# PREVENTING MEASURE OF NOVEL APPROACH OF COVID 19 EYE PROTECTION AND SOCIAL DISTANCING: A SYSTEMATIC REVIEW

**[1]Pallavi Ghildiyal, [2]Dr. Gaurav Dubey, [3]Dr. Anil Kumar, [4]Ajay Kumar, [5]Roshan Kumar, [6]Shamit Pal, [7]Purabi Saha**

**[1]Assistant Professor, Dept. of Pharmacology, Uttaranchal Institute of Pharmaceutical Sciences, Uttaranchal University, Dehradun, Uttarakhand, INDIA**

**[2] Department of Optometry, UPUMS, Saifai, Etawah, INDIA.**

**[3]Ex- Research Scholar, Department of botany, DDU, Gorakhpur University, Gorakhpur, INDIA.**

**[4]Research Scholar, Department of Zoology, DSB Campus Kumaun University, Nainital, INDIA**

**[5]Research Scholar, Department of Pharmacology, Dev Bhoomi Institute of Pharmacy and Research, Dehradun, Uttarakhand, INDIA.**

**[6]Department of Optometry, Teerthanker Mahaveer University, Moradabad, INDIA.**

**[7]Dept. of Pharmacy, Uttaranchal Institute of Pharmaceutical Sciences, Uttaranchal University, Dehradun-248007, Uttarakhand, INDIA.**

**Corresponding Author**: Purabi Saha**

**purabisaha2000@gmail.com**

5821

## Abstract

Public health and societal efforts can avoid the 2019 Corona pandemic (COVID-19). Ethiopia has adopted health and social measures. COVID-19 social distance and health prevention research. SARS-CoV-2 produces COVID-19. The global vaccine effort must understand how the virus spreads to end the pandemic. SARS-CoV-2 spreads by respiratory droplets and aerosols, according to new studies. Temperature, humidity, precipitation, air currents, pH, and radiation affect transmission. Hand washing and masks are also helpful public health measures. Non-pharmaceutical remedies need more research. Body-invading eye bacteria exist. There's no indication that COVID-19 exposure causes the disorder's ocular symptoms. Tears and conjunctiva contained SARS-CoV-2. Ocular symptoms may be the first or only sign of infection. Hand cleanliness, social isolation, and hospital SOPs can limit illness spread. Eye lubricants and spectacles can prevent eye infections.

**Keywords:** **Eye Disease, Covid-19, SARS-CoV-2, Hygiene, Social - distancing**

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## 1.1. Introduction

359 000 deaths and 5.85 million SARS-CoV-2 illnesses worldwide as of May 28, 2020. Lockdowns in many countries harm health, well-being, and livelihoods. Infectivity range and optimal human distance are unknown. Community pandemic mitigation may be needed to prevent COVID-19. To guarantee safe care and interaction, SARS-CoV-2 patients must be kept apart. Close contact or projected exposure is useful for risk categorization, contact tracking, and advisory messaging, although country-specific criteria differ[1]. Health experts give different advice on physical and social distance. Face masks have been used in hospitals for decades to prevent infection, but now professionals and the public debate whether everyone should wear them. Research should lead face coverings and social or physical distance. None of the SARS or MERS-related betacoronaviruses have been properly researched (MERS). IPC practises include clean hands, minimal facial contact, adequate ventilation, and testing for infectious pathogens. All these steps must be taken simultaneously to stop SARS-CoV-2.

## 1.2. COVID-19 Eyelid, Ocular Surface, and Anterior Segment

COVID-19 tears had SARS-CoV-2 RNA. Tears and conjunctival secretions propagate SARS-CoV-2. RT-PCR from conjunctival swab. Moderate-to-severe COVID-19 can rip. 69% of eye-patients had pneumonia. Diplopia, conjunctival irritation, and cotton wool patches were most common (27.8 percent). Conjunctivitis affects more men than women. Chronic COVID-19 affected 15 people. Chronic COVID-19 is long. COVID-19 patients had 11.6% conjunctivitis. Red-eyed. Conjunctivitis reduces airflow. Four patients made eye-contact. After hand-eye contact, 535 COVID-19 patients exhibited conjunctivitis. [2,3] 13-day-old developed bilateral acute follicular conjunctivitis, intermediate-phase symptoms. 5 days of growing Ct from 1 Conjunctival swab is germ-free. Lubricants and drops cured conjunctivitis in two weeks. Virus shedding may continue after a negative nasopharyngeal swab[4].



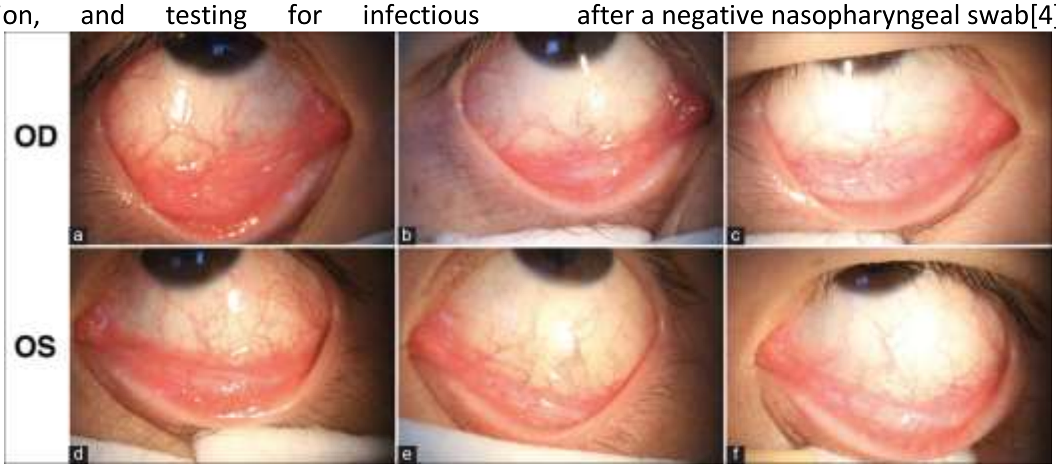


**FIG: 1 COVID-19 conjunctivitis sequelae After 13 days with moderate COVID-19, both eyes developed follicular conjunctivitis. Slit-lamp examination revealed acute viral conjunctivitis. A and d) got conjunctival injections and inferior palpebral follicles on day 13. On days 17 and 19, the patient was treated with Ribavirin eye-drops. (C, F)**

## 1.3. Modes of transmission

Respiratory droplets disseminate SARS-CoV-1. Coughing and sneezing propagate the SARS-CoV-2 virus. Various activities can release aerosols and droplets. Large droplets disperse better than microscopic ones, although lasting longer[5]. SARS-CoV-2 infectious titer drops by less than 20% after three hours in the air, suggesting aerosol transmission. This study used a machine to make SARS-CoV-2 aerosols (105.25 50% TCID50), however it's uncertain if normal COVID-19 patients release this many live virions[6]. 6 found COVID-19 in China. 24 people on the same bus and 7 others close were afflicted by the index case. Infected patients rode a different hospital bus. The density of symptomatic cases around the index case wasn't statistically significant. Poor bus ventilation and air recirculation may have increased SARS-CoV-2 attacks[6,7]. Respiratory droplets were shown to be the main transmission mechanism. 86% of practise attendees were sick. Even without seating charts, the entire choir may have been exposed if the index patient was in a 4-by-13-foot space. SARS-CoV-2 was found in 63.2% of 11 residential isolation rooms and 58% of Nebraska Biocontainment Unit and National Quarantine Unit halls. Less than two metres from patients' rooms, air samples had higher RNA (4.07%). All mattress samples had viral RNA. Airflow models projected airflow under beds[8,9]

**1.4 . PPE kits**

Infection-prone people may benefit from face masks. PPE is a mask worn near an infected person (PPE). Larger particles simplify source control. Simulators, not humans, should test PPE (PPE). Mask filtration depends on material and design[10]. When evaluating effectiveness, consider filtering capacity and fit. NIOSH has more standards than N95. "95" rated respirator blocks 0.3 m or smaller particles. NIOSH uses 85 l/min of air to simulate heavy labour to study air pollution. These simulators mimic the job[11]. Masks that don't meet this standard must be tested at much higher flow rates (PPE). In these experiments, respirator testing equipment is waxed or bonded to a plate. Cloth and medical masks can fit in the plate's hole[12].

WHO's "Advice on Mask Use" utilises NIOSH's 78 nm particle filtering method. Nonwoven surgical masks penetrated 50-60%, but cotton masks penetrated 90%. 32 L/min flow employed similar approaches (which is still 3 to 6 times higher than human ventilation during light work). Latex gloves are 10-times better than surgical masks (Q). 6.8 for a cotton T-Q. Certain medical face masks stop bacteria and viruses better than cotton, poly-ester, and polypropylene[13-15]. Material and treatment determine this. When breathing rates are lower than resting, fabric masks filter 12 to 99.9% of aerosols.

Coronavirus 2 mimics SARS symptoms, spreading COVID-19 widely (SARS-CoV-2). Hand washing and wearing a mask in public are popular infection prevention techniques before vaccinations or other therapies are available. All healthcare workers who treat SARS-CoV-2 patients must wear eye protection (PPE)[16]. Healthcare workers should use goggles, face shields, and a mask or respirator to protect themselves from virus-containing respiratory droplets. Face masks, physical isolation, and hand washing are enough. Insufficient data exists to generalise concerning eyeglasses and/or safety goggles/face shields and COVID-19. Epidemiologically, this is crucial. The study found that wearing glasses daily reduces COVID-19 risk[17]. Data bias and confounding factors limit many studies. The researchers' comparison group used data from a decades-old study in another part of China. The study's findings may be deceptive due to an unmeasured COVID-19 risk factor[18]. Eyeglasses and public eye protection don't reduce COVID-19 risk. Handwashing and physical isolation are two effective COVID-19 prevention strategies. COVID-19 requires public eye protection, but it offers no benefits. Glasses may reduce virus inoculum less than goggles or a face shield. [19,20]. COVID-19 transmission patterns and health care interventions may be needed (see Table 1). Respiratory hygiene concerns require a one-metre gap between patients and community health workers (3.3 feet). Community education and hand hygiene stations can be maintained. Community health workers should wear a mask whenever possible (see Table 1).

**Table 1: Mask Use in Health Care settings Depending on Transmission Scenario, Target Population, Setting, Activity and Type**

| Transmission Scenario | Target population (who) | Setting (where) | Activity (what) | Mask type (which one) * |
|---|---|---|---|---|
| SARS-CoV-2 transmission has been documented or is expected in a community or cluster. | Nurses and other health care workers | A healthcare facility | It is permissible for patients with and without the COVID-19 virus to participate in any type of patient care or public area activity (e.g., cafeteria, staff rooms) | A medical face mask (or respirator aerosol generating procedure perfor med) |
| | Patients, visitors, and service providers are all included under this category. | | No matter what you're doing or where you are, | Masks for medical or clothing use |
| | Inpatients | With a single or a double bed | When at least one metre of physical distance cannot be maintained. | |
| | Health workers and caregivers | making a trip to your house (for example, for antenatal or postnatal care, or for a chronic condition) | Direct contact with a patient or a distance of at least one metre cannot be maintained. | Medical mask |
| | | Community | Essential routine services and community outreach programmes are included in this category. | |
| It has been reported or suspected that SARS-CoV-2 patients are transmitting the virus on a periodic basis. | Health workers and caregivers | facility of health care (including primary, secondary, tertiary care levels, outpatient care, and long-term care facilities) | Regardless of whether a patient has COVID-19 or not, in the patient care area | Medical mask |
| | Other staff, patients, visitors, service suppliers and all others | | No routine activities in patientareas | A medical mask is unnecessary. You should use a medical mask when you're within one metre of a patient or if you're in close proximity. |



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|---|---|---|---|---|
| | Health workers and caregivers | a visit to your place of residence (for example, for antenatal or postnatal care, or for a chronic condition) | When there is no way to keep a distance of at least one metre between you and the other person. | Medical mask |
| | | Community | Community outreach programs (e.g., bed net distribution) | |
| No documented SARS-CoV-2 transmission | Health workers and caregivers | Health facility (including primary, secondary, tertiary care levels, outpatient care, and long-term care facilities) | Providing any patient care | In accordance with conventional and transmission-based measures, the use of medical masks |
| | | Community | Community outreach programs | |
| Any transmission scenario | Health workers | Facilities for the provision of health care (including outpatient and long-term-care settings) where aerosol-generating procedures (AGP) are used | the provision of treatment for COVID-19 patients in a setting where AGPs have already been put in place, or the performance of an AGP on a suspected or confirmed COVID-19 patient | Respirator (N95 or N99 or FFP2 or FFP3) |



### 1.5. Eye lids, ocular surface manifestation of Covid 19

**1. Follicular conjunctivitis**

Conjunctivitis is a COVID-19 symptom. In one study, 86% of mild COVID-19 infections led to conjunctivitis. Symptomatic people all had red eyes. Conjunctival congestion causes respiratory difficulties, 4 cases, but not a risk factor. One study of 535 COVID-19 patients linked conjunctival congestion to hand-eye contact. 13 days into a patient's illness, both eyes had acute flaccid conjunctivitis. As seen in [Fig. 1], conjunctival swabs were positive for five days but Ct levels quickly rose. Unknown cause of delayed onset follicular conjunctivitis in an asthmatic diabetic man. Conjunctival sample had no bacterial or fungal infection. Two weeks of using lubricants and preservative-free moxifloxacin eye drops cured conjunctivitis. SAR-CoV may persist in conjunctiva even if nasal tests are negative.

**2. Viral kerato conjunctivitis**

Mild keratoconjunctivitis may indicate a respiratory infection. Valacyclovir treated herpetic and epidemic keratoconjunctivitis. SARS-CoV-2 was tested in Canadians with SARS-like symptoms. Nasopharynx, conjunctiva impacted[21]. COVID-19 needs conjunctivitis. 10 days following COVID-19 symptoms, a Chinese patient's left eye developed conjunctivitis. Viscous fluids accompanied both pain episodes. Conjunctiva swabs showed no

HSV or adenovirus. Second-day levofloxacin and sodium hyaluronate were negative. Both sides stained one week after healing. This eye swab was SARS-CoV-2 and HSV-free. One eye's interleukin-6 was 10 times higher. Complete immune-mediated remission. SAR-CoV-2 causes conjunctivitis. Week left eye. Infection likely increased cytokine production. Glucocorticoids inhibit immune-mediated kerato-conjunctivitis.

3. **Hemorrhagic and pseudomembranous conjunctivitis**

On day 19, following the development of systemic symptoms, the French COVID-19 patient presented with hemorrhagic and pseudomembranous conjunctivitis. Antibiotic drops containing azithromycin and dexamethasone were given on a regular basis to dissolve the pseudo-membrane and treat the infection[22].

4. **Conjunctivitis in children**

A illness related to Kawasaki disease in children has increased in some areas of Italy, linked to COVID-19. In children, it is called multiple system inflammation (MIS-C). This self-limiting vasculitis causes iridocyclitis, papill oedema, sub-conjunctival bleeding, and conjunctival injection. Ocular problems including conjunctivitis are the most upsetting for MIS-C patients. Due to a delayed response to COVID-19, MIS-C had greater levels of SARS-CoV-2 serology on nasal swabs. Treatment aims to reduce systemic inflammation. An IVIG injection, aspirin, and corticosteroids were used in the described cases[23].

5. **Episcleritis**

Conjunctival and episcleral congestion, phenylephrine-induced blanching. COVID-19 was the symptom. Virus delayed symptoms by three days. A second episcleritis patient was found 7 days following the first COVID-19 infection. Self-limiting episcleritis has unknown causes. Possible relationship between SARS-CoV-2, Ebola, HIV, and hepatitis C.

### 1.6. Ocular intraction with pandemic disease

Covid-19 has multiple symptoms. Nine of 1,099 COVID-19 patients from 552 Chinese institutes had conjunctival congestion (redness). COVID-19 patients had eye problems. Seven people experienced chemo, epiphora, and hyperaemia (three patients). Epiphora was one patient's first COVID-19 symptom[24]. Two of 12 eye patients with SARS-CoV-2-positive conjunctival swabs (RT-PCT). Eye patients had greater white blood cell, neutrophil, and C-reactive protein levels. Inflammatory symptoms are connected. COVID-19 caused five cases of conjunctivitis. RT-PCR found COVID-19 in all five nasopharyngeal samples. Five conjunctivitis patients had no fever or cough. One in COVID-19 patients had viral conjunctivitis[25]. Despite having no fever or respiratory symptoms, SARS-CoV-2 was found in the patient's tears and conjunctival secretions. One patient got Chemosis after a conjunctival injection (5.8 percent). Multiple times, COVID-19 has caused ocular problems. Redness, conjunctival follicles, and keratitis are edoema symptoms. Two weeks after symptoms began, tarsal haemorrhages and mucous filaments were seen. Another patient had conjunctivitis, edoema, pseudomembranes, and swollen ear and submaxillary lymph nodes.

### 1.7. COVID-19 Retinal Vein Occlusion

The severe acute respiratory syndrome coronavirus 2, often known as SARS-CoV-2, is the causative agent of COVID-19. This virus has had remarkable repercussions for public health and is continuing to wreak havoc on medical facilities all over the world. As of the 8th of August in 2021, there have been about 4 million fatalities and over 200 million documented instances of the disease[26]. During the early stages of the disease's clinical course, some of the moderate symptoms that manifest themselves are fever, a dry cough, malaise, dyspnea, and a loss of both smell and taste. The progression of the disease can lead to acute respiratory distress syndrome (ARDS), septic shock, and failure of several organs, all of which can ultimately end in cardiac arrest and a poor prognosis for the patient's life. It has been discovered that COVID-19 is connected to an abnormal coagulation process as well as a condition that is prothrombotic. Patients diagnosed with COVID-19 have been shown to have an increased prevalence of hypercoagulability of the blood, a higher D-Dimer level, longer prothrombin and aprotinin times, and an increase in fibrin degradation products on multiple occasions. As a direct consequence of this, individuals infected with COVID-19 who are either hospitalised or living in the community have a considerable risk of getting a venous thromboembolism (VTE). A systemic thromboembolic disorder can have a severe impact on a variety of organs, including the eye, which is just one of those organs. One of the ocular symptoms of SARS-CoV-2 that has been identified is a condition known as central retinal vein occlusion (CRVO) [27,28]. In COVID-19, RVO can be caused by a modification of the retinal vasculature that can be caused by thromboembolisms, a condition known as prohaemostatics, hypoxia, or endothelial damage. We present a history of COVID-19 and CRVO, drawing together the limited body of previous research that has been done on the subject and making recommendations for its ongoing evolution.

The kind of retinal vascular disease known as diabetic retinopathy occurs more frequently than retinal vein occlusion (RVO), which comes in a close second. In the industrialised world, it has been reported that the prevalence of retinal vein occlusions is 5.20 cases per 1000 people, but the prevalence of central retinal vein occlusions was 0.8 instances per 1000 people. CRVO can be further broken down into the subcategories of non-ischemic (perfused) and ischemic (non-perfused). Visual acuity is maintained, and only very modest changes take place, in cases with CRVO that do not involve ischemia; however, the prognosis for ischemic CRVO is not as favourable[29]. Traditional risk factors for coronary artery disease-related vascular obstruction (CRVO) include advanced age (90% of patients older than age 50), hypertension, glaucoma, diabetes mellitus, and hyperlipidemia. As a result, CRVO is generally associated with populations that are getting older. A hypercoagulable state was found to have a substantial relationship with CRVO in younger people, although diabetes mellitus and hypertension were found to have little bearing on the issue. It has been determined that people infected with SARS-CoV-2 may exhibit a number of coagulation abnormalities that point to a hypercoagulable state. This condition has been given the name COVID-19 related coagulopathy. Therefore, it is possible that CRVO is caused by the hypercoagulability that is induced by covid-19. Only one-third of older people diagnosed with CRVO experience improvement even in the absence of treatment, and non-ischemic CRVO can occasionally progress into ischemic CRVO. Therefore, the only way to improve one's prognosis is through the timely diagnosis and treatment of one's condition[30]. Tests of visual acuity, rapid afferent pupillary defect, fundoscopy, optical coherence tomography (OCT), and fluorescein angiography should be performed as part of the diagnostic workup for CRVO. Blocking intraocular VEGF with the intravitreal injection of anti-VEGF medications such aflibercept, bevacizumab, or ranibizumab is now the treatment method that is utilised the most frequently. In addition, steroids administered either intraocularly or systemically are a viable treatment option for macular edoema. The patient is constantly monitored until there is a discernible improvement in vision and the fluid activity completely stops. Only then can the monitoring be reduced. The pathophysiological processes that result in CRVO because of COVID-19 are the primary topic of this review[31]. In addition to this, we conducted a comprehensive study of previously published case reports to investigate the characteristics and clinical outcomes of individuals diagnosed



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with CRVO due to COVID-19.

### 1.8. Bilateral Middle Maculopathy And Macular Neuroretinopathy COVID-19

SARS-CoV-2 causes conjunctivitis to visual neuropathy. PAMM and AMN are connected to SARS COV-2. Infection alters blood vessels, inflammation, and neurons. Covishield (recombinant, replication-deficient chimpanzee adenovirus expressing SARS-CoV-2 Spike [S] glycoprotein) causes discomfort, fatigue, headache, joint pain, flu-like symptoms, and decreased appetite[32]. Two immunologically-mediated cases of uveitis were observed, but no vasculitis-related side effects. Fig: 2 There are no vaccine-related eye side effects. Our client demonstrated acute symptomatic photopsia and paracentral scotomas with mild vision loss. Our patient had outer plexiform hyperreflectivity, as documented.

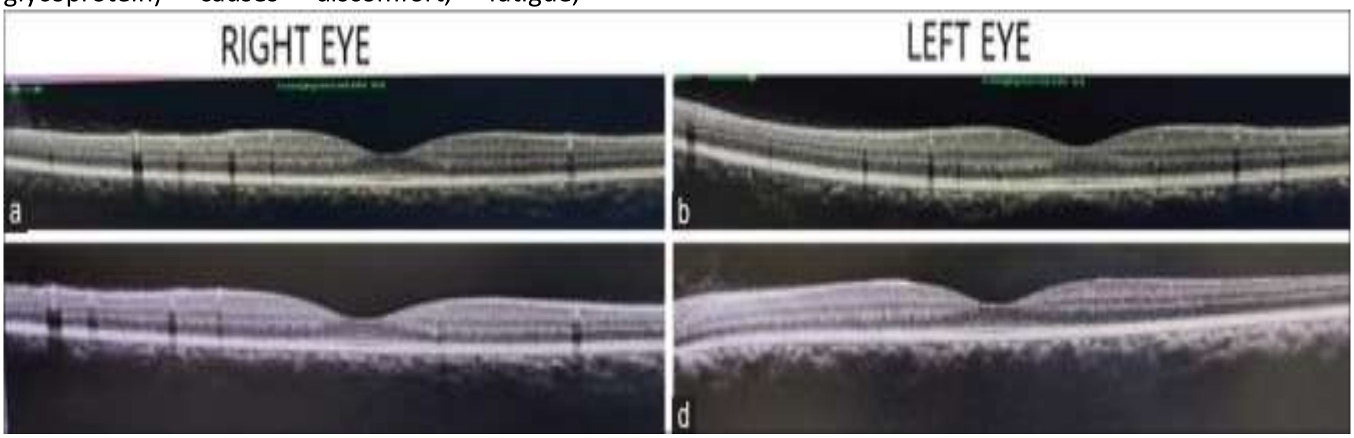


**Fig: 2 Shadowing in the underlying retina due to hyperreflective lesions in the nerve fibre and ganglion cell layers; normal foveal contour. There are several small hyperreflective patches in the ganglion cell layer and faint outer plexiform layer modifications with localised loss of ELM and an unbroken IS/OS link. Right and left eye OCTs were performed 3 weeks after initial observation. Shrinkage of hyperreflective lesions coincides with a reduction in thickness of the outer nuclear layer.**

On OCT, we see hyper reflective lesions in the inner and outer retina, but not in the ellipsoid zone, suggesting that our lesions are more discrete than those seen in PAMM and AMN. Infections, immunologic disorders, and hypercoagulable diseases were ruled out despite the patient's acute eye difficulties following vaccination. His ocular symptoms likely stemmed from his vaccination against SARS-CoV-2, since both his MRI and VEP came back normal. For our patients, H1N1 vaccinations and viral infections are clinically indistinguishable, as are PAMM and AMN. An disease of the capillary plexus is a possible diagnosis for PAMM and AMN. Vasculitis of the tiny blood vessels, caused by vaccination[33]. PAMM and AMN in our case were most likely brought on by vasculitic alterations. Ophthalmic symptoms are experienced by 2-25% of those infected with COVID-19. These diseases are not associated with the SARS-CoV-2 virus. Larger population-based studies using standardised methods of examination, investigations, and data collection are necessary to determine whether they are the result of a preexisting systemic condition, whether the virus has aggravated the underlying condition, whether the virus directly damages nerves, vessels, and other structures, or whether the body's own immune system is responsible for the pathology. It is unclear whether or not the eye virus replicates its RNA or is infectious. The virus can replicate in the secretions of the eyes and disseminate. Patients with COVID-19 who require corticosteroids also need antifungal therapy guidelines supported by data. Patients with COVID-19 should undergo an evaluation for risk factors for ocular vascular occlusions, and then anticoagulation prophylaxis with ophthalmic consequences should be administered. SARS-CoV-2 has already infected a large percentage of the population, either directly through disease or indirectly through contact with a person who has latent COVID-19. There is a pandemic of mutated strains[34]. An increase in the frequency and severity of ocular problems is to be anticipated. To help ophthalmologists remember the importance of asking specific history about COVID-19 infection, contact with infected person, or related symptoms, we have provided a broad overview of the various features published to date from around the world and the stage of the disease when they can be expected. COVID-19 can lead to vision problems. When found on an elderly person, a histiocytic lesion should make doctors suspicious. By being aware of these signs, early diagnosis of the condition is possible, which in turn reduces the likelihood of the sickness spreading. High-risk patients should have a chest x-ray and a CT scan of the paranasal sinuses to rule out sinusitis in addition to a nasopharyngeal swab for RT-PCR. COVID-19 cases should be reported by ophthalmologists[35-37].

**1.9. Neuro- Opthalmic Manifestations**

A wide variety of neuro-ophthalmological symptoms have been linked to COVID-19. These signs and symptoms could originate from a number of different pathophysiological causes, such as hypoxia, severe hypertension, toxic metabolic processes, ischemic and hemorrhagic strokes, and para-infectious and post-infectious inflammatory responses[38].

**Optic neuritis**

Patients with confirmed cases of COVID-19 infection have been reported to have had optic neuritis. Recovery-stage optic neuritis was observed in a single patient in a study of neurological problems associated with COVID-19 admitted to a single hospital in Spain. Case reports of MOG antibody positivity in patients with suspected or confirmed COVID-19 infection have also been documented. One patient required intravenous corticosteroids to treat bilateral optic nerve problems, which included peripheral retinal haemorrhages. An autoimmune reaction and the subsequent creation of MOG antibodies likely resulted from the COVID-19 infection. It's not known if the patient already had a genetic susceptibility for MOG-associated sickness or whether the virus was the initiating factor. In addition to the previously mentioned case of optic neuritis, another instance of optic neuritis with concomitant neurological abnormalities, suggestive of acute disseminated encephalomyelitis (ADEM), has been observed.

**Cranial nerve palsies**

Patients with a classic case of COVID-19 infection have been reported to experience both diplopia and ptosis soon after their diagnosis. Following the disappearance of classic COVID-19 symptoms, several patients have been observed to have ocular motor impairments. Deficits in ocular motility, together with paresthesias and hyporeflexia, have been linked to the Miller-Fisher form of Guillain-Barre syndrome. Inflammation of the cranial nerves has been seen on MRI, which is consistent with this diagnosis.

In another case series, there was an active instance of COVID-19 infection, which caused fever in three different people for numerous days. They did not notice any abnormalities with their senses, but rather a general sense of tiredness. Because of their reduced response to repetitive nerve stimulation and the presence of positive acetylcholine receptor antibodies, the electromyographic (EMG) results of these individuals were compatible with a diagnosis of myasthenia gravis[39]. This condition affects the ability of muscles to contract and relax. This autoimmunity may have been dormant for a long time, and the COVID-19 infection may have only recently brought it to light. Participants in this trial who were diagnosed with Myasthenia Gravis and subsequently given treatment consisting of a combination of immunosuppressant medications made complete recoveries. During the height of the epidemic, a case of isolated abducens nerve palsy was documented. There was no known underlying reason for the condition, and imaging revealed no identifiable lesion.

There is a connection between cerebral venous sinus thromboses and the hypercoagulable and proinflammatory condition that is caused by COVID-19 infection. Symptoms of cerebral venous sinus thromboses may include confusion and an increase in intracranial pressure. An increase in the pressure inside the skull can be the root cause of papilledema as well as a mislocalized palsy of the sixth nerve. It has been discovered that children who are infected with COVID-19 are more likely to suffer from a multisystem inflammatory disease, one of the symptoms of which is pseudotumor cerebri syndrome. Chemoesis has also been observed in patients who were suffering from acute infections and had a large amount of ocular discharge.

### 1.10. Eye movement abnormalities and nystagmus

Infection with COVID-19 has been linked to oscillopsia, ataxia, and myoclonus in multiple case reports. These symptoms appear most frequently in the context of encephalopathy and after severe involvement of the body's other systems. In these patients, corresponding MRI cerebellar lesions and normal cerebrospinal fluid thickness were found, which points to a post-infectious immune-mediated rhomboencephalitis being the most likely diagnosis. In one instance, the MRI did not show any structural damage; however, the patient's symptoms and the absence of any pathology in the cerebrospinal fluid (CSF) were deemed to be symptomatic of this illness. This was despite the fact that the MRI did not show any structural damage. One patient was reported to have developed opsoclonus myoclonus ataxia syndrome five days after the typical fevers and myalgias associated with COVID-19 had gone[36-38]. However, a chest CT showed alterations that were consistent with COVID-19 infection despite the fact that the MRI of the brain showed no abnormalities. It was determined that intravenous immunoglobulin and methylprednisolone were the most effective treatments for the inflammatory cerebellar disease that the patient was experiencing. The authors (SLG personal communication) reported that a patient who had transitory white matter anomalies in the bilateral superior cerebellar peduncles also had aberrant ocular bobbing. This patient's condition was described as "aberrant ocular bobbing" (slow phase up and fast phase down).

### 1.11. Visual field defects

Stroke is one of the most notable and devastating neurological outcomes of COVID-19, especially among those who are younger in age. As a consequence of the involvement of the posterior circulation as well as the occipital lobes, these patients have been found to suffer from visual field anomalies as well as visual snow syndrome[40]. Because of the hypothesis of posterior reversible vasoconstriction syndrome, it is possible for certain people who have COVID-19 to experience temporary deficits in their visual field as well as abnormalities on MRI (PRES). The hallucination of palinopsia was described by one patient who had PRES brought on by a COVID-19 infection and who had signs of parieto-occipital lobe involvement on an MRI.

## 2. Discussion

Safe treatment and interaction require keeping SARS-CoV-2 patients apart. It's hard to categorise threats, trace contacts, and produce alerts. Health officials have inconsistent advise on physical and social distance to prevent illness transmission. Professionals and the public debate whether everyone should wear face masks, research face masks and distance.

25 SARS and MERS betacoronaviruses have never been properly studied (MERS). Other IPC practises include ensuring proper ventilation and testing for infectious pathogens. These procedures must be taken simultaneously to stop SARS-CoV-2 spread. A machine created SARS-CoV-2 aerosols (105.25 TCID50), although it's unclear if COVID-19 patients can. Chinese scientists discovered CIV-19. 31 people on one bus and 7 nearby were hurt simultaneously. Infected people followed a separate hospital bus route. Symptomatic neighbours weren't prominent. Poor ventilation and air circulation may have helped SARS-CoV-2 spread, increasing attacks. Transmission was through respiratory droplets. 86% of practice-goers were unwell. If the index patient was 4x13, the entire choir may have been infected. SARS-CoV-2 was detected in 63.2% of 11 residential isolation rooms and 583% of corridor samples in Nebraska. Less than two metres from patient rooms, air samples had higher RNA (4.07%). Under-mattress samples contained viral RNA. Studies projected air would pass under beds. Disease-prone people may benefit from face masks. A ill person's PPE includes a mask (PPE). Larger particles simplify source control. Instead of human testing, employ simulators (PPE). Material and design affect a mask's filtration. When measuring efficacy, consider filtering capability and fit. NIOSH has others besides N95. "95" denotes the respirator is effective against 0.3 m particles. NIOSH mimics heavy labour at 85 l/min to measure air pollution. Simulators mimic the workplace. Non-compliant masks must be evaluated at higher flow rates than the public (PPE). The respirator testing plate can be waxed or bound. Insert cloth or medical masks into testing plate hole. COVID-19 requires and harms public eye protection. Glasses suppress virus inoculum more than goggles or a mask. COVID-19 patients may not wear glasses for this reason. Cloth masks prevent virus inhalation and illness. Face shields or goggles are more protective than eyeglasses. Hill's biological gradient effect may be revealed via future research. Consider the study's limitations and unforeseen consequences when wearing eyeglasses in public. Green goggles and face shields increase eye pollution. First-time users need it. If a new PPE doesn't pollute the user, provide it. Healthcare workers must utilise PPE, hand and respiratory hygiene, and surface disinfection (PPE). Droplet and contact dangers should be avoided. mask, eye protection When interfering with COVID-19 transmission, keep a one-metre distance (3.3 feet). Handwashing and community education. Health personnel should wear a mask whenever possible (see Table 1). COVID-19 causes conjunctivitis. In 86% of mild COVID-19 infections, conjunctivitis was found. Every patient had red eyes. Asthma caused conjunctival congestion. But never a danger. 535 COVID-19 participants reported conjunctival congestion after hand-eye contact. A patient's eyes developed acute flaccid conjunctivitis on day 13. Ct levels rose after five positive conjunctival swabs. An older diabetic, hypertensive, and asthmatic male with delayed follicular conjunctivitis. The conjunctival sample was sterile. With lubricants and preservative-free moxifloxacin drops, conjunctivitis disappeared in two weeks. COVID-19 is connected to an increase in Kawasaki-like disorders in children, even if nasopharyngeal testing is negative. Symptoms include iridocyclitis, papilloedema, subconjunctival haemorrhage, and conjunctival injection. MIS-C patients suffer most from eye problems like conjunctivitis. MIS-C had higher SARS-CoV-2 serology due to a delayed response to COVID-19. Therapeutic goals include reducing inflammation. IVIG, aspirin, and corticosteroids were utilised. 1 in 30 COVID-19 patients had viral conjunctivitis. Despite no fever or respiratory symptoms, SARS-CoV-2 was found in the patient's tears and conjunctival secretions. One patient with conjunctival injections developed chemosis (5.8 percent). Studies link COVID-19 to ocular involvement. Edoema

produces conjunctival follicles and keratitis. Two weeks after symptoms began, tarsal haemorrhages and mucous filaments were seen. Edema, pseudomembranes, conjunctivitis, and big ear and submaxillary lymph nodes were included.

## 3. Conclusion

Eye infections are common. There is no solid evidence that COVID-19 causes ocular problems. Studies identified SARS-CoV-2 in tears and conjunctival secretions. Infected patients may only have ocular symptoms. Hand cleanliness, social isolation, and hospital SOPs are popular ways to prevent illness spread. Using eye lubricants before eye drops and transitioning from contacts to glasses helps avoid eye infections.

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