

ORIGINAL ARTICLE

Hand Eczema among General Population in the time of Enhanced Hand Hygiene during COVID-19 Pandemic

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Abstract

During the COVID-19 pandemic, health authorities in most of the world recommend people maintain hand hygiene to prevent the spread of the virus. Unfortunately, this has resulted in an increased number of hand dermatitis among health care workers (HCW) and the general population. Hand eczema results from the damage to the epidermal barrier that induces inflammation and activates the innate immune system. In this brief study, we assess hand eczema prevalence during the Covid-19 pandemic in the general population of Saudi Arabia via a self-administered online questionnaire. The total number of participants was 502, of which 268 (53.4%) were males. Most participants were younger than 30 years (67.9%), while only (2.2%) were older than 60 years. Forty percent of participants developed new-onset hand skin damage during the pandemic, and this was proportionally correlated with the daily average frequency of handwashing with soap and water. We hope this brief study paves the way for further larger epidemiological studies.

Keywords: Hand Eczema, Hand Hygiene, COVID-19, Saudi Arabia

INTRODUCTION

The current climate of a global COVID-19 pandemic mandates the maintenance of hand hygiene to prevent the spread of the virus.¹ This has resulted in an increased number of hand dermatitis among health care workers (HCW) and the general population.² It has been well reported that hand dermatitis is a common skin disease among HCWs due to hand hygiene requirements by hospital infection control measures.³ However, during the current Covid-19 pandemic, hand dermatitis has become more prevalent in the general population.² Skin has an essential role in innate immunity serving as a barrier to irritants, allergens, and pathogens in the environment. The outermost layer of skin, "stratum corneum," is composed of corneocytes and a lipid-rich extracellular matrix; both work as a barrier to entry of pathogens and to prevent water loss through the skin.⁴ Hand dermatitis results from the damage to the epidermal barrier that induces inflammation and activates the innate immune system.⁵ The epidermal barrier is often damaged by chronic exposure to water plus detergents, solvents, or other irritants.⁶

The definitive treatment of hand dermatitis is the identification of the causative irritant and then avoidance; however, with current recommendations and the importance of hand hygiene and the several surge waves of the Covid-19 cases the world sees, complete avoidance is not feasible. Various measures are recommended to prevent or alleviate symptoms of hand dermatitis, such as the use of alcohol-based hand rubs containing emollients which are found to be better for skin health, and the use of emollients, humectants, and barrier creams.

As there have been many published studies looking into hand dermatitis among HCWs, we, in this brief study, assess hand dermatitis prevalence and severity during the Covid-19 pandemic in the general population of Saudi Arabia, including both HCWs and non-HCWs via a self-administered online questionnaire.

MATERIAL AND METHODS

This cross-sectional study approved by the ethics committee of our institute was performed using a web-based self-administered questionnaire to assess hand dermatitis prevalence and severity, which was validated in Arabic. This questionnaire was administered to the general population, whether they are HCWs or non-HCWs, via social media to adults aged 18 years and older in Saudi Arabia over 2 months (from October 1 to December 1, 2021). The data were statistically analyzed using the SPSS software, version 25.

RESULTS

The total number of participants was 502, of which 268 (53.4%) were males (Table 1). Most of the participants were younger than

30 years (67.9%), while only (2.2%) were older than 60 years (Table 2). This may reflect the age composition of the population in Saudi Arabia. However, this questionnaire was distributed randomly to the general population of Saudi Arabia; 33.3% of participants were HCWs. Regarding education level, it was variable from intermediate school level to Ph.D. holders; however, most (78.9%) were of university-level education. Percentages of participants using soap and water for hand hygiene 1-5 times daily and 6-10 daily were 58% and 27.3%, respectively. While only 3.6% use it more than 20 times per day. Regarding the frequency of hand sanitizers (70% alcohol) used for hand hygiene, 93% used it 10 times daily or less.

The percentage of participants with pre-existing skin diseases was 13.1%, while 86.9% had no past history of skin diseases (Table 3). Forty percent of participants developed new-onset hand skin damage (Table 4). Dryness (41%) was the most common symptom, followed by itching (12%). Hand skin damages were more prevalent among HCWs than non-HCWs, 46.1%, and 37.0%, respectively. Hand skin damages were found to be proportionally correlated with the daily average frequency of handwashing with soap and water. Of those using soap and water hand washing 1-5 times daily, 32.6% of them developed hand skin damage, and those who are using it 6-10 times, 11-15 times, 16-20 times, and more than 20 times, 32.6%, 46.0%, 51.5%, 66.7%, 61.1% developed hand skin damages respectively. The highest percentage of participants who developed hand skin damage (71.4%) were those using hand sanitizers 6-10 times daily.

Table 1: Age Distribution

	Number	Percent
18-30 year	341	67.9
31-40 year	38	7.6
41-50 year	87	17.3
51-60 year	25	5
60-70 year	7	1.4
older than 70 years	4	0.8
Total	502	100

Table 2: Gender Distribution

	Number	Percent
Female	234	46.6
Male	268	53.4
Total	502	100

Table 3: Presence vs. Absence of Pre-existing Skin Diseases

	Number	Percent
Presence of pre-existing skin disease	66	13.1
Absence of pre-existing skin disease	436	86.9
Total	502	100

No clear association was found between the frequency of use of hand sanitizers and hand skin damage. This could be explained by a large number of hand sanitizers that have emollients, so they are drying and moisturizing at the same time. The most frequent symptoms recorded were scaling (17.1%), fissures (11.6%), and erythema (7.4%).

Table 4: Presence vs. Absence of Newly Onset Hand Skin Damage

	Number	Percent
Presence of newly onset hand skin damage	201	40
Absence of newly onset hand skin damage	301	60
Total	502	100

DISCUSSION

NSAIDs have anti-inflammatory, antipyretic, and analgesic During the COVID-19 pandemic, health authorities worldwide, including Saudi Arabia, advised enhanced hand hygiene practices to decrease viral transmission. The Centers for Disease Control and Prevention (CDC) recommend frequent hand washing with soap and water for 20 seconds or using hand sanitizer containing at least 60% alcohol.⁸ This, in turn, will result in an increased incidence of hand eczema among the general population.⁸⁻¹¹ Hand eczema of HCWs has been discussed widely, and lots of research have been published before and during the COVID-19 pandemic. However, only a few research studied hand eczema in the general population during COVID-19. Here in our brief study, we help fill this gap and pave the way for larger studies.

Our survey found that 40% of participants developed a new-onset hand skin damage during the COVID-19 pandemic. This is a large number, and measures should be taken to decrease it. A Danish study examined the incidence of hand eczema among Danish schoolchildren aged 5-13 years during the COVID-19 pandemic via a nationwide questionnaire. They found that 40.9% of children who have no prior hand eczema developed hand eczema after school reopening.⁹ This is the same percentage we found in our study. Moreover, a study from India reported a rise in hand eczema among non-HCWs during COVID-19.¹⁰ A similar study from Thailand, including both HCWs (42.7%) and non-HCWs (57.3%), found that (20.87%) have hand dermatitis.⁸

Dryness, itching, scaling, and erythema are among the most common symptoms reported in the published study, including the current study.^{8,10} However dryness is not as frequent as in other reports; we think this could be attributed to the common baseline presence of dry hands in Saudi Arabia due to the dry weather.

Preventive measures for hand eczema resulting from enhanced hand hygiene during the pandemic should be implemented, and people should be educated on the proper way of practicing good hand hygiene while minimizing the risk of developing hand eczema. These measures include the use of alcohol-based hand rub (ABHR) instead of soap and water ⁷, reduction of duration and frequency of exposure to irritants (soap or ABHR)¹², and use of hand moisturizers more frequently.¹³

Early recognition and treatment of hand eczema are crucial to help affected people adhere to hand hygiene and to prevent chronicity which is more difficult to treat. Treatment mainly aims at rapid and lasting restoration of the damaged epidermal barrier.¹⁴ In Inflammatory disease, treatment with topical corticosteroids, tacrolimus, pimecrolimus, or UV light decreases inflammation and improves epidermal barrier.⁶ These should be used for a limited time due to side effects. Topical application of bland creams and ointments can be used without side effects for long-term treatment of mild to moderate inflammatory diseases as they are shown to

partially correct the epidermal barrier and improve stratum corneum hydration, thus enhancing epidermal proliferation and differentiation.¹⁵ A limitation to our study is that the sample size is not large enough to draw strong, generalizable conclusions; however, our results are comparable to other similar studies.

CONCLUSION

Hand skin damage incidence attributed to enhanced hand hygiene during the COVID-19 pandemic is 40% among the general population of Saudi Arabia. This should draw the attention of the concerned authorities to implement preventive measures to minimize hand eczema incidence and recognize cases of hand eczema and early treat them as the presence of hand eczema can negatively affect adherence to hand hygiene which in turn increase viral transmission. We hope this article paves the way for researchers to do further, larger epidemiological studies.

Patient consent: Written informed consent was taken from the patient.

Competing interest: None.

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