

# Determine The Factors Related to The Incidence of Dermatitis among Fishermen

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**Abstract:** One of the most common occupational diseases is occupational contact dermatitis. Dermatitis among fishermen may be due to sea water due to its density that draws water from the skin. Dermatitis that often occurs among fishermen is irritant contact dermatitis and allergic contact dermatitis. This study aims to determine the factors related the incidence of dermatitis among fishermen at Karangreja Village, Suranenggala Subdistrict, Cirebon District in 2019. This study used a descriptive analytic approach with cross sectional design. The population of this research was fishermen at Karangreja Village, Suranenggala Subdistrict, Cirebon District in 2019 as many as 167 fishermen and the samples were 63 fishermen taken by accidental sampling technique. Data collection was carried out by interview using a questionnaire and observation using a checklist sheet. Data analysis was performed using chi-square test. The results showed that there was a relationship between work period with P Value = (0.040), Personal Protective Equipment with P Value = (0.030), personal hygiene with P Value = (0.045) and the incidence of dermatitis among fishermen. Meanwhile, there was no relationship between age and the incidence of dermatitis with P Value = (0.629).

## 1. Background

One of the most common occupational diseases is occupational contact dermatitis. This kind of 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 occupy 9% to 34% of work-related diseases. Occupational contact dermatitis usually occurs on the hands and the incidence rate for dermatitis varies between 2% to 10%. It is estimated that 5% to 7% of dermatitis sufferers will develop into chronic disease and 2% to 4% of them are difficult to cure with topical treatment [1].

Dermatitis among Fisherman may be due to sea water which due to its density that draws water from the skin, in this case sea water is a cause of chronic skin dermatitis with primary stimulation. However, skin diseases may also be caused by fungi or sea animals. Wet work environment is a place where fungal diseases may develop, for example monoliasis [2].

Dermatitis that often occurs among Fisherman is irritant contact dermatitis and allergic contact dermatitis. This disease arises due to several factors such as environmental factor, agent characteristics and individual factor. Inadequate personal hygiene can result in fungal, bacterial, viral, parasitic infections, skin disorders and other complaints. If the working environment is dirty and humid, skin diseases will be easily develop [3].



The prevalence of dermatitis in Indonesia is 6.78% and varies greatly. About 90% of occupational dermatitis are contact dermatitis, both irritant and allergic. 92.5% occupational skin diseases are contact dermatitis, around 5.4% of skin diseases are due to skin infections and 2.1% of them are due to other causes. In epidemiological studies, Indonesia showed that 97% of 389 cases were contact dermatitis, 66.3% of which were irritant contact dermatitis and 33.7% were allergic contact dermatitis [4].

According to data from Suranenggala CHC Unit in the last 4 months from January to April 2019, the incidence of dermatitis ranked number 8 on the top 10 disease with a total of 635 dermatitis cases [5].

The results of a preliminary study conducted by the researchers in May 2019 among 10 fishermen at Karangreja Village, Suranenggala Subdistrict, Cirebon District, as many as 6 fishermen suffered from leg and hand skin disorders in the form of irritation that appeared after returning from the sea, there were redness on the skin, itching, and scaly skin. In addition, the fishermen did not use personal protective equipment (PPE) properly while their work at sea, which caused the skin to be exposed to direct sunlight and the splash of sea water soaked the skin continuously and there were bites from animals such as jellyfish that could cause itchy and blistered skin. This study aims to determine the factors related the incidence of dermatitis among fishermen.

## 2. Methods

This study used a descriptive analytic approach with cross sectional design. The population of this research was fishermen at Karangreja Village, Suranenggala Subdistrict, Cirebon District in 2019 as many as 167 fishermen and the samples were 63 fishermen taken by accidental sampling technique. Data collection was carried out by interview using a questionnaire and observation using a checklist sheet. Data analysis was performed using chi-square test.

## 3. Results

### 3.1 Frequency Distribution of Age, Work Period, Use of Personal Protective Equipment, Personal Hygiene, and Incidence of Dermatitis among Fisherman

**Table 1.** Frequency Distribution of Age, Work Period, Use of Personal Protective Equipment, Personal Hygiene, and Incidence of Dermatitis among Fishermen

Variable	Category	Frequency	Percentage (%)
Age	Non Productive	4	6.3
	Productive	59	93.7
Work Period	≤ 2 Years	43	68.3
	>2 Years	20	31.7
Use of PPE	Did Not Use	45	71.4
	Use	18	28.6
Personal Hygiene	Bad	46	73.0
	Good	17	27.0
Incidence of Dermatitis	No Dermatitis	27	42.9
	Dermatitis	36	57.1

Based on table 1 it was shown that the majority of respondents were included in productive age as many as 59 people (93.7%), 43 respondents (68.3%) had work period of <2 years, 45 (71.4%) respondents did not use Personal Protective Equipment while working and 46 (73%) respondents had bad personal hygiene, 36 respondents (57.1%) had symptoms of dermatitis.

### 3.2 Relationship Between Age and Dermatitis

**Table 2.** Relationship Between Age and Dermatitis among Fishermen

Age	Dermatitis				Total		P Value
	No Dermatitis		Dermatitis		n	%	
	n	%	n	%			
Non Productive	1	25	3	75	4	100	0.629
Productive	26	44.1	33	55.9	59	100	
Total	27	42.9	36	57.1	63	100	

Based on table 2 it was shown that 3 (75%) respondents who had non productive age experience dermatitis. Meanwhile, respondents who had productive age and experienced dermatitis there were 33 (55.9%) experienced dermatitis. Bivariate test results using the chi-square test obtained P value = 0.629 ( $\alpha > 0.05$ ). This showed that there was no relationship between age and the incidence of dermatitis.

### 3.3 Relationship Between Work Period and the Incidence of Dermatitis

**Table 3.** Relationship Between Work Period and the Incidence of Dermatitis among Fishermen

Work Period	Dermatitis				Total		P Value
	No Dermatitis		Dermatitis		n	%	
	n	%	n	%			
$\leq 2$ Years	14	34.9	28	65.1	42	100	0.040
$> 2$ Years	13	60.0	8	40.0	21	100	
Total	27	42.9	36	57.1	63	100	

Based on table 3 it was shown that of respondents whose work period was  $\leq 2$  years experience dermatitis there were 28 respondents (65.1%). Meanwhile, respondents whose work period was  $> 2$  years and experience dermatitis there were 8 respondents (40.0%). Bivariate test results using the chi-square test obtained P Value = 0.040 ( $\alpha < 0.05$ ). This showed that there was a relationship between work period and the incidence of dermatitis among Fisherman.

### 3.4 Relationship Between the Use of Personal Protective Equipment and the Incidence of Dermatitis.

**Table 4.** Relationship Between the Use of Personal Protective Equipment and the Incidence of Dermatitis among Fishermen

Use of PPE	Dermatitis				Total		P Value
	No Dermatitis		Dermatitis		n	%	
	n	%	n	%			
Did Not Use	22	48.9	23	51.1	45	100	0.030
Use	14	77.8	4	22.2	18	100	
Total	36	57.1	27	42.9	63	100	

Based on table 4 it was shown that of respondents who did not use Personal Protective Equipment and experience dermatitis there were 23 respondents (51.1%). Meanwhile, respondents who used Personal Protective Equipment and experience dermatitis there were 4 respondents (22.2%). Bivariate test results using the chi-square test obtained P value = 0.030 ( $\alpha < 0.05$ ). This showed that there was a relationship between the use of Personal Protective Equipment and the Incidence of Dermatitis among Fisherman.

### 3.5 Relationship between Personal Hygiene and the Incidence of Dermatitis

**Table 5.** Relationship between Personal Hygiene and the Incidence of Dermatitis among Fishermen

Personal Hygiene	Dermatitis				Total		P Value
	No Dermatitis		Dermatitis		N	%	
	N	%	n	%			
Bad	16	34.8	30	65.2	46	100	0.045
Good	11	64.7	6	35.3	17	100	
Total	27	42.9	36	57.1	63	100	

Based on table 5 it was shown that of respondents with bad personal hygiene and experience dermatitis there were 30 respondents (65.2%). Meanwhile, respondents with good personal hygiene and experience dermatitis there were 6 respondents (35.3%). Bivariate test results using the chi-square test obtained P Value = 0.045 ( $\alpha < 0.05$ ). This showed that there was a relationship between personal hygiene and the incidence of dermatitis among Fisherman.

## 4. Discussion

### 4.1 Relationship Between Age and the Incidence of Dermatitis among Fisherman

Based on the results of a study among 63 fishermen it was shown that 59 (93.7%) respondents who had a productive age. Age range of 15-64 years is the productive age, while the non productive age is the age below 15 years and 65 years and above [6]. The statistical test results obtained P Value = 0.629 ( $\alpha > 0.05$ ) meaning that there was no relationship between age and the incidence of dermatitis.

The similar study was conducted by Arie Retnoningsih which stated that there was no significant relationship between age and the incidence of contact dermatitis among Fisherman at Tombok Region of Tanjung Mas Village, North Semarang District, Semarang City [7].

Dermatitis can be experienced by anyone of any age group. An older person has dry and thin skin that is intolerant of soap and solvents. Age has little effect on sensitization capacity. Each age group has a different characteristic pattern of sensitivity, as in young adults who have the tendency to experience allergy due to cosmetics and occupation, whereas the medical and a history of previous sensitivity have an effect among people with older age. Old age makes the body more susceptible to irritants. There is often failure in the treatment of dermatitis among the elderly which results in chronic dermatitis. It can be said that dermatitis will be easier to affect at an older age [8].

Based on the study results, the researchers argued that the absence of a relationship between age and the incidence of dermatitis in this study might occur because dermatitis could be suffered by all people from any age group. Age had little effect because if you do not use protective equipment while working and personal hygiene and the environment cleanliness are not considered well then the possibility of experiencing dermatitis will be greater.

### 4.2 Relationship Between Work Period and the Incidence of Dermatitis among Fisherman

Based on the results of this study among 63 Fishermen it was shown that 43 respondents (68.3%) had a work period of  $\leq 2$  years. Statistical test results obtained P Value = 0.040 ( $\alpha < 0.05$ ) which meant that there was a relationship between work period and the incidence of dermatitis. The results of this study are in line with the study conducted by Imma Nur Cahyawati who stated that there was a significant relationship between work period and the incidence of dermatitis among Fisherman who worked at the Tanjung Sari fish auction place, Rembang District [9].

Workers with work duration of  $\leq 2$  years can be one of the factors which indicates that those workers do not have enough experience in carrying out their work. If those workers are still often found to make mistakes, then this has the potential to increase the incidence of dermatitis among workers with work duration of  $\leq 2$  years. Workers with more experience will be more careful so that they are less likely to be exposed to irritants or allergens [10].

Based on the study results, the researchers argued that the length of one's work period determined one's level of experience in mastering his work. It was possible that fishermen at Karangreja village who had a work period of  $\leq 2$  years did not have enough experience in carrying out their work, lack of knowledge and vulnerability of the skin to sea water cause the skin to become more sensitive.

Educating patients about how to avoid irritants in the home and work place is very important. Reducing contact with irritants such as soap, solvents, oils, alkalis, acids or abrasive materials decreases the incidence of ICD. However, when avoidance of the irritant is not possible, protective skin products are the next alternative [11].

#### *4.3 Relationship Between the Use of Personal Protective Equipment and the Incidence of Dermatitis among Fisherman.*

Based on the results of research among 63 Fishermen it was shown that 45 respondents (71.4%) did not use Personal Protective Equipment while working. Statistical test results obtained P Value = 0.030 ( $\alpha < 0.05$ ) which meant that there was a relationship between the use of Personal Protective Equipment and the incidence of dermatitis. The results of this study are in line with the study conducted by Elizabeth Ruttina Hutagaol which stated there was a significant relationship between the use of PPE and the incidence of occupational contact dermatitis among fish traders in the Traditional-Modern Market of the Betung Bay Auction Warehouse [12].

In simple terms PPE is a set of tools used by workers to protect part or all of their bodies from potential occupational hazards. Based on the reality in the field it can be seen that workers who use PPE well were still fewer than those who did not use PPE [9].

Based on the study results, the researchers argued that the use of PPE among Fisherman at Karangreja Village, Suranenggala Subdistrict was still low. There were some fishermen who used Personal Protective Equipment but still experienced dermatitis. This may be due to respondents did not maintain their personal hygiene properly and did not use Personal Protective Equipment according to Indonesian National Standards (SNI). The use of personal protective equipment (PPE) that are not clean or not maintained well is one of the reasons why they still experienced dermatitis.

#### *4.4 Relationship Between Personal Hygiene and the Incidence of Dermatitis among Fisherman.*

Based on the results of this study among 63 fishermen, it was shown that 43 respondents (73%) had bad personal hygiene. Statistical test results obtained P Value = 0.045 ( $\alpha < 0.05$ ) which meant that there was a relationship between personal hygiene and the incidence of dermatitis. The similar study was conducted by Arie Retnoningsih which stated that there was a relationship between the history of skin diseases among Fisherman at Tombok Region of Tanjung Mas Village, North Semarang District, Semarang City [7].

Personal Hygiene is one of the factors that can prevent dermatitis. Good skin hygiene will prevent the body from disease. Washing hands and feet, bathing and changing clothes regularly can avoid skin diseases. Washing the hands is not only done until the hands are clean, the more important is that it is accompanied by using soap and cleaning between the fingers and toes with running water [8].

Based on the study results, the researchers argued that personal hygiene among Fisherman at Karangreja was still very low, although there were some fishermen who performed personal hygiene, but most of them did not wash their feet and hands after work, did not change their work clothes every day and did not clean the personal protective equipment after work. If those habits are continues to be done, there will be very likely to increase the incidence of dermatitis.

## **5. Conclusions**

Based on the study results there was a relationship between work period with P Value = (0.040), Personal Protective Equipment with P Value = (0.030), personal hygiene with P Value = (0.045) and the incidence of dermatitis among fishermen. Meanwhile, there was no relationship between age and the incidence of dermatitis with P Value = (0.629).

Recommendations for Fishermen Use clean and not damp personal protective equipment, such as boots and gloves to prevent exposure to irritants or allergens and to maintain personal hygiene, such as washing hands and feet with soap with running water after work, showering after work, changing work clothes everyday. For Suranenggala CHC Unit Conduct health education regarding dermatitis to fishermen.

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