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Prevalence and characteristics of occupational contact dermatitis among farmers in Wongaye Gede Village, Tabanan, Bali



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ABSTRACT

Background: Occupational contact dermatitis is a disease in the field of dermatology that arises in the work environment due to workers coming into direct contact with causative substances, be they irritants or allergens. Farmers are susceptible to various allergens or irritants when working in farming, clearing land, fertilizing, spraying, caring for, and during harvest. Epidemiological data showing contact dermatitis in Balinese farmers was still very minimal. So, based on the above background, we are interested in examining the characteristics of work-related contact dermatitis in farmers in Bali.

Methods: This research method is descriptive research using a cross-sectional method that evaluates work-related contact dermatitis among farmers in Wongayo Gede Village, Penebel District, Tabanan Regency.

Results: 56 farmers showed that 34 samples suffered from occupational contact dermatitis, of which 59% were men and 41% were women. Based on the division of age groups according to WHO, it was found that youth (18-65 years) were 82%, middle-aged (66-79 years) 12%, and older adults (80-99) 6%. The highest educational background is elementary school 47%, high school 33%, and junior high school 15%.

Conclusion: This research reveals that men's occupational contact dermatitis is more common. The most commonly found sample ages were young people in 18-65 years. Meanwhile, the most recent educational status of the sample was elementary school. The most common locations for skin lesions are on the upper and lower extremities.

Keywords: characteristics, contact dermatitis, farmers, prevalence.

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INTRODUCTION

Indonesia is an agricultural country because most of its population works as farmers. Farmers are very vulnerable to being exposed to various types of allergens or irritants when working in farming, clearing land, fertilizing, spraying, caring for and also during harvest. This can cause farmers to experience contact dermatitis on their skin.¹

Occupational skin disease is a skin disorder due to a person's work. This occupational disease is usually found in industrial, agricultural, and plantation areas. Epidemiological data in Indonesia shows that 97% of 389 cases of skin disease were contact dermatitis, 66.3% were irritant contact dermatitis, and 33.7% were allergic contact dermatitis. According to the National Institutes of Health, occupational contact dermatitis often occurs in farmers. It is estimated that

around 30% of occupational diseases in farmers are contact dermatitis.¹

Farmers are often exposed to chemicals used when carrying out their work. Environmental factors such as humidity, temperature, and frequency of hand washing can also influence contact dermatitis. Examples of irritants that can cause occupational contact dermatitis in farmers are soap and detergent, pesticides, dust, dirt, sweat, disinfectants, petroleum, artificial fertilizers, and plants.² The diagnostic criteria for occupational irritant contact dermatitis are fulfilling 4 of the following 7 Mathias criteria: 1) Clinical manifestations are consistent with contact dermatitis; 2) In the work environment, some materials are suspected to be irritants or allergens; 3) Anatomical distribution according to the exposed area; 4) There is a temporal relationship between the time of exposure and the onset of clinical manifestations; 5) Other causes have been

ruled out; 6) Skin disorders improve when not working/holidays/leave; 7) Patch tests or provocation tests can identify the cause.³

The epidemiological data for contact dermatitis in Balinese farmers was still very minimal. So, based on the above background, we are interested in evaluating the characteristics of work-related contact dermatitis in farmers in Bali.

METHODS

This descriptive study uses a cross-sectional method to identify the characteristics of work-related contact dermatitis in farmers in Wongayo Gede Village, Penebel District, Tabanan Regency. The research was carried out from September 2023 – December 2024. The target population for this study was farmers suffering from contact dermatitis who came and were examined by researchers during the visit

to the village. The sample for this study was farmers suffering from contact dermatitis, both irritant and allergic, who met the inclusion criteria. Inclusion criteria include farmers who suffer from contact dermatitis caused by their work, which is proven by the results of the history and physical examination and is believed to be caused by the materials used during work. Exclusion criteria include subjects suffering from skin disorders other than contact dermatitis, refusing to participate, and not signing informed consent. This research was approved by the Research Unit of the Faculty of Medicine and Health Sciences, Warmadewa University, and Wongayo Gede Village Office for visit and examination. After the data was collected, descriptive analysis was carried out for sample characteristics in the form of demographic data and clinical symptoms of dermatophytosis.

RESULTS

In this study, 56 farmers were examined, and 34 samples suffered from occupational contact dermatitis, of which 59% were men and 41% were women, as presented in **Table 1**. Characteristics based on the age groups according to the World Health Organization (WHO) presented in **Table 2**. Occupational contact dermatitis was commonly in young age (18-65 years group) at 82%, followed by middle-aged (66-79 years) at 12%, and elderly (80-99) at 6%.

If we look at the latest educational status in **Table 3**, the highest is elementary school (47%), followed by high school (33%) and junior high school (15%). In this study, 5% of the sample with a bachelor's degree was also obtained. Meanwhile, the location of the lesion presented in **Table 4** is commonly found in the upper and lower extremities with the same proportion (29%). Followed by a sample with occupational contact dermatitis on both upper and lower extremities simultaneously (5%).

DISCUSSION

From the results of research conducted on 34 farmers who met the inclusion and exclusion criteria, most respondents were aged 18-65 years, which is the productive

Table 1. Occupational contact dermatitis by sex

Sex	Total	Percentage (%)
Male	20	59
Female	14	41

Table 2. Occupational contact dermatitis by age group

Age (years)	Total	Percentage (%)
18-65	28	82
66-79	4	12
80-99	2	6

Table 3. Occupational contact dermatitis by latest education status

Education level	Total	Percentage (%)
Elementary school	16	47
Junior high school	5	15
Senior high school	11	33
Bachelor	2	5

Table 4. Occupational contact dermatitis by location of skin lesions

Location	Total	Percentage (%)
Face	2	6
Back	4	12
Upper extremities	10	29
Lower extremities	10	29
Upper and lower extremities	5	15
Back and upper extremities	1	3
Back and lower extremities	2	6

age group. This is because this age is active and can carry out farmer work. This is in line with why people in the productive age range will often be exposed to causative agents through daily activities or work. This is in accordance with the results of research conducted by Rahmatica et al.¹

The most common educational status of samples of occupational contact dermatitis sufferers was elementary school. Educational factors can influence contact with occupational contact dermatitis.⁴ This study found that the lesion locations most frequently affected by occupational contact dermatitis were in the upper and lower extremities. This follows a literature stating that the incidence of contact dermatitis, both irritant and allergic, is most common on the hands. This is possible because the hands are the body organs most often used to carry out daily work. Even skin diseases caused by work, a third or more, affect the hands.^{5,6} This follows the results of research conducted by Dewi et al. and Darmahayu et al., where the location of the lesions most frequently affected by occupational

contact dermatitis is on the hands.⁷⁻⁹

This research uses primary data by directly examining the samples so that the accuracy of the data can be guaranteed. The limitation of this research is that the number of samples is not too large and could not evaluate the allergic or irritant agent. Further research is expected with a larger sample size.

CONCLUSION

This research reveals that occupational contact dermatitis is more common in men. The most commonly found sample ages were young people, namely 18-65 years. Meanwhile, the most recent educational status of the sample was elementary school. The most common locations for skin lesions are on the upper and lower extremities. Researchers suggest that further research should be carried out regarding the ingredients that cause occupational contact dermatitis and with a larger number of samples.

ETHICS IN PUBLICATION

The ethical clearance number for this study is 94/Unwar/FKIK/EC-KEPK/II/2024 was granted by the Research Unit of the Faculty of Medicine and Health Sciences, Warmadewa University.

CONFLICT OF INTEREST

None.

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AUTHOR CONTRIBUTIONS

Each author has contributed to the data collection, assessment of the references, process of writing, and publication.

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