

Irritant contact dermatitis in healthcare workers as a result of the COVID-19 pandemic: a cross-sectional study

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Summary

COVID-19 healthcare workers (HCWs) require frequent handwashing and use of personal protective equipment (PPE) to prevent infection. However, evidence is emerging that these practices are causing adverse effects on their skin integrity. A single-centre, cross-sectional study of HCWs from an Irish hospital was undertaken to evaluate the degree of COVID-19-related irritant contact dermatitis (ICD) between April and May 2020. Of 270 participants surveyed, 223 (82.6%) reported symptoms of ICD. The hands were the most commonly affected site (76.47%) and the most frequently reported symptom was dry skin (75.37%). Nearly all (268; 99.26%) HCWs had increased hand-washing frequency, but 122 (45.35%) did not use emollients. In the ICD group, 24.7% cited a history of dermatitis compared with 4.3% of unaffected staff ($P < 0.001$). The ICD group recorded PPE usage for an average of 3.15 h compared with the non-ICD group at 1.97 h ($P = 0.21$). Promoting awareness of COVID-19-related ICD is vital to highlight prevention and treatment for frontline staff.

Healthcare workers (HCWs) at the front line of the COVID-19 outbreak response are exposed to hazards that put them at risk of infection. Frequent hand hygiene and appropriate personal protective equipment (PPE) are recommended to prevent transmission of the virus.¹ However, there is evidence to suggest that these practices are having a negative impact on skin health.² HCWs in particular represent a high-risk group for developing occupational dermatitis,³ which can have a multitude of negative effects, including decreased compliance with proper PPE and adequate handwashing.⁴

We sought to evaluate the degree to which frontline staff members from a large tertiary hospital have been affected with irritant contact dermatitis (ICD) as a result of the COVID-19 pandemic.

Report

The study received full ethics approval from the Clinical Research Ethics Committee of the Cork Teaching Hospitals.

We performed a single-centre cross-sectional study, covering the period 29 April to 13 May 2020, using self-administered questionnaires, which were distributed to staff at Cork University Hospital (Cork, Ireland). Approximately 500 online surveys were sent via email or text message, and 500 hard copies were distributed to the emergency department (ED), hospital wards and intensive care unit (ICU). The questionnaire enquired about duration of PPE exposure, whether there was an increased frequency of hand washing, any symptoms of ICD and alleviating measures trialled.

Data were collected into an Excel spreadsheet (Microsoft Corp., Redmond, WA, USA) and analysed using SPSS software (V25; IBM SPSS, Armonk, NY, USA). All data are available upon request.

In total, there were 270 responses (27% response rate). Of the 270 respondents, 197 (77.41%) were women and 57 (22.59%) were men; 111 (41%)

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worked on medical wards, 26 (9.6%) in the ED, 32 (11.8%) in the ICU and 58 were (21.4%) in a surgical specialty. Nurses comprised 51.7% (140) of respondents, with doctors comprising 25.1% (68), allied health members 10.3% (28) and healthcare assistants 8.5% (23).

Of the 270 respondents, 223 (82.6%) reported signs and symptoms of ICD. Affected sites included the hands, nose, cheeks and forehead, with the hands being the most commonly affected site (76.47%), followed by the nose (13.73%) and cheeks (12.55%). The most frequently reported symptom was dry skin, with 75.37% of staff affected, while 36.94% reported redness and 27.61% itching.

Virtually all (268, 99.26%) HCW reported an increase in frequency of hand-washing; however, 122 (45.35%) staff members reported not using emollients or other topical treatments.

Atopy was not related to the development of ICD, but we found that a history of ICD contributed significantly ($P < 0.001$), with 55 (24.7%) of the ICD group citing a history of dermatitis compared with 4.3% of unaffected staff.

Continuous PPE usage was recorded as a mean of 3.15 h for the ICD group compared with 1.97 h for the unaffected group; however, this fell short of significance ($P = 0.21$).

Almost all staff had increased their frequency of handwashing in line with international guidance, and over 80% of our sample reported signs or symptoms of ICD.

There is no doubt of the crucial importance of hand hygiene and appropriate PPE when exposed to patients with COVID-19.¹ However, there is emerging evidence that this practice is causing significant morbidity for frontline staff. One multicentre study from Wuhan, China reported that up to 74.5% of staff members were affected by dermatitis,⁵ and a further study from Hubei, China described a staggering 97% of workers affected.⁶ Handwashing alone is not the only contributor, as further data from China reported the detrimental role played by N95 masks.⁷

Over 45% of our surveyed staff reported not using emollients. As COVID will likely be a persistent and recurrent problem, rates of frontline staff ICD are likely to increase accordingly. Facial ulceration and attempts to manipulate respirators to alleviate pressure could hinder their effectiveness⁸ and reduce compliance with PPE equipment, putting HCWs at increased risk of exposure to SARS-Cov2.

The limitations of our study include self-selection bias, as symptomatic staff members would be more

inclined to complete the survey. Additionally, as this was a single-centre study with a small sample size, it provides only a snapshot of a global problem.

Our study has highlighted the issue of ICD among a sample of Irish HCW. Data from other European countries are limited. Prolonged PPE use among HCW is currently a global issue with no end date in sight. National figures for affected healthcare staff would contribute to a better understanding of the issue and input from dermatology and occupational health experts may aid educational initiatives in healthcare settings.

In conclusion, healthcare-related ICD as a result of the COVID-19 pandemic is emerging as a significant problem on an international scale. It is vital to promote awareness of this issue in order to provide appropriate prevention and timely treatment for our healthcare staff on the frontline.

Learning points

- ICD among HCWs secondary to the COVID-19 pandemic is emerging as a significant issue.
- Currently data on the prevalence of COVID-19-related dermatoses in the UK and Ireland are limited.
- In our cohort, there was an 82% prevalence of occupational ICD since the onset of the COVID-19 pandemic.
- HCWs with a history of dermatitis were more at risk of developing an occupation-related ICD.
- 45% of staff reported not using emollients or alleviating factors.
- This prevalence is likely to be a reflection of a wider global issue.
- This study provides a platform for dermatologists and occupational health experts to tackle this emerging problem.
- It is crucial to promote awareness of this issue to provide treatment and preventative measures for our frontline staff.

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