

## THE RISK OF OCCUPATIONAL CONTACT DERMATITIS IN COVID-19 ISOLATION WARD SETTING

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**Abstract:** Occupational contact dermatitis (OCD) is a prevalent skin condition affecting healthcare workers, particularly those in high-risk environments such as COVID-19 isolation wards. This study aims to summarize the findings of a study conducted on patients to explore the risk factors associated with OCD development among healthcare professionals in COVID-19 isolation ward settings. This prospective observational study aimed to assess the risk of occupational contact dermatitis (OCD) among healthcare professionals working in the COVID-19 isolation ward setting. The study was conducted at Chaudhary Mohammad Akram Hospital for six months, from November 2021 to April 2022. Data was collected from 150 participants of both genders. The participants ranged from 22 to 55 years, with a mean age of  $32.5 \pm 6.8$  years. The study population consisted of 55% females and 45% males. The occupation distribution included doctors (40%), nurses (50%), and support staff (10%). Clinical evaluations revealed that 38 healthcare professionals (25.3%) exhibited signs consistent with occupational contact dermatitis. Among them, 18 participants (47.4%) were diagnosed with irritant contact dermatitis (ICD), while 20 participants (52.6%) showed signs indicative of allergic contact dermatitis (ACD). It is concluded that this study highlights the significant prevalence of occupational contact dermatitis among healthcare professionals in COVID-19 isolation wards. Prolonged PPE usage and frequent hand hygiene practices contribute to skin irritation.

**Keywords:** Dermatitis, Allergy, COVID-19, Occupational Contact Dermatitis, Healthcare Professionals, Irritant Contact Dermatitis

### Introduction

The COVID-19 pandemic has achieved phenomenal difficulties for healthcare experts in disconnection ward settings. As these devoted cutting-edge workers persistently oversee and care for patients impacted by the infection, they are reliably presented with different potential health chances. One critical concern is the increased gamble of creating occupational contact dermatitis (OCD) because of drawn-out and escalated individual defensive gear (PPE) utilization, and regular hand cleanliness rehearses, and expanded times of glove use (Sawada, 2023).

A few cutaneous reactions to COVID-19 immunizations have been accounted for. The most well-known incorporate urticarial, maculopapular, morbilliform, or papulovesicular ejections and chilblains, livedo and vasculitis, expanding at the areas of corrective fillings, varicella-zoster or herpes simplex emissions, pityriasis-rosea-like reactions, and COVID arm. Different examinations have likewise shown that the improvement of psoriasis might happen after immunization, notwithstanding the beginning of lichen planus or atopic dermatitis and the fuel of prior hidradenitis suppurativa or pemphigus vulgaris (Olusegun and Martincigh, 2021). Occupational skin diseases are illustrative of cutaneous irritation, and during the spread of COVID-19 all over the planet, healthcare workers encountered an assortment of skin conditions because of their obligations in treating COVID-19 patients. To better

comprehend the developing highlights of occupational skin diseases among healthcare experts and to fittingly treat such skin issues, this survey gives a refreshed outline of the information assembled from past examinations (Liu et al., 2020).

Occupational contact dermatitis, a typical occupational skin issue, incorporates aggravation contact dermatitis (ICD) and hypersensitive contact dermatitis (ACD). Delayed and redundant openness to aggravations or allergens can prompt skin hindrance interruption, irritation, and uneasiness, eventually influencing healthcare workers' prosperity, work execution, and, generally speaking, the nature of patient care (Zaino and Huecker, 2021). Given the fast and significant changes in working circumstances encouraged by the pandemic, investigating the gamble of OCD among healthcare workers in the COVID-19 separation ward setting is vital. The expected implications of OCD reach out past the domain of actual distress, as impacted healthcare workers might encounter decreased work fulfillment, expanded truancy, and a compromised capacity to give ideal patient care (Piapan et al., 2022). As healthcare frameworks keep exploring the pandemic scene, protecting the prosperity of cutting-edge workers remains a fundamental need. Understanding the gamble of occupational contact dermatitis fills in as a critical stage towards guaranteeing their occupational health, improving contamination counteraction rehearses, and advancing in general work

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fulfillment in an undeniably requesting climate (Larese Filon et al., 2021). Epidemiological information from past examinations led in China in 2020 showed the pervasiveness of skin damage in health workers connected with preventive measures against COVID-19 disease using PPE accounted for 97.0% (526 out of 542), and the most often impacted area was the scaffold of the nose (83.1%), cheeks (78.7%), hands (74.5%), and temple. Healthcare workers are presented with different boosts that compound occupational skin diseases. Because of the great recurrence of handwashing utilizing cleansers and sanitizers, notwithstanding the utilization of gloves for extensive stretches of the day, healthcare workers are at a higher gamble of gaining occupational contact dermatitis. Consequently, it is conjectured that healthcare workers are at a higher gamble of creating occupational skin diseases (Visser et al., 2014).

Thus, this study aims to summarize the findings of a study conducted on patients to explore the risk factors associated with OCD development among healthcare professionals in COVID-19 isolation ward settings.

### Methodology

This prospective observational study aimed to assess the risk of occupational contact dermatitis (OCD) among healthcare professionals working in the COVID-19 isolation ward setting. The study was conducted at Chaudhary Mohammad Akram Hospital for six months, from November 2021 to April 2022.

Inclusion criteria for the study include individuals actively working in the COVID-19 isolation ward at Chaudhary Mohammad Akram Hospital who are willing to provide informed consent.

The study has established certain criteria that excluded individuals from participating. These include people with a prior history of dermatological conditions that may confound the assessment of occupational contact dermatitis, healthcare professionals who were not directly involved in patient care within the COVID-19 isolation ward, and participants who were unwilling or unable to provide informed consent.

One hundred fifty healthcare professionals working in the COVID-19 isolation ward of Chaudhary Mohammad Akram Hospital were recruited for this study. The participants included doctors, nurses, and support staff actively involved in patient care. Informed consent was obtained from all participants before their study enrollment. Data collection was conducted through a combination of self-administered questionnaires and clinical assessments. The participants were provided with structured

questionnaires that gathered information on demographics, occupational history, frequency and duration of personal protective equipment (PPE) usage, and hand hygiene practices. To assess the occurrence of occupational contact dermatitis, clinical evaluations were performed by dermatologists specializing in occupational skin disorders. The participants' skin was examined for signs of irritant or allergic contact dermatitis, including erythema, papules, vesicles, and pruritus. The severity of dermatitis was graded based on standardized scoring systems. Data were analyzed by using SPSS v27.0. The prevalence of occupational contact dermatitis was calculated as the proportion of healthcare professionals exhibiting dermatitis signs. Factors such as duration and frequency of PPE usage, type of PPE, hand hygiene practices, and occupation were analyzed for potential associations with OCD. Chi-squared tests and logistic regression analyses were employed to identify significant relationships between variables.

### Results

Data was collected from 150 participants of both genders. The participants ranged from 22 to 55 years, with a mean age of  $32.5 \pm 6.8$  years. The study population consisted of 55% females and 45% males. The occupation distribution included doctors (40%), nurses (50%), and support staff (10%). (Table 1)

Clinical evaluations revealed that 38 healthcare professionals (25.3%) exhibited signs consistent with occupational contact dermatitis. Among them, 18 participants (47.4%) were diagnosed with irritant contact dermatitis (ICD), while 20 participants (52.6%) showed signs indicative of allergic contact dermatitis (ACD). The severity of dermatitis varied, with mild cases accounting for 55.3%, moderate cases for 31.6%, and severe cases for 13.2% of the participants with OCD. (Table 2, Figure 1)

Table 3 assessed the association between PPE usage and the risk of developing OCD. Results indicated a statistically significant association between prolonged glove usage and OCD ( $p < 0.05$ ). However, no significant association was observed between the type of PPE and the risk of developing OCD ( $p > 0.05$ ).

Participants who reported frequent handwashing and sanitization were more likely to develop OCD ( $p < 0.05$ ). Interestingly, participants who reported less frequent hand hygiene practices were also at a higher risk of developing OCD, suggesting a complex relationship between hand hygiene and skin irritation.

**Table 01: Demographic profile of participants**

Characteristic	Frequency	Percentage (%)
<b>Age (years)</b>		
Mean $\pm$ SD	32.5 $\pm$ 6.8	
<b>Gender</b>		
Female	82	54.7
Male	68	45.3
<b>Occupation</b>		
Doctors	60	40.0
Nurses	75	50.0
Support Staff	15	10.0

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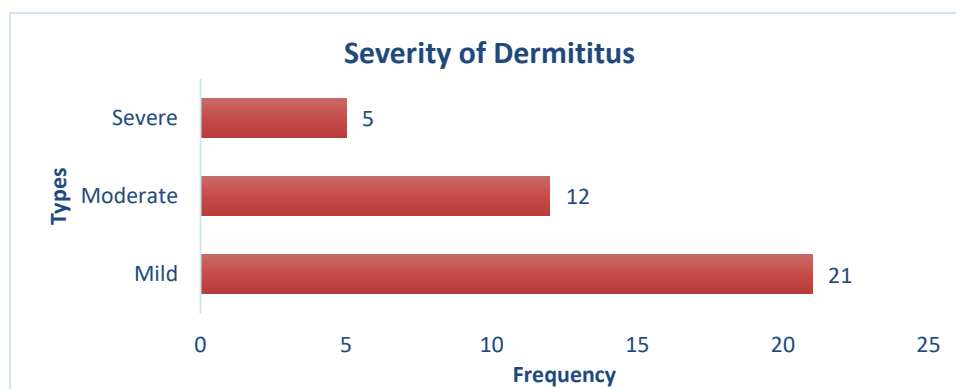


Figure 1: Frequency of Severity Distribution of Dermatitis

Table 02: Type of dermatitis

Type of Dermatitis	Frequency	Percentage (%)
Irritant Contact Dermatitis (ICD)	18	12.0
Allergic Contact Dermatitis (ACD)	20	13.3

Table 03: Factors associated with OCD

Factor	OCD (Yes)	OCD (No)	Total
Prolonged Glove Usage	28	122	150*
<b>Type of PPE</b>			
Type A	10	40	50
Type B	18	82	100
<b>Hand Hygiene Practices</b>			
Frequent Handwashing	24	84	108
Frequent Hand Sanitization	20	68	88
Less Frequent Hand Hygiene	18	70	88

\*P value < 0.05

**Discussion**

Occupational contact dermatitis (OCD) is a huge worry for healthcare experts working in the COVID-19 separation ward setting, where delayed and serious individual defensive gear (PPE) use and continuous hand cleanliness rehearses are essential for disease counteraction. This conversation digs into the ramifications of the review's outcomes, thinks about possible components behind the noticed affiliations, and features the significance of preventive procedures to moderate the gamble of OCD among cutting-edge workers (Filon et al., 2014). The noticed commonness of OCD among healthcare experts (25.3%) highlights the significant effect of working circumstances in the COVID-19 disconnection ward on skin health. This finding is consistent with past examinations that have recognized healthcare workers as a weak gathering for creating occupational skin problems because of their errands and their work climate (Kersh et al., 2021). The pervasiveness of occupational contact dermatitis (ICD) and allergic contact dermatitis (ACD) highlights the diverse ideas of skin responses in light of different aggravations and allergens. The relationship between delayed glove utilization and the event of OCD lines up with the instrument of aggravation contact dermatitis, where steady openness to dampness, rubbing, and impediment can disturb the skin hindrance and lead to irritation (Yuindartanto et al.,

2023). The mix of glove utilization and continuous hand cleanliness practices can intensify skin disturbance and compromise the skin's defensive capability. This is particularly significant regarding the COVID-19 pandemic, where rigid contamination control measures have prompted expanded times of PPE utilization. The connection between hand cleanliness rehearses and OCD risk is critical. While powerful hand cleanliness is fundamental for disease anticipation, exorbitant and deficient practices can add to skin aggravation (Purnamasari et al., 2021). Successive handwashing and disinfection, while significant for lessening the transmission of microbes, can strip the skin of normal oils and disturb its hindrance capability. On the other hand, members who revealed less regular hand cleanliness rehearses were likewise at a higher gamble of creating OCD, showing a requirement for adjusted hand cleanliness proposals considering contamination control and skin health (Coman et al., 2015). The seriousness of OCD fluctuated among members, with gentle cases being the most pervasive. This range of seriousness highlights the significance of addressing skin health issues at the beginning phase to forestall movement to additional extreme types of dermatitis. The variety in seriousness across various occupations proposes that variables, for example, task-explicit openness and responsibility, might add to contrasting degrees of skin aggravation. The discoveries of this study have suggestions for healthcare

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organizations and cutting-edge workers. Preventive systems ought to incorporate a far-reaching approach, remembering custom-made training for legitimate PPE utilization, proper hand cleanliness rehearses, and the utilization of creams to keep up with skin respectability. Customary skin appraisals and early intercession can alleviate the gamble of serious dermatitis, lessen non-attendance, and further develop the general prosperity of healthcare experts (Stocks et al., 2015).

## Conclusion

It is concluded that this study highlights the significant prevalence of occupational contact dermatitis among healthcare professionals in COVID-19 isolation wards. Prolonged PPE usage and frequent hand hygiene practices contribute to skin irritation. Balancing infection control measures with skin health is crucial, underscoring the need for tailored preventive strategies to safeguard the well-being of frontline workers and ensure effective patient care.

## Declarations

### Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

### Ethics approval and consent to participate.

Approved by the department Concerned.

### Consent for publication

Approved

### Funding

Not applicable

## Conflict of interest

The authors declared an absence of conflict of interest.

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