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The Impact of Personal Hygiene and the Use of Personal Protective Equipment on the Incidence of Dermatitis

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ABSTRAK

Skin diseases are commonly caused by bacterial, viral, fungal, parasitic infections, and allergic reactions. According to data from the International Labour Organization (ILO), 160 workers suffer from occupational diseases. Surveillance studies in the United States have reported that 80% of occupational skin diseases are classified as dermatitis. This study aimed to examine the impact of personal hygiene and the use of personal protective equipment (PPE) on the incidence of dermatitis at the Sandar Angin Public Health Center in Pagar Alam City. An analytic survey method with a cross-sectional design was employed. Data were collected using a questionnaire administered to 68 patients who visited the Sandar Angin Public Health Center, selected through accidental sampling. Data analysis was conducted using the Chi-Square test. The results indicated a significant relationship between personal hygiene ($p = 0.035$) and the use of personal protective equipment ($p = 0.010$) with the incidence of dermatitis at the Sandar Angin Public Health Center. It is recommended that the health center implement proper personal hygiene practices, particularly after work-related activities, and ensure the consistent use of personal protective equipment to reduce the risk of dermatitis.

INTRODUCTION

Inflammation in the form of itchy red rashes on the skin caused by direct contact with certain substances that irritate the skin or trigger an allergic reaction is commonly referred to as dermatitis. These rashes are not contagious or life-threatening, but they can cause significant discomfort to the affected individuals (Wartonah, 2018). The skin is the largest organ of the human body, covering muscles and internal organs. It is composed of a complex network of blood vessels, nerves, and glands, all of which are susceptible to disease. One of the most frequently encountered skin conditions is dermatitis, which can be caused by allergens (Price & Wilson, 2017). The skin acts as a receptor of external stimuli and serves as a primary barrier against pathogenic organisms. Well-maintained skin can help prevent various diseases (Mubaraq & Cahyani, 2017).

The workplace is widely recognized as an environment containing various hazards that pose threats to workers' safety and health. Presidential Regulation Number 7 of 2019 states that workers are valuable assets in national economic development and must be protected

through occupational safety and health (OSH) programs. The purpose of implementing OSH is to ensure that workers remain healthy, safe, productive, and protected from workplace accidents and occupational diseases. Among occupational diseases, occupational skin diseases—commonly referred to as occupational dermatitis—are particularly prevalent. These skin disorders represent a significant proportion of occupational diseases and are estimated to account for 50–75% of all occupational illnesses (Saftarina, 2018).

According to data from the International Labour Organization (ILO), 160 workers are affected by occupational diseases. Surveillance research in the United States reports that 80% of occupational skin diseases are dermatitis, with irritant contact dermatitis ranking second at 14–20% (ILO, 2018). In Indonesia, most skin diseases are caused by bacterial, viral, fungal, or parasitic infections, as well as allergies. Other contributing factors such as skin type, climate, personal habits, and environmental conditions also influence the clinical presentation of skin diseases (Harahap, 2017). Dermatitis can reduce worker productivity due to symptoms that interfere with work performance. In Indonesia, the costs associated with treating occupational skin disorders are significant, including loss of income, reduced productivity, worker reassignment, compensation, medical expenses, and insurance (Soedarto, 2018).

Multiple factors influence the transmission of occupational dermatitis among workers, including personal hygiene, use of personal protective equipment (PPE), knowledge, history of skin disease, and allergy history (Ma'rufi, 2017). In general, the public tends to perceive skin diseases as non-threatening, and therefore they are often left untreated until they become severe. If skin complaints are not promptly addressed, they may progress to more serious skin disorders (Djuanda, 2017).

Personal hygiene refers to individual cleanliness and health practices intended to prevent disease for oneself and others. Poor personal hygiene, such as not washing hands, not showering after work, wearing dirty clothing, or neglecting the use of clean PPE, can increase the risk of developing dermatitis (Wartonah, 2018). This finding is consistent with a study by Merarie, Irawan, and Nito (2024), which demonstrated a significant association between personal hygiene and the incidence of dermatitis in the community served by the Cempaka Community Health Center in Banjarmasin.

In addition to personal hygiene, the use of personal protective equipment is a key strategy to minimize the risk of dermatitis. PPE helps prevent direct contact with physical, chemical, or biological agents. Research findings show that 17 out of 24 (85%) fishermen affected by dermatitis did not wear PPE while working. This is in line with the statement by Lestari and Utomo (2017), who noted that if workers do not use PPE, their skin is left unprotected and is more vulnerable to irritants and allergens. PPE usage significantly reduces the risk of direct exposure to substances that may cause skin trauma, thus demonstrating a strong association between PPE use and the incidence of dermatitis (Djuanda, 2017). These findings are further supported by a study by Marbun, Sembiring, and Syafitri (2023), which found a significant relationship between PPE use and contact dermatitis among waste collection workers at Tadukan Raga landfill.

Data from the South Sumatra Provincial Health Office showed that in 2022, there were 4,842 reported cases of dermatitis, which increased to 5,303 in 2023 (South Sumatra Provincial Health Office, 2024). Similarly, in Pagar Alam City, there were 821 reported cases of dermatitis in 2022. At Sandar Angin Health Center, 210 cases were recorded in 2022, increasing to 921

cases in 2023, with 236 of them reported from Sandar Angin Health Center alone (Pagar Alam City Health Office, 2024). Based on the aforementioned background, this study aims to examine the impact of personal hygiene and the use of personal protective equipment on the incidence of dermatitis at Sandar Angin Health Center, Pagar Alam City.

METHODS

This study employed an analytical survey design with a cross-sectional approach. The sample was selected using accidental sampling, involving 68 patients who visited the Sandar Angin Public Health Center in Pagar Alam City. Data were collected using a structured questionnaire. Data analysis consisted of univariate analysis using frequency distribution and bivariate analysis using the Chi-Square test.

RESULTS

Univariate Analysis

Table 1. Frequency Distribution of Personal Hygiene, Use of Personal Protective Equipment, and Incidence of Dermatitis

Variable		n = 68	%
Personal Hygiene	Poor	39	57,4
	Good	29	42,6
Use of Personal Protective Equipment (PPE)	Not	45	66,2
	Using	23	33,8
Incidence of Dermatitis	Yes	37	54,4
	No	31	45,6

Source: Primary Data, 2024

Based on Table 1, it is shown that out of 68 patients who visited the Sandar Angin Public Health Center in Pagar Alam City, 39 individuals (57.4%) had poor personal hygiene, while 29 individuals (42.6%) had good personal hygiene. Regarding the use of personal protective equipment (PPE), 45 individuals (66.2%) reported not using PPE, whereas 23 individuals (33.8%) reported using PPE. In terms of the incidence of dermatitis, 37 individuals (54.4%) experienced dermatitis, while 31 individuals (45.6%) did not experience dermatitis.

Bivariate Analysis

Based on Table 2, it is shown that among the 39 patients with poor personal hygiene, 26 individuals (66.7%) experienced dermatitis, while 13 individuals (33.3%) did not. Conversely, among the 29 patients with good personal hygiene, 11 individuals (37.9%) experienced dermatitis, and 18 individuals (62.1%) did not, at the Sandar Angin Public Health Center in Pagar Alam City. The Chi-square test yielded a value of 4.439 with a p-value of 0.035. Since the p-value is less than 0.05, it can be concluded that there is a statistically significant association between personal hygiene and the incidence of dermatitis at the Sandar Angin Public Health Center in Pagar Alam City.

Regarding the association between the use of personal protective equipment (PPE) and the incidence of dermatitis, it was found that among the 45 patients who did not use PPE, 30

individuals (66.7%) experienced dermatitis, while 15 individuals (33.3%) did not. In contrast, among the 23 patients who used PPE, 7 individuals (30.4%) experienced dermatitis, while 16 individuals (69.6%) did not, at the same health center. The Chi-square test showed a value of 6.661 with a p-value of 0.010. As the p-value is less than 0.05, this result also indicates a statistically significant association between the use of personal protective equipment and the incidence of dermatitis at the Sandar Angin Public Health Center in Pagar Alam City.

Table 2. The Relationship between Personal Hygiene and the Use of Personal Protective Equipment (PPE) with the Incidence of Dermatitis

Independent Variable	Dermatitis Incidence						χ^2	*pValue*
	Yes		No		Total			
	n	%	n	%	n	%		
Personal Hygiene								
Poor	26	66,7	13	33,3	39	100	4,439	0,035
Good	11	37,9	18	62,1	29	100		
Use of Personal Protective Equipment (PPE)								
Not Using	30	66,7	15	33,3	45	100	6,661	0,010
Using	7	30,4	16	69,6	23	100		

Source: Primary Data, 2024

PEMBAHASAN

The Relationship Between Personal Hygiene and the Incidence of Dermatitis

Based on the cross-tabulation between personal hygiene and the incidence of dermatitis, it was found that out of 39 patients with poor personal hygiene, 13 did not suffer from dermatitis. This was because they consistently used personal protective equipment (PPE) such as masks, rubber gloves, and boots while working. Thus, even with inadequate personal hygiene, the use of PPE helped prevent dermatitis. Conversely, among 29 patients with good personal hygiene, 11 experienced dermatitis. This occurred because they did not use appropriate PPE during work activities, such as wearing masks while sweeping, rubber gloves when handling waste, boots, or raincoats when working during rain. Additionally, some patients did not shower immediately after returning home from work or failed to change out of their work clothes, which increased their susceptibility to skin conditions like dermatitis.

Bivariate analysis using the Chi-Square test yielded a value of 4.439 with a p-value of 0.035. Since the p-value was less than 0.05, the null hypothesis was rejected and the alternative hypothesis was accepted. This indicates a significant relationship between personal hygiene and the incidence of dermatitis among patients at the Sandar Angin Community Health Center in Pagar Alam City. In other words, patients with poor personal hygiene have a higher likelihood of developing dermatitis, whereas those with good personal hygiene are at lower risk.

Personal hygiene refers to individual hygiene practices that aim to maintain bodily cleanliness, including washing, bathing, and caring for the hair, nails, teeth, and gums (Perry & Potter, 2018). Personal hygiene is a key preventive measure against skin diseases. One specific personal hygiene action that helps prevent contact dermatitis is maintaining skin cleanliness.

In this study, skin cleanliness refers to the routine practices of seaweed farmers in cleaning their bodies before and after work, including bathing, using soap, drying with a clean towel, and wearing clean clothes (Sitorus, 2018).

Personal hygiene plays a crucial role in reducing the risk of contact dermatitis. This is due to the strong link between personal cleanliness and the development or transmission of disease when proper hygiene is not practiced in daily life. Routine practices such as regular hand and foot washing, bathing, and changing clothes are essential to reducing the risk of skin disorders (Satyarini, Pratikna, Mulia, & Dewi, 2020).

The findings of this study are consistent with previous research. A study by Merarie, Irawan, and Nito (2024) found a significant association between personal hygiene and the incidence of dermatitis in the working area of the Cempaka Community Health Center in Banjarmasin, with a Chi-Square test p-value of 0.000. Another study by Fitriandini, Adriyani, and Akliyah (2024) using Fisher's Exact Test also reported a significant relationship, with a p-value of 0.000, between the personal hygiene of waste transport workers and the occurrence of irritant contact dermatitis in Banyuwangi Regency. Similarly, a study conducted by Rahmagina, Gusti, and Arlinda (2024) found a significant association between personal hygiene and skin complaints among waste pickers at the Air Dingin landfill in Padang City, with a p-value of 0.0001. The odds ratio (OR) of 12.264 and a 95% confidence interval of 4.349–34.585 indicate that respondents with poor personal hygiene were 12.264 times more likely to suffer from skin disorders compared to those with good personal hygiene.

Association Between the Use of Personal Protective Equipment (PPE) and the Incidence of Dermatitis

Based on the cross-tabulation between PPE usage and the incidence of dermatitis, it was found that among 45 patients who did not use PPE, 15 individuals did not experience dermatitis. These patients reported that after returning home from work, they immediately took a shower using soap and changed into clean clothes. This post-exposure hygiene practice likely eliminated or inactivated any pathogens that may have been present on their skin, thereby preventing the onset of dermatitis. Conversely, among the 23 patients who reported using PPE, 7 still developed dermatitis. This was attributed to improper or inconsistent PPE usage. For instance, some patients reused disposable masks or failed to wash their hands before eating after removing rubber gloves, believing the gloves provided sufficient protection. As a result, pathogens remained on their hands and led to dermatitis symptoms, typically characterized by itching on the hands and feet.

Bivariate analysis using the Chi-Square test yielded a value of 6.661 with a p-value of 0.010. Since $p < 0.05$, the null hypothesis is rejected and the alternative hypothesis is accepted, indicating a statistically significant association between PPE usage and the incidence of dermatitis among patients at Sandar Angin Community Health Center in Pagar Alam City. This implies that individuals who do not use PPE are more likely to develop dermatitis, while those who use PPE correctly have a lower risk.

This finding aligns with Soeripto (2018), who stated that PPE is essential for workers to prevent injuries or illnesses caused by hazards present in the workplace environment. Similarly, Djuanda (2017) emphasized that proper PPE use can prevent direct contact with

harmful chemicals or substances that may cause skin trauma, thus supporting the association between PPE use and the incidence of dermatitis.

This result is also consistent with a study by Marbun, Sembiring, and Syafitri (2023), which found a significant relationship between PPE use and contact dermatitis among waste collection workers at Tadukan Raga landfill, with a p-value of 0.013. The odds ratio indicated that workers without complete PPE were 9.09 times more likely to develop contact dermatitis compared to those with complete PPE. Another study by Pratiwi and Diah (2023) reported a similar result, where a Chi-Square test revealed a significant association (p = 0.014) between PPE use and contact dermatitis among seaweed farmers in Mangarabombang District, Takalar Regency. Furthermore, research by Manalu and Nainggolan (2022) reported a significant association (p = 0.001) between PPE use and dermatitis symptoms among waste transport workers in Lubuk Pakam District.

Improper use of PPE can endanger workers by failing to provide adequate protection from occupational hazards. Therefore, selecting appropriate PPE should consider several factors, such as suitability for the type of work, ability to provide protection, safety, ease of use, comfort, flexibility, compliance with safety standards, durability, affordability, availability of spare parts, and minimal interference with movement.

CONCLUSION

Based on the results and discussion presented above, it can be concluded that there is a significant relationship between personal hygiene and the use of personal protective equipment (PPE) with the incidence of dermatitis among patients at Sandar Angin Public Health Center in Pagar Alam City. The findings of this study are expected to enhance public awareness regarding both the positive and negative impacts of personal hygiene and PPE use in preventing dermatitis. Furthermore, it is recommended that the health center implement proper personal hygiene practices, especially after completing work-related tasks, and consistently encourage the use of PPE during work activities to reduce the risk of dermatitis.

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