

# Maskne: A side effect of wearing face mask and face mask-wearing attitudes and behavior during 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> waves of COVID-19 in rural population of Haryana

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## ABSTRACT

**Introduction:** The term “maskne” originated during the SARS CoV-2 (COVID-19) pandemic; it is a variant of acne associated with continuous wearing of face mask. Maskne is mainly observational, and the most common cause of maskne is contact irritant dermatitis. **Materials and methods:** The average mask use percentage by OPD cases visiting the hospital for a month in each wave of the COVID-19, that is, in the month of June 2020 during the first wave, in the month of April 2021 during the second wave and in the month of December 2021 during the third wave was calculated. We also included 30 patients with a diagnosis of irritant contact dermatitis aka maskne and 30 patients with diagnosis of acne vulgaris, all >18 years of age from April 2020 to December 2021. **Results:** 66% of people wore masks coming to hospital in the month of June 2020 (first wave) which increased to 74% during the second wave in the month of April 2021 and during the third wave only 23% of people wore masks in the month of December 2021. **Conclusion:** Maskne and worsening of acne vulgaris can be due to wearing of dirty face masks for longer duration. Use of moisturizers and regular “mask breaks” are important aspects in management of maskne.

**Keywords:** Acne, face masks, COVID-19, irritant contact dermatitis, maskne, OPD

## Introduction

Despite COVID having ravaged India, toppled our healthcare system, and snatched so many loved ones, a lot of people continue to flout protocols concerning face masks which is one of the main credible protections we have to combat the virus, apart from soap or sanitizer and social distancing. The first case of COVID-19 was detected on 30 January 2020 in Thrissur, Kerala and a nationwide lockdown was imposed on 25 March 2020; during the lockdown cases kept rising and peaked at 90,000 cases per day in mid-September 2020.

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Masks create a warm and humid environment underneath them that traps moisture and sebum, which can aggravate pre-existing acne or cause new breakouts by clogging pores, called as maskne. “Maskne” is a term coined during the COVID-19 pandemic; it is a variant of acne associated with continuous wearing of face mask. Maskne, which can also be called as irritant contact dermatitis, is mainly observational, and exacerbation of acne over the masked area is a distinct feature which may be due to follicular occlusion; it has a strong relationship with mechanical stress.<sup>[1]</sup> Data about the prevalence of maskne is limited, and often a descriptive terminology is used rather than a proper diagnoses. Based on the limited available evidence, mask-related acne and irritant contact dermatitis are the most common facial dermatoses associated with mask wearing.<sup>[2-5]</sup> People suffering

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from maskne do not wear face masks and making the same an excuse for not wearing a face mask could turn vulnerable for the society in this pandemic as it is not over yet.<sup>[1]</sup> Acne vulgaris a skin condition that can worsen due to continuous use of dirty face masks for longer duration.<sup>[6,7]</sup> Humid environment, like in tropical countries, increased sweating, reuse of disposable masks multiple times, friction and long duration of mask wearing are the main etiological risk factors. “The acne people are experiencing due to face masks is small pimples, like rosacea and some people have never had acne like this in their lives,” says Northwestern Medicine Dermatologist Walter J. Liszewski.<sup>[8]</sup> Special precautions for skincare must include use of skin cleansers, moisturizers and, if required, standard treatment of acne with benzoyl peroxide, retinoids, clindamycin phosphate, etc., and use of cotton masks, and giving breaks in mask wearing for longer duration can result in amelioration of this skin condition.<sup>[9]</sup>

## Materials and Methods

This study is an observational study conducted in Civil Hospital Narwana district Jind, Haryana which caters to a population of around 7.5 lakhs of around 70 villages with an average OPD of around 400–450 cases per day. Descriptive method of analyzing data was conducted. We calculated the average mask use percentage by the OPD cases visiting the hospital for a month in each wave of the COVID-19 pandemic, that is, in the month of June 2020 during the first wave, in the month of April 2021 during the second wave, and in the month of December 2021 during the third wave. We also noted age groups of 18–35 years, 36–55 years and 56–75 years of face mask users.

We also included 30 patients with a diagnosis of irritant contact dermatitis aka maskne and 30 patients with diagnosis of acne vulgaris, all >18 years of age from April 2020 to December 2021. We included only those patients who were not undergoing any treatment, to avoid confounders, and also those who wore the mask for a minimum of 4 hours a day. We excluded the patients suffering from other skin disorders. Informed consent was obtained from each participant and institutional ethical clearance was obtained.

## Results

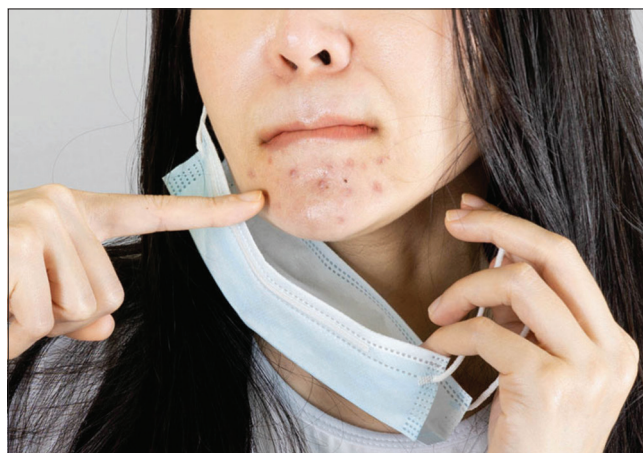
During the first wave of SARS-CoV-2 pandemic, 66% of people, who were coming to the hospital, wore masks in the month of June 2020 which increased to 74% during the second wave in the month of April 2021 due to the deadly mutant delta virus which had lesser incubation period and caused maximum mortality. During the third wave, only 23% of people wore masks in the month of December 2021, the reason being milder symptoms of COVID-19 in the third wave. Low mortality rate and vaccination are the most common reasons for not wearing the mask. 80% of the patients with maskne (24/30 patients) were those who used disposable face masks repeatedly and at least 4 hours a day and 66.66% (20/30) of patients with acne vulgaris experienced their condition worsening due to using the same disposable mask

repeatedly. Compliance towards wearing a mask was seen to be lowest in people falling in the age group of 18–35 years which was 18%, 24% in the age group of 36–55 years and was the highest among those in the age group of 56–75 years which was 58%.

## Discussion

To slow the spread of COVID-19, face masks have become part of our daily routine. They are now required in public places, such as restaurants, trains, buses, grocery stores, shopping complex, etc., as a barrier against the new coronavirus that spreads through respiratory droplets. If you develop breakouts from wearing a mask, you’re not alone. This condition, known as “maskne” (mask acne), which is an umbrella term for several skin conditions that can stem from wearing a face mask, is a common side effect.

80% of the patients (24/30) developed maskne due to repeated use of the same dirty disposable mask. Maskne doesn’t simply cause pimples, though. It may also result in skin issues, including redness, bumpiness, and irritation [Image 1]. It can also trigger conditions such as dermatitis and folliculitis. Most common cause of maskne is irritant contact dermatitis which occurs when you’re allergic or sensitive to the material of your mask. It can result in a red rash, along with irritation and blisters [Image 2]. It is the most common type of mask reaction and often affects the cheeks and the bridge over the nose. People who use a mask for 4–6 hours or more without a break and those with a compromised skin barrier are more at risk. Symptoms range from dry, scaly patches to skin ulceration. Acne happens when your pores become clogged with oil, dead skin cells, and dirt. It can cause pimples, whiteheads, or blackheads. It is more likely if you have a history of acne, but it can affect anyone. It seems to be most common in people using surgical masks and some types of respirators.<sup>[10]</sup> 66.66% of patients (20/30) with acne vulgaris experienced their condition worsening due to repeated use of the same disposable mask and for more than 4 hours per day in a stretch.



**Image 1:** Rashes appearing below the lower lip and above chin after using face mask as “chin protector” for a longer duration regularly (Image source: health.clevelandclinic.org)



**Image 2:** Rashes appearing due to continuous irritation through face mask use (Image source: oryon.co.uk)

It's essential to keep wearing a face mask, even if you have maskne. You should know when to wear a face mask [Flowchart]. Keeping your mouth and nose covered is one of the best ways to protect yourself and those around you from SARS-CoV-2. Finding a suitable mask can help prevent maskne. Use of a cotton cloth face mask is the best preventive measure. Some other ways of treating symptoms if they arise are washing your face regularly, using a gentle cleanser, applying cortisone cream and moisturizer with ceramides, taking a break from makeup, removing your mask for 15 minutes every 4 hours, washing your fabric facemask after every use and choosing the right mask. The right mask can fit snugly but be not too tight, contain two or more layers, be made up of a soft fabric like cotton, and should contain a wire at the top to prevent leakage of air. Synthetic masks made of nylon or rayon should be avoided as they can irritate the skin. In 2020, some scientists looked into the performance of face masks made of several common fabrics, including cotton, silk, chiffon, flannel, various synthetics, and combinations of these. They found that combining layers of different fabrics such as silk or chiffon and cotton improved the filtration rate, offering more protection from the virus. They suggested that combining two layers of silk with one of densely woven cotton, combined without gaps between layers, may be the best option for preventing the transmission of particles.

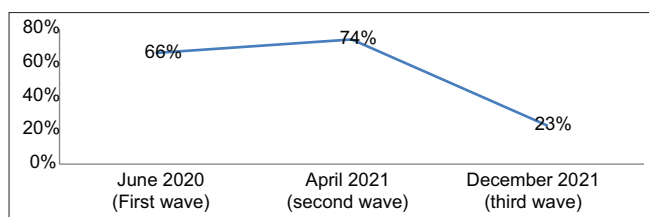
It is essential to consult a dermatologist for maskne, acne and other skin conditions caused by wearing face masks. Medical treatment is required if the symptoms are severe; including fresh fruits containing vitamin C and vegetables in the diet will help boost the immune system and maintain overall health during the COVID-19 pandemic.

A primary route of transmission of COVID-19 is via respiratory particles, and it is known to be transmissible from pre-symptomatic, pauci-symptomatic, and asymptomatic individuals. Reducing disease spread requires two things: limiting contacts of infected individuals via physical distancing and other measures, and reducing the transmission probability per contact. The preponderance of evidence indicates that mask wearing

reduces transmissibility per contact by reducing transmission of infected respiratory particles in both laboratory and clinical contexts. Public mask wearing is most effective at reducing spread of the virus when compliance is high.<sup>[6,11-13]</sup> We calculated the compliance rate of face mask users coming to Civil Hospital Narwana in out-patient department (OPD) in a particular month during the first, second and third waves which hit India, that is, in June 2020, in April 2021 and in December 2021, respectively. During the month of June 2020 (first wave), 66% of OPD patients wore face masks; in April 2021 (second wave), 74% of patients wore face masks due to the fear of the deadly delta variant, which had a shorter incubation period and was the most vulnerable variant till date; in December 2021 (third wave), only 23% of patients complied the face mask protocols, the main reasons being vaccination, less vulnerable COVID-19 variant with milder symptoms, lower mortality rate and being fed up with wearing face masks [Figure 1]. In an article published in the *The New Indian Express* on 21 May 2021, it was stated that “only 44% of Indian population was wearing masks till May 2021”. This data can vary from area to area, but the bitter truth is that masks have become chin protectors even for the educated class in India. In an article published in *Hindustan Times* newspaper, it was reported that “only 14 per cent of the people wear the mask correctly, the ministry of health said citing a study conducted in 25 cities, which was reported by the media earlier and half of the population does not wear mask. The ministry also said that of half the population who wear a mask, 64 per cent of them cover the mouth but not nose, 20 per cent of them wear it on the chin, two per cent have the mask on the neck and only 14 per cent wear it correctly covering the nose, mouth, chin and with a clip on the nose.”

We also calculated face mask compliance across different age groups, i.e., in 18–35 years, in 36–55 years and in 56–75 years. The highest (58%) was in the 36–55 years age group and the lowest (18%) was in the 18–35 years age group. In 56–75 years age group, compliance was 24% [Figure 2].

This study was conducted during the lockdown and other phases of different waves in Civil Hospital Narwana, and as per the results of this study, we expect an increase in the prevalence of maskne and worsening of acne due to mask wearing for more than 4–6 hours per day and advise establishing recommendations or guidelines to support dermatologists and family doctors in its differential diagnosis; management is needed and should be based on big data.<sup>[14]</sup> Further studies on mask-related dermatoses are needed to better understand the pathophysiologic mechanism of face mask usage in maskne, in order to evaluate the best therapeutic approaches and counteract the pro-inflammatory effect of masks. Policymakers need urgent guidance on the use of masks by the general population as a tool in combating SARS-CoV-2, the respiratory virus that causes COVID-19. Masks have been recommended as a potential tool to tackle the COVID-19 pandemic since the initial outbreak in China.<sup>[15]</sup> Although usage during the outbreak varied by time and location,<sup>[16]</sup> globally, countries are grappling



**Figure 1:** Percentage of people who wore face masks during different waves of SARS-CoV-2

with translating the evidence of public mask wearing to their own contexts.

## Conclusion

Irritant contact dermatitis is the most common cause of maskne which results in occlusion of the follicles and can be caused by the repeated use of dirty face masks, and using face masks for longer durations, and exacerbation tends to result from the development of a warm, moist, occlusive environment around the face during mask use. Worsening of acne vulgaris during face mask use is due to use of dirty masks and for longer durations. Maintenance of the skin barrier, use of skin cleansers, moisturizers and regular mask breaks are important aspects of management, in addition to standard medical treatment of the skin condition. Although maskne can be frustrating, it's important to keep wearing face coverings during the COVID-19 pandemic.

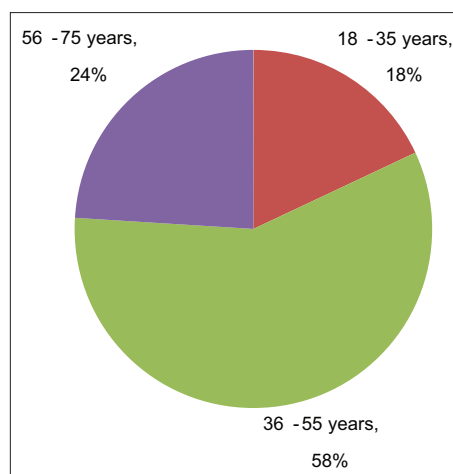
The age group of 36–55 years are the most aware group of people regarding the prevention and spread of COVID-19 through using face mask, and the 18–35 years age group is least aware of the condition or, rather, this group doesn't want to comply to the standard public health measures issued by the government from time to time. If people want to stop crashing the medical facilities at a large scale, then they should understand the role of mask wearing. Making a relevant policy on face mask usage and awareness camps by NGOs, volunteers, and governments should be conducted to create awareness; schools can play a significant role in educating younger people regarding face mask usage and when one should use a face mask.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Figure 2:** Compliance towards mask wearing across different age groups

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## Conflicts of interest

There are no conflicts of interest.

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