

## HANDS ECZEMA IN TIMES OF PANDEMIC: A REVIEW OF FACTORS RELATED TO EXCESSIVE HYGIENE

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*Emildo César Licassali Filho*

``Universidade de Vassouras``

Vassouras, Rio de Janeiro

<https://orcid.org/0000-0002-1629-8396>

*Erica Pontes Pereira Ferreira*

``Universidade de Vassouras``

Vassouras, Rio de Janeiro

<https://orcid.org/0000-0002-9543-464X>

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**Abstract:** Hand eczema is an inflammation of the skin that presents signs such as flaking, cracks, erosions, vesicles, among others. Its consequences are varied, among which we can highlight the use of substances such as soaps and detergents. During the COVID-19 pandemic, the use of these substances increased considerably, as a result of which some cases of eczema began to appear. However, some studies indicate that we cannot correlate cases of eczema with disinfection processes. In view of this, the objective of this review was to evaluate the occurrence of this skin inflammation during the 2020 pandemic. The databases used were DOAJ, PubMed and BVS, with a total of 16 scientific articles included. Most of the studies observed indicate the emergence of eczema due to excessive hand washing associated with soap. On the other hand, in smaller numbers, studies make it clear that in a certain population there was a lower prevalence of skin lesions even associated with eczema risk factors. In conclusion, after analyzing the articles, further studies are needed to relate skin lesions to COVID-19 prevention measures.

**Keywords:** Hand eczema; Dermatitis; COVID-19; Skin; Excessive hygiene.

## INTRODUCTION

Hand eczema, also known as hand dermatitis, refers to an inflammation of the skin, which usually presents a typical clinical presentation with signs of redness, edema, skin infiltration, scaling, areas of hyperkeratosis, vesicles, fissures and erosions (COENRAADS, P.-J., 2012). It has a multifactorial etiology and can be divided into exogenous causes caused by soaps, rubber, vegetables, detergents, among others, and endogenous causes caused by atopy, stress, hormones, etc. Of all occupational diseases, hand eczema is the most common skin disease, accounting for 9-35% of the others

(AGARWAL, 2014). During the COVID-19 pandemic, proper hand hygiene has become a preventive measure (CAVANAGH, G.; WAMBIER, C., 2020). As a result, hand disinfection and washing procedures ended up increasing during this period, leading to a growing increase in the incidence of hand eczema, even with the use of emollients as a preventive measure (REINHOLZ, M. et al., 2021). On the other hand, studies indicate that frequent washing associated with the use of disinfectants during the 2020 pandemic was not related to the emergence of typical eczema symptoms (PIAPAN, L. et al., 2023).

Due to the large number of people affected by hand eczema due to the excessive use of alcohol, soaps and other chemicals and cases in which eczema was not related to the use of these substances, the objective of this literature review was to evaluate the occurrence of hand eczema during the COVID-19 pandemic.

## METHODOLOGY

This is an integrative literature review that used the Directory of Open Access Journals (DOAJ), National Library of Medicine (PubMed) and the VHL Regional Portal (VHL) databases. The search was performed using the descriptors “hand eczema” and “COVID 19 pandemic”, with the Boolean operator “AND”.

The review was conducted following the following steps: definition of the theme; establishment of eligibility parameters; determination of inclusion and exclusion criteria; analysis of publications in the databases; review of the studies found and presentation of the results. Articles published in the last 3 years (2020-2023), which involved controlled clinical trial, observational study and case report studies, and which were related to hand eczema during the COVID-19 pandemic were included. Articles that did not present surveys and definitions with the objective of the study were excluded, as well

as those that did not address hand eczema during the COVID-19 pandemic period.

## RESULTS

The search resulted in a total of 155 papers. Fifteen articles were found in the DOAJ database, 57 articles in the PubMed database and 83 articles in the BVS database. After selecting the inclusion and exclusion criteria, two articles were selected from the DOAJ database, five from PubMed and nine from BVS, and six articles were removed because they were duplicated between the BVS and PubMed platforms, resulting in a total of 16 articles, as shown in Figure 1.

Of the 16 selected studies, 12 are observational studies, 2 are case reports and 2 are controlled clinical trials (Table 1). Of the selected studies, eleven articles observed that during the COVID-19 pandemic there was an increase in the rates of hand eczema due to the disinfection process. Three studies reported that the prevalence of skin symptoms was not related to daily hand hygiene. Two articles evaluated the effectiveness of an intervention to prevent eczema, obtaining positive results.

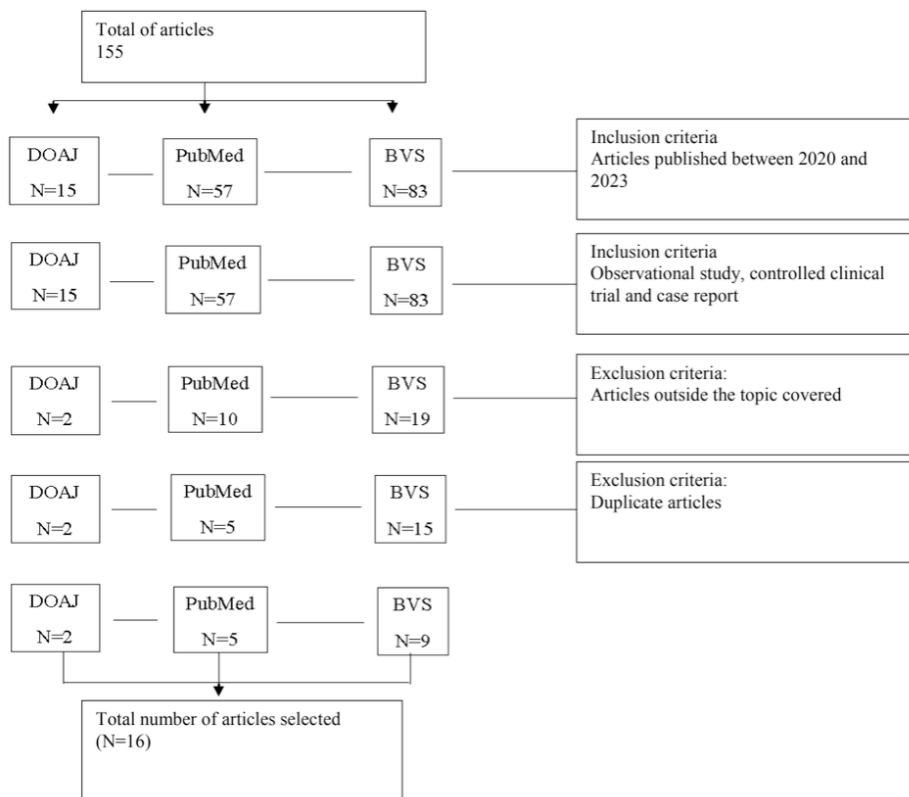
## DISCUSSION

Hand washing with soap has become a simple and effective preventive measure to prevent the spread of SARS-CoV-2. This virus is formed by a lipid and protein envelope that protects its genetic material. The soap, formed by similar molecules, begins to penetrate the viral membrane and detaches itself, opening pores in it, dispersing the viral genetic material, inhibiting its ability to enter the human cell (FERNANDES, P.; RAMOS, M. J., 2020). Constant hand washing generates several changes in the skin. This prolonged exposure causes edema in the stratum corneum, increasing the skin's permeability and sensitivity to irritants. On the skin, soap

ends up breaking down intercellular lipids and damaging proteins in the stratum corneum, increasing irritation (SOUZA, B. et al., 2022).

An online questionnaire assessed the impact of disinfection on the skin, comparing data before and during the COVID-19 pandemic. After application, a significant increase in the occurrence of skin symptoms in healthy individuals and worsening of symptoms in the population that already had dermatitis before the pandemic was observed (POLECKA, A. et al., 2023). When evaluating children, with high frequency in the use of disinfectant products, schoolchildren had a 1.5 times greater risk than preschoolers in developing skin changes (BORCH, L. et al., 2020).

In health professionals, the high exposure to antimicrobial methods and products is clear. In the evaluation of 270 professionals, 223 (82.6%) reported signs and symptoms of eczema on the hands (KIELY, L. F. et al., 2020). In an evaluation of the occurrence of hand eczema in a group of nursing students with a low prevalence of atopic eczema in childhood, the integrity of the skin barrier was analyzed, observing a lower prevalence of clinical symptoms of eczema. This finding may be due to a low susceptibility of the skin to the development of skin lesions (PIAPAN, L. et al., 2023). Even with a high prevalence of hand hygiene during the COVID-19 pandemic, findings in a hospital in Denmark suggest that the interaction of hand eczema and exposure to irritating factors cannot be related to just one cause, as it is still a complex study (YÜKSEL, Y. T. et al., 2022). Due to little evidence on the involvement of different hygiene procedures, it was observed that alcohol-based hand sanitizers presented lower rates of skin barrier disruption (MONTERO-VILCHEZ, T. et al., 2022). When implementing correct eczema prevention in a group of health professionals, such as the use of emollients



**Figure 1:** Flowchart of selection and identification of designated articles in the DOAJ, PubMed and BVS databases.

Source: Author (2024).

Author	Year	Title	Type of study	Main conclusions
L. Piapan, D. D. Taranto, E. Patriarca, F. Ruie & F. L. Filon.	2023	Hand Eczema in Apprentice Nurses during the COVID-19 Pandemic after a Skin Prevention Program	Observational study (n=242)	Nursing students who were evaluated during the COVID-19 pandemic did not present skin manifestations on their hands.
A. Polecka, et al.	2022	Questionnaire-Based Study Evaluating the Hand Hygiene Practices and the Impact of Disinfection in the COVID-19 Pandemic on Hand Skin Conditions in Poland	Observational study (n=170)	Study made clear the increase in symptoms along with the deterioration of skin on the hands.
R. Gallo, et al.	2022	Implementation of a distance learning hand eczema prevention program for healthcare workers during the COVID-19 pandemic	Case report	Distance learning used to inform healthcare professionals on eczema prevention has positively changed the prevalence of the disease.
C. Symanzik, L. Stasielowicz, R. Brans, C. Skudlik & S. M. John.	2022	Prevention of occupational hand eczema in healthcare workers during the COVID-19 pandemic: A controlled intervention study	Controlled clinical trial (n=302)	Online health education as an intervention for the prevention of occupational hand eczema in healthcare professionals during the pandemic was successful.
A. Alkhalifah.	2022	Risk factors for hand eczema in the general population of Saudi Arabia during the COVID-19 pandemic: Na internet-based cross-sectional study.	Observational study (n=582)	Increased prevalence of eczema due to use of disinfectants.
T. Y. Yüksel, B. L. Nørreslet, M. E. Flachs, E. N. Ebbehøj & T. Agner.	2022	Hand eczema, wet work exposure, and quality of life in health care workers in Denmark during the COVID-19 pandemic.	Observational study (n=795)	Study finds low prevalence of hand eczema among hospital workers in Denmark.

H. A. Tesfaye, T. G. Engdaw, M. F. Aragaw & G. G. Kabito.	2022	Prevalence and risk factors of work-related contact dermatitis symptoms among healthcare cleaners during the COVID-19 pandemic in Northwest Ethiopia: a multicentre cross-sectional survey.	Observational study (n=409)	It reveals that high prevalence of contact dermatitis was common during the pandemic.
L. Pecoraro, G. Chiaffoni, G. Piacentini & A. Pietrobelli.	2022	The need of an updated culture of “occupational” atopic hand dermatitis in children at the time of COVID-19.	Observational study (n=2)	Two children with dermatitis for several years showed worsening of their condition after intense alcohol-based hand washing during the pandemic.
T. Montero-Vilchez, et al.	2022	Assessment of hand hygiene strategies on skin barrier function during COVID-19 pandemic: A randomized clinical trial.	Controlled clinical trial (n=62)	According to the study, daily hand hygiene showed lower rates of skin rupture with the use of alcohol-based disinfectants.
P. K. Panda & I. K. Sharawat.	2021	Fluctuating Palmar Erythema in a Toddler during COVID-19 Pandemic: Do You Know the Offender?	Case report	A child used to wash his hands with an alcohol-based product during the pandemic, leading to dermatitis.
M. Reinholz, et al.	2021	Increased prevalence of irritant hand eczema in health care workers in a dermatological clinic due to increased hygiene measures during the SARS-CoV-2 pandemic	Observational study (n=66)	The pandemic has led to an increase in the incidence of hand eczema signs in healthcare professionals.
F. L. Kiely, et al.	2021	Irritant contact dermatitis in healthcare workers as a result of the COVID-19 pandemic: a cross-sectional study.	Observational study (n=270)	The study indicates that the continued use of personal protective equipment during the COVID-19 pandemic among healthcare professionals contributed to the appearance of eczema.
S. Mushtaq, et al.	2021	Cutaneous adverse effects due to personal protective measures during COVID-19 pandemic: a study of 101 patients.	Observational study (n=101)	The use of protective measures during the pandemic resulted in adverse effects on the skin, including contact dermatitis.
N. Hamnerius, et al.	2021	Skin Exposures, Hand Eczema and Facial Skin Disease in Healthcare Workers During the COVID-19 Pandemic: A Cross-sectional Study.	Observational study (n=24.468)	Increased protective measures such as continuous use of soap and disposable gloves by healthcare professionals during the pandemic resulted in occupational skin diseases.
L. Borch, et al.	2020	COVID-19 reopening causes high risk of irritant contact dermatitis in children	Observational study (n=6.273)	Increased frequency of hand washing in children during the pandemic has increased the incidence of eczema.
B. Kendziora, et al.	2020	Evaluation of hand hygiene and onset of hand eczema after the outbreak of SARS-CoV-2 in Munich.	Observational study (n=512)	Handwashing frequency increased after the COVID-19 outbreak. Most respondents reported symptoms of eczema.

**Table 1:** Organization of articles according to year of publication, type of study and main conclusions.

Source: Author (2024).

instead of washing hands with soap and water several times during the workday, it was observed that this adequate care is essential in reducing the prevalence of hand eczema cases (SYMANZIK, C. et al., 2022).

## CONCLUSION

When evaluating the initial proposal for this review, it was observed that most studies point to the measures adopted during the COVID-19 pandemic, mainly frequent hand washing associated with the use of soap, as the

main factor in the emergence of hand eczema. On the other hand, applied studies conclude that we cannot relate the emergence of characteristic eczema lesions to the excessive disinfection practiced during the pandemic. Therefore, we need more specific studies to better clarify the emergence of hand eczema related to the hygiene measures adopted during the COVID-19 pandemic.

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