

# The risk of hand eczema in healthcare workers during the COVID-19 pandemic: Do we need specific attention or prevention strategies?

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Coronavirus disease-2019 (COVID-19) causes a global pandemic following the first identified case in China in late 2019. Apart from respiratory droplets, contact transmission was stated to play an important role in the spreading of the disease. Therefore, hand hygiene became an important measure for prevention; the World Health Organization has recommended washing of hands with water and soap, or alcohol-based hand disinfectant before and after the contact with COVID-19 patients and/or their body fluids.<sup>1</sup> Independent of COVID-19, healthcare workers (HCW) generally have an increased risk of hand eczema (HE).<sup>2,3</sup> Skin damage due to intensive hand hygiene measures during the COVID-19 pandemic in HCW has recently been reported,<sup>4,5</sup> as well as HE among HCW during the pandemic.<sup>5</sup> Therefore, we aimed to investigate the frequency, risk factors, and clinical features of HE among healthcare workers during the COVID-19 pandemic.

## METHODS

Between May 15 and 25 2020, a total of 107 HCW working in the COVID-19 patient care units of our hospital were enrolled in the study. All individuals were examined by a team of dermatologists. Demographic and clinical findings were recorded in a form. The Hand Eczema Severity Index (HECSI) scoring system was used for the standardization of HE severity.<sup>6</sup>

## RESULTS

Hand eczema was detected in 54 of 107 (50.5%) participants. The overall demographic and clinical parameters, and the comparison of these parameters between groups with and without HE are summarized in Tables S1a and S1b. In the group with HE, female gender ( $P = .033$ ), age ( $P = .003$ ), work years ( $P < .001$ ), generalized dry skin ( $P = .006$ ), history of HE in the past year ( $P > .001$ ), additional

housework at home ( $P < .001$ ), handwashing frequency  $> 20$  times per day ( $P = .04$ ) were significantly over-represented. On the other hand, the frequency of moisturizing cream use after hand washing at the workplace ( $P = .002$ ) and in daily life ( $P < .001$ ) were significantly lower (Table S1a and S1b). Multivariate logistic regression analysis summarized in Table S2 showed that the use of moisturizing hand cream in daily life (odds ratio [OR]: 22.1; 95% confidence interval [CI]: 6.33–77.0), a history of HE within the past year (OR: 18.5; 95%CI: 3.82–89.9), and a handwashing frequency  $> 20$  times per day (OR: 3.28; 95%CI: 0.995–10.8) were independently associated with a high risk of HE.

Table S3 summarizes clinical features of individuals with HE. The most common clinical type, morphology, and affected area were irritant contact dermatitis (96.3%), erythematous-squamous morphology (75.9%), and hand dorsum (85.2%), respectively. The median HECSI score was 24 (range 3–84) among individuals with HE. Hand eczema was severe in 21 (38.9%), moderate in 20 (37%), and mild in 13 (24.1%) patients (Table S3).

Moisturizing hand cream was used in 26 (57.8%) patients before and in 36 (80%) patients after the development of HE. Topical corticosteroids were used in only 16 (35.6%) patients after HE had developed. The frequency of handwashing and the use of alcohol-based disinfectants did not change before and after HE (Table S1b).

## DISCUSSION

The frequency of HE was 50.4% among healthcare workers at the COVID-19 patient care units in this study. The HE prevalence in pre-COVID-19 era varied between 12% and 50%.<sup>2,7</sup> Lan et al reported a high level of hand skin (70.4%) damage due to frequent hand hygiene and longer times of using gloves in healthcare workers managing COVID-19 patients.<sup>4</sup> Recently, Guertler et al published a

questionnaire-based study among healthcare workers at COVID-19 units. The majority of the study population (90.4%) reported symptoms associated with acute hand dermatitis, whereas the prevalence of self-reported HE was only 14.9%.<sup>5</sup>

Previous reports have demonstrated that personal or familial atopy, >20 hand washings per day, using occlusive gloves, and long years of working are independent risk factors for HE.<sup>3</sup> On the other hand, HE prevalence was lower in individuals using moisturizers, and the use of moisturizers has been recommended for preventing HE.<sup>3,8</sup> The increased risk of HE with frequent handwashing (>20 per day) was in line with the literature from pre-COVID-19 era. In contrast to the literature, however, the increased use of moisturizing hand cream was independently associated with HE in the present study. This might suggest that patients with HE used moisturizing creams with a therapeutic intent after the development of HE, rather than for prevention. It was interesting that only one-third of patients used topical corticosteroids after the development of HE, and that a majority (80%) increased the frequency of moisturizer use instead. Although the use of moisturizers before HE development was reported as 57.8% among patients with HE, it is uncertain that the moisturizers had been used appropriately.

The limitation of this study was its small sample size. However, the diagnosis of HE based on dermatological examination during COVID-19 pandemic was the strength of the study. In conclusion, because hand hygiene is one of the key factors to prevent COVID-19 transmission, preventive strategies are rapidly needed to reduce HE risk related to hand hygiene

## CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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## SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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