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Factors Associated with the Incidence of Contact Dermatitis among Fish Traders at the Aur Duri Traditional Market, Jambi City in 2024

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A B S T R A K

Contact dermatitis is the occurrence of dermatitis (skin inflammation) accompanied by spongiosis or intracellular edema in the epidermis due to interactions between the skin and irritants or chemicals. These ingredients can be toxic or allergic. This study aims to determine the factors that can cause the incidence of irritant contact dermatitis in fish traders. This research was conducted in January – February 2024 using a quantitative approach with a cross sectional design. The sample in this study amounted to 65 people obtained using simple random sampling techniques. Data collection uses questionnaires and examinations by health workers. The data analysis method uses the Chi-Square test. The results of the study showed that there was a relationship between age (p= 0.002), personal hygiene (p= 0.005), length of exposure (p= 0.005), use of PPE (p= 0.001), and provision of clean water (p= 0.004) with the incidence of contact dermatitis to fish traders. There was no relationship between gender (p= 0.532) and length of service (p= 1.000) with the incidence of contact dermatitis in fish traders at Aur Duri Market, Jambi City.

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INTRODUCTION

Dermatitis is a disease that is often found in tropical countries, such as Indonesia. Contact dermatitis is a common skin disease that occurs in society due to daily activities in the work environment, but the actual prevalence of work-related contact dermatitis is not yet known for certain because there are still many workers who never report mild illnesses. (Novitasari et al., 2023)
The World Health Organization (WHO) reported that in 2020 the prevalence of irritant contact dermatitis was in 4th place, namely 12%. (Hayati et al., 2022) The incidence of dermatitis in Indonesia still varies. Based on data from Indonesian epidemiological studies, it is known that as many as 97% of skin disease problems are contact dermatitis, where irritant contact dermatitis reaches 66.3% and allergic contact dermatitis reaches 33.7% of cases. (RI Ministry of Health, 2019)

Contact dermatitis can harm individuals who work in the informal sector, including workers who often have direct contact with water. One of the jobs that experiences constant contact with water is fish traders. Repeated exposure to water can cause swelling and shrinking of the stratum corneum, which can cause cases of hand dermatitis. Components such as pepsin and trypsin contained in fish stomachs can also cause irritation to the epidermis of human skin. (Yanti & Allo, 2022)

Factors that cause contact dermatitis are classified into 2 types, namely endogenous and exogenous factors. Endogenous factors include age, gender, race, and history of skin disease, where these factors are inherited conditions that cannot be changed and can influence the incidence of contact dermatitis. Meanwhile, exogenous factors include personal hygiene behavior, use of PPE, work period, environment, and length of exposure. These are factors that come from outside and have the possibility of being changed to prevent contact dermatitis. (Ahmad et al., 2020)

Based on an initial survey conducted by researchers at the Aur Duri Traditional Market of 10 fish traders with an average age of 46 years and an average working period of > 5 years, it was found that there were fish traders who experienced skin complaints such as itching on the sidelines. fingers, redness, skin changes such as scaly, blistered skin conditions, rashes, and a hot sensation in several parts of the body, such as the hands and feet.
From the initial survey results, information was obtained that the habit of washing hands and feet after work was carried out by fish traders but did not use soap and running water. Fish traders only wash their hands with used water so that residual blood or fish scales often remain on their hands. Based on the problem description above, the problem formulation for this research is "what is the description of the incidence of contact dermatitis and what factors can cause contact dermatitis in fish traders at the Aur Duri Traditional Market, Jambi City in 2024?".

LITERATURE REVIEW

Contact dermatitis is an inflammatory response to the skin that can be acute or chronic, this is caused by exposure to external irritants or allergens that come into contact with the skin. Occupational contact dermatitis (DKAK) is defined as a skin disease that arises due to skin interaction with substances or materials

used in the workplace environment. Contact dermatitis is divided into two types, namely irritant contact dermatitis and allergic contact dermatitis. (Ahmad et al., 2020)

Contact dermatitis due to irritation is the most common type among various skin diseases that arise as a result of work activities, accounting for around two-thirds of the total cases of occupational skin diseases. This situation occurs more often in industrial sectors that involve exposure to water, such as fishing workers, fish traders, catering service providers, electronic plating workers, and industrial sectors that use detergents intensively. The first signs of irritant contact dermatitis (DKI) generally appear on the membrane around the fingers, and the healing process requires a long period of time, perhaps even lasting several months. Even though there has been improvement in the areas affected by DKI, this does not rule out the potential for DKI to occur again. (Patel & Nixon, 2022)

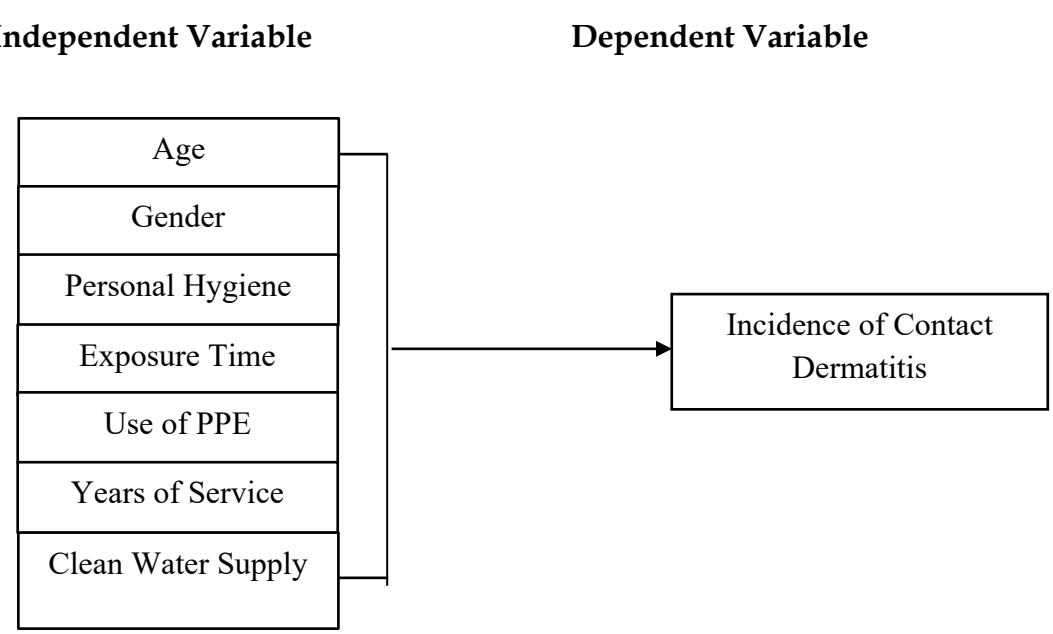

Figure 1. Framework of Thinking

METHODOLOGY

This research is a quantitative research with a Cross-Sectional (Cut in Lintang) design. The dependent variable studied was the incidence of contact dermatitis and the independent variables studied were age, gender, personal hygiene, length of exposure, use of PPE, length of service, and provision of clean water. This research was conducted at the Aur Duri Traditional Market, Jambi City. It was carried out in January - February 2024. The population of this research was 105 fish traders who were recorded in the market manager's report book. The sample in the study was 65 people obtained based on the Lemeshow formula. The sampling technique is simple random sampling using Microsoft Excel. Data collection techniques include direct observation of fish traders, questionnaires, and direct examinations carried out by health workers. Data analysis in this study was obtained using the SPSS program, namely univariate analysis and bivariate analysis using the chi-square test with a

significance limit of α = 0.05 which was presented in table form accompanied by narrative or explanation.

RESEARCH RESULT

Respondent Characteristics

Table 1. Distribution of Respondent Characteristics

Respondent Characteristics	Frequency	
	n	%
Age		
21– 30 Year	11	16,9
31 – 40 Year	14	21,5
41 – 50 Year	33	50,8
51 – 60 Year	7	10,8
Address		
Jambi City	61	93,8
Outside Jambi city	4	6,2
Education		
Menengah	63	96,9
Tinggi	2	3,1

The results of the analysis of the characteristics of fish traders in table 1 show that the age of the fish traders who were respondents ranged from 21 to 60 years with the majority of respondents being in the age range 41 - 50 years, 33 (50.8%). On average, 61 fish traders with addresses in Jambi City (93.8%) and the majority of fish traders' education is at secondary education level, namely 63 people (96.9%).

Univariate Analysis

Table 2. Frequency Distribution of Dermatitis Events, Age, Gender, Personal Hygiene, Length of Exposure, Use of PPE, Work Period, Provision of Clean Water

Variable	Frequency	
	n	%
Incidence of Contact Dermatitis		
Dermatitis Sufferers	29	44,6
Not a Dermatitis Sufferer	36	55,4
Age		
Risky	44	67,7
No Risk	21	32,3
Gender		
Man	41	63,1
Woman	24	36,9
Personal Hygiene		
Not good	38	58,5
Good	27	41,5

Exposure Time		
Risky	38	58,5
No Risk	27	41,5
Use of PPE		
Uncomplete	35	53,8
Complete	30	46,2
Years of Service		
Risky	14	21,5
No risk	51	78,5
Clean Water Supply		
Unavailable	33	50,8
Available	32	49,2

Based on table 2 above, it can be seen that the respondents who suffered from contact dermatitis were 29 people (36.9%) and the respondents who did not suffer from contact dermatitis were 36 people (55.4%). Apart from that, it can also be seen that the majority of respondents are in the at-risk age category, namely ≥ 40 years, 44 (67.7%). There were 41 (63.1%) male respondents and 24 (36.9%) female respondents. Then in the personal hygiene variable there were 38 (58.5%) respondents with poor personal hygiene conditions, there were 35 (53.8%) respondents in the long exposure category at risk (≥ 8 hours), there were 35 (53.8%) respondents In the category of incomplete use of PPE, there were 14 (21.5%) respondents who had a risky working period (≤ 2 years), and there were 33 (50.8%) respondents who were in the category of unavailable clean water supply.

Bivariate Analysis

Table 3. Cross Tabulation of Dermatitis Incidence with Variables Age, Gender, Personal Hygiene, Length of Exposure, Use of PPE, Work Period, Provision of Clean Water

Variable	Incidence of Irritant Contact Dermatitis						PR (95% CI)	*p-value*
	Sufferer		Not a Sufferer		Total			
	N	%	N	%	N	%		
Age								
Risky	26	59,1	18	40,9	44	100	4,13	0,002
No Risk	3	14,3	18	85,7	21	100	(1,41-12,13)	
Gender								
Man	20	48,8	21	51,2	41	100	1,30	0,532
Woman	9	37,5	15	2,5	24	100	(0,71-2,38)	
Personal Hygiene								
Not Good	23	60,5	15	39,5	38	100	2,72	0,005
Good	6	22,2	21	7,8	27	100	(1,28-5,77)	

Exposure Time								
Risky	23	60,5	15	39,5	38	100	2,72	0,005
No Risk	6	22,2	21	77,8	27	100	(1,28-5,77)	
Use of PPE								
Uncomplete	23	65,7	12	34,3	35	100	3,28	0,001
Complete	6	20,0	24	80,0	30	100	(1,54-6,98)	
Years of Service								
Risky	6	42,9	8	57,1	14	100	0,95	1,000
No Risk	23	45,1	28	54,9	51	100	(0,48-1,86)	
Clean Water Supply								
Unavailable	21	63,6	12	36,4	33	100	2,54	0,004
Available	8	25,0	24	75,0	32	100	(1,32-4,89)	

Based on statistical tests in table 3, the p value is > 0.05 for the variables gender (p = 0.532) and length of service (p = 1.000), while the p value < 0.05 for the variables age (p = 0.002), personal hygiene (p=0.005), length of exposure (p=0.005), use of PPE (p=0.001), and provision of clean water (p=0.004) which shows that there is a significant relationship between age, personal hygiene, length of exposure, use of PPE, and providing clean water with the incidence of contact dermatitis among fish traders at the Aur Duri Traditional Market, Jambi City.

DISCUSSION

Relationship between Age and the Incidence of Contact Dermatitis

Based on research conducted, there were 26 (59.1%) fish traders in the at-risk age category suffering from contact dermatitis and 3 (14.3%) in the non-risk age category. The results of the analysis obtained a p-value = 0.002 (p < 0.05), which means that there is a significant relationship between age and the incidence of irritant contact dermatitis among fish traders at the Aur Duri Traditional Market, Jambi City.

This is in line with the results of research conducted by Yanti and Asna (2022) where the results of research using the chi-square test obtained a value of p = 0.002, so there is a relationship between age and dermatitis. (Yanti & Allo, 2022) Research conducted by Kaderiah et al. (2024) stated that there was a significant relationship between age and the incidence of contact dermatitis in seaweed fishermen (p=0.001). (Kaderiah et al., 2024)

Ages ≥ 40 years are considered to be at risk for dermatitis because the older the skin becomes, the drier it becomes due to the loss of the fat layer on the skin and makes the skin easily infected by irritants. This condition makes the skin more at risk of irritant contact dermatitis. With age, the skin experiences functional disorders due to structural and morphological changes (such as thinning of the epidermis by 10-50%, dermal remodeling, loss of elasticity, reduction in the number of sebaceous glands, etc.). An increase in pH at the skin surface with increasing age causes a decrease in T cell responses to antigens, increasing their susceptibility to infection. Furthermore, alkalinization of adult skin causes disruption of the epidermal barrier as well, associated with

activation of serine proteases and reduced activity of enzymes that produce ceramide. (Yanti & Allo, 2022)

Relationship between Gender and the Incidence of Contact Dermatitis

Based on research conducted, there were 20 (48.8%) male fish traders and 9 (37.5%) female traders who experienced contact dermatitis. The results of the analysis obtained a p-value = 0.532 (p > 0.05), which means that there is no significant relationship between gender and the incidence of irritant contact dermatitis among fish traders at the Aur Duri Traditional Market, Jambi City.

This is in line with research conducted by Novitasari et al. (2023) which states that based on the results of the chi-square test, it shows that there is no relationship between gender and the incidence of dermatitis with a ρ value = 0.082. (Novitasari et al., 2023) Research conducted by Maharani and Koesyanto (2022) states that there is no relationship between gender and the incidence of contact dermatitis with a p-value of 0.435 (p < 0.05). (Maharani & Koesyanto, 2022)

The results of this study are not in line with research conducted by Sholeha et al. (2021) which states that the gender variable obtained a p-value = 0.000, meaning that there is a relationship between gender and symptoms of contact dermatitis. (Sholeha et al., 2021)

Gender is a risk factor for dermatitis and usually occurs predominantly in women. This happens because women have more sensitive skin than men. Women are at risk of developing skin diseases compared to men, this happens because men's skin has dominant hormones, namely androgens, which can make their skin sweat more and grow more hair, while women's skin is thinner so it is very susceptible to skin damage. . (Sholeha et al., 2021)

The Relationship between Personal Hygiene and the Occurrence of Contact Dermatitis

Based on the research results, there were 23 (60.5%) fish traders who experienced contact dermatitis in the poor personal hygiene category and 6 (22.2%) in the good personal hygiene category. The results of the analysis obtained a p-value = 0.005 (p < 0.05), which means that there is a significant relationship between personal hygiene and the incidence of irritant contact dermatitis among fish traders at the Aur Duri Traditional Market, Jambi City.

This research is in line with research conducted by Oktarizal et al. (2022) it is known that in the statistical test carried out the result was p-value = 0.000, where (p<0.05) which means Ho is rejected and there is a significant relationship between Personal Hygiene and complaints of contact dermatitis. (Oktarizal et al., 2022) Another relevant study also conducted by Sirait and Anita (2021) stated that data analysis obtained a chi-square of 4.912 with a probability of 0.027 < 0.05, which means that there is a significant relationship between personal hygiene and the incidence of dermatitis in fishermen. (Sirait & Siregar, 2021)

The personal hygiene aspect carried out by fish traders while working is very lacking, there are still many fish traders who cannot implement the habit of washing their hands and feet properly and correctly. On average, when fish

traders wash their hands, they only use water from fish storage containers and do not use soap. Fish traders who do not care about their personal hygiene will be at risk of experiencing contact dermatitis. Therefore, after returning from the market, fish traders should be more concerned about their personal hygiene in order to reduce the risk of contact dermatitis. To improve the habit of fish traders in washing their hands and feet with soap after finishing work, it is best to provide hand washing soap facilities and running water taps by market managers at a number of points for several stalls and also in bathrooms at the Aur Duri City Traditional Market. Jambi.

Relationship between exposure time and the incidence of contact dermatitis

Based on the research conducted, there were 23 (60.5%) fish traders who experienced contact dermatitis in the long exposure category at risk and as many as 6 (22.2%) in the long exposure category without risk. The results of the analysis obtained a p-value = 0.005 ($p < 0.05$), which means that there is a significant relationship between the length of exposure and the incidence of irritant contact dermatitis among fish traders at the Aur Duri Traditional Market, Jambi City.

These results are in line with research conducted by Siregar et al. (2021) who said that the results of the chi-square statistical test obtained a p value of α (0.023 < 0.05), thus it can be seen that Ha is accepted, meaning that there is a relationship between working hours and complaints of skin disorders among fish traders. (Siregar et al., 2021) Research conducted by Ahmad et al. (2020) shows that exposure time has a relationship with complaints of skin disorders among fish traders with a significance value of (0.000). (Ahmad et al., 2020)

Each worker has a different exposure time. Prolonged exposure to substances such as water, sea fish soaking water or freshwater fish water can increase the occurrence of work-related contact dermatitis. The longer the skin is in contact with water, it can cause damage to the outer layer of skin cells and damage to deeper layers of skin cells so that the risk of irritant contact dermatitis is higher. (Ahmad et al., 2020) Length of exposure is related to the incidence of irritant contact dermatitis. This can happen because the longer a fish trader is in contact with water substances in his work which are irritating in nature, the more inflammation or skin irritation can occur, causing skin abnormalities, especially on the hands and feet which often come into contact with water substances. If the worker has a duration of exposure ≥ 8 hours and occurs repeatedly, then vulnerability will arise ranging from mild to severe.

Relationship between PPE use and the incidence of contact dermatitis

Based on research conducted, there were 23 (65.7%) fish traders who experienced contact dermatitis in the incomplete PPE use category and 6 (20.0%) in the complete PPE use category. The results of the analysis obtained a p-value = 0.001 ($p < 0.05$), which means that there is a significant relationship between the use of PPE and the incidence of irritant contact dermatitis among fish traders at the Aur Duri Traditional Market, Jambi City.

These results are in line with research conducted by Anggraini and Utami (2022), which showed that the Fisher's exact test p-value = 0.020 was smaller than 0.05, which means that there is a relationship between the use of PPE and

the incidence of dermatitis. (Anggraini & Utami, 2022) In line with research conducted by Siregar et al. (2021) where the results of data analysis obtained a chi-square of 10.417 with a probability of 0.001 < 0.05, which means that there is a significant relationship between the use of personal protective equipment and the incidence of dermatitis at fish sales places. (Siregar et al., 2021)

Observation results at the research location show that many fish traders still underestimate the use of PPE. There are still fish traders who do not use gloves and even if they do use gloves, most fish traders use cloth gloves, which of course will keep the skin on their hands always moist because of its water-absorbing properties. Apart from that, there were still traders who were not wearing protective clothing, not wearing boots, and none of the traders were wearing head protection. According to them, using gloves can hinder their work because they are not used to it and do not feel comfortable. The low level of awareness regarding the use of PPE in the form of gloves has resulted in skin disorders among fish traders. Most of the skin disorders experienced by fish traders are in the hand area because they use their hands for work and are directly exposed to risk factors because they do not use gloves.

Relationship between Working Period and the Incidence of Contact Dermatitis

Based on research conducted, there were 6 (42.9%) fish traders who experienced contact dermatitis in the risky work period category and 23 (45.1%) in the non-risky work period category. The results of the analysis obtained a p-value = 1.000 (p > 0.05), which means that there is no significant relationship between work experience and the incidence of irritant contact dermatitis among fish traders at the Aur Duri Traditional Market, Jambi City.

The results of this study are in line with research conducted by Siregar and Sari (2021) which stated that work experience did not have a significant relationship with complaints of skin disorders in fish traders (p=0.386; PR=0.922; 95%CI=0.754-1.128), This means that working time is not a risk factor for experiencing complaints of skin disorders. (Siregar & Sari, 2021) According to Rianingrum et al. (2022), based on the results, there is a p-value = 0.467, which has no relationship between work experience and irritant contact dermatitis. (Rianingrum et al., 2022)

However, this research is not in line with research conducted by Yanti and Asna (2022) which states that there is a relationship between work experience and dermatitis in fish traders at the Central Market in the city of Sorong, West Papua. (Putri & Allo, 2022)

The working period is the length of time a trader carries out work which is calculated in annual units. Years of work are calculated to find out how long fish traders have been exposed to risk factors. The longer a person works, the more he or she is exposed to the dangers posed by the work environment. Fish traders with long working periods are more susceptible to irritant contact dermatitis because they often come into contact with irritants. This means that fish traders with long working periods are more likely to get irritant contact dermatitis. One of the prevention efforts is to implement personal hygiene behavior and use PPE that is appropriate to work conditions to avoid irritants that can cause irritant contact dermatitis. (Sirait & Siregar, 2021)

Fish traders with a risky work period (≤ 2 years) experienced much less dermatitis compared to fish traders with a less risky work period (> 2 years). Meanwhile, based on existing theory, fish traders who have just started working should experience dermatitis more easily than traders who have worked for a long time, which is related to experience and the level of skin resistance to irritants. Based on the results of this study, the author assumes that work experience is not related to the incidence of contact dermatitis due to the large difference in respondents between risky and non-risky work periods. Apart from that, it may also be influenced by other factors such as how long a person is exposed per day and contact with irritants and depending on the condition of personal hygiene and the use of PPE when fish traders are working.

Relationship between Providing Clean Water and the Occurrence of Contact Dermatitis

Based on research conducted, there were 21 (63.6%) fish traders who experienced contact dermatitis in the PAB not available category and as many as 8 (25.0%) in the PAB available category. The results of the analysis obtained a p-value = 0.004 ($p < 0.05$), which means that there is a significant relationship between the provision of clean water and the incidence of irritant contact dermatitis among fish traders at the Aur Duri Traditional Market, Jambi City.
This is in line with the results of research conducted by Ilmiyanti et al. (2022) the significance value of the clean water facilities factor is 0.015 where $\alpha < 0.05$ which indicates that H0 is rejected, which means there is an influence between clean water facilities and the incidence of contact dermatitis. (Ilmiyanti et al., 2022) Research conducted by Gusmawati et al. (2019) there is a strong relationship between clean water sanitation and the incidence of dermatitis in Bajo tribe fishermen in Lora Village, Mataoleo District, Bombana District. (Gusmawati et al., 2019)

Water is a basic necessity for human survival both in the household, community and work context. Therefore, it is very important to have a water supply that is clean and not polluted by rubbish or waste. Fish traders in their daily activities certainly need water that is clean and good for washing their hands or feet. The water needed by fish traders is water for sanitary hygiene purposes, namely water of a certain quality and used for daily needs, the quality of which is different from water for drinking purposes. Clean water facilities that do not meet the requirements are the cause of contact dermatitis. (Ilmiyanti et al., 2022)
The results of this study show that there is a significant relationship between the provision of clean water and the incidence of irritant contact dermatitis among fish traders at the Aur Duri Traditional Market, Jambi City in 2024. Although it does not have a direct effect on the incidence of dermatitis, the environment will determine the development of the dermatitis incidence. Several things are related to environmental conditions, namely the availability of clean water facilities that meet the requirements. If clean water is available properly, it can certainly minimize the incidence of contact dermatitis. (Zahtamal et al., 2022)

Based on the results of interviews with fish traders, it was found that traders were still found who said that the provision of clean water at the Aur Duri market was never available and that not all traders' stalls had their own taps. Traders who do not have water taps choose to store their water needs while working in an open container. This is one of the causes of contact dermatitis because the supply of water, especially clean water, is still lacking, which limits traders from washing their hands with running water when they finish work.

The provision of clean water is of course needed by fish traders because in their activities they come into direct contact with water, if the water is polluted it will also have an impact on the health condition of the fish traders' skin. To overcome the condition of providing clean water at the Aur Duri Traditional Market, Jambi City, the market management can discuss and collaborate with the nearest Community Health Center to check the water conditions in the market in order to find solutions on how to ensure that the availability of clean water in the market is sufficient.

CONCLUSION AND RECOMENDATION

Based on the results of research conducted on 65 respondents who work as fish traders at the Aur Duri Traditional Market, Jambi City, it can be concluded that:

1. From research conducted on 65 fish traders, it was found that 29 (44.6%) fish traders experienced irritant contact dermatitis and 36 (55.4%) fish traders did not experience contact dermatitis.
2. From the research results it can be concluded that there is a significant relationship between age (p-value = 0.002), personal hygiene (p-value = 0.005), length of exposure (p-value = 0.005), use of PPE (p-value = 0.001), provision of clean water (p-value = 0.004) with the incidence of contact dermatitis. And there is no significant relationship between gender (p-value = 0.532) and length of service (p-value = 1.000) with the incidence of contact dermatitis in fish traders at the Aur Duri Traditional Market, Jambi City in 2024.

Based on the results of the research that has been carried out, the suggestions that the author can give include:

1. For Market Managers, it is hoped that market managers can provide facilities for washing hands at several points in the market location to make it easier for fish traders to clean themselves after selling. Apart from that, market managers are also expected to be able to collaborate with the nearest community health center to provide education regarding the importance of personal hygiene behavior and routinely carry out water checks at market locations to ensure that the water used by fish traders on a daily basis is in accordance with water requirements for sanitation hygiene purposes. .
2. For fish traders, it is hoped that this reading source can serve as an evaluation guide for fish traders to increase their self-awareness in using PPE completely and implementing personal hygiene behavior before and after work.

ADVANCED RESEARCH

Based on the researcher's personal experience during this research stage, there are several limitations that are important for future researchers to pay attention to with the aim of improving the quality of the research. This is due to the existence of weaknesses in this research that need to be improved on an ongoing basis. Future researchers are expected to be able to examine other factors that have not been examined in this research and further develop research designs that have been used previously to obtain better research results.

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