International Journal of Research in Medical Sciences
Handika NJ. Int J Res Med Sci. 2022 Jul;10(7):1556-1559
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20221584

Review Article

Facial mask-related acne during the coronavirus disease 2019 pandemic: a literature review

Natalia Jennifer Handika*

Department of Medical Bachelor and Medical Profession, Universitas Udayana, Denpasar, Bali, Indonesia

Received: 29 May 2022
Accepted: 13 June 2022

***Correspondence:**
Dr. Natalia Jennifer Handika,
E-mail: nataliajenniferh@gmail.com

ABSTRACT

The global COVID-19 pandemic has given rise to the need to use personal protective equipment such as masks, among healthcare professionals and the general public. Regular long time wearing of mask during this pandemic has resulted in increased incidence of acne flare, which the term maskne or mask acne has emerged. This literature review discussed current knowledge of maskne, the factors predisposing person to developing maskne, some strategies which may prevent maskne and its effects.

Keywords: Mask, Acne, Maskne, COVID-19, Skin

INTRODUCTION

The coronavirus disease-2019 (COVID-19) respiratory disease has caused significant morbidity and mortality worldwide, and was declared a pandemic by the WHO.[1-3] Facial masks are one of the effective personal protective equipment (PPE) that recommended by WHO to prevent the spread of the virus for the community and health-care workers (HCWs).[4] A face mask is a piece of covering that generally aims to cover the oral and nasal apertures, while being hooked onto the ears. With the escalation of wearing mask in a longer period, numerous adverse facial dermatoses, such as acne flare have been reported.[4-6]

The term 'maskne' refers to acne breakouts and acne-like eruptions the areas covered by face masks.[4,7,9] Acne vulgaris is a self-limiting, multifactorial disorder affecting the sebaceous glands and pilosebaceous follicles.[8] Some authors have linked the occurrence of maskne is likely a disorder of follicular occlusion, directly related to mechanical stress dysbiosis (pressure, occlusion, and friction) and microbiome (heat, pH, and moisture from biofluids). Both of these are affected by increased duration of mask-wear.[2,5,8-13]

Acne may affect many aspects of an individual's quality of life in which acne may impacts greatly in one's psychological state.[3,9] In fact, maskne or mask-related acne is a well-recognized comorbidity due to PPE during COVID-19 pandemic both in HCW and less in the general population.[12] This review will be discussed current knowledge of maskne.

MASKNE

The term 'maskne' refers both to new diagnoses and to aggravation of pre-existing acneiform eruption.[4,12,14] Maskne prevalence are variable in literature. Yaqoob et al. study showed the prevalence of acne in HCW in Pakistan after the use of mask was 53.4%.[7] In a Turkish survey, conducted from December 2020 to February 2021, 101 HCW were screened for facial dermatoses and it emerged that acne prevalence was present in 55.4% of participants meanwhile the exact prevalence maskne in the general population is still unknown.[14,15] The maskne lesions are mostly found in the local area covered by the mask, with cheeks were the most frequent site involved in eruption of acne, followed by chin, forehead, and nasal bridge.[6,8,13] The lesion severity varies from mild-to-severe in each

literature.[5] Study by Han et al, Ramesh et al and Shabari et al showed that the most reported symptoms of maskne were itching, pain, discomfort, stinging, sensation, burning sensation, dryness/tenderness, and excessive seborrhoea.[6,8,9,13] The most common signs were comedones, papules on cheek and nose, instead of nodules or cysts on forehead, submaxillary and neck.[5,8,13]

Mask acne is thought to be a subtype of acne mechanica, for aggravation of the disease induced by an extrinsic factor that clearly intensifies acne, namely mechanical forces such are pressure, tension, friction, stretching, rubbing, pinching, or pulling, or almost any type of mechanical stress on the skin, although numerous other factors are implicated in its pathogenesis.[3,8,12] Recently, Teo et al suggested that maskne should be diagnosed in case of: de novo acne occurred 6 weeks after a regular mask wear or; worsen of pre-existence acne in mask covered by areas after regular mask wearing; and after exclusion of the main differential diagnoses (i.e. seborrheic dermatitis).[1,2]

Figure 1: Mask related flare of acne vulgaris, with multiple inflammatory papules and pustules on the nose, cheek and chin.[11]

Figure 2: Exacerbation of pre-existing acne in a young female patient.[11]

RISK FACTOR

There are several risk factors on maskne in general population and HCW. Various studies indicated a higher incidence of mask acne in HCW compared to the general public, which can be explained by the increased hours of wearing PPE.[3] Long-time mask wearing during COVID-19 pandemic may lead to an increased flare of acne, but what should be noticed is that the patients with acne may be tempted to touch their face following removal of mask for itch and annoying pimples. The average time to onset of the flare was about 3.4 weeks (range 2-8 weeks) after daily mask use.[5,8,11,13] The type of the mask is one of acne flare factor on maskne. Amongst all types of masks, HCW using N-95 mask developed significant acne ($p<0.036$) while surgical and cloth mask did not yield a notable contribution in its development. Furthermore, the thickness of N-95 with metal wiring covering the nasal bridge makes it more compact and airtight, resulting in a humid environment for bacterial growth and thus increasing severity.[3,6,7] A person with prior history of acne vulgaris were about four times more likely to develop new acne lesions or experience worsening of their acne is logical and may be linked to their background predisposition to having acne prior to wearing face masks.[9]

Studies proposed other risk factors may contribute to the development of acne, such as female HCW, younger HCW, those with a personal or family history of acne greater stress, the sleep deprivation HCW undergo during their shifts in COVID wards, and the consequent increasing in cortisol secretion.[4,15]

PATHOGENESIS

The pathogenesis of PPE related acne is thought to be threefold: creation of a humid microclimate inside the mask; mucosa can be colonized by bacteria which could increase bacterial load on the surrounding skin; and friction effect of a close-fitting mask can damage the follicular ostia causing chronic irritation, and this effect is worsened by heat and humidity.[6,9,11,12]

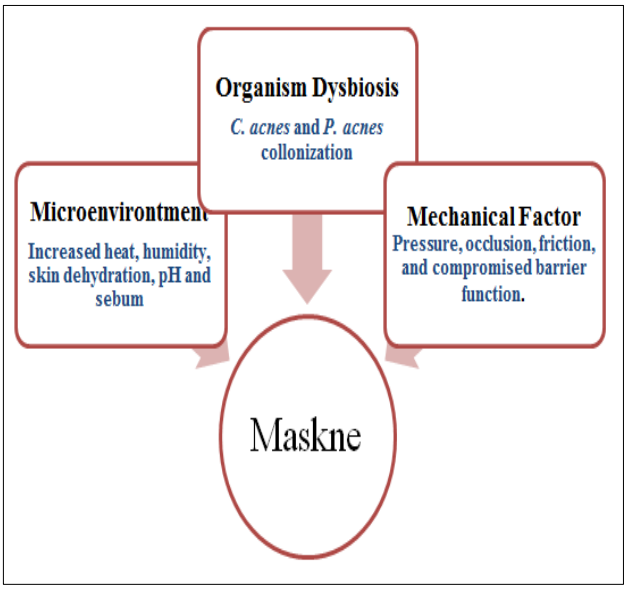

Figure 3: The pathogenesis of maskne.

MANAGEMENT

General preventive

There are several preventive measures that might be implemented to prevent maskne presented in Table 1.[3]

Table 1: Preventive measures for maskne.

Use nonsurgical masks in low-risk open areas	Use a gentle cleanser, avoid scrubs and rubs
Use N95 masks only in high-risk areas	Use a non-comedogenic moisturizer
Take mask-free breaks for 15 minutes every 2 hours	Avoid occlusive makeup such as foundations
Fabric masks should be washed daily	Avoid all make-up on days of extended mask use
Re-use N95 masks, if necessary, after 72 hours	Avoid frequently touching the face
Wash hands before and after touching the masks	Avoid picking acne lesions to avoid post-inflammatory hyperpigmentation (PIH)

By employing these non-pharmacologic maneuvers, the condition of mask related acne might be relieved. However, the patient should consult dermatologists for topical or oral medication if the acne lesions sustain or aggravate.[5,8,11]

Treatment

Specific therapeutic modalities include the use of retinoid such as adapalene cream alone or in combination with benzoyl peroxide cream at night (short contact period), either daily or on alternate nights as tolerated, once daily can be used especially in those with preexisting acne or in mild maskne cases.[15] The use of oral antibiotics, topical antibiotics, and oral isotretinoin or minocycline can be used for moderate to severe cases and should be decided by dermatologist on a case-by-case basis. The addition of an oral tetracycline such as lymecycline 408 mg once daily for up to 12 weeks also can be used for moderate to severe cases.[3,5,11]

CONCLUSION

Maskne has been increased in this COVID-19 pandemic and has various risk factors involved in its pathogenesis. Wearing a mask is extremely important to our fight against COVID-19 however, the HCW and general public should be aware of proper and rational mask wearing to prevent this maskne.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Teo WL. The "Maskne" microbiome - pathophysiology and therapeutics. Int J Dermatol. 2021;60(7):799-809.
2. Teo WL. Diagnostic and management considerations for "maskne" in the era of COVID-19. J Am Acad Dermatol. 2021;84(2):520-1.
3. Raju SP, Sachdev M, Khunger N, Madnani N. Mask Acne in Skin of Color: A Significant Dermatological Condition Amidst the COVID-19 Pandemic. J Clin Aesthet Dermatol. 2022;15(4):44-8.
4. Spigariolo CB, Giacalone S, Nazzaro G. Maskne: The Epidemic within the Pandemic: From Diagnosis to Therapy. J Clin Med. 2022;11(3):618.
5. Kosasih LP. MASKNE: Mask-Induced Acne Flare During Coronavirus Disease-19. What is it and How to Manage it? Open Access Maced J Med Sci. 2020;8(T1):411-5.
6. Christopher PM, Roren RS, Tania C., Jayadi NN, Cucunawangsih C. Adverse Skin Reactions to Personal Protective Equipment Among Health-Care Workers During COVID-19 Pandemic: A Multicenter Cross-sectional Study in Indonesia. Int J Dermatol Venereol. 2020;3(4):211-8.
7. Yaqoob S, Saleem A, Jarullah AF, Asif A, Essar MY, Emad S. Association of Acne with Face Mask in Healthcare Workers Amidst the COVID-19 Outbreak in Karachi, Pakistan. Clin Cosmet Investig Dermatol. 2021;14:1427-33.
8. Ramesh A, Shabari A. Clinico-epidemiological study of mask induced acne due to increased Mask use among health care workers during COVID pandemic in a tertiary care institute. Int J Res Dermatol. 2021;7:48-52.
9. Falodun O, Medugu N, Sabir L, Jibril I, Oyakhire N, Adekeye A. An epidemiological study on face masks and acne in a Nigerian population. PLoS One. 2022;17(5):e0268224.
10. Althobaiti HM, Althobaiti H, Khan M, Alsatti H, Samarkandy SJ. The Association Between Facial Dermatosis and Face-Mask Wearing During COVID-19 in Saudi Arabia. Cureus. 2022;14(2):e22265.
11. Kaul S, Kaur I, Jakhar D. Facial Mask-related Acne and Acneiform Eruption During the Coronavirus Disease 2019 Pandemic: A Case Series. J Clin Aesthet Dermatol. 2021;14(10):32-4.
12. Damiani G, Gironi LC, Grada A, Kridin K, Finelli R, Buja A, Bragazzi NL, Pigatto PDM, Savoia P. COVID-19 related masks increase severity of both acne (maskne) and rosacea (mask rosacea): Multi-center, real-life, telemedical, and observational prospective study. Dermatol Ther. 2021;34(2):e14848.
13. Han C, Shi J, Chen Y, Zhang Z. Increased flare of acne caused by long-time mask wearing during COVID-19 pandemic among general population. Dermatol Ther. 2020;33(4):e13704.

14. Rudd E, Walsh S. Mask related acne (“maskne”) and other facial dermatoses. BMJ. 2021;373:1304.
15. Kiely LF, O'Connor C, O'Briain G, O'Briain C, Gallagher J, Bourke JF. Maskne prevalence and associated factors in Irish healthcare workers during the COVID-19 pandemic. J Eur Acad Dermatol Venereol. 2022;10.

Cite this article as: Handika NJ. Facial mask-related acne during the coronavirus disease 2019 pandemic: a literature review. Int J Res Med Sci 2022;10:1556-9.