

# Types and Prevalence of Adverse Skin Reactions Associated with Multiple N95 and Simple Mask Usage during the COVID-19 Pandemic

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## BACKGROUND / PURPOSE

As the COVID-19 pandemic continues to impact the world, the incidence of these skin reactions is likely to increase and may require increased medical attention. A few studies have recently been published highlighting that prolonged use of N95s in a single interval increases the incidence of adverse skin reactions<sup>1,2</sup>. The most commonly described reactions with use of PPE appear to be acne, scarring, itching, redness, and dryness, with the nasal bridge and cheeks being the most commonly affected anatomical locations<sup>2-5</sup>. Currently, there is limited evidence suggesting these problems may be exacerbated by prolonged time of individual mask use<sup>3,4,6</sup>. However, as COVID-19 continues to be a major problem worldwide, longer duration of mask use can be expected. It has been reported that 74% to 97% of HCWs have experienced adverse skin reactions related to their use of enhanced infection protection methods<sup>3,6</sup>.

## OBJECTIVES

The aim of this study was to assess the most common types and locations of adverse skin reactions amongst HCWs with prolonged use of PPE

## METHODS

- A 17-question optional, anonymous, self-administered survey was disseminated through multiple newsletters throughout the healthcare system.
- Our health system consists of 6 hospitals, that serve the greater Phoenix area.
- Inclusion criteria consisted of healthcare workers within the hospital system with direct patient contact, such as physicians, nurses, respiratory therapists, physician assistants, nurse practitioners, physical therapists, occupational therapists, and dieticians.
- Exclusion criteria included employees that did not require patient contact or those working from home.
- Surveys were administered from August to October 2021. Responses were collected and subsequently stored in a secure database.
- The survey asked questions relating to the estimated exposure to COVID-19 patients on a daily basis, the duration of daily use of N95s and simple masks, use of additional PPE in conjunction with their N95/surgical mask, presence of adverse skin reactions and their anatomical locations, and types of treatments tried.

## RESULTS

- A total of 230 healthcare workers responded to the survey. Among these respondents, 192 (83.5 %) reported at least one adverse skin reactions (mean count=3.1, SD=2.5). The most commonly reported reactions were acne (n=133, 57.8%), dryness (n=108, 47.0%), and redness (n=105, 45.7%).
- Anatomical areas most commonly affected included the nasal bridge (n=92, 40.0%), cheeks (n=92, 40.0%), and chin (n= 91, 39.6%).
- The most commonly reported daily duration of mask use was 10+ (n=74, 32.2%). Surgical masks (n=185, 79.7%) were used most frequently.
- Rank-biserial correlations estimated the strength of the relationship between average duration of mask wearing per day and the appearance of adverse reactions. Nine of the 12 correlations were statistically significant. Redness was most strongly associated with mask duration (rrb= .37, p<.001) followed by nasal bridge damage/ scarring (rrb= .25, p<.001), and skin breakdown/ frictional erosions ((rrb= .22, p<.001).

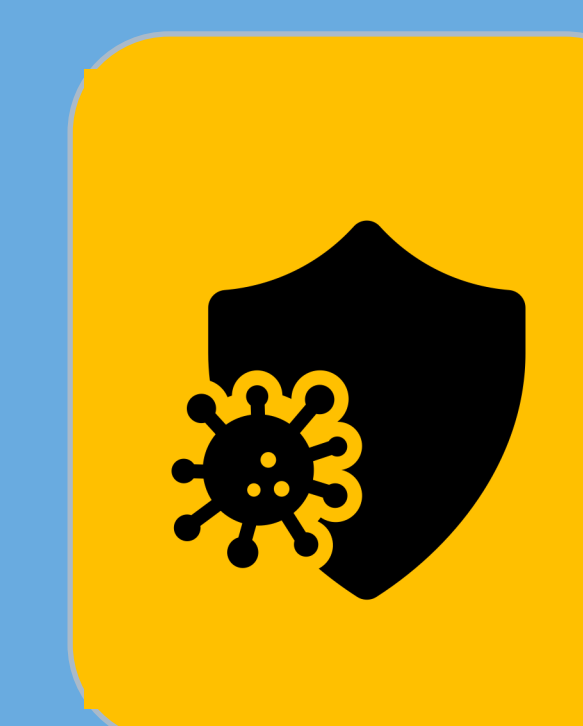
Reaction	Count (%)
Acne	133 (57.8%)
Dryness/scaling	108 (47%)
Redness	105 (45.7%)
Itching	94 (40.9%)
Increased pore size	61 (26.5%)
Skin breakdown/frictional erosions	49 (21.3%)
Rash	46 (20.0%)
Nasal bridge damage/scarring	40 (17.4%)
Pigmentation changes	24 (10.4)
Burning	17 (7.4%)
Other	17 (7.4%)
Ulceration	8 (3.5%)

Anatomical Site	Count (%)
Nasal Bridge	92 (40.0%)
Cheek	92 (40.0%)
Chin	91 (39.6%)
Auricles/behind ears	79 (34.3%)
Zygomatic arch (cheekbones)	47 (20.4%)
Other	12 (5.2%)
No adverse skin reactions	9 (3.9%)

## DISCUSSION / CONCLUSION

- Multiple adverse skin reactions were associated with increased duration of mask use with redness being the most significant
- Acne was the most commonly reported reaction with the nasal bridge and cheeks being the most commonly affected
- Dryness was also a prominent adverse skin reaction which could be related to the study being conducted in the most arid climates of the Southwest United States
- This study hopes to help assess and anticipate the most common adverse skin reactions experienced by HCW's and offer insight on future anticipatory guidelines

## OUTCOMES



- 83.5% experienced adverse skin reactions
- 9 out of 12 skin reactions were associated with prolonged mask use



- Nasal bridge and cheeks were most commonly affected sites
- Acne was the most common skin reaction

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## AUTHOR DISCLOSURES

Nothing To Disclose