

Commentary

The Emotional Impact of Maskne in the Era of COVID-19: A Commentary on the Future of a Multi-Modality Approach

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Abstract: Over the past two years, the world has experienced the destructive effects of the SARS-CoV-2 pandemic, better known as COVID-19. The use of surgical face masks was declared necessary by many governments around the world to protect citizens from catching the rapidly spreading virus. Albeit surgical masks contributing to stopping the spread of SARS-CoV-2, many people have reported rashes closely resembling acne on their chins ever since wearing face masks became mandatory. This article studies the acne that results from masks worn to prevent the transmission of the SARS-CoV-2. Acne due to the wearing of masks (“Maskne”) is a new challenge that has affected the population and can decay the mental health of societies and individuals. The exploration of the mental and physical health effects of “Maskne” help us to form treatments that emphasize the association of improving mental health to decrease acne and enhancing quality of life.

Keywords: maskne; COVID-19; emotional health; mental health; dermatology



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1. Introduction

In 2019, an unknown, rapidly spreading virus emerged in China, later spreading to many other countries in a matter of months. This virus, known as the SARS-CoV-2, can spread quickly through respiratory openings, such as the mouth and nose. Among the many rules set to limit the transmission of SARS-CoV-2, the wearing of a face mask covering both the mouth and nose is required when interacting with others in a public area. Contrary to the situation in years prior to the SARS-CoV-2, many people wearing a face mask for long periods of time reported the skin symptom of prominent acne [1]. The pathogenesis of acne is quite intricate and can vary. The web term “Maskne” has grown increasingly popular when used to describe pustules formed at the base of the chin or the nose (areas where a mask may rest for a long time) [2,3]. This is likely due to sweat or perspiration developing along the chin under the cloth of the mask. It was found that the usage of masks has augmented the production of acne by alternating the skin microbiome by trapping organisms such as bacteria and fungal organisms [4]. Research showed that there were increased negative emotions as a result of the SARS-CoV-2 pandemic [5]. The most frequent mental illness during this pandemic has been depression, most likely caused by many different factors. This may include the fear of going out in public again, social awkwardness, and insecurities with how one may have changed physically and even mentally over the past two years [6]. Aside from SARS-CoV-2, acne negatively affects the mental health and self-esteem of adolescents [7]. Additional research showed that mask-wearing and the effects of SARS-CoV-2 increased pre-existing mental health disorders. Mask acne has recently been affecting people by causing red pustules and rashes to erupt after long-time mask usage. These cutaneous lesions may take a toll on an individual’s self-esteem or even how they perceive themselves, causing people to suffer from mental illnesses.

2. SARS-Cov-2 and Skin Concerns with Acne

In the exploration of the determination of the effects of wearing a mask, a study conducted in Thailand described the immediate effects of wearing a face mask [8]. It was shown that the use of protective face masks caused adverse reactions on the skin of 454 different patients [8,9]. It was also found within these cases that acne was the most prevalent disease (399 cases), followed by rashes on the face (154 cases) and itching symptoms (130 cases) [8]. From these statistics, it can be interpreted that the use of protective face masks leads to some type of minor facial deformity because of irritation of the skin. It was found, in a prior study, supported by the La Roche -Posay Dermatological Laboratories, that acne relapses in teenagers occurred with a direct result in a decreased quality of life. La Roche -Posay conducted a real-world study that looked into the rate of acne relapses among teenagers and adults, as well as viewing the effect on quality of life and productivity. It was found that, in a questionnaire of 1049 people, about 48% people faced mild acne, 41% moderate acne, and 16% severe acne [10]. Due to the fact that this study was conducted prior to the regular use of daily masks, no direct correlation can be established, but we do see a correlation of acne and emotional health. The study did not state that acne was a direct result of wearing a mask, but it did note that multiple studies showed that wearing a mask caused increased acne that led to decreased productivity and psychological distress [11]. In an Italian study conducted on healthcare professionals, it was shown that surgical face masks increase the prevalence of a dermatological pathology to 64.38 percentage, while FFP2 no-valve masks have a 32.89 percentage rate and other variations have a lower prevalence [12].

Governments around the world mandated the usage of masks to deter the transmission of SARS-CoV-2 at the beginning of this pandemic. This is due to the fact that masks prevent the circulation of respiratory droplets [13]. In turn, breathability, a sticky sensation, moisture saturation, and insufficient hygienic routines are some of the other textile–skin interactions caused by masks [3]. Acne became more common as the need for mask use increased, which is consistent with data supported from multiple clinical trials [14]. Acne was formed because of the property of occlusive materials within the mask. This could have allowed for allergic reactions with the skin [15]. It was found that there was increased irritation from behind the ears, around the nasal area, and other areas where the mask applied pressure and friction [16]. We see that masks were used during gym workouts and in the subway/traveling in hot crowded places, which leads to the increased entrapment of oil in the face and a higher risk of acne [17]. With respect to people in working conditions, or other extracurricular activities that required the usage of PPE equipment, it was shown that people with a mean face mask usage of 6.8 h per day faced adverse effects on the face [18].

3. Emotional Health Related to Maskne (and the Pandemic)

According to recent studies, acne and other face skin inflammations during the pandemic could be the cause of various mental illnesses, such as anxiety, depression, and lack of self-esteem [19]. Acne is the eighth most common skin disease, affecting 9.4% of people worldwide. Previous studies have associated skin breakouts to mental health problems [20]. Due to the recent effects of SARS-CoV-2 on households and families, there have been many cases of anxiety rising in patients [19]. As stated earlier in this paper, acne negatively affects the quality of life and productivity of adolescents, acting hand in hand with mental health disorders [10]. According to a cross-sectional study conducted in June and September 2020, 220 documented acne vulgaris patients were checked for various psychological health problems, including post-traumatic stress disorder (PTSD), depression, and anxiety. The study was conducted within the dermatology and psychiatry departments of Istanbul Bagcilar Research and the Training Hospital of University of Health Sciences of Turkey, and consisted of patients of 18–35 years old. There were not clear differences between some of the patients, although PTSD rates were higher for acne vulgaris patients at 16.4%, rather than the control groups (9.5%) (“ $p = 0.040$ ”) [21]. The study concluded that patients with

high depression levels or PTSD were more likely to develop skin inflammations and vice versa (patients with acne vulgaris were more likely to develop psychological disorders) [21].

4. Mental Health among Students during COVID-19

Adolescents are the age group that is predominantly affected by acne, but other circumstances during the pandemic have contributed to the worsening of their emotional health. Social distancing as a result of the pandemic is believed to be the factor that contributes the most to their negative mental health. Health officials have declared that social distancing and confinement induce feelings of loneliness, despair, and depression [22]. On the other hand, students have reported depression and distractions from their academic studies due to the loss of someone or the strict rules (masks, washing hands, distancing, etc.) placed upon them [23]. Students began to find themselves unable to focus on work because they were spending too much time searching for information on SARS-CoV-2. College students living in New Jersey participated in a cross-sectional survey that assessed their knowledge levels of SARS-CoV-2 and measured their mental health [24]. The results showed that students became distracted by looking for information on SARS-CoV-2, rather than working on their school assignments. Students that reported high levels of depression had difficulties in focusing on academic work and had to deal with the loss of a loved one or a job [25]. Some students researched SARS-CoV-2 for more than an hour using trusted websites, but it had a negative effect on their mental health and work ethic. The additional burden of Maskne in this population adds to the overall mental health struggles caused by the SARS-CoV-2 pandemic. With all of these additional stressors in the adolescent age group, we can conclude that, perhaps, dealing with acne caused by wearing a mask also contributes to the larger burden of Maskne [26].

5. Skin Microbiome and Gut–Brain Connection

It is important to address the connection first proposed by dermatologists John H. Stokes and Donald M. Pillsbury, who referred to the role that gastrointestinal processes and feelings of depression and anxiety play in the formation of skin conditions. They mention that, at the molecular level, the skin has a complex relationship with the nervous and immune systems [26]. The notion of psychology combined with dermatology is examined in terms of how the skin reacts to stress, how emotions, such as stress, serve as a trigger in the brain, and how these emotions can lead to a variety of common skin illnesses [27]. It can be understood that feelings, such as stress, for example, have been linked to the aggravation of acne by affecting the gut microbiome. The microbiome is the normal flora on the skin, but due to the stress of mask usage, the flora is altered. If we can recognize the connection of reactions within the brain due to microbiota in the gastrointestinal tract, we can use it in the management of acne.

6. Skin and Healthy Food Choices

Another crucial part of keeping skin healthy is having a balanced diet [28]. Nutritionists and clinicians are working together to research the best dietary avenues for patients that are affected by acne. In view of modernization and a Western lifestyle, the microbiome health of the gut is an essential part of healthy skin [29]. More recent research co-relates high glycemic foods and foods elevated in trans-fat to be a culprit in the worsening of acne. During the pandemic, a sedentary life and increased screen time has led to poor food choices and, perhaps, to the worsening of gut health; however, this needs to be further researched for better quantification [30].

7. Conclusions

The entrapment of bacteria and oils, the application of friction and pressure, and different allergic reactions from face masks resulted in an increase in facial deformities in the general population, which could lead to the deterioration of mental health [20]. Face masks have also been found to accelerate acne development by trapping microbes, such as

bacteria and fungi, irritating the skin with friction and pressure and producing a variety of allergic reactions [3,15]. Future studies could focus on the impact of cosmetics worn underneath the mask and how different cosmetic ingredients impact Maskne outcomes. There are no previous studies in the literature on the effect of masks and skin of healthcare professionals. Before the pandemic, these workers were using masks. A further examination of this could help us to understand if the pandemic has truly increased the number of acne cases due to longer working hours during the pandemic for healthcare workers. Healthcare workers must use personal PPE, such as face masks, for extended periods of time to avoid exposure to SARS-COV-2 and its use has been linked to a number of adverse effects [31]. We also observe that patients with pre-existing acne could have been new inflammatory bouts with the usage of a mask. It can be inferred that acne generated by the use of masks has a negative impact on a patient's mental health, and the burden of wearing the mask also adds to the detrimental effects of acne [9,15].

The authors' goal is to help to influence the creation of specific guidelines for dermatologists and other clinical practitioners in the management of the emotional health burdens of Maskne, which will aid in its overall management. The study of Maskne's mental and physical health consequences guides the health provider in the importance of developing a management program that includes mental health awareness along with acne treatment. The research in the area of the skin microbiome shows us a physiologic connection to the skin–gut–brain axis and establishes an important basis of a multi-level approach when managing acne [32]. This would mean that having a combined approach when managing Maskne and its emotional effects leads to a more efficient way of treating acne [33]. In the future, there is a need to understand, in more depth, the correlation that any negative impact of social distancing had on mental health. In order to help our societies to move away from the psychological health disorders that were an effect of the pandemic, we must accept patients that need help emotionally or mentally. We must also break the stigma of keeping mental disorders locked up, especially after a life-changing event such as SARS-CoV-2 [34].

As clinical practitioners and researchers in the post-pandemic era, we are encountering nuances of the mental aspects of disease that cannot be ignored. The connection that has already been proven between the skin–gut–brain can be explored as a logical avenue of approach for managing the emotions, cosmetic aspects, and overall well-being of the individual. We cannot merely rely on topical creams for the management of acne post-pandemic; rather, we should focus our treatment approach on the individual as a whole. At large, eastern holistic medicine offers such an approach and falls under the realm of "Vibrational medicine" [35]. For example, we can be influenced from the eastern science of Ayurveda, which defines acne to be a "pitta" (or constitution) imbalance and focuses on creating a pitta balance in the body with a multi-level approach combining lifestyle, well-being, mindfulness practices and diet changes along with topical treatment. Education focused on better food choices, having low glycemic index and low trans-fat can be an approach that is encouraged. Mental health needs to be taken into consideration, especially how it affects people in our current situation. Teaching mindfulness practices to patients can help them to adjust their perspective and enhance their quality of life. An attempt to give constructive advice on mindful activities, such as breathing, yoga, meditation, as well as necessary cosmetic management using peels, lasers and topical treatments, will become the new comprehensive approach to the management of "Maskne" and acne post-pandemic.

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References

1. Xerfan, E.M.S.; Facina, A.S.; Andersen, M.L.; Tufik, S.; Tomimori, J. Acne flare-up due to mask wearing: A current pandemic scenario and its relationship with sleep. *Ski. Res. Technol.* **2021**, *27*, 1002–1003. [[CrossRef](#)] [[PubMed](#)]
2. Knutsen-Larson, S.; Dawson, A.L.; Dunnick, C.A.; Dellavalle, R.P. Acne vulgaris: Pathogenesis, treatment, and needs assessment. *Dermatol. Clin.* **2012**, *30*, 99–106. [[CrossRef](#)] [[PubMed](#)]
3. Teo, W.L. Diagnostic and management considerations for “maskne” in the era of COVID-19. *J. Am. Acad. Dermatol.* **2021**, *84*, 520–521. [[CrossRef](#)] [[PubMed](#)]
4. Teo, W.L. The “Maskne” microbiome-pathophysiology and therapeutics. *Int. J. Dermatol.* **2021**, *60*, 799–809. [[CrossRef](#)] [[PubMed](#)]
5. Andreassi, S.; Monaco, S.; Salvatore, S.; Sciabica, G.M.; De Felice, G.; Petrovska, E.; Mariani, R. To Work or Not to Work, That Is the Question: The Psychological Impact of the First COVID-19 Lockdown on the Elderly, Healthcare Workers, and Virtual Workers. *Healthcare* **2021**, *9*, 1754. [[CrossRef](#)] [[PubMed](#)]
6. Mariani, R.; Monaco, S.; Di Trani, M. Putting into Words the COVID-19 Lockdown Experience: Psychological Symptoms and the Referential Process. *Healthcare* **2021**, *9*, 1100. [[CrossRef](#)] [[PubMed](#)]
7. Dunn, L.K.; O’Neill, J.L.; Feldman, S.R. Acne in Adolescents: Quality of Life, Self-Esteem, Mood and Psychological Disorders. *Dermatol. Online J.* **2011**, *17*, 1. [[CrossRef](#)]
8. Techasatian, L.; Lebsing, S.; Uppala, R.; Thaowandee, W.; Chaiyarit, J.; Supakunpinyo, C.; Panombualert, S.; Mairiang, D.; Saengnipanthkul, S.; Wichajarn, K.; et al. The Effects of the Face Mask on the Skin Underneath: A Prospective Survey During the COVID-19 Pandemic. *J. Prim. Care Community Health* **2020**, *11*, 2150132720966167. [[CrossRef](#)]
9. Lan, J.; Song, Z.; Miao, X.; Li, H.; Li, Y.; Dong, L.; Yang, J.; An, X.; Zhang, Y.; Yang, L.; et al. Skin damage among health care workers managing coronavirus disease-2019. *J. Am. Acad. Dermatol.* **2020**, *82*, 1215–1216. [[CrossRef](#)]
10. Dreno, B.; Bordet, C.; Seite, S.; Taieb, C. Acne relapses: Impact on quality of life and productivity. *J. Eur. Acad. Dermatol. Venereol.* **2019**, *33*, 937–943. [[CrossRef](#)]
11. Tan, J.; Bhate, K. A global perspective on the epidemiology of acne. *Br. J. Dermatol.* **2015**, *172* (Suppl. 1), 3–12. [[CrossRef](#)] [[PubMed](#)]
12. Proietti, I.; Borrelli, I.; Skroza, N.; Santoro, P.E.; Gualano, M.R.; Bernardini, N.; Mambrin, A.; Tolino, E.; Marchesiello, A.; Marraffa, F.; et al. Adverse skin reactions to personal protective equipment during COVID-19 pandemic in Italian health care workers. *Dermatol. Ther.* **2022**, e15460. [[CrossRef](#)] [[PubMed](#)]
13. Abboah-Offei, M.; Salifu, Y.; Adewale, B.; Bayuo, J.; Ofosu-Poku, R.; Opore-Lokko, E.B.A. A rapid review of the use of face mask in preventing the spread of COVID-19. *Int. J. Nurs. Stud. Adv.* **2021**, *3*, 100013. [[CrossRef](#)] [[PubMed](#)]
14. Altun, E.; Demir, F.T. Occupational facial dermatoses related to mask use in healthcare professionals. *J. Cosmet. Dermatol.* **2021**, advance online publication. [[CrossRef](#)]
15. Zhang, B.; Zhai, R.; Ma, L. 2019 novel coronavirus disease epidemic: Skin protection for health care workers must not be ignored. *J. Eur. Acad. Dermatol. Venereol.* **2020**, *34*, e434–e435. [[CrossRef](#)]
16. Daye, M.; Cihan, F.G.; Durduran, Y. Evaluation of skin problems and dermatology life quality index in health care workers who use personal protection measures during COVID-19 pandemic. *Dermatol. Ther.* **2020**, *33*, e14346. [[CrossRef](#)]
17. Veraldi, S.; Angileri, L.; Barbareschi, M. Seborrheic dermatitis and anti-COVID-19 masks. *J. Cosmet. Dermatol.* **2020**, *19*, 2464–2465. [[CrossRef](#)]
18. Aloweni, F.; Bouchoucha, S.L.; Hutchinson, A.; Ang, S.Y.; Toh, H.X.; Suhari, N.A.B.; Sunari, R.N.B.; Lim, S.H. Health care workers’ experience of personal protective equipment use and associated adverse effects during the COVID-19 pandemic response in Singapore. *J. Adv. Nurs.* **2022**, 1–14. [[CrossRef](#)]
19. Sim, H.; How, C. Mental health and psychosocial support during healthcare emergencies—COVID-19 pandemic. *Singap. Med. J.* **2020**, *61*, 357–362. [[CrossRef](#)]
20. Bhate, K.; Williams, H. Epidemiology of acne vulgaris. *Br. J. Dermatol.* **2013**, *168*, 474–485. [[CrossRef](#)]
21. Sagaltici, E.; Tas, B. Mental health and psychological resilience among acne vulgaris patients during the pandemic: A cross-sectional controlled study. *J. Cosmet. Dermatol.* **2021**, *20*, 3739–3746. [[CrossRef](#)]
22. Chahrour, M.; Assi, S.; Bejjani, M.; Nasrallah, A.A.; Salhab, H.; Fares, M.; Khachfe, H.H. A Bibliometric Analysis of COVID-19 Research Activity: A Call for Increased Output. *Cureus* **2020**, *12*, e7357. [[CrossRef](#)] [[PubMed](#)]
23. Sahu, P. Closure of Universities Due to Coronavirus Disease 2019 (COVID-19): Impact on Education and Mental Health of Students and Academic Staff. *Cureus* **2020**, *12*, e7541. [[CrossRef](#)] [[PubMed](#)]
24. Kecojevic, A.; Basch, C.H.; Sullivan, M.; Davi, N.K. The impact of the COVID-19 epidemic on mental health of undergraduate students in New Jersey, cross-sectional study. *PLoS ONE* **2020**, *15*, e0239696. [[CrossRef](#)] [[PubMed](#)]
25. Gutter, M.; Copur, Z. Financial Behaviors and Financial Well-Being of College Students: Evidence from a National Survey. *J. Fam. Econ. Issues* **2011**, *32*, 699–714. [[CrossRef](#)]
26. Tomas-Aragones, L.; Marron, S.E. Body Image and Body Dysmorphic Concerns. *Acta Derm.-Venereol.* **2016**, *96*, 47–50. [[CrossRef](#)]
27. Bowe, W.P. Acne Vulgaris, Probiotics and the Gut-Brain-Skin Axis—Back to the Future? *Gut Pathog.* **2011**, *3*, 1. Available online: <https://gutpathogens.biomedcentral.com/articles/10.1186/1757-4749-3-1> (accessed on 1 March 2011). [[CrossRef](#)]
28. Stokes, J.H.; Pillsbury, D.H. The effect on the skin of emotional and nervous states: Theoretical and practical consideration of a gastrointestinal mechanism. *Arch. Dermatol. Syphilol.* **1930**, *22*, 962–993. [[CrossRef](#)]

29. Kucharska, A.; Szmurło, A.; Sińska, B. Significance of diet in treated and untreated acne vulgaris. *Adv. Dermatol. Allergol.* **2016**, *33*, 81–86. [[CrossRef](#)]
30. Lee, Y.B.; Byun, E.J.; Kim, H.S. Potential Role of the Microbiome in Acne: A Comprehensive Review. *J. Clin. Med.* **2019**, *8*, 987. [[CrossRef](#)]
31. Abiakam, N.; Worsley, P.; Jayabal, H.; Mitchell, K.; Jones, M.; Fletcher, J.; Spratt, F.; Bader, D. Personal protective equipment related skin reactions in healthcare professionals during COVID-19. *Int. Wound J.* **2021**, *18*, 312–322. [[CrossRef](#)]
32. Beri, K. Skin microbiome & host immunity: Applications in regenerative cosmetics & transdermal drug delivery. *Future Sci. OA* **2018**, *4*, FSO302. [[CrossRef](#)] [[PubMed](#)]
33. Strauss, J.S.; Krowchuk, D.P.; Leyden, J.J.; Lucky, A.W.; Shalita, A.R.; Siegfried, E.C.; Thiboutot, D.M.; van Voorhees, A.S.; Beutner, K.A.; Sieck, C.K.; et al. Guidelines of care for acne vulgaris management. *J. Am. Acad. Dermatol.* **2007**, *56*, 651–663. [[CrossRef](#)] [[PubMed](#)]
34. Han, H.S.; Shin, S.H.; Park, J.W.; Li, K.; Kim, B.J.; Yoo, K.H. Changes in skin characteristics after using respiratory protective equipment (medical masks and respirators) in the COVID-19 pandemic among healthcare workers. *Contact Dermat.* **2021**, *85*, 225–232. [[CrossRef](#)] [[PubMed](#)]
35. Beri, K. A future perspective for regenerative medicine: Understanding the concept of vibrational medicine. *Future Sci. OA* **2018**, *4*, FSO274. [[CrossRef](#)] [[PubMed](#)]