

‘MASKNE’ (MASK INDUCED ACNE) IN HEALTH CARE PROFESSIONALS OF TERTIARY CARE HOSPITALS OF LAHORE DURING COVID-19 PANDEMIC

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ABSTRACT:

Objective: To determine the frequency and associated factors of acne as a result of prolonged mask wearing.

Methods: This cross sectional study was carried out on health care professionals working at Jinnah hospital Lahore and Children’s Hospital Lahore. A total of 150 health care professionals including doctors, nurses and paramedics giving history of prolonged mask wearing (more than 4 hours per day) were enrolled in the study. Patients’ details including age, sex and previous history of presence of acne was enquired. All the individuals were examined for presence of comedones, papules and pustules. All the information was recorded on a predesigned proforma.

Results: The mean age of individuals in this study was 30.5 + 3.6 years. There were 102(67.66%) females and 48(32.33%) males. Acne was found in 85(56%) individuals i.e. 71(84%) females and 14(16%) males. Mostly inflammatory (papulopustular) lesions were found in 58(68%) of individuals while non-inflammatory (comedonal) lesions were present in 27(32%) of cases. The most frequently involved area was chin which was involved in 73(86%) cases. Most cases with acne reported usage of KN95 mask i.e. 48(56%).

Conclusion: Prolonged use of masks by health care professionals is associated with an increased frequency of acne. As mask wearing cannot be abandoned being one of the most crucial measures in prevention of a potentially fatal illness, certain guidelines need to be established to prevent or reduce the occurrence of problematic acne.

Keywords: Mask induced acne, personal protective equipment, health care workers

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INTRODUCTION:

Coronaviruses belong to a group of viruses causing respiratory illnesses including common cold, severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS). In 2019, a new coronavirus (SARS-CoV-2) was recognized as the

cause of an epidemic arising in China. This has been declared as a pandemic by the World Health Organization (WHO) since March 2020.¹

The mean incubation period of COVID-19 is 5.2 days.² Symptoms range from nonspecific, including fever, dry cough, and fatigue. Involvement of multiple systems including respiratory (sore throat, cough, shortness of breath and chest pain), gastrointestinal (nausea, vomiting and diarrhoea), musculoskeletal (aches and pains), and neurological (headache) may occur.

It is a highly contagious disease which is transmitted via respiratory route.^{3,4,5} Respiratory droplet transmission occurs directly when a person is in contact with infected person through breathing, talking,

coughing and sneezing leading to a human atomization of virus particles.^{4,5} Mask wearing is advocated to prevent droplet dispersal during sneezing, coughing and talking, so that the environmental contamination by the virus (SARS-CoV-2) can be reduced.^{6,7}

Using masks as a part of personal protective equipment has become obligatory for health care professionals. PPE induced skin injury is common, occurring in 43-97% of healthcare workers.⁸ Masks, goggles, face shields and gloves can apply pressure, create abrasions and retain moisture, therefore causing injury to the nasal bridge, cheeks, forehead and hands as well.^{9,10} Long time mask wearing causes exacerbation not only in pre-existing acne but also increases the incidence of acne mechanica like lesions due to the material used in mask and prolonged contact with straps. Increased warmth and dampness on the skin of face due to expired air and sweating exaggerate this problem.¹¹

'Maskne' is a new term introduced in this COVID-19 pandemic given to the acne and breakouts which are caused by wearing a mask.¹² It is a type of acne mechanica with local exacerbations of acne due to pressure, friction, rubbing, squeezing, or stretching, that is induced by the prolonged usage of masks. High temperature affects sebum excretion rate (SER) adversely. It has been found that sebum excretion is increased by 10% with every rise of 1°C. This high temperature and humidity under the mask cause occlusive effect thereby hampering skin hydration resulting in irritation of ducts of pilosebaceous glands.¹¹ It is usually confined to the areas that are covered by the mask most frequently perioral areas including chin, jaw line and nose. Exacerbation of acne lesions involving forehead has also been demonstrated as the result of usage of headgears.

Healthcare workers are at increased risk of developing acne due to several factors. Masks worn by them are usually more tightly fitted to prevent infection. Also they have to wear them for longer period of time. The Journal of American Academy of Dermatology recently published a research letter which showed that approximately 83 percent of health care workers in China developed problems on facial skin due to wearing masks.⁹

The objective of this study was to determine the frequency and associated factors of acne as a result of prolonged mask wearing in health care professionals. Mask wearing cannot be abandoned due to the increased risk of transmission of infection in health care workers. This necessitates the need of developing guidelines for prevention of mask induced acne.

METHODS:

This cross-sectional study was conducted at Jinnah Hospital, Lahore and Children's Hospital Lahore. A total of 150 healthcare workers including doctors and nursing staff who gave history of wearing masks for more than 4 hrs per day were enrolled. Their demographic data including age, gender and address was obtained. Individuals were enquired about history of previous acne, type of mask used (N95/KN95/surgical) and duration of maskwearing. All individuals were examined for the presence of inflammatory and non-inflammatory acne lesions. All information was recorded in a predesigned structured proforma.

STATISTICAL ANALYSIS:

All the data was analysed by using SPSS version 26.

RESULTS:

This study included 150 individuals, 102 (67.66%) females and 48 (32.33%) males with the mean age 30.5 + 3.6 years (Table 1). Among these 129 (86.22%) were doctors and 21 (13.77%) were nursing staff. Acne was reported in 85 (56%) individuals. Out of these previous history of acne was found in 24 (28%) while 61 (72%) had new onset of acne lesions after starting prolonged mask wearing (Table 1).

Table 1: Demographic Data

Characteristics	Patients n=150
Age (years)	30.5+3.6
Gender	
• Male	48(32.33%)
• Female	102(67.66%)
Occupation	
• Doctors	129(86.22%)
• Nurses	21(13.77%)
Onset of Acne	
• Flare of pre-existing acne	24 (28%)
• New episode of acne	61(72%)

Among the cases of acne the male to female ratio was 1:5. Inflammatory (papulopustular) lesions were found in 58 (68%) in individuals while non-inflammatory (comedonal) lesions were seen in 27 (32%) cases. The areas involved were chin in 73 (86%) cases while in 12 (14%) individuals, nose and lower cheeks involvement was found (Table 2). Acne lesions were present for less than 3 months duration in 69 (81.33%) while 16 (18.66%) cases have acne lesion for more than 3 months.

Majority of the health care workers who had acne were using KN95 mask 48(56%). Twenty five (30 %) of individuals were using surgical mask while only 12(14%) individuals were using N95 mask. The mask wearing duration was less than 6 hours in 19(22%)

cases and 66(78%) cases wore mask for more than 6 hours(Table 3).Thus presence of acne was significantly more in subjects who wore masks for more than 6 hours per day (p<0.05).

Table 2: Patterns of Acne lesions

Types of acne		Gender predominance		Areas involved	
Inflammatory (papulo- pustular)	Non inflammatory (comedonal)	Males	Females	Chin	Nose and lower cheeks
58(68%)	27 (32%)	14(16%)	71(84%)	73(86%)	12(14%)

Table 3: Characteristics of mask used

Type of Mask			Duration of mask wearing	
KN95	N95	Surgical mask	<6 hours	>6hours
48(56%)	12(14%)	25(30%)	19(22%)	66(78%)



DISCUSSION:

COVID 19 is a highly contagious airborne infection. Strict compliance to mask wearing is the only way to prevent its airborne spread. Wearing a mask is therefore the new norm in present circumstances. This however has resulted in many dermatological problems to emerge in health care workers who have to wear masks for

prolonged time periods. 'Maskne' (mask induced acne) is one such adverse skin reaction.¹³

The present study was carried out for assessing the frequency and clinical spectrum of acne induced by usage of mask for longer periods in healthcare workers. In our study the mean age of individuals was 30.5 ± 3.6years with a female predominance (84%). Crisc. Foo

et al also found female predominance in their cases.¹³ This is also in accordance with other studies in which mask induced acne was found more often in females.¹¹ In our study of 150 individuals, 129 (86%) were doctors while 21 (13.77%) were paramedical staff. In the study carried out by Crisc.Foo, 14.3% of the respondents were doctors, 73.0% nurses, and 12.7% other ancillary staff.¹³ Acne was reported in 85 (56%) of cases in our study while it was 59.6% in the study carried by Changxu Han et al.¹¹ Inflammatory lesions (papulopustular) were present in 58 (68%) of individuals while 27 (32%) reported non-inflammatory or comedonal lesions. In a study carried out in Hong Kong, Changxu Han et al noticed comedonal and papular lesions in all the five patients of their study.¹¹ Chin area was involved in 73 (86%) of individuals while 12 (14%) showed nose and lower cheek involvement in our study while Changxu Han noted frequent involvement of cheek and nose. Presence of acne was significantly more in subjects wearing masks for more than 6 hours per day (78%) than in those who wore them for less than six hours ($p < 0.05$). This is also consistent with the findings of Changxu in which 4 out of 5 enrolled cases wore mask for more than 7 hours.¹¹

In our study acne was reported with the use of KN95 mask in 48 (56%) individuals, in 25 (30%) with surgical masks and in 12 (14%) with N95 masks. Although N95 mask is tighter fitting than both KN95 and surgical mask, very few of the healthcare workers reported acne with it. The reason could be that its use is mostly limited to doctors and nurses directly involved in care of confirmed COVID patients whose working shifts were limited to not more than 6-7 hours per day with a break of couple of weeks in between shifts. Also there had been a shortage of supply of N95 due to its increased demand. KN95 on the other hand was more widely used because of its lesser price and free availability. As its fabric is thicker as compared to the routine surgical masks hence a larger number of healthcare workers wearing it suffered from acne.

As wearing of masks cannot be compromised being one of the most crucial measures in prevention of a potentially fatal illness, certain guidelines need to be established to prevent or reduce the occurrence of problematic acne.

1. Consider the type of mask used. Masks with 100 percent cotton are a good option in acne prone skin because they allow skin to breathe a bit. In hot weather when sweating is more, keeping a two layered gauze under the mask for absorbing moisture due to perspiration may be helpful to keep it clean.

2. Good skin care routine practices. Keeping the skin clean by using mild cleanser and fragrance-free light moisturizer which not only moisturizes the skin but also help in reducing the irritation and friction as well.
3. Avoidance of makeup products. Using make up while wearing mask traps the moisture and intensifies the irritation of pilosebaceous ducts and blockade due to moisture underneath the mask.
4. Take a 15-minute mask break every 4 hours. Removal of mask when it's safe to do so and after washing hands every few hours may be helpful.
5. Replacement of masks at regular intervals. The N95 mask should worn for maximum 3 days while surgical mask should be changed after every 4 hours.¹¹

CONCLUSION:

Although wearing of masks for prolonged time periods leads to the eruption of mask induced acne still ditching the mask is not an option especially by health care workers. By following few practical guidelines, one can reduce the incidence of skin problems related to the use of masks.

ETHICAL APPROVAL

The study was approved by the Ethical Review Committee of Allama Iqbal Medical College/Jinnah Hospital, Lahore, Pakistan. Reference No. 66/ERB

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AUTHORS' CONTRIBUTION:

WH, LMM, RM: Concept, manuscript writing, data collection and analysis

MQK, AS: data collection, Statistical analysis

TR: Concept, manuscript writing, data analysis