



## Review Article

# PPE kit causes skin problems and ways to prevent

Shaik Ali Hassan<sup>1,\*</sup>, Sumit Bhateja<sup>1</sup>, Geetika Arora<sup>2</sup>, Francis Prathyusha<sup>3</sup>

<sup>1</sup>Manav Rachna Dental College, Faridabad, Haryana, India

<sup>2</sup>Inderprastha Dental College & Hospital, Ghaziabad, Uttar Pradesh, India

<sup>3</sup>Dr. Francis Maxillofacial and Dental Clinic, India



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## ABSTRACT

In the present world, the only word we hear is covid19 also called novel coronavirus, which has spread all over the globe, originated from Wuhan in china. It started on November 17th, 2019 it was reported and now it becomes a major challenge in the global world. PPE is It is protective to wear to safeguard the health of workers by minimizing the exposure to a biological agent like a virus, bacteria. PPE includes eyewear, face-shield, mask, gloves, coverall/gowns (with or without aprons), headcover, and shoe cover. In this review article there is a discussion about the personal protection equipment which causes skin problems to healthcare workers (doctors, nurses) due to long wear of PPE kit and ways to prevent the skin problems.

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## 1. Introduction

In the present world, the only word we hear is covid19 also called novel coronavirus, which has spread all over the globe, originated from Wuhan in china.<sup>1</sup> It started on November 17th, 2019 it was reported and now it becomes a major challenge in the global world which has become very hard to treat as there is no antidote for the virus to date. Coronavirus can affect many animals. The National Health Commission of the People's Republic of China declared that it was the biggest general emergency.<sup>2,3</sup> It started on November 17th, 2019 it was reported and now it becomes a major challenge in the global world which has become very hard to treat as there is no antidote for the virus to date. Coronaviruses are an enormous group of infections, some causing sickness in individuals and others that flow among creatures, including camels, felines, and bats. Once in a while, creature coronaviruses can develop

and contaminate individuals and afterward spread between individuals, for example, has been seen with MERS and SARS.<sup>4</sup> It is believed to be transmitted for the most part through respiratory beads that get created when individuals hack, wheeze, or breathe out. SARS-CoV-2 additionally gets transmitted by contacting, by direct touch and through tainted surfaces or articles and afterward contacting their mouth, nose, or conceivably their eyes. Medicinal services related to contamination by SARS-CoV-2 infection have been archived among social insurance laborers in numerous nations. The individuals most in danger of COVID-19 disease are the individuals who are in close contact with a suspect/affirmed COVID-19 patient or who care for such patients.<sup>5</sup>

## 2. Symptoms

Patients can have many symptoms. Symptoms are seen in 2-14 days after exposure from a virus.

\* Corresponding author.

E-mail address: [alishaikhassan@gmail.com](mailto:alishaikhassan@gmail.com) (S. A. Hassan).

Individuals with these side effects or mixes of manifestations may have COVID-19:

1. Cough
2. The brevity of breath or trouble relaxing Or possibly two of these side effects:
3. Fever
4. Chills
5. Continued shaking with chills
6. Muscle torment
7. Cerebral pain
8. Sore throat
9. New loss of taste<sup>6</sup>

When to go to a doctor

- Inconvenience relaxing
- Relentless agony or weight in the chest
- New disarray or powerlessness to stimulate
- Pale blue lips or face.<sup>6</sup>

### 2.1. Personal Protective Equipment (PPE)

It is protective to wear to safeguard the health of workers by minimizing the exposure to a biological agent like a virus, bacteria.

#### 2.1.1. Components of PPE

Components of PPE are eyewear, face-shield, mask, gloves, gowns (with or without aprons), headcover, and shoe cover.

2.1.1.1. Face shields and eyewear. Contamination of mucous part of the eyes, nose, and mouth is likely in a situation of beads produced by a hack, wheeze of a contaminated individual, or during airborne creating methods completed in a clinical setting. Unintentionally contacting the eyes/nose/mouth with a debased hand is another likely situation. Subsequently, assurance of the mucous films of the eyes/nose/mouth by utilizing face shields/goggles is a fundamental piece of standard and contact safety measures. The adaptable edge of goggles ought to give great seal the skin of the face, covering the eyes and the encompassing regions and in any event, protecting from solution spills.

2.1.1.2. Masks. viruses that include Coronaviruses target mainly the upper and lower respiratory tracts. Hence protecting the airway from the particulate matter generated by droplets or aerosols prevents human infection. Contamination of mucous membranes of the mouth and nose by infective droplets or through a contaminated hand also allows the virus to enter the host. Hence the droplet precautions/airborne precautions using masks are crucial while dealing with a suspect or confirmed case of COVID-19/performing aerosol-generating procedures.

Masks are of different types. The type of mask to be used is related to the particular risk profile of the category of

personnel and his/her work. There are two types of masks which are recommended for various categories of personnel working in hospital or community settings, depending upon the work environment

1. Triple-layer medical mask
2. N-95 Respirator mask

2.1.1.3. Triple-layer medical mask. It is a disposable mask, fluid-resistant, protect from droplets of infectious material emitted during coughing, sneezing, while talking. This cannot provide the proper protection as it has large pores and it can be used for only up to 4hours.

2.1.1.4. N-95 respiratory mask. An N-95 respirator cover is a respiratory defensive gadget with high filtration productivity to airborne particles. To give the imperative air seal to the wearer, such covers are intended to accomplish a very close facial fit. Such cover ought to have a high liquid obstruction, great breathability (ideally with an expiratory valve), unmistakably recognizable inner and outer faces, duckbill/cup-molded organized plan that doesn't crumple against the mouth. On the off chance that effectively worn, the filtration limit of these covers surpasses those of triple-layer clinical covers. Since these give a lot more tightly air seal than triple-layer clinical veils, they are intended to shield the wearer from breathing in airborne particles.

2.1.1.5. Gloves. At the point when individual contact an article/surface sullied by COVID-19 tainted individual and afterward contacts his own eyes, nose, or mouth, he may get presented to the infection. Although this isn't thought to be a transcendent method of transmission, care ought to be practiced while taking care of articles/surface possibly defiled by suspect/affirmed instances of COVID-19. Nitrile gloves are favored over latex gloves since they oppose synthetic concoctions, including certain disinfectants, for example, chlorine. There is a high pace of hypersensitivities to latex and contact unfavorably susceptible dermatitis among wellbeing laborers. Be that as it may, if nitrile gloves are not accessible, latex gloves can be utilized. Nonpowdered gloves are wanted to powder gloves.

2.1.1.6. Gowns. gowns are intended to shield the middle of human services suppliers from presentation to infection. Although coveralls ordinarily give 360-degree insurance since they are intended to cover the entire body, including back and lower legs and some of the time head and feet too, the structure of clinical/seclusion outfits don't give constant entire body assurance (e.g., potential openings in the back, inclusion to the mid-calf as it were). By utilizing suitable defensive dress, it is conceivable to make a hindrance to take out or lessen contact and bead presentation, both known to transmit COVID-19, in this manner securing medicinal services laborers working in nearness (inside 1 meter) of suspect/affirmed COVID-19 cases or their discharges.

Gowns are considered similarly worthy as there is an absence of near proof to show whether one is more viable than the other in lessening transmission to health care staff. gowns are significantly simpler to put on and for evacuation. A cover can likewise be worn over the gown. for the whole time, the healthcare person is in the treatment territory. Gowns have rigid gauges that reach out from forestalling introduction to naturally sullied strong particles to shielding from spillage risks.

2.1.1.7. Shoe cover. Shoe covers are thought to be comprised of impermeable texture to be utilized overshoes to encourage individual protection.

2.1.1.8. Head covers. Covers, for the most part, spread the head. Those utilizing outfits should utilize a head spread that covers the head what's more, neck while giving clinical consideration to patients. Hair and hair expansions should fit inside the head spread.<sup>7</sup>

### 3. How does PPE affect the skin

Almost the personal protection kit is made up of polythene. Pretty much every kind of PPE face shields, goggles, face shields, gloves can cause skin problems. Indeed, even outfits can cause overheating and abundant sweating, and when joined with contact, that can prompt intertriginous dermatitis. Hand disturbance is particularly basic when gloves are utilized with high recurrence, as they are currently. Not exclusively do the hands become aggravated from visit purifying and handwashing, yet gloves trap dampness and heat, and the detailed impacts incorporate contact dermatitis, maceration, and erosion of the epidermis.<sup>8,9</sup>

On the off chance that you have any sort of uncomfortable sore all over — another imperfection, an itchy rash, a scraped area, or an injury — you are bound to inadvertently reach up and touch your face or adjust your cover. Each time you do that, you break the PPE protocol and hazard contaminating your face.<sup>10,11</sup>

In contrast to a dispensable careful cover, the N95 and N99 covers are intended to fit intently against the skin, shaping a seal around the mouth and nose. In healthcare settings, these covers (otherwise called "respirators," which come in different sizes and models) are fit-tested on each staff part to ensure they are airtight before they are viewed as sheltered and protective. This is important with regards to options for assuaging the weight of the N95 cover on the wearer's face. Tighter isn't better. At the point when worn for a long time, nurture often has blushed indentations on their faces relating to the outline of the cover.<sup>12,13</sup>

Moisture develops underneath PPE, including covers, and combined with pressure, the result is progressively significant weight-related skin harm. The dramatic weight lines, wounds, and wounds from PPE and the looks on their

countenances can be seen.

#### 3.1. Prevention of skin problems

There are 3 levels of prevention to reduce skin problems.

##### 3.1.1. Level 1

Creams containing acrylate polymers or dimethicone are acceptable options for this in light of longer durability. Apply moisturizer to zones of the face that have the most contact with PPE, for example, ears, temple, and nose. Whatever product you use, it must be applied 1 to 2 hours before wearing PPE with the goal that it is completely assimilated and completely dry before the PPE is put on. The best time is right after showering or washing your face, at home before you go to work. On the off chance that you use cosmetics, maintain a strategic distance from the oil-based foundation. Petrolatum products, (for example, Vaseline) are in like manner not suggested.<sup>14,15</sup>

5 minutes before applying goggles or veil, apply a liquor-free skin obstruction wipe (otherwise called fluid skin protectants or sealants) to your face, covering the territories most liable to be affected by PPE (the "T-zone"), staying away from the eyes and mouth. Permit this to dry for 1 minute with the goal that it is not, at this point tacky to the touch before wearing PPE.

##### 3.1.2. Level 2

Utilize a moisturizer, permit it to dry, and apply a skin hindrance wipe before wearing PPE. The type of cover being worn should dictate a choice about the utilization of any additional dressing between the skin and veil. Note that the skin boundary wipe will lessen shearing, but it won't alleviate pressure. Underneath careful covers, a dressing of some type can be utilized to pad the skin from the weight of the veil. Options incorporate a thin cement froth dressing, a silicone adherent sheet (perforated or nonperforated), and a thin hydrocolloid sheet.<sup>16,17</sup>

##### 3.1.3. Level 3

In this, it is mainly for the healthcare worker who has open wounds. If open wounds are there is a need for closed dressing. Once the skin is having wound it doesn't heal as the use of PPE at that place disturbs the wound healing, so proper rest to healthcare workers will help to heal.<sup>18–20</sup>

### 4. Conclusion

As the PPE kit is very important for the healthcare workers which includes Doctors, Nurses, attendars and even the receptionist as they are exposed to the virus. The PPE helps to protect and it also dermatitis between digits and also cause open wounds due to daily wear for longer periods. Sweating also affects the people as the PPE kit cause tight airseal protection. Proper rest to the surfaces and rest to

healthcare workers will help to reduce skin problems and help to deal the problems of coronavirus by the Doctors.

## 5. Source of Funding

None.

## 6. Conflict of Interest

None.

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## Author biography

**Shaik Ali Hassan** Dental Surgeon

**Sumit Bhateja** HOD

**Geetika Arora** Reader

**Francis Prathyusha** Private Practitioner

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