

## **THE RELATIONSHIP BETWEEN PERSONAL HYGIENE PATTERNS AND DERMATITIS INCIDENTS AMONG HORTICULTURAL FARMERS IN SENDANGAGUNG**

Theresia Avila Evi Kustanti<sup>1</sup>, Arimbi Karunia Estri<sup>1</sup>, Emmelia Ratnawati<sup>1</sup>

<sup>1</sup>Sekolah Tinggi Ilmu Kesehatan Panti Rapih Yogyakarta

Email: [theresiaavilaevikustanti@gmail.com](mailto:theresiaavilaevikustanti@gmail.com)

### **ABSTRACT**

**Background:** Contact dermatitis is an inflammation of the skin caused by pesticides and chemical fertilizers that adhere to the skin. Personal hygiene is one of the indirect causes of contact dermatitis. Based on epidemiological data in Indonesia in 2017, 97% of 389 cases of skin diseases were contact dermatitis. Of these, 66.3% were irritant contact dermatitis and 33.7% were allergic contact dermatitis. In 2018, the national prevalence of dermatitis in Indonesia was 6.8%. Dermatitis ranked 17th at the Minggir Community Health Center for outpatient patients from January to February 2023. This research was conducted from June 25 to June 19, 2023. **Objective:** The purpose of this study was to determine the relationship between personal hygiene patterns and dermatitis among horticultural farmers in Sendangagung Village, Minggir Sub-district. **Method:** This quantitative research used an analytical observational study with a Cross-Sectional Study approach and employed Total Sampling with 61 samples. Instruments used included a questionnaire on personal hygiene patterns, a questionnaire on contact dermatitis, and observation of contact dermatitis. **Results:** Most respondents did not use personal protective equipment (PPE), amounting to 13 individuals (21.3%), and all horticultural farmers who used PPE did not use it properly, totaling 48 individuals (78.7%). Respondents with poor personal hygiene patterns were very few, totaling 8 individuals (13.1%). A small number of respondents experienced contact dermatitis, totaling 19 individuals (31.1%). Bivariate analysis using Fisher's exact test yielded a p-value of 0.001 (p-value < 0.05), indicating a significant relationship between personal hygiene patterns and the occurrence of dermatitis among horticultural farmers. **Conclusions:** There is a significant relationship between personal hygiene patterns and the occurrence of dermatitis among horticultural farmers in Sendangagung Village, Minggir Sub-district. **Keywords:** Dermatitis, Horticultural, Personal Hygiene

### **Introduction**

Indonesia is an agrarian country with vast natural potential, evident from the majority of its population working in the agricultural sector as their main livelihood source. According to the Central Statistics Agency in 2022, 88.89% of Indonesia's population is employed in the agricultural sector (BPS, 2023). The agricultural sector holds significant potential for contributing to both national and regional economic growth and development (Hamjaya, et al., 2022). Particularly promising within agriculture is horticulture, especially vegetables and fruits (Munir, et al., 2023). The demands of farming tasks such as cultivation, land clearing, fertilization, spraying, maintenance, and harvesting expose farmers to various chemicals (Pratiwi, et al., 2022). Chemical substances used include

insecticides, herbicides, fungicides, nematicides, and rodenticides (Guampe, 2021). Pesticides are a major cause of occupational skin diseases among farmers, penetrating the skin pores and causing irritation and acute poisoning (Siregar & Nurfadilah, 2022). Additionally, fertilizers are also associated with contact dermatitis due to agricultural work (Novitasari, et al., 2023).

In Indonesia, the prevalence of dermatitis has been increasing annually. Epidemiological data from 2017 indicated that 97% of 389 cases of skin diseases were contact dermatitis, with 66.3% being irritant contact dermatitis and 33.7% allergic contact dermatitis (Ministry of Health, 2017). In 2018, national prevalence data reported dermatitis prevalence in Indonesia at 6.8% (Ministry of Health, 2019). Thirteen provinces had dermatitis prevalence rates higher than the national average, including Gorontalo, Central Sulawesi, North Sulawesi, South Kalimantan, Central Kalimantan, East Nusa Tenggara, Yogyakarta Special Region, Central Java, West Java, Jakarta, Bangka Belitung, Aceh, and West Sumatra (Apriliani, et al., 2022).

Dermatitis is an inflammation of the skin's epidermis and dermis, which can be acute, subacute, or chronic, influenced by various exogenous and endogenous factors. Contact dermatitis is characterized by skin inflammation caused by substances adhering to the skin (Novitasari, et al., 2023). Causes of dermatitis include direct factors from chemical characteristics and exposure characteristics. Indirect factors include age, gender, race, personal hygiene patterns, duration of exposure, use of personal protective equipment (PPE), and knowledge (Susanto, 2018). Personal hygiene involves practices such as bathing, washing hands and feet with soap and running water, and laundering clothes after activities (Rahmatika, et al., 2020). Research by Rahmatika, et al. (2020) showed a relationship between personal hygiene and dermatitis. Bivariate analysis using the Chi-square test yielded a  $p$ -value = 0.000 ( $p$ -value <0.05). Similar studies by Sulasmi, et al. (2022) demonstrated a significant relationship between personal hygiene and skin diseases, with a statistical test result showing a  $p$ -value = 0.030 ( $p$ -value <0.05), indicating that respondents with poor personal hygiene were more likely to experience skin disorders compared to those with good hygiene.

Sendangagung Village is part of the Minggir Subdistrict in Sleman Regency, located in the center of the Minggir Subdistrict. Preliminary studies conducted by the researcher in Sendangagung Village, through interviews with the Village Chief and agricultural department employees, revealed the potential of Sendangagung Village in horticultural agriculture. There are 61 horticultural workers in Sendangagung Village. According to data from Minggir Health Center for outpatient treatment in January-February 2023, dermatitis ranks 17th, with 77 patients affected by allergic contact dermatitis and irritant contact dermatitis. In addition, the researcher conducted interviews and observations with 10 horticultural farmers engaged in spraying activities, finding that 8 farmers reported skin complaints, including 4 with redness, 2 with scaly skin on hands and feet, and 2 with dry skin. The researcher also inquired about the farmers' personal hygiene practices, revealing that 5 farmers did not immediately bathe after returning from the fields, while the remaining 5 did. Observations showed that 3 farmers washed their hands with tap water contaminated with debris. Observations on the use of personal protective equipment (PPE) during spraying revealed that 2 farmers wore long-sleeved layered shirts and gloves, 1 wore a mask, and 7 did not use any PPE such as coats, boots/shoe covers, masks, or eye protection.

Based on this preliminary information, the researcher is interested in examining the Relationship Between Personal Hygiene Patterns and the Occurrence of Dermatitis Among Horticultural Farmers in Sendangagung Village, Minggir Subdistrict.

## Method

This study is a quantitative research employing an observational analytic design with a Cross-Sectional Study approach. It analyzes the Relationship Between Personal Hygiene Patterns and the Occurrence of Dermatitis Among Horticultural Farmers in Sendangagung Village, Minggir Subdistrict conducted from February to July 2023. The population for this study consists of horticultural farmers

cultivating agricultural land in Sendangagung Village, Minggir Subdistrict, Sleman Regency, Yogyakarta, totaling 61 individuals. The sampling technique utilized in this research is Non-Probability Sampling using Total Sampling, involving all 61 horticultural farmers. The inclusion criteria for the sample include willingness to participate as a respondent, engaging in horticultural farming, and owning land in Sendangagung Village. Exclusion criteria encompass unwillingness to participate, not involved in horticultural farming, or lacking land in Sendangagung Village.

To gather data on personal hygiene patterns, the researcher employed a questionnaire adapted from Ivangkia (2022), Pratiwi, et al. (2022), Patilaiya, et al. (2020), and Sari, et al. (2021) in Likert scale format with options "good and poor". The validity test of the personal hygiene pattern instrument confirmed validity as the calculated  $r$ -value  $>$   $r$ -table (0.361). Meanwhile, the reliability test of the personal hygiene pattern instrument with Cronbach's Alpha 0.917 indicated reliability. For the questionnaire and observation of contact dermatitis, the researcher utilized scales adapted from Darnoto (2021), Rachmawati (2020), Saleh & Yanti (2021) in Guttman scale format with "yes and no" options. The validity test of the contact dermatitis instrument concluded that all statement items were valid as the calculated  $r$ -value  $>$   $r$ -table (0.361). The reliability test of the contact dermatitis instrument with Cronbach's Alpha 0.847 indicated reliability.

## Results

Description of univariate and bivariate analysis results in the study of the Relationship Between Personal Hygiene Patterns and the Occurrence of Dermatitis Among Horticultural Farmers in Sendangagung Village, Minggir Subdistrict can be seen in the following table:

Table 1  
Distribution of Respondents Based on Age  
Horticultural Farmers in Sendangagung Village, Minggir Subdistrict  
June 25 - July 19, 2023 (n=61)

| Age   | Frequency (n) | Percentage (%) | Mean |
|-------|---------------|----------------|------|
| 17-25 | 7             | 11,5           | 49   |
| 26-35 | 4             | 6,6            |      |
| 36-45 | 10            | 16,4           |      |
| 46-55 | 19            | 31,1           |      |
| 56-65 | 15            | 24,6           |      |
| > 65  | 6             | 9,8            |      |
| Total | 61            | 100            |      |

Based on Table 1, it shows that out of 61 respondents, nearly half of them are aged 46-55 years, totaling 19 individuals (31.1%), and the youngest age group in this study is 26-35 years with 4 individuals (6.6%). The remaining ages are as follows: 17-25 years with 7 individuals (11.5%), 36-45 years with 10 individuals (16.4%), 56-65 years with 15 individuals (24.6%), and over 65 years with 6 individuals (9.8%). Therefore, it can be concluded that the age of horticultural farmers in Kelurahan Sendangagung, Kapanewon Minggir, is predominantly in the 46-55 years age group, with an average age of 49 years.

Table 2  
Distribution of Respondents Based on Gender  
Horticultural Farmers in Kelurahan Sendangagung, Kapanewon Minggir  
June 25 - July 19, 2023 (n=61)

| Gender | Frequency (n) | Percentage (%) |
|--------|---------------|----------------|
| Male   | 35            | 57,4           |
| Female | 26            | 42,6           |
| Total  | 61            | 100            |

Based on Table 2, out of 61 respondents, the majority were male with 35 individuals (57.4%), while females accounted for 26 individuals (42.6%). Thus, it can be concluded that the majority of horticultural farmers in Kelurahan Sendangagung, Kapanewon Minggir, are male.

Table 3  
Distribution of Respondents Based on Length of Work Per Day  
Horticultural Farmers in Kelurahan Sendangagung, Kapanewon Minggir  
June 25 - July 19, 2023 (n=61)

| Length of Work | Frequency (n) | Percentage (%) | Mean |
|----------------|---------------|----------------|------|
| < 4 hours      | 20            | 32,8           | 4    |
| ≥ 4 hours      | 41            | 67,2           |      |
| Total          | 61            | 100            |      |

Based on Table 3, it shows that out of 61 respondents, more than half of them work in horticultural farming for ≥ 4 hours per day, totaling 41 individuals (67.2%), while those working <4 hours per day amount to 20 individuals (32.8%). Therefore, it can be concluded that horticultural farmers in Kelurahan Sendangagung, Kapanewon Minggir, mostly work ≥ 4 hours.

Table 4  
Distribution of Respondents Based on the Use of Personal Protective Equipment (PPE)  
Horticultural Farmers in Kelurahan Sendangagung Kapanewon Minggir June 25-July 19, 2023  
(n=61)

| PPE Usage                                   | Frequency (n) | Percentage (%) |
|---------------------------------------------|---------------|----------------|
| - (Not using PPE)                           | 13            | 21,3           |
| - Using PPE:                                |               |                |
| Mask                                        | 3             | 4,9            |
| Cap                                         | 11            | 18,0           |
| Boots                                       | 4             | 6,6            |
| Long-sleeved shirt                          | 3             | 4,9            |
| Mask, boots                                 | 2             | 3,3            |
| Cap, Long-sleeved shirt                     | 5             | 8,2            |
| Gloves, boots                               | 1             | 1,6            |
| Cap, gloves                                 | 2             | 3,3            |
| Cap, boots                                  | 1             | 1,6            |
| Cap, mask, boots                            | 1             | 1,6            |
| Mask, gloves, boots                         | 1             | 1,6            |
| Cap, mask, Long-sleeved shirt               | 1             | 1,6            |
| Cap, Long-sleeved shirt, boots              | 6             | 9,8            |
| Cap, Long-sleeved shirt , long pants, boots | 1             | 1,6            |
| Cap, gloves, long-sleeved shirt, boots      | 3             | 4,9            |
| Cap, mask, long-sleeved shirt, boots        | 3             | 4,9            |
| Total                                       | 61            | 100            |

Based on table 4, it shows that out of 61 respondents, most respondents do not use PPE, totaling 13 individuals (21.3%). The most commonly used type of PPE in this study is a cap worn by 11 individuals (18.0%). The remaining respondents use the following types of PPE: mask by 3 individuals (4.9%), boots by 4 individuals (6.6%), long-sleeved shirts by 3 individuals (4.9%), mask and boots by 2 individuals (3.3%), cap and long-sleeved shirts by 5 individuals (8.2%), gloves and boots by 1 individual (1.6%), cap and gloves by 2 individuals (3.3%), cap and boots by 1 individual (1.6%), cap, mask, and boots by 1 individual (1.6%), mask, gloves, and boots by 1 individual (1.6%), cap, mask,

and long-sleeved shirt by 1 individual (1.6%), cap, long-sleeved shirt, and boots by 6 individuals (9.8%), cap, gloves, long-sleeved shirt, long pants, and boots by 1 individual (1.6%), cap, gloves, long-sleeved shirt, and boots by 3 individuals (4.9%), and cap, mask, long-sleeved shirt, and boots by 3 individuals (4.9%). Therefore, it can be concluded that most horticultural farmers in Kelurahan Sendangagung, Kapanewon Minggir, do not use PPE, totaling 13 individuals (21.3%), and all horticultural farmers who use PPE do not use them completely and do not comply with the standards set by the Indonesian Ministry of Health, totaling 48 individuals (78.7%).

Table 5

Distribution of Respondents Based on Personal Hygiene Patterns  
Horticultural Farmers in Kelurahan Sendangagung, Kapanewon Minggir  
June 25 - July 19, 2023 (n=61)

| Personal Higiene | Frequency (n) | Percentage (%) |
|------------------|---------------|----------------|
| Good             | 53            | 86,9           |
| Bad              | 8             | 13,1           |
| Total            | 61            | 100            |

Based on Table 5, it shows that out of 61 respondents, farmers cultivating agricultural land in Kelurahan Sendangagung mostly have good personal hygiene practices, amounting to 53 individuals (86.9%), while those with poor personal hygiene practices are very few, totaling 8 individuals (13.1%).

Table 6

Distribution of Respondents Based on Contact Dermatitis  
Horticultural Farmers in Kelurahan Sendangagung, Kapanewon Minggir  
June 25 - July 19, 2023 (n=61)

| Incidence of Contact Dermatitis | Frequency (n) | Percentage (%) |
|---------------------------------|---------------|----------------|
| Contact Dermatitis              | 19            | 31,1           |
| No Contact Dermatitis           | 42            | 68,9           |
| Total                           | 61            | 100            |

Based on Table 6, it shows that out of 61 respondents, a small portion of horticulture farmers in Kelurahan Sendangagung experienced contact dermatitis, totaling 19 individuals (31.1%), while those who did not experience contact dermatitis numbered 42 individuals (68.9%).

Table 7

Relationship Between Personal Hygiene Patterns  
and Incidence of Dermatitis Among Horticulture Farmers  
in Kelurahan Sendangagung Kapanewon Minggir  
June 25 to July 19, 2023 (n=61)

| June 25 to July 15, 2023 (n = 61) |                                 |       |                       |       | P value |
|-----------------------------------|---------------------------------|-------|-----------------------|-------|---------|
|                                   | Incidence of Contact Dermatitis |       |                       |       |         |
|                                   | Contact Dermatitis              |       | No Contact Dermatitis |       |         |
| Personal Higiene                  | n                               | %     | n                     | %     | 0.001   |
| Good                              | 12                              | 19,67 | 41                    | 67,21 |         |
| Bad                               | 7                               | 11,47 | 1                     | 1,63  |         |
| Total                             | 19                              | 31.14 | 42                    | 68.84 |         |

Based on Table 7, it shows that out of 61 respondents, horticulture farmers in Kelurahan Sendangagung with poor personal hygiene patterns and experiencing contact dermatitis numbered 7 individuals (11.47%), while those with good personal hygiene patterns and experiencing dermatitis numbered 12 individuals (19.67%). The statistical test using Fisher's exact test yielded a p-value of 0.001 (p-value < 0.05), thus rejecting H0, indicating a significant relationship between personal hygiene patterns and the incidence of dermatitis among horticulture farmers.

## Discussion

The findings of this study are consistent with Akbar's research (2020) on the relationship between personal hygiene and occupation with the incidence of dermatitis in the working area of Puskesmas Juntinyuat, which stated that personal hygiene is associated with dermatitis, with a Chi-Square test result yielding a p-value of 0.015 (p-value < 0.05). Similar research by Rahmatika et al. (2020) on the risk factors for contact dermatitis among farmers also found a significant relationship between personal hygiene and dermatitis, with a bivariate analysis using Chi-Square yielding a p-value of 0.000 (p-value < 0.05). Personal hygiene is an action to maintain the cleanliness and health of individuals for both physical and psychological well-being (Issabella et al., 2023). Personal hygiene is a fundamental ability to meet the needs of sustaining life, health, and personal prosperity (Depkes RI, 2013). The study by Wati & Ridlo (2020) on PHBS among communities in Rangkah Sub-District, Surabaya, explained that community knowledge for living and health can be influenced by external factors such as parental habits, family, friends, the surrounding community, and educators. Individual knowledge indicates the extent to which individuals understand and implement clean and healthy living behaviors. Harrianto (2012) in Adlia et al. (2019) argued that age, fluid needs, weather, and work environment are factors contributing to personal hygiene habits.

Based on the researchers' findings, the personal hygiene patterns of horticultural farmers in Kelurahan Sendangagung, Kapanewon Minggir, still exhibit poor hygiene behaviors among 8 (13.10%) respondents. This is due to inadequate personal hygiene habits such as bathing, hand washing, foot washing, using running water and soap, as well as laundering and changing clothes. Direct observations of horticultural farmers in Kelurahan Sendangagung, Kapanewon Minggir, revealed that most farmers cultivate horticultural crops in paddy fields. It is evident in the field that the lack of facilities in the fields, such as wells, clean running water, soap, towels, and spare clothes, contributes to inadequate personal hygiene practices among horticultural farmers. Moreover, the working conditions for these farmers are hot due to the intense sunlight, causing them to sweat profusely, which can harbor germs on their skin and clothes. Some farmers choose to delay cleaning themselves in the fields and instead clean themselves at home, which is often far from their fields. These findings are also supported by the study of Sulasmi, Fitrah & Budirman (2022), which argued that environmental impacts on personal hygiene practices lead farmers to experience skin disorders due to pesticides. On average, horticultural farmers in Indonesia use chemical fertilizers such as NPK (Nitrogen Phosphate Potassium), KCL (Potassium Chloride), and urea (Bay, Levis & Bano, 2022). Meanwhile, the pesticides used include Insecticides (to combat insects), Herbicides (to prevent and kill weeds), Fungicides (to combat fungi), Nematocides (to combat worm pests), and Rodenticides (to combat rodents) (Guampe, 2021).

Handwashing habits among farmers are crucial for health because hands are the body parts most frequently in contact with chemicals such as chemical fertilizers and pesticides. Developing a habit of washing hands with soap and running water helps farmers remove dirt adhering to their skin (Pratiwi, Yenni & Mirsiyanto, 2022). This study aligns with the theory of the epidemiological triangle, which explains that a disease occurs due to an imbalance among the host (human), agent (source of disease), and environment (Ilmiyanti et al., 2022). This study identified several risk factors for contact dermatitis, such as human factors including age characteristics, gender, work duration, type of work, soap usage, and handwashing habits. Additionally, agent factors include the duration of contact of horticultural farmers with chemicals in the fields. Environmental factors such as weather and the habit of using personal protective equipment (PPE) also play a role. The participation of the Kelurahan Government, such as community empowerment, is essential, particularly in managing health service activities (Maulani et al., 2021). This is because health services are factors of well-being in the success of development programs involved in productivity outcomes (Haliwangka, Razak & Sjarlis, 2023). Not only the kelurahan, but Field Agricultural Extension Officers (PPL) also play a role in agriculture as facilitators or information providers about agriculture to enhance well-being (Erlangga & Supriyadi,

2017). Agricultural extension should consider factors such as adapting the ability of horticultural farmers to develop their farming businesses, providing non-confusing knowledge to respondents, and ensuring that the information obtained is useful for the future. PPLs not only provide socialization but also must provide health education such as proper personal hygiene practices and disease prevention like dermatitis, as well as provide guidance on pesticide dosage, use of chemical fertilizers, and appropriate PPE usage according to standards.

### Conclusions

Based on the research findings, the researcher concluded that nearly half of the respondents were in the pre-elderly age range (46-55 years), totaling 19 individuals (31.1%). Most of the respondents were male, amounting to 35 individuals (57.4%). More than half of the respondents worked on horticultural farming land for  $\geq 4$  hours per day, totaling 41 individuals (67.2%). The majority of horticultural farmers did not use Personal Protective Equipment (PPE), totaling 13 individuals (21.3%), and all farmers who did use PPE did not comply with the standards set by the Indonesian Ministry of Health (Depkes RI), totaling 48 individuals (78.7%). According to the study, it was found that out of 61 respondents, only a small number of farmers exhibited poor personal hygiene behaviors, specifically 8 individuals (13.1%). Furthermore, the research indicated that a small proportion of horticultural farmers in Kelurahan Sendangagung experienced contact dermatitis, totaling 19 individuals (31.1%). There is a significant relationship between personal hygiene practices and the occurrence of dermatitis among horticultural farmers in Kelurahan Sendangagung, Kapanewon Minggir, as indicated by Fisher's statistical test with a p-value of 0.001 (p-value < 0.05).

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