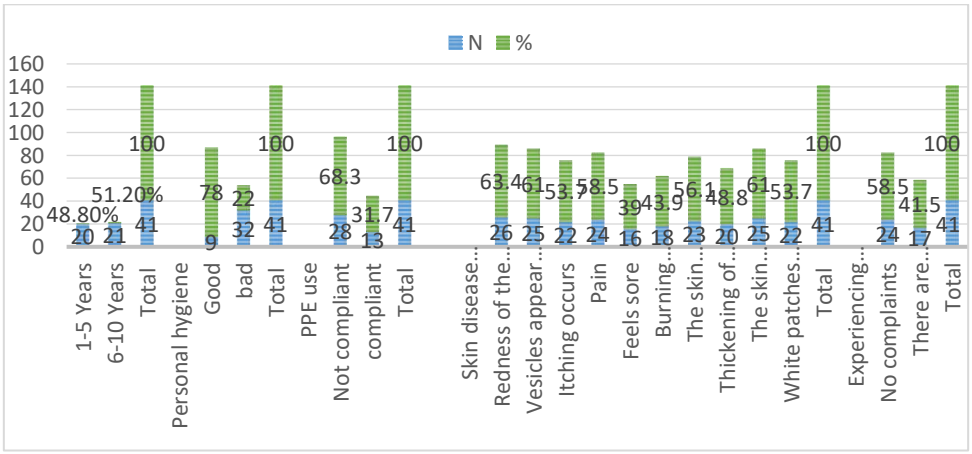


*Figure 1.Frequency distribution of waste carrier characteristics in Deli Tua Sub-district.*

Following the findings of research on waste transport workers in Deli Serdang totaling 41, a review of single-variate analysis revealed that nearly all waste disposals who did not experience skin disease were 24 (58.5%) The majority of waste disposals with a working period of 6-10 years were (51.2%), poor personal hygiene was 32 (22.0%), respondents who were not compliant in using PPE were (68.3%) and as many as 26 (63.4%) respondents who experienced symptom of skin disease had redness on the skin.

***Table 1. Analysis OF Risk Factors For Skin Disease Complaint***

| Variable | Skin Disease Complaints | | | | Total | | P-Value | PR (CI 95%) |
|---|---|---|---|---|---|---|---|---|
| | compliant | | Non-compliant | | | | | |
| | n | % | n | % | n | % | | |
| **Working mass** | | | | | | | | |
| 1-5 years | 3 | 7,3 | 17 | 41,5 | 20 | 48,8 | 0,001 | 11,333 (2,463-52,147) |
| 6-10 years | 14 | 34,1 | 7 | 17,1 | 21 | 51,2 | | |
| **Personal hygiene** | | | | | | | | |
| Bad | 10 | 24,41 | 22 | 53,7 | 32 | 78,0 | 0,012 | 7,700 (1,351-43,878) |
| Good | 7 | 17,1 | 2 | 4,9 | 9 | 22,0 | | |
| **Use Of PPE** | | | | | | | | |
| compliant | 9 | 22,0 | 4 | 9,8 | 13 | 31,7 | 0,014 | 5,625 (1,339-23,625) |
| Non-compliant | 8 | 19,5 | 20 | 48,8 | 28 | 68,3 | | |

Results of the analysis of the independent factors are length of service, personal hygine, use of PPE, while the dependent variable is symptom of skin diseases in waste transport workers. Respondents who did not have indication of skin disease in waste transport workers occurred mostly in the 1-5 year work period group, namely 41.5%. The chi-square test yielded an odds ratio of 0.001 (<0.005), indicating a link underlying both variables the working period and Symptom of skin diseases with an Odd Ratio value of 11.333 (CI 2.463-52.147). Respondents who did not havesymptom of skin disease in respondents whose personal hygine was poor were 53.7%, with a p The result of (0.012 <0.005) indicates a link personal hygine andsymptom of skin disease. Based on the results of the analysis, the Odd Ratio value is 7.700 (CI 1.351-43.878), thus respondents with poor personal hygine have a 7.7 times risk of feeling skin disease symptom compared to good personal hygine. Respondents who did not have symptom of skin disease in respondents who were not compliant in using PPE were 48.8%,with a p value (0.014 <0.005) it can be concluded that there is a relationship between the use of PPE and symptom of skin disease. According to a summary from this assessment, the Odd Ratio value was 5.625 (CI 1.339-23.625), thus respondents with non-compliant PPE use had a 5.6 times risk of feeling skin disease symptom compared to respondents who were compliant in using PPE.

## DISCUSSION

The period of work means a length duration or amount of period the labor spends at an area. (Tarwaka, 2017 in Karyati, 2023). The period of work referred to in this study was calculated since the respondents worked in matters related to waste, because there were several respondents who initially worked as scavengers and ended up becoming waste carriers and there were those who worked from waste recipients while becoming scavengers and there were also garbage collectors who had just worked as waste carriers.The results showed that skin disease symptom occurred in respondents who worked for over five decades (34.1%) with an Odd Ratio of 11.333 (CI 2.463-52.147).

Thus respondents with a work period of more than 5 years have a risk of 11.3 times feeling skin disease symptom compared to a work period of less than 5 years.The length of service is important to know to see how long ofcers are exposed to disease agents that cause symptom of skin diseases that respondents often feel. According to (Sucipto CD 2014in Hakim, 2019). working period is a period of time or the length of time the workforce works in a place. It should be noted that the length of work for waste haulers can be up to 5 years and above. The longer a person works, the more exposure to hazards posed by the work environment. (Hakim, 2019).

The working period needs to be known to see the length of time a person is exposed to various sources of disease that can cause symptom of skin disorders. The results of this study are in line with Hidayanti's research which states that respondents who have a work period ≥ 10 years are 36 respondents (75,0%) while respondents with a work period < 10 years have symptom of skin disorders as many as 14 respondents by 32,6%. The nal results of multivariate analysis modeling, variables that are signicantly associated with symptom of skin disorders in waste pickers are age and tenure. Occupational disease awareness improved in line with the tenure at the respondents' workplace. Waste haulers whose working period is new have not been able to adjust to the many risks posed by the work of transporting waste.

Workers' job satisfaction continued to increase until 5 years of service and decreased after 8 years of service. Outer skin cells can be damaged due to prolonged contact with irritants, the damage is directly proportional, meaning that prolonged exposure can damage skin cells which results in easy skin disease (Hidayanti et al., 2022).The results of the entianopa study stated that out of 29 workers with a long working period, 11 (37.9%) workers suffered from skin diseases and 18 (62.1%) workers did not suffer from skin diseases. Of the 33 workers with a new working period, 24 (72.7%) workers suffered from skin diseases and 9 (27.3%) workers did not suffer from skin diseases. Based on statistical tests, there is a

statistically significant relationship between the length of service and the incidence of skin diseases among garbage workers in Jambi City where the p-value is 0.006 (<0.05)(Yurandi et al., 2021).

Personal hygiene is the main requirement in maintaining one's health (Hidayat, 2009 inAndriani, 2016). Relationship between personal hygiene and skin disease symptom Hygiene is one of self-care such as care for the skin, nails, hands, and the body as a whole. Personal hygiene is one of the efforts to improve health status, maintain cleanliness, and prevent disease. Good personal hygiene in this study is a garbage transporter who bathes regularly at least 2 times a day, washes hands before and after work using soap, cuts nails short, and cleans them. In respondents whose personal hygiene is poor, 24,4%, while in respondents whose personal hygiene is good 17,1% it can be p *value* 0,012 concluded that there is a relationship between personal hygiene and symptom of skin disease. The results of this study are in line with Wahyuni's research, the results of which show that there is a relationship between personal hygiene practices and skin disorders in waste transport workers in Bener Meriah Regency with a p-value 0,003(Wahyuni, 2023). This is because respondents who do not immediately wash their hands with soap or immediately shower after being contaminated with garbage can experience skin disorders due to germs and bacteria that stick to the skin.

The results of Entianopia's research based on statistical tests using chi-square showed that there was a significant relationship between personal hygiene and the incidence of skin diseases in waste transport workers in Jambi City where the p-value was 0.008 (<0.05)(Entianopa et al., 2017). Based on the results of Eko's research, the p-value (0.000) ≤ alpha (0.05) was obtained, it can be concluded that there is a relationship between Personal Hygiene and the incidence of contact dermatitis (Yurandi et al., 2021). The relationship between personal hygiene that affects the occurrence of skin disorders. From the results of observations in the field, there were several respondents who had good personal hygiene but experienced skin disorders, this was due to other influencing factors, namely risky age and length of work, so that with a risky age and long exposure to garbage resulted in respondents experiencing skin disorders. The researcher assumed that thesymptom of skin diseases that waste disposals felt because they did not immediately wash their hands and clean their bodies when they got home. Washing hands using water will not remove grease and dirt compared to using soap.

Germs can live and stick to unclean hands containing fat and dirt. The work clothes they use are not always washed every day. The work clothes they use are not always washed

every day. Skin diseases are the most common infectious diseases in developing countries with a prevalence of around 20-80% (Sitanggang et al., 2021). Itching symptom are felt when sweating because work clothes are wet and damp can become a nesting place for germs. Maintaining health is an effort to be productive and can produce something. A healthy lifestyle should start from ourselves by paying attention to our own health. Personal hygiene is associated with the religious obligation to clean and purify before carrying out worship (Malik et al., 2020).

Maintenance of personal hygiene is necessary to maintain individual comfort, safety, and health. Hygiene practices go hand in hand with improved health. Diseases sometimes arise due to a lack of hygiene or also the wrong way to clean yourself. The following is explained through the hadith narrated by HR Bukhari no.5933 which states that Allah SWT favors health by maintaining cleanliness and beauty, meaning: Ibn Abbas, said: The Prophet said: "Two pleasures, most people are deceived in both, (namely) health and leisure". (HR Bukhari, no. 5933). The meaning of the explanation in the hadith is to neglect/neglect to thank Allah Ta'ala for the blessings He has given to humans. Gratitude to Allah Ta'ala is a good or good deed while neglecting to thank Allah and denying Allah's blessings is a crime or bad deed and each of them will get a reward from Allah. By maintaining personal hygiene, it can prevent skin diseases. In Islam, it is known that cleanliness is part of the faith, so it is the duty of Muslims to try to keep themselves clean, including clothes. Allah and His Messenger also love His servants who wear clean clothes and fragrant clothes as Allah SWT says in QS. Al-Muddassir verse 4 which means: And clean your clothes.

Personal protective equipment is a set of safety equipment used by workers to protect all or part of their body from the potential hazards of the work environment against occupational accidents and diseases to reduce the severity of a possible accident or occupational disease(Mustarin et al., 2021). symptom of skin disease in respondents who are not compliant in the use of PPE are 19,5%, while in respondents who are compliant in the use of PPE are 22,0% with a p *value* (0,014) it can be concluded that there is a relationship between the use of PPE and symptom of skin disease. Based on the results of the analysis, the Odd Rasio value 5,625 (CI 1,339-23,625) thus respondents with noncompliant PPE use have a 5.6 times risk of feeling skin disease symptom compared to respondents who are compliant in using PPE.

The results of this study are in line with Wahyuni's research, the results of which show that there is a relationship between personal protective equipment and skin disorders in waste transport ofcers in Bener Meriah Regency with a p-value 0,006. According to the researcher,

there is a relationship between personal protective equipment and skin disorders, respondents who do not fully use personal protective equipment while working, who only use one of the three personal protective equipment such as masks, boots, and helmets, most of them experience skin disorders, this is because the respondent's skin is directly exposed to garbage which contains many germs and bacteria. There are some respondents who already use complete personal protective equipment but experience skin disorders, this is because respondents have a history of skin disorders and old age so they are at risk of skin disorders (Wahyuni, 2023).

The results of Jufrizal's research based on the results of the chi-square test obtained a p value = 0.037 and of the 57 respondents who did not wear incomplete PPE 106 respondents experienced skin disease. This is because the janitors do not feel that PPE is very important, especially in disease prevention, one of which is the prevention of skin disease. Every day workers are always in direct contact with waste and this can trigger symptom of skin disease if cleaners who are always in contact with waste do not maintain their personal hygiene (Jufrizal et al., 2023).

The results of field research found that the majority of waste disposals do not use personal protective equipment (PPE) such as gloves, boots, protective clothing / long sleeves when working this results in symptom of skin diseases. To overcome the occurrence of symptom about the use of personal protective equipment, waste disposals should use PPE completely, namely by using work shoes that are not waterproof and up to the knee, wearing gloves, and wearing long-sleeved clothes that can cover the hands. waste disposals use PPE completely, then the waste disposals will be protected from the risk of health problems such as skin disease complaints.

## CONCLUSION

Based on the results of the study it can be concluded that there is a relationship between tenure, PPE, personal hygine with complaints of skin diseases in waste carriers. Compliant waste transporters in the use of PPE have a 5.6 times risk of not feeling skin disease complaints compared to non-compliant waste transporters. Waste pickers who have good personal hygiene have a 7.7 times risk of not feeling skin disease complaints compared to poor waste pickers. Recommendations include increasing awareness and adherence to personal hygiene practices and providing adequate PPE for workers as an effective preventive measure against contact dermatitis and other skin conditions.

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