

## Scoping Review of Use of Personal Protective Equipment Against Contact Dermatitis Incidence in Informal Workers

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### ABSTRAK

**Background:** Skin disease is currently a health problem for people around the world, including in Indonesia. The prevalence of all forms of dermatitis is 4.66%. The use of personal protective equipment (PPE) can minimize the risk of contact dermatitis, but in reality, there are still many workers who do not use PPE when working, especially informal workers. In the informal industrial welding work in the Depok area, only 50% of workers used PPE while working, while 50% did not use PPE while working.

**Research objectives:** The research objective was to assess the effectiveness of using personal protective equipment in reducing the incidence of contact dermatitis in informal workers.

**Research Methods:** This type of research is the Scoping Review, with article searches from PubMed and Science Direct.

**Results:** The results of the analysis showed that the effectiveness of using personal protective equipment is very important to avoid the incidence of contact dermatitis in workers, especially to prevent factors that put workers in contact with allergens and irritants.

**Conclusion:** The use of minimal personal protective equipment coupled with poor personal hygiene after doing work, especially work in direct contact with allergens and irritants, are factors that can cause contact dermatitis in workers who have direct contact with allergens and irritants.

**Keywords:** Personal Protective Equipment, Contact Dermatitis, Informal Workers

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## 1. Introduction

Occupational skin disease is one of the most common occupational diseases among workers and is the second most common occupational disease in Europe after musculoskeletal injuries (Nicholson et al., 2010). The most common occupational skin disease is contact dermatitis, which is as common as 70–90% (Smedley et al. 2011).

The Canadian Center for Occupational Health (CCOHS) mentions that occupational contact dermatitis (DKAK) is skin inflammation caused by allergens or irritants that come into direct contact with the skin while at work (CCOH, 2016). Occupational contact dermatitis can occur in all types of work, including hospital workers, construction workers, factory and industrial workers, salon workers, farmers, garden workers who deal with plants, fertilizers, and pesticides, and it can also occur in other workers (Frosch et al., 2011). Workers with work-related contact dermatitis can experience a decrease in productivity at work due to the symptoms they experience (Lau, Matheson, Burgess, Dharmage, & Nixon, 2011). Although this disease is rarely life-threatening, it can cause high morbidity and suffering for workers, so it can affect the economic needs and quality of life of sufferers (Brown, 2004).

Efforts to prevent work accidents and occupational diseases are made by eliminating risks or controlling sources of danger. According to the ILO (1989), the hazard control hierarchy consists of five hazard controls: elimination, substitution, engineering, administration, and personal protective equipment. Elimination, namely by eliminating work hazards; substitution by replacing materials or work processes with safer ones; engineering by making protectors on machine parts that endanger workers; administratively by means of job rotation; and finally, personal protective equipment.

The use of PPE is the final stage of hazard control. Although the use of PPE will be maximized if it is carried out with other controls such as elimination, substitution, engineering, and administration so that hazards can be controlled, The benefits of using PPE when working are very large in terms of preventing work accidents. But in reality, there are still many workers who do not use PPE while working.

Research conducted by Amtiria (2015) showed that 46% of workers who did not fully use PPE experienced contact dermatitis, while only 8% of workers who completely used PPE experienced contact dermatitis. According to one study conducted on informal industrial welding jobs in the Depok area, only 50% of workers used PPE while working, while 50% did not (Purwanto, 2009). Using PPE while working can reduce the possibility of work accidents. Therefore, the use of PPE in the informal sector needs to be considered by workers, companies, and the local government. Therefore, researchers want to conduct a scoping review related to the use of personal protective equipment and the incidence of irritant contact dermatitis in informal workers.

## **2. Methods**

This type of research is review research, namely scoping reviews. A scoping review of this study was conducted to identify the effectiveness of using personal protective equipment against the incidence of contact dermatitis in informal workers. This research will be conducted by searching for data in published online electronic databases, namely Science Direct and Open Access Journal (PubMed). The time of research is January–Mei 2023.

## **3. Result**

A literature search on the Science Direct PubMed database yielded 350 articles, and then 347 articles were excluded due to discrepancies based on PICOS and duplicate articles, resulting in 3 suitable articles. There are three research articles that have been reviewed, namely:

1. Occupational Contact Dermatitis in Employees of Large-Scale Narcotic Crop Farms in Ethiopia

2. Occupational dermatoses: knowledge, attitudes, and perceptions among motor vehicle repair
3. Dermatoses among automobile mechanics in Mansoura, Egypt

The entire article was obtained using a cross-sectional study design. The researcher made a data extraction consisting of the author, year, research design objectives, samples, and results.

#### **4. Discussion**

The research results from Tamene and Aiggan (2021) show that PPE is a significant factor affecting occupational dermatitis. Farm workers who do not use PPE have a 2.5-times higher risk of occupational dermatitis than workers who use PPE while working. In any workplace, the successful performance of tasks requires the provision of adequate infrastructure as well as suitable equipment and supplies. The scarcity of PPE in agriculture is a major organizational barrier to workplace safety. The lack of PPE not only affects the quantity and quality of work but also endangers the lives and livelihoods of agricultural workers. In Tamene's research, Aiggan (2021) found that inadequate knowledge about the use and storage of pesticides and not using PPE had an effect on the incidence of contact dermatitis in Khat farm workers in Ethiopia.

The results of research from Ahmed, Amani S., and Ramadan Mohamed Eldahshan (2021) revealed an independent risk factor for occupational skin diseases among motorized vehicle repair shop workers: the lack of use of personal protective equipment. In this study, the majority of workers with occupational skin disease were car mechanics (56.4%), followed by car painters (23.1%); car tinkerers were the most frequent skin disease among mechanics (25, 7%), followed by the different work characteristics of the study group (12.8%); and lastly, auto-electricity (7.7%).

The results of research from Abou-ElWafa, H. S. (2018) This study shows that working for 20 years or more, a lack of PPE, and the presence of chemical hazards in the workplace are independent predictors of the likelihood of developing occupational skin diseases. Even though they work in a high-risk environment with

possible fire, fall, and chemical exposure hazards, none of the repair shops had fire extinguishers, first aid kits, or any kind of safety device. 1 In addition, the high percentage of car workers studied (67, 8%) in an industrial zone in Zagazig City washed their hands with gasoline or benzene, but no one in the study wore protective gloves or used barrier creams or emollients, except for some workers who wore

The effectiveness of the use of personal protective equipment is influenced by factors that influence the use of PPE itself, which consist of predisposing factors (age, knowledge, attitudes, education, years of service), enabling factors (facilities), and reinforcing factors (technical guidance, supervision). The more effective use of PPE will affect the performance of a worker, so it will also affect work productivity.

In the world of work, the use of personal protective equipment (PPE) is needed, especially in work environments that have potential hazards to work safety, such as in industry. In general, companies have implemented an OHS management system in which there are provisions for the use of PPE, but in reality, PPE is not always worn at work, and many workers do not use PPE. This can occur for various reasons, for example, discomfort with PPE and not understanding the risks of work.

From the results of the study, it was found that the use of minimal personal protective equipment coupled with a poor level of personal hygiene after doing a job, especially work that is in direct contact with allergens and irritants, is a factor that can cause the incidence of contact dermatitis in workers who have direct contact with these allergens and irritants. This is supported by research by Rahmi Garmini, who wrote that workers who have good personal hygiene experience less irritant contact dermatitis than workers who have poor personal hygiene. There is a relationship between the use of PPE and personal determinants, which include length of service, duration of contact, personal hygiene, and a history of skin disease with symptoms of contact dermatitis among informal workers in the tofu industry in Kuningan Regency. In Barradah's study, R. K. (2020) concluded that in their study, only 10–19% of workers used protective gloves when working, but when workers were educated that the lesions on their hands were contact dermatitis, the majority of them began to use gloves. Thus, it is important to provide education to

workers so that they have knowledge about the importance of using personal protective equipment to prevent occupational diseases.

## 5. Conclusions and Recommendations

Based on the discussion in this study, the researchers concluded that several research results on the effectiveness of using personal protective equipment are very important to avoid contact dermatitis, especially to prevent factors that make workers come into contact with allergens and irritants. The effectiveness of the use of personal protective equipment is influenced by factors that influence the use of PPE itself, which consist of predisposing factors (age, knowledge, attitudes, education, years of service), enabling factors (facilities), and reinforcing factors (technical guidance, supervision). The more effective use of PPE will affect the performance of a worker, so it will also affect work productivity. The role of health institutions, companies, and business actors is very important in protecting workers from irritant contact dermatitis. Providing education and training on the use of personal protective equipment is one of the preventive measures that can be taken so that the impact on workers can be reduced.

## References

- Abou-ElWafa, H. S., Albadry, A. A., El-Gilany, A. H., & Ismael, A. F. (2018). Dermatoses among automobile mechanics in Mansoura, Egypt. *Archives of Environmental and Occupational Health*, 73(1), 42–
47. <https://doi.org/10.1080/19338244.2017.1289892> Ahmed, A. S., & Eldahshan, R. M. (2022). Occupational dermatoses: knowledge, attitudes and perceptions among motor vehicle repair workers. *International Journal of Occupational Safety and Ergonomics*, 28(4), 2112–2118.
- <https://doi.org/10.1080/10803548.2021.1962640> Amitiria, Rahma. 2015. Penggunaan Alat Pelindung Diri dan Kejadian Dermatitis Kontak Iritan pada Pekerja. *J Agromed Unila Volume 2 Nomor 2 Mei 2015*

Barradah, R., Ahmad, M., Shaik, R., Ahmad, R., Badar Almutairi, A., & Alghuyaythat, W. (n.d.). *Assessment of hand or foot eczema and contact dermatitis among car mechanics.*

Brown, T., 2004. Strategies for Prevention: Occupational Contact Dermatitis. *Occup Med*, [e-journal] 54(7): pp. 450–457. Tersedia di: <https://www.ncbi.nlm.nih.gov/pubmed/15486176>.

Canadian Centre for Occupational Health and Safety. 2016.

Tersedia di: [http://www.ccohs.ca/oshanswers/diseases/allergic\\_derm.html](http://www.ccohs.ca/oshanswers/diseases/allergic_derm.html). [Sitasi 15

Mei 2020]

Frosch PJ, Kugler K. Occupational contact dermatitis. Dalam: Johansen J, Frosch P, Lepoittevin J, penyunting. *Contact Dermatitis*. Edisi ke-5. London, New York: Springer; 2011.h. 831-41.

*International Labour Office*. 1989. *Buku Pedoman Pencegahan Kecelakaan*.

Lau, M. Y., Matheson, M. C., Burgess, J. A., Dharmage, S. C., & Nixon, R. (2011). Disease severity and quality of life in a follow-up study of patients with occupational contact dermatitis. *Contact Dermatitis*, 65, 138-145

Rahmi G. 2018. Faktor yang Mempengaruhi Kejadian Dermatitis Kontak Iritan pada Pekerja Pabrik Tahu

Smedley J. Concise guidance: diagnosis, management and prevention of occupational contact dermatitis. *Clinical Med* 2010; 10 :487-90.

Tamene, A. (2021). Occupational Contact Dermatitis in Employees of Large-Scale Narcotic Crop Farms of Ethiopia: Prevalence and Risk Factors. A Self-Reported Study Using the Nordic Occupational Skin Questionnaire. *Environmental Health Insights*, 15. <https://doi.org/10.1177/11786302211048378>

