

Hygiene Related Hand Eczema During COVID-19 Pandemic

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Abstract

Objective: To determine the frequency and pattern of hand eczema in patients practicing hand hygiene during Covid-19 pandemic

Methods: This cross sectional study was carried out at Department of Dermatology unit1, Jinnah hospital, Lahore. A total of 150 patients observing hand hygiene practices in the form of hand washing and application of alcohol based hand sanitizers were enrolled after informed consent. Frequency of hand washing and application of sanitizers was asked. Patients were examined for presence of hand eczema and associated signs and symptoms such as erythema, itching, scaling, vesicles, dryness, fissuring, lichenification and sago-grain appearance were noted. All information was recorded on a predesigned proforma.

Results: The mean age of the patients was 33.25+ 8.37 years. There were 81 (54%) females and 69 (46%) males. Among these 83 (55.3%) were healthcare workers and 67 (44.6%) were general public. Out of 150 patients hand eczema was seen in 126 (84%) patients with history of frequent daily hand washing and use of sanitizer. Most of the patients presented with scaling (89%), itching (86.5%) dryness (76.1%) and erythema (68.2%). Previous history of contact dermatitis and atopy was found in 20.6 % and 15.3 % of hand dermatitis patients respectively.

Conclusion: Hand sanitation practices during Covid-19 pandemic cause increased frequency of hand eczema. As hand hygiene cannot be compromised during the pandemic therefore patients need to be given guidelines to prevent or minimize hygiene related skin damage.

Keywords: Hand Washing, Hand Sanitizer, Hand Dermatitis, Covid 19

Introduction

The Covid-19 pandemic is the most serious health crisis of modern times.¹ It is a highly contagious disease transmitted between people through respiratory, contact and aerosol routes.^{2,3,4} Respiratory droplet transmission occurs directly when a person is in contact with infected person through breathing, talking, coughing and sneezing leading to a human atomization of virus particles.^{3,4} It also occurs indirectly through contact with viral particles deposited on surfaces and objects in vicinity of an infected person. Large droplets settle on objects and persons

leading to their contamination while aerosols are dispersed in air. Direct and indirect contact route transmissions occur over a short range while airborne transmission occurs over extended distance.^{3,4}

World Health Organization and other major health authorities have recommended frequent hand washing with soap and water or use of alcohol based sanitizers to prevent the spread of the infection. According to United Nations International Children's Emergency Fund, hand washing is the easiest, cheapest and most important way to prevent spread of infection.⁵ However these hygiene recommendations lead to adverse dermatological effects like skin dryness, irritant contact dermatitis and allergic contact dermatitis.⁶ Prolonged exposure to water causes swelling of stratum corneum, disruption in intercellular lipids along with increased skin permeability and sensitivity of skin to physical and chemical irritants.⁷ Excessive hand sanitization with soap and alcohol based product also causes disruption of skin flora and damages natural skin barrier so irritants

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and allergens can easily penetrate the skin leading to dermatitis.^{6,8} It subsequently leads to activation of skin immune system, release of pro-inflammatory cytokines and delayed-type hypersensitivity reactions.⁹ Symptoms include dryness, roughness, itching, burning, erythema, edema, blistering, scaling, and fissuring.⁶ Soaps, detergents, solvents and surfactants damage skin proteins and epidermal keratin, depletes skin lipids and alter cell membrane of keratinocytes. Their frequent use can lead to cumulative irritant contact dermatitis.¹⁰ Patients with family or personal history of atopic dermatitis have increased sensitivity towards skin irritants as they have chronically dysfunctional skin barrier. Hand hygiene-related products may rarely cause allergic contact dermatitis. Frequent use of alcohol based sanitizer can also cause skin dryness and irritation.⁹

A high incidence of hand hygiene-induced skin damage was reported in COVID-19 healthcare workers in China. Out of 434 healthcare workers in Hubei province, 74% (321) were frequent washers performing hand hygiene more than ten times per day, and among these 76.6% (246) reported hand skin damage with dermatitis symptoms.⁶ There are also reports of increased consultations during the pandemic for hand eczema from India and Italy. An Indian study reported 16 patients of hand eczema over a short span of 10 days due to excessive use of hand sanitizers/handwashing.¹¹

The presence of hand eczema itself can lead to decrease in adherence to hand hygiene practices. This may lead to an increased risk of infection. Moreover any breach in skin continuity consequent to contact dermatitis allows SARS-CoV-2 to gain entry as the cell receptor for SARS-CoV-2 entry (i.e. angiotensin-converting enzyme 2) is present in large quantities in the blood vessels of the skin, basal layer of the epidermis, and hair follicles.^{11,12}

The present study was planned to identify the frequency and patterns of hand eczema due to hygiene related practices during the current pandemic. As hand hygiene cannot be compromised due to risk of transmission of a serious infection therefore guidelines need to be devised for prevention or minimization of hygiene related dermatitis while not compromising on the safety.

Methods

This cross sectional survey was done at dermatology unit 1, Jinnah hospital, Lahore after approval from the ethical review board. Patient information and identification were kept confidential. The study population included both health care professionals and general public.

A total of 150 patients were enrolled. After informed consent basic information regarding gender, age, occupation, and clinical history of previous dermatitis and atopic diathesis were obtained. The details of hand hygiene practices adopted were noted i.e. frequency of hand washing and frequency of sanitizer application. The hands were examined in good light for presence of hand eczema and associated signs and symptoms particularly erythema, itching, scaling, vesicles, dryness, fissuring, lichenification and sago-grain appearance.

Results

Our study included 150 patients with a mean age of 33.25±8.37 years. There were 81 (54%) females and 69 (46%) males. Among these 83 (55.3%) were healthcare workers while 67 (44%) were general patients (Table 1). Hand eczema was identified in 126 (84%) patients. Out of these 71 (56.34%) were healthcare workers (Table 2). Scaling was present in 113 (89.65%) patients, followed by itching in 109 (86.5%), skin dryness 96 (76.1%), erythema 86 (68.2%), vesicles 30 (23.8%), sago-grain like appearance 15 (11.9%), fissuring 11 (8.7%) and lichenification in 5 (3.9%) patients. Overall frequency of daily hand washing and use of hand sanitizer was increased and correlated positively with the frequency of hand eczema (Table 3). Atopy was present in 23(15.3%), out of which 21(91%) presented with hand eczema whereas history of previous dermatitis was present in 31 (20.6%) patients and out of these 26 patients(83%) developed hand eczema. Thus hygiene related hand eczema was significantly more common in atopics and those with previous history of dermatitis (p value<0.05).

Table 1: Characteristics of Study Sample

| Characteristics | Patients n=150 |
|--|-------------------|
| Age (years) | 33.25±8.37 |
| Gender | |
| • Males | 69 (46%) |
| • Females | 81 (54%) |
| Profession | |
| • Healthcare Workers | 83 (55.3%) |
| • Non Healthcare Workers | 67 (44.6%) |
| Positive history of Atopy | 23 (15.3%) |
| Positive history of previous hand eczema | 31 (20.6%) |

Table 2: Frequency of Hand Eczema among Healthcare Workers (HCW) and non-HCW

| | Total patients n =150 n(%) |
|--------------------------|-------------------------------|
| Hand eczema | 126 (84%) |
| Among healthcare worker | 71 (56.34%) |
| Among non health workers | 55 (43.65%) |

Table 3: Daily Frequency of Hand Washing and use of Sanitizer

| Daily frequency (Times per day) | Frequency of Hand washing n (%) | Frequency of use of hand sanitizer n (%) |
|------------------------------------|---------------------------------------|--|
| < 5 | 17 (11.33%) | 22 (14.6%) |
| 5 – 10 | 28 (18.6%) | 34 (22.66%) |
| 10 -15 | 31(20.6%) | 41 (27.33%) |
| 15 – 20 | 74 (49.33%) | 53 (35.33%) |



Figure – 1 Scaling



Figure – 2 Erythema & Fissuring



Figure – 3 Sago-Grain Appearance

Discussion

Although the number of COVID cases has declined over the last few weeks the novel nature of the virus has led to a great uncertainty around the world on predicting when this pandemic will end.¹³ Till now there are no clinically approved treatments available and in the absence of an effective vaccine or treatment, the scenario is expected to prolong. The only option left is to follow preventive measures recommended by WHO.¹⁴ However these measures can cause hand eczema which needs to be identified and avoided along with advice for proper hand care regimen without compromising safety and reducing risk of transmission of infection.

The present study was planned to identify the frequency and patterns of hand dermatitis as a result

of hand hygiene promoted during the current pandemic situation. The mean age of patients in our study was 33.25±8.37 years. There was a slight female dominance in our study as 81 (54%) patients were females. Anne et al also observed a female dominance of 61.4% patients.⁸ This is also in accordance with other studies showing that hand eczema is more common in females.¹⁵ In our study out of 150 patients, 83 were healthcare workers (55.3%). Among health workers eczema was reported in 71 out of 83 (85.5%) patients. Previous studies have also revealed that hand eczema is more common in health care workers and the risk factors include more rigorous hand hygiene routines and wearing gloves for a long time.¹⁶

The present study revealed increased frequency of hand washing in the study population. Majority of them i.e. 74 (49.33%) patients were washing hands 15-20 times per day. This was comparable to another study by Anne et al where 38.9 % patients were washing their hands 10-20 times per day.⁸ Our data revealed that 53 (35.33%) patients were using hand sanitizers 15-20 times daily. Increased overall frequency of hand disinfectant application has also been noted by Anne et al where 35.4% patients were applying disinfectant 10-20 times daily.⁸

In our study out of 150 patients with history of frequent hand washing and use of sanitizer 126 (84%) reported hand eczema. A higher incidence of 90.2% was also reported from Germany that correlated with a two times an increase in the frequency of hand washing during the COVID-19 pandemic.¹¹ Regarding the signs and symptoms, scaling was observed in 113 patients (89.65) followed by itching in 109(86.5 %), skin dryness in 96 (76.1%) and erythema in 86(68.2%) patients. Other patterns included vesicular lesions in 30 (23.8), sago-grain like appearance in 15 (11.9%), fissuring in 11 (8.7%) and lichenification in 5 (3.9%) patients. Our findings add to the current data of Anne et al also showing high prevalence of symptoms associated with acute hand dermatitis (90.4%) among health care workers in which dryness was reported in 83.2% followed by erythema 38.6%, itching 28.9%, burning 21.1%, scaling 18.4%, fissures 9.6% and pain in 4.4% patients.⁸ Lan et al also reported an increasing onset of skin damage of hands in 74.5% of 526 covid-19 healthcare workers.¹⁶ Atopic dermatitis is a factor significantly related to

severity of hand eczema.¹⁷ Our results also highlighted this fact. Atopy was present in 23(15.3%) of all patients, out of which 21(91%) presented with hand eczema.

Following the hand hygiene recommendations is essential in preventing the spread of COVID-19 and, under no circumstances, should be compromised by the eczematous changes that may occur in the hands. By providing preventive guidance to patients, dermatologists can help to limit the adverse cutaneous effects associated with hygiene practices in the community.⁶ The following skin care tips may help prevent and manage hand dermatitis consequent to frequent cleansing:

1. Use of a mild moisturizing soap and lukewarm water for washing hands is recommended. Use of harsh, medicated and antiseptic soaps should be discouraged as they have no added benefit and contribute significantly towards development of eczema.
2. After washing dry the hands gently without causing physical irritation to prevent chafing.
3. Applying moisturizing skin care products after hand cleansing is the essential step in keeping the skin hydrated and preventing further damage. Thick and greasy preparations like white petroleum jelly are more effective than creams and lotions. Products should be fragrance free to prevent contact sensitization and should be applied liberally multiple times a day.
4. When soap and water are not available, the CDC advises the use of alcohol-based hand sanitizers (containing at least 60% alcohol). Since these can be irritating, it is important to hydrate the skin immediately after. Applying a moisturizing cream afterward does not interfere in any way with the properties and efficiency of this type of sanitizers.⁹
5. Topical corticosteroids may be used to reduce the signs and symptoms of inflammation in severe cases of hand dermatitis.

Conclusion

Hand sanitation practices during Covid-19 pandemic cause increased frequency of hand eczema. However compliance with hand hygiene recommendations is essential in preventing the spread of COVID-19 and,

under no circumstances, should be compromised by the eczematous changes that may occur in the hands. The awareness and practice of preventive measures can reduce the chances of hand eczema. The potential development of hand dermatitis is preventable and manageable by using appropriate skin products. Dermatologists should counsel patients on strategies to combat skin damage and limit the adverse effects associated with changing hygiene practices in the community.⁶

Author's Contribution

RM, LMM, WH: Concept data collection, analysis, write up.

ZN, AS: Data collection, analysis.

TR: Concept, analysis, write up.

Conflict of Interest: None

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