GDDDR GLOBAL DRUG DESIGN & DEVELOPMENT REVIEW
www.gdddrjournal.com
Cite Us

▪ Pages: 8 – 13 ▪ Vol. VII, No. III (Summer 2022) ▪ p- ISSN: 2788-497X ▪ e- ISSN: 2788-4120
▪ DOI: 10.31703/gdddr.2022(VII-III).02 ▪ URL: http://dx.doi.org/10.31703/gdddr.2022(VII-III).02

Frequency of Acne in Healthcare Providers with Prolonged Use of Face Masks in Rawal Institute of Health Sciences: The Post-Covid Era

Neelam Ayub [a]	Mahwish Ahmed [b]	Mahvish Aftab Khan [c]
Furquana Niaz [d]	Shahzad Ahmad [e]	Shanza Obaid Niazi [f]

Abstract: *Objectives: This study studied post-covid healthcare workers' acne vulgaris rates after prolonged face mask use. Methodology: Rawal Institute of Health Sciences Islamabad conducted this cross-sectional study from July 1, 2021, to June 31, 2022. 196 health staff wore masks having no allergies or dermatoses. Dermatologists rated acre according to GAGS (Global Acne Severity System). Skin type, acne history, comedogenic skin care products, acne area, and severity were noted. Counted acne vulgaris. IBM SPSS 25 used chi square test to correlate acne with gender, rank, past acne, and mask type. Results: 32.40 7.5 years for 196. 83 (42.3%) men, 113 (57.7%) women. 95 (48.5%) docs, 61 (31.1%) nurses, 21 (10.7%) aides, 19 (9.7%) paramedics. 94 (48%). 91 (46.4%) used N95 masks and 93 (47.4%) medical masks. 109 (55.6%) wore masks for 5-10 hours, 67 (34.2%) for >10, and 20 (10.2%) for <5. 62 (31.6%) had acne. N95 mask use affected acne, not gender (p<0.05). Conclusion: Mask-wearing healthcare workers have acne vulgaris regardless of gender. N95 masks cause acne.*

Key Words: Acne, Face Masks, Covid19, Post-covid Era, Health Care Providers

Introduction

Following the global coronavirus (COVID-19) warning, many healthcare personnel have begun to implement precautions to limit their exposure to potentially fatal infections. Healthcare workers are undoubtedly the group very much in danger since they constantly get in touch with infected individuals, especially those who suffer from the coronavirus (Rivers, J. K., et al. 2021). Healthcare workers confront this infection on the front lines every day while wearing personal protective equipment (PPE) (Akl, J., 2021), (Patruno, C., 2020).

A PPE specifically, that gained huge popularity is the face mask. Healthcare workers who are caring for patients with COVID-19 are obligated to wear PPE, which renders them prone to severe dermatological reactions, such as acne, rash, and injuries related to pressure (Park, S. J., et al. 2021). The emergence of acne is one of the common complaints. The best explanation for a mask-induced acne flare is friction from skin rubbing against the cloth of the mask in association with sweat. Substances, such as formaldehyde, a constituent of surgical masks, and N-95 are likely

[a] Senior Registrar Dermatology, Rawal Institute of Health Sciences, Islamabad, Pakistan.
Email: neelamayub79gmail.com *(Corresponding Author)*
[b] Assistant Professor Dermatology, HBS Medical and Dental College, Islamabad, Pakistan.
[c] Assistant Professor Dermatology, Pakistan Institute of Medical Sciences, Islamabad, Pakistan.
[d] Professor of Dermatology, Karachi Institute of Medical Sciences, Karachi, Sindh, Pakistan.
[e] Assistant Professor, Medicine and Allied, North West General Hospital, Peshawar, Pakistan.
[f] Consultant Dermatologist Estheticare F7, Islamabad, Pakistan.

Citation: Ayub, N., Ahmed, M., Khan, M. A., Niaz, F., Ahmad, S., & Niazi, S. O. (2022). Frequency of Acne in Healthcare Providers with Prolonged Use of Face Masks in Rawal Institute of Health Sciences: The Post-Covid Era. *Global Drug Design & Development Review, VII*(III), 8-13. https://doi.org/10.31703/gdddr.2022(VII-III).02

to be blamed for irritative symptoms (Inan Dogan, E. 2021). (Zhang, B. 2020).

The third most common skin dermatosis, acne is marked by the irritation of pilosebaceous units, and it usually shows up as whiteheads, blackheads, or pimples on the skin. Both individuals who have a background of acne vulgaris and those who have never had acne can develop make (Markovic, M., 2019). (Rudd, E. 2021). One research concluded that 59.6% of individuals who frequently utilize masks suffer acne issues. Health providers are more aware of a mask than the general public due to the prolonged utilization of facemasks (Kosasih, L. P. 2020). According to an investigation, roughly 20 medical experts confirmed an acne diagnosis in less than three weeks (Han, C., (2020).

Extensive research has established the existence of facial maskne [11]. Remarkably, there has been a fundamental change in how acne is addressed. Due to its dehydrating effect on the mucous membranes, oral isotretinoin, which is commonly used to treat severe acne, is believed to increase the invasion of the nasal mucosa by coronavirus by [12]. This study's primary objective was to establish a link between facial masks and acne in order to determine the prevalence of acne among healthcare workers.

Material and Methods

This cross-sectional study was conducted at Rawal Institute of Health Sciences Islamabad from July 1st 2021 to June 31st, 2022 after obtaining approval from the hospital ethical committee (ERB # RIHS-REC/091/22). Data was collected from doctors, nurses, technicians, and other paramedical staff assigned to ward duties, operation theatre or ICU duties where the mask was mandatory. Those wearing facial masks daily for more than 2 hours, having ages between 20 to 45 of either gender were *included*. Participants with skin allergies other than acne vulgaris, those who did not give consent, and those with skin dermatoses were *excluded* from the study.

Subjects meeting the inclusion criteria were enrolled in the study. The objective of the study was explained to all participants and written consent was obtained. Demographic details like age, gender, history of acne, duration of wearing the mask, type of mask, and frequency of changing the mask were noted down on a pre-designed pro forma. All the subjects using face masks for > 2 hours during their duty in the hospital indoor were assessed on Global Acne Grading System (GAGS). Questions about acne were administered, including those about skin type, previous acne history, family history, usage of comedogenic skin care products, acne site, and acne severity. Participants were examined by a dermatologist and utilizing the global acne grading system (GAGS), acne severity was evaluated. No lesions were valued at 0, comedones were valued at 1, papules were valued at 2, pustules were valued at 3, and nodules were valued at 4. Each site's score was determined by multiplying its factor and grade values (0–4). The factors were indicated as "2" for the forehead, "1" for the nose and chin, and "3" for the chest and upper back for each site. Scores between 1 and 18 were deemed mild, 19 to 30, moderate, 31 to 38, severe, and >39, very serious. The sample size was determined by using the WHO sample size calculator.

Data analysis was performed using IBM SPSS 25. Frequency and percentages were calculated for categorical variables and Mean SD was calculated for numerical variables. For the association of acne with various factors, the Chi Square test was used keeping $P < 0.05$ as significant.

Results

This study was conducted on 196 participants. The mean age of the subjects was 32.40 7.5 years. Regarding gender, there were 83 (42.3%) males and 113 (57.7%) females. As per occupation, there were 95 (48.5%) doctors, 61 (31.1%) nurses, 21 (10.7%) technicians and 19 (9.7%) other paramedical staff in our study *(table 1)*. The frequency of acne vulgaris in our study was 94 (48%). There were 36(38.3%) males with acne Vs. 58(61.7%) females, hence acne wasn't associated with gender (p=0.27). The most frequently used mask in our study was N95 and surgical masks 91 (46.4%) and 93 (47.4%) respectively. According to

the duration of wearing the mask, we found that 109 (55.6%) of the participants wore their masks for 5 to 10 hours, 67 (34.2%) participants wore their masks for > 10 hours and 20 (10.2%) of the participants wore their masks for < 5 hours. Out of 196 participants, 62 (31.6%) had a prior history of acne. Regarding the frequency of changing masks majority of the participants changed their masks more than 3 times a day.

Table 4 shows the association of use of face mask with acne. The P-value is 0.02 which is less than 0.05 and shows that there is a positive relationship between the use of face masks and acne. Result indicates that the frequency of acne in the user of N95 masks is higher than other participant who used other face masks.

Table 5 shows the association of history with acne. The P-value is 0.02 which is less than 0.05 which shows that there is a positive relationship between the history of acne and acne. The result indicates that the frequency was in those participants who had a history of acne.

Table 1. Demographics of Health care Providers Wearing face Mask Daily for > 2 Hours (n=196)

DEMOGRAPHICS		STATISTICS
AGE (YEARS)		32.40 7.5
GENDER	Male	83 (42.3%)
	Female	113 (57.7%)
OCCUPATION	Doctors	95 (48.5%)
	Nurses	61 (31.1%)
	Technicians	21 (10.7%)
	Others	19 (9.7%)
MASK TYPE	N 95	91 (46.4%)
	Surgical	93 (47.4%)
	Cloth	12 (6.1%)
DURATION OF MASK	< 5 hours	20 (10.2%)
	5 to 10 hours	109 (55.6%)
	> 10 hours	67 (34.2%)
HISTORY OF ACNE	Yes	62 (31.6%)
	No	134 (68.4%)
FREQUENCY OF CHANGING MASK	2 to 3 times	90 (45.9%)
	> 3 times	106 (54.1%)

.

Table 2. Association of Gender with Acne (n=196)

		Gender		Total	P value
		Male	Female		
Acne	Yes	36	58	94	
		38.3%	61.7%	100.0%	
	No	47	55	102	
		46.1%	53.9%	100.0%	
Total		83	113	196	0.27
		42.3%	57.7%	100.0%	

Table 3. Association of Acne with Occupation (n=.196).

		Occupation				Total	P value
		Doctor	Nurses	Technician	Others		
Acne	Yes	46	36	6	6	94	
		48.9%	38.3%	6.4%	6.4%	100.0%	

		Occupation				Total	P value
		Doctor	Nurses	Technician	Others		
	No	49	25	15	13	102	0.04
		48.0%	24.5%	14.7%	12.7%	100.0%	
Total		95	61	21	19	196	
		48.5%	31.1%	10.7%	9.7%	100.0%	

Table 4. Association of Acne with the Type of Mask with Acne (n=196)

		Mask type			Total	P value
		N 95	Surgical	Cloth		
Acne	Yes	53	37	4	94	0.02
		56.4%	39.4%	4.3%	100.0%	
	No	38	56	8	102	
		37.3%	54.9%	7.8%	100.0%	
Total		91	93	12	196	
		46.4%	47.4%	6.1%	100.0%	

Table 5. Association of the Past History of Acne with Acne (n=196)

		History of acne		Total	P value
		Yes	No		
Acne	Yes	38	56	94	0.02
		40.4%	59.6%	100.0%	
	No	24	78	102	
		23.5%	76.5%	100.0%	
Total		62	134	196	
		31.6%	68.4%	100.0%	

Discussion

Since the coronavirus epidemic, medical personnel have worked tirelessly to ensure that patients receive the best care possible[13]. Although the preventative measures have their own benefits, utilizing them for an extended period of time has sadly been shown to result in a number of dermatoses, comprising of contact dermatitis, seborrheic dermatitis, and acne.[15] The primary objective of this study is to assess the association between face mask use and acne among healthcare professionals in our hospital.

Our study found that 48% of participants had acne after wearing a mask, our results are comparable to various studies which reported 59.6% and 56% frequency of acne vulgaris due to wearing masks[16, 17]. In addition, doctors had the highest prevalence of acne, which is in agreement to a study done by Malik LM et al.[14] Nurses had the second highest prevalence of acne followed by technicians and other paramedic staff.

In our study, we found that among different kinds of masks, healthcare personnel employing N-95 developed substantial acne. Similar results were reported by Daye [18], who additional corroborated the association by noting that 1/3rd of healthcare professionals using N-95 faced acne in his study. Close-fitting masks can provide localized pressure on the skin that can clog the pilosebaceous duct, causing acne to either appear or worsen.[14]

In this study, there was no evidence of a gender preference for acne occurrence. This contradicts with the results of other studies[18, 19], where it was found that females were more prone to develop maskne. It makes sense and could be related to their underlying tendency to have acne prior to wearing face masks as people with a history of acne vulgaris are more likely to develop new lesions or experience worsening of current acne.

Our study found no link was found between the duration of the mask worn with acne onset. Our findings agree with various studies which also supported our claim. However, we did notice a slight spike in the frequency of acne in health workers who wore the mask for more than 5 hours a day. There are studies which reported a significant association of prolonged duration of wearing a mask with acne, which is contradicting with our results[19, 20].

Our study indicates that people with a history of acne are more likely to acquire acne when they consistently use face masks. The comparatively high ambient temperature in areas like Pakistan especially in the summers produce more perspiration behind the mask and an increase in the surrounding skin's humidity, which in turn causes swelling of the pilosebaceous follicles. Acne flare-ups may ensue from the resulting acute blockage[21]. During application, the face mask may reach greater temperatures and become more humid, which may enhance sebum production and create ideal circumstances for the growth of acne-causing bacteria like Propionibacterium acne. Similar investigations conducted in other nations provide support for this concept[22].

Acne caused by facial masks is becoming a common medical problem among health care professionals. As the pandemic is still around and new variants of SARS COV 19 may emerge again in coming years, strategies need to be implemented by dermatologists to cope with the problem. As most of the health workers are from the younger age group, wearing face masks for long hours can increase their risk of acne vulgaris hence demotivating them and exposing them to the pandemic can lead to serious health conditions.

Conclusion

The study concluded that acne vulgaris is prevalent in healthcare providers using masks regardless of gender. The doctors using N95 masks and having a past history of acne are at risk.

Recommendations

The study recommends that the health workers should follow the American Academy of Dermatology Association guidelines for using facial masks. It is also recommended that the mask may be removed for 15 minutes every four to five hours. Face must be properly moisturized, and hazardous cosmetic products must be avoided.

References

Rivers, J. K., Arlette, J. P., DeKoven, J., Guenther, L. C., Muhn, C., Richer, V., et al. (2021). Skin care and hygiene among healthcare professionals during and after the SARS-CoV-2 pandemic. SAGE

Akl, J., El-Kehdy, J., Salloum, A., Benedetto, A., Karam, P. (2021). Skin disorders associated with the COVID-19 pandemic: a review. J Cosmet Dermatol. 2021;20(10):3105-15.

Patruno, C., Fabbrocini, G., Stingeni, L., Napolitano, M. (2020). The role of occupational dermatology in the COVID-19 outbreak. Contact Dermatitis. 83, 174–175.

Park, S. J., Han, H. S., Shin, S. H., Yoo, K. H., Li, K., Kim, B. J. et al. (2021). Adverse skin reactions due to use of face masks: a prospective survey during the COVID-19 pandemic in Korea. J Eur Acad Dermatol Venereol. 2021;35(10):e628.

Inan Dogan, E., Kaya, F. (2021). Dermatological findings in patients admitting to dermatology clinic after using face masks during Covid-19 pandemia: a new health problem. Dermatol Ther. *34*(3), e1493.

Zhang, B., Zhai, R., Ma, L. (2020). Novel coronavirus disease epidemic: skin protection for healthcare workers must not be ignored. *J Eur Acad Dermatol Venereol. 34*(9), e434–e435.

Markovic, M., Soldatovic, I., Bjekic, M., Sipetic-Grujicic, S. (2019). Adolescents self perceived acne-related beliefs: from myth to science. An Bras Dermatol. *94*(6), 684–690.

Rudd, E., & Walsh, S. (2021). Mask related acne and other facial dermatoses. BMJ.;373:n1304.

Kosasih, L. P. (2020). Maskne: mask-induced acne flare during coronavirus disease-19. What is it and how to manage it? Open Access Maced J Med Sci. *8*(T1), 411–15.

Han, C., Shi, J., Chen, Y., Zhang, Z. (2020). Increased flare of acne caused by long-time mask wearing during COVID-19 pandemic among general population. *Dermatol Ther. 33*(4),

Donnarumma, M., Nocerino, M., Lauro, W., Annunziata, M. C., Marasca, C., Fabbrocini, G., (2021). Isotretinoin in acne treatment during the coronavirus disease 2019: a retrospective analysis of adherence to therapy and side effects. *Dermatol Ther. 34*(1), e14677.