



An Overview of The Incidence of Acne Due to The Use of Masks During The COVID-19 Pandemic

Monica Syefi Febriyanti^{*1}, Christanti Naomi Pramasanti Sitanggang¹, Ribka Liliana Zebua¹, Syahfori Widiyani¹

¹Department Dermatology and Venereology, Faculty of Medicine, Christian University of Indonesia, Jakarta, 13630, Indonesia

*Corresponding Author: monicasyefi14@gmail.com

ARTICLE INFO

Article history:

Received 23 December 2023

Revised 24 February 2024

Accepted 28 February 2024

Available online 29 February 2024

E-ISSN: 2686-0864

P-ISSN: 2088-8686

How to cite:

Febriyanti MS, Sitanggang CN, Zebua RL, Widiyani S. An Overview of The Incidence of Acne Due to The Use of Masks During The COVID-19 Pandemic. SCRIPTA SCORE Sci Med J. 2024 Feb 29;5(2):82-6

ABSTRACT

Background: On March 11 2020, WHO declared COVID-19 as a pandemic. One of the efforts to prevent, control and break the chain of transmission of COVID-19 in the community is to use a mask. However, apart from feeling uncomfortable, many complaints about acne due to the use of masks are found in the community. During the COVID-19 pandemic, a popular phenomenon appeared on social media, namely "Maskne", a combination of the words mask and acne. **Objective:** The purpose of this study was to determine the incidence of acne due to the use of masks. **Methods:** The approach used in this research is quantitative, cross-sectional with data collection techniques through questionnaires. Data analysis using SPSS version 16.0 software. **Results:** The results showed that the longer use of masks, the higher incidence of acne; the more steps of cleaning the face, the smaller severity of acne. **Conclusion:** The incidence of acne due to wearing mask during the COVID-19 pandemic correlates with the length of time wearing a mask. The type of mask, the colour of the mask and the variety of beauty products used are not correlated with an increase in the incidence of acne during the use of masks. **Keyword:** acne, COVID-19, mask, maskne

ABSTRAK

Latar Belakang: Pada tanggal 11 Maret 2020 WHO menyatakan COVID-19 sebagai pandemi. Salah satu upaya pencegahan dan pengendalian, serta pemutusan rantai penularan COVID-19 pada masyarakat adalah dengan menggunakan masker. Namun, selain rasa tidak nyaman, keluhan timbulnya jerawat akibat menggunakan masker banyak ditemukan di masyarakat. Selama pandemi COVID-19 muncul fenomena yang populer pada media sosial yaitu "Maskne" gabungan kata mask dan acne. **Tujuan:** Tujuan penelitian ini adalah mengetahui gambaran kejadian jerawat akibat menggunakan masker selama pandemi dan faktor yang menimbulkan jerawat akibat pemakaian masker. **Metode:** Pendekatan yang digunakan dalam penelitian ini yaitu kuantitatif, potong lintang dengan teknik pengumpulan data melalui kuesioner. Analisis data dengan menggunakan software SPSS versi 16.0. **Hasil:** Hasil penelitian didapatkan bahwa semakin lama pemakaian masker maka semakin tinggi angka kejadian jerawat; semakin banyak tahapan membersihkan wajah maka tingkat keparahan jerawat makin kecil. **Kesimpulan:** Insidensi jerawat akibat penggunaan masker pada pandemi COVID-19 berhubungan dengan lama penggunaan masker. Tipe masker, warna masker, dan jenis produk kecantikan digunakan tidak berhubungan dengan peningkatan insidensi jerawat pada penggunaan masker.

Kata Kunci: COVID-19, jerawat, masker, maskne



This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.
<https://doi.org/10.32734/scripta.v5i2.15061>

1. Introduction

On January 7 th 2020, a new type of coronavirus was identified or better known as Coronavirus Disease 2019 (COVID-19). COVID-19 is an infectious disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2).^[1]

The transmission of COVID-19 spread rapidly to various countries, that on March 11th 2020 WHO declared COVID-19 outbreak as pandemic. In Indonesia, the spread of COVID-19 has reached all provinces and the number of positive confirmed cases is increasing.^[2,3]

COVID-19 is a positive single strain RNA, encapsulated and non-segmented virus. The averages incubation period of COVID-19 is 5-6 days but can reach until 14 days. Coronavirus can spread through droplets or contact with contaminated objects. COVID-19 is mainly transmitted from symptomatic patient to others through droplets. There are also asymptomatic confirmed cases of COVID-19 with a very low risk of transmission, but there is still a small chance of transmission. Droplet transmission occurs when a person is in close range to those who has symptoms so that droplets can hit the mucosa and conjunctiva. In addition, the virus that causes COVID-19 can survive on surfaces, the length of time the coronavirus survives is influenced by conditions such as the type of surface, temperature, or humidity of the environment. The risk of transmission is highest in the first days of illness due to the high concentration of virus in the secretions.^[4]

Prevention and control in breaking the chain of transmission in the community plays an important role to prevent new source of transmission. Prevention of transmission in individuals can be done in several ways, namely cleaning hands regularly by washing hands with soap and running water or using alcohol-based antiseptic liquids, using personal protective equipment such as masks that cover the nose and mouth when going outside, maintaining a minimum distance of 1 meter from other people to avoid being exposed to droplets, immediately showers and changes clothes after travelling, and increasing endurance for implementing a Pola Hidup Bersih dan Sehat (PHBS).^[4,5]

Masks are one of the personal protective equipment during the COVID-19 pandemic. Currently, there are various types of masks available. Medical masks include surgical masks and N95 masks that are designed to protect the wearer from harmful particles and liquids. N95 masks are more effective at filtering out very small particles in the air and have smaller gaps compared to surgical masks. In addition, there are non-medical masks made of various combinations of materials such as chiffon, cotton, flannel, silk, and other materials. There are differences between medical masks and non-medical masks as protection against pathogens that can be transmitted through aerosols in the air. In July 2020, the United States CDC recommended wearing cloth masks in public places or outside the home, especially when maintaining distance in public places is difficult or in crowded places. The use of cloth masks on public is considered an important and effective way to reduce the spread of the virus.^[6]

However, in several studies, it was mentioned that there were uncomfortable effects of wearing masks as personal protective equipment during the COVID-19 pandemic such as feeling uncomfortable in the nose (30.3%), dry nose (26.1%), burning sensation in the nose (52.0%), itchy nose (56.0%), acne (39.0%), redness on the face (67.6%).⁷ Another study mentioned the adverse effects of wearing masks are headaches (71.4%), skin breakdown (51%), impaired cognition (23.6%), and acne (53.1%).^[8,9]

During the COVID-19 pandemic, the popular term "Maskne" emerged on social media. Maskne is a combination of the words mask and acne.^[9-11] Acne is an inflammatory dermatosis of the pilosebaceous follicles and is polymorphic. Acne caused by masks is classified as mechanical acne, the precipitating factor is An Overview of The Incidence of Acne Due to The Use of Masks During The COVID-19 Pandemic 3 mechanical pressure from clothing materials. The symptoms experienced by acne during mask use are burning, itchy skin, and an oily face.^[9,10] Common signs of acne during mask-wearing are blackheads and inflammatory lesions such as papules, pustules, nodules on the cheeks and on the nose with clinical degrees and variants.^[10,12]

There are several causes of acne due to the use of masks, namely: (1) Increased sweat and moisture of the skin causes swelling and blockage of epidermal keratinocytes in the pilosebaceous follicles.^[8,10,12,13] (2) Due to the disruption of skin hydration, it can cause changes in the microflora of the skin and cause the risk of infection and inflammatory response.^[12,13] (3) Increase in inflammatory mediators, infiltration of neutrophils and monocytes, and an increase in Reactive Oxygen Species (ROS).^[13] Factors that are thought to be related to increased mask use are a history of previous acne, type or language of mask, facial hygiene, length of mask use, and use of cosmetics.^[10] This study aims to determine the incidence of acne due to the use of masks during the COVID-19 pandemic.

2. Methods

This study is a quantitative study, cross-sectional study, data collection techniques through questionnaire. The validity of the questionnaire was tested using Pearson Correlation Sig. 2-tailed and reliability test using Cronbach's Alpha. The minimum amount of data with an error rate of 5% using the Lemeshow formula is 385 respondents, and in this study, data was obtained from 500 respondents using a simple random sampling technique. Data analysis using SPSS version 16.0 software for Chi-Square hypothesis testing. Mechanical acne referred to in this study is a lesion of blackheads, papules, pustules, nodes or cysts at the location of the nose around the mouth of both cheeks of the lower chin, or the chin of both jaws, namely in the area in contact with the mask.

3. Results

There were 380 female respondents (76%) and 120 male respondents (24%). Respondents aged 12 to 55 years with an average age of 24 years.

3.1 Type of Mask

In this study, there was no correlation between the use of all masks (surgical mask coated with cloth mask, surgical mask, N95 mask, 3-layer cloth mask, single-layer cloth mask) and acne (p=0.431) (Table 2).

3.2 The Colour of The Mask

In this study, it was found that the colour of the mask did not correlate with the onset of acne. (p=0,19). See Table 2.

3.3 Duration of Wearing the Mask

It was in this study that there was a correlation between the duration of mask use and the incidence of acne. (p=0.049). (Table 2).

3.4 Variations in Beauty Product Usage

In this study, there was no correlation between the onset of acne and the use of any cosmetic product (p= 0.296). See Table 2.

3.5 Use of Facial Cleansing Products

It was found that the use of facial cleansing products had a significant correlation with acne (Table 2). The more cleaning steps, the better it will be in maintaining healthy facial skin. The variable use of facial cleansing products has a p value = 0.021. (Table 2)

3.6 Grade of Acne Severity

In this study, the severity of respondents' acne was dominated by less than 10 lesions, namely 319 respondents out of 389 respondents with acne (82%).

Table 1. Mechanical Acne Incidence Rate by Type of Mask Used by Respondents

| | ACNE MECHANICA | | Total | Proportion of acne incidence |
|--|----------------|-------------|-------------|------------------------------|
| | No | Yes | | |
| Mask Surgical mask | 80 (16%) | 267 (53.4%) | 347 (69.4%) | 76.94% |
| Surgical mask overlaid with cloth mask | 10 (2%) | 27 (5.4%) | 37 (7.4%) | 72.97% |
| Single-layer cloth mask | 2 (0.4%) | 18 (3.6%) | 20 (4%) | 90% |
| 3-layer cloth mask | 13 (2.6%) | 42 (8.4%) | 55 (11%) | 76.37% |
| N95 | 6 (1.2%) | 35 (7%) | 41(8.2%) | 85.36% |
| Total | 111 (22.2%) | 389 (77.8%) | 500 (100%) | |

Table 2. Relationship between mask type, mask colour, duration of mask use, variety of beauty products and use of facial cleansing products with the incidence of acne due to mask use

| No. | Data Analysis | Total samples | r-value | p-value |
|-----|------------------------------------|-----------------|---------|---------|
| 1. | Type of Mask | 500 Respondents | 0.035 | 0.431 |
| 2. | The Colour of The Mask | | 0.59 | 0.190 |
| 3. | Duration of Wearing the Mask | | 0.088 | 0.049 |
| 4. | Variations in Beauty Product Usage | | 0.47 | 0.296 |
| 5. | Use of Facial Cleansing Products | | 0.104 | 0.021 |

4. Discussion

4.1 Type of Mask

There was no correlation between the type of all masks with acne ($p=0.431$). The public can use types of masks as recommended by the Ministry of Health of the Republic of Indonesia such as N95 masks, surgical masks, and cloth masks. However, cloth masks are advised not to be made of thin fabrics such as scuba and buff masks and it is recommended that cloth masks have at least two layers of fabric. Cloth masks are recommended to be used for 3 hours and then replaced with a clean mask that has not been used.^[14]

Based on Table. 1, the incidence of mechanical acne in respondents was highest among respondents who wore surgical masks, namely 267 respondents (53.4%). However, this condition can be caused of the respondents in this study were dominated by surgical mask wearers. The single-layer cloth mask is the type of mask with the highest proportion of mechanical acnes compared to other types of masks.

4.2 The Colour of The Mask

The colour of the mask did not correlate with acne ($p = 0.19$). Colour of the mask is generally used as an attraction to consumers. In a study by Guerra, et al (2018) dyes in cosmetics such as xanthenes dyes that are red in colour can cause the skin to become rough because they react with proteins in the skin and other substances can become allergens to the skin.^[15]

4.3 Duration of Wearing the Mask

There was a correlation between the duration of mask use and the incidence of acne. The phenomenon in this study agrees with the research of Purushothaman, *et al* (2020), stated that the use of masks for more than 3 hours can cause acne in some respondents, this influenced by an increase skin temperature which can increase the rate of sebum excretion by 10% per 1°C increase.^[12]

Wearing an N95 mask for one hour can increase skin temperature to above 34.5°C so that it becomes inconveniences when using a mask, but the facial skin temperature will decrease again after the mask is removed. Wearing an N95 mask for five minutes will increase skin temperature higher than using a surgical mask.^{6,7} According to Hidajat (2020), if the mask becomes damp, the mask should be changed immediately and the mask should be changed every 4 hours.^[10]

4.4 Variations in Beauty Product Usage

There was no correlation between the onset of acne and the use of any cosmetic product ($p < 0.05$). The beauty products or cosmetics used by respondents along with the use of masks during the COVID-19 pandemic in this study were basic skincare products such as toners and moisturizers, sunscreen, foundation (primer or concealer or foundation) and powder.

According to several studies, the use of comedogenic cosmetics along with using masks can cause acne.⁸⁻¹¹ If during the COVID-19 pandemic people use beauty products together with the use of masks, it is recommended to balance the use of each product so that the purpose of using beauty products such as maintaining and maintaining skin moisture are still achieved.^[16]

4.5 Use of Facial Cleansing Products

The use of facial cleansing products had a significant correlation with acne ($p= 0.021$). Better effects were achieved on the skin that cleans by cleansing products than only with water or with body soap. This can be caused using body soap on the face can make the skin becomes drier and easily irritated.^[17] If during the COVID-19 pandemic people use beauty products together with the use of masks, it is recommended to balance the use of each product so that the purpose of using beauty products such as maintaining skin moisture is still achieved.^[16]

5. Conclusion

Based on this study, 319 respondents (82%) experienced acne due to wearing masks. The incidence of acne due to wearing mask during the COVID-19 pandemic correlates with the length of time wearing a mask, the longer the mask is worn, the higher the incidence of facial acne and the more stages of using cleaning products to clean the face can reduce the incidence of acne. The type of mask, the colour of the mask and the variety of beauty products used are not correlated with an increase in the incidence of acne during the use of masks.

6. Recommendations

The study has limitations in assessing the severity of acne, the assessment was carried out by each respondent, so this study can be developed by assessing the severity of acne caused by masks that are assessed directly by a venerology dermatologist. For further studies, the recommends using direct sampling as sampling technique so the data that collected are more valid in accordance with the criteria of sample. The number of respondents taken for further studies should be the same or greater than that used in this study, so that the results are more objective.

References

- [1] Putri RN. Indonesia dalam Menghadapi Pandemi Covid-19. *JIUBJ* 2020;20(2):705-709. doi:<http://dx.doi.org/10.33087/jiubj.v20i2.1010>
- [2] Handayani D, Hadi DR, Isbaniah F, Burhan E, Agustin H. Corona Virus Disease 2019. *Jurnal Respirologi Indonesia*. 2020;40(2):119-127. doi:<https://doi.org/10.36497/jri.v40i2.101>
- [3] Kementerian Kesehatan Republik Indonesia. *Keputusan Menteri Kesehatan Republik Indonesia Nomor HK.01.07/Menkes/4641/2021 Tentang Panduan Pelaksanaan Pemeriksaan, Pelacakan, Karantina, Isolasi Dalam Pencegahan COVID-19*. Kementerian Kesehatan Republik Indonesia; 2019:1-31.
- [4] Kementerian Kesehatan Republik Indonesia. *Pedoman Penanganan Cepat Medis Dan Kesehatan Masyarakat COVID-19 Di Indonesia*. Kementerian Kesehatan Republik Indonesia; 2020.
- [5] Kementerian Kesehatan Republik Indonesia. *Pedoman Pemberdayaan Masyarakat Dalam Pencegahan COVID-19 Di RT/RW/Desa*. Kementerian Kesehatan Republik Indonesia; 2020.
- [6] Scheid JL, Lupien SP, Ford GS, West SL. Commentary: Physiological and Psychological Impact of Face Mask Usage during the COVID-19 Pandemic. *Int J Environ Res Public Health*. 2020;17(18):2-6. doi:10.3390/ijerph17186655
- [7] Purushothaman PK, Priyanga E, Vaidhyswaran R. Effects of Prolonged Use of Facemask on Healthcare Workers in Tertiary Care Hospital During COVID-19 Pandemic. *Indian Journal of Otolaryngology and Head & Neck Surgery*. 2021;73(1):59-65. doi:10.1007/s12070-020-02124-0
- [8] Elisheva R. Adverse Effects of Prolonged Mask Use among Healthcare Professionals during COVID-19. *Journal of Infectious Diseases and Epidemiology*. 2020;6(3):1-5. doi:10.23937/2474-3658/1510130
- [9] Gomolin TA, Cline A, Russo M. Maskne: Exacerbation or Eruption of Acne During the COVID-19 Pandemic. *SKIN The Journal of Cutaneous Medicine*. 2020;4(5):438-439. doi:10.25251/skin.4.5.7
- [10] Hidajat D. Maskne: Akne Akibat Masker. *Unram Medical Journal*. 2020;9(3):202-214. doi:10.29303/jku.v9i3.433
- [11] Teo WL. Diagnostic and Management Considerations For “maskne” In The Era of COVID-19. *J Am Acad Dermatol*. 2021;84(2):520-521. doi:10.1016/j.jaad.2020.09.063
- [12] 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):13. doi:10.1111/dth.13704
- [13] Aguilera SB, Pena ID La, Viera M, et al. The Impact of COVID-19 on the Faces of Frontline Healthcare Workers. *Journal of Drugs in Dermatology*. 2020;19(9):858-864.
- [14] Kementerian Kesehatan Republik Indonesia. *Kemenkes Sarankan 3 Jenis Masker untuk Dipakai*. Kementerian Kesehatan Republik Indonesia. Published September 21, 2020. Accessed February 15, 2021. <https://www.kemkes.go.id/article/view/20092200001/kemenkes-sarankan-3-jenis-masker-untuk-dipakai.html>
- [15] Guerra E, Llompert M, Garcia-Jares C. Analysis of Dyes in Cosmetics: Challenges and Recent Developments. *Cosmetics*. 2018;5(3):47. doi:10.3390/cosmetics5030047
- [16] Kubba R, Kumar BA, Thappa DM, et al. Cosmetics and Skin Care in Acne. *Indian J Dermatol Venereol Leprol*. 2009;75(7):55-56.
- [17] Mukhopadhyay P. Cleansers and Their Role in Various Dermatological Disorders. *Indian J Dermatol*. 2011;56(1):2. doi:10.4103/0019-5154.77542