

OCULAR MANIFESTATIONS IN SYMPTOMATIC COVID-19 PATIENTS

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IOS

IRAQ



No disclosure



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THE NEW COVID-19

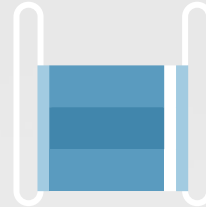
In this study, As we are in the era of COVID-19 as its new disease for our communities and as we are responsible for what's new in our ophthalmology world, we want to report the new ocular finding in patients that got the infection and how this affected their vision.

OBJECTIVES OF THE STUDY



Symptoms

COVID-19 infection having a direct and indirect impact on eye problems?



recommendation

Any specific eye disease that needs special care or management after infection with COVID-19?



relationships

Is there a significant relationship between COVID-19 and eye diseases?

COVID-19 OUTBREAK START

THE VIRUS

The SARS-CoV-2 virus is an enveloped RNA virus with a single strand that is responsible for COVID-19. It has a high rate of transmission, especially among the elderly and those who suffer from comorbidities like immune suppression, respiratory disease, or diabetes mellitus, in particular



THE NEW VIRUS

SARS-CoV-2 RNA was discovered in the tears of patients who were infected with the virus, and reports suggest that the ocular surface may act as both a portal of entry and a reservoir for viral transmission. COVID-19 has been clinically associated with moderate conjunctivitis, which may be the disease's first and only symptom.

SCHEDULE

JAN

FEB

MAR

ABR

MAY

SYMPTOMS

Jan 1 - Feb
28

PREVENTION

Feb 1 - Mar
28

RESEARCH

Jan 1 - May
25

10TH EVOLVING PRACTICE OF OPHTHALMOLOGY
MIDDLE EAST CONFERENCE

TIMELINE



PHYSICAL SYMPTOMS



FEVER

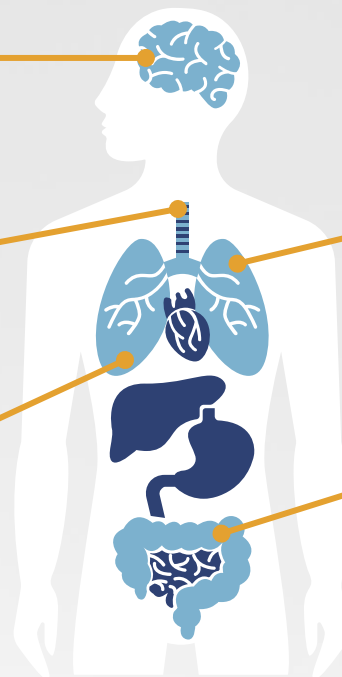
Temperature can exceed 37.3 °C

DRY COUGH

Irritation and coughing with mucus

DYSPNEA

Difficulty or trouble breathing



PNEUMONIA

Sometimes there is inflammation of lungs

GASTRO DISORDERS

Sometimes you can suffer from diarrhea



Method



The study was a hospital based prospective cross-sectional study which included patients with recent Covid 19 infection. The study was conducted in ophthalmology department of Erbil Teaching Hospital in Erbil city from June 2021 till April 2022. The participants were recruited from the outpatient clinic in a non-probability convenience sampling way.



Patients with recent COVID-19 infection (at least one month up to three months) diagnosed by nasopharyngeal swap and SARS-COV-2 RT-PCR.



Exclusion criteria

Participants with ocular disease prior to COVID-19 infection ,Patients on ocular or systemic medications prior to COVID-19 infection, History of ocular trauma, patients recovered from COVID-19 before three months from their initial presentation to ophthalmology clinic ,patients received COVID-19 vaccination.

RESULTS ANALYSIS



By gender



48%



52%

Age group 26-40 y



45.3%

Age group 11-25 y



32%

| Age (years) | Frequency | Percent% |
|--------------------|------------------|-----------------|
| 11 – 25 | 24 | 32% |
| 26 – 40 | 34 | 45.3% |
| 41 – 55 | 6 | 8% |
| ≥ 56 | 11 | 14.7% |
| Gender | | |
| Male | 36 | 48% |
| Female | 39 | 52% |
| Total | 100 | 100% |

Demographic data of the Study groups



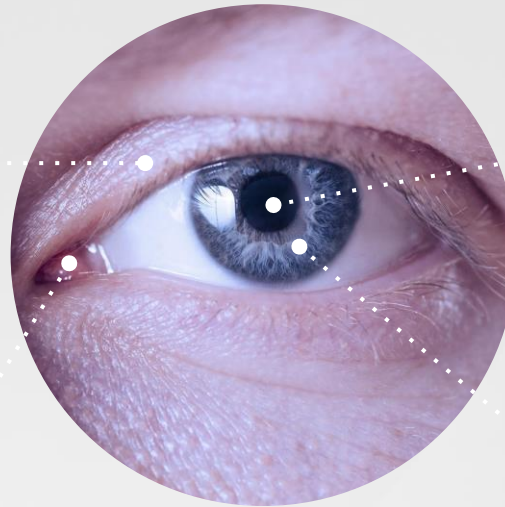
By symptoms

Periorbital swelling

FB sensation

Lacrimation

Blurred vision

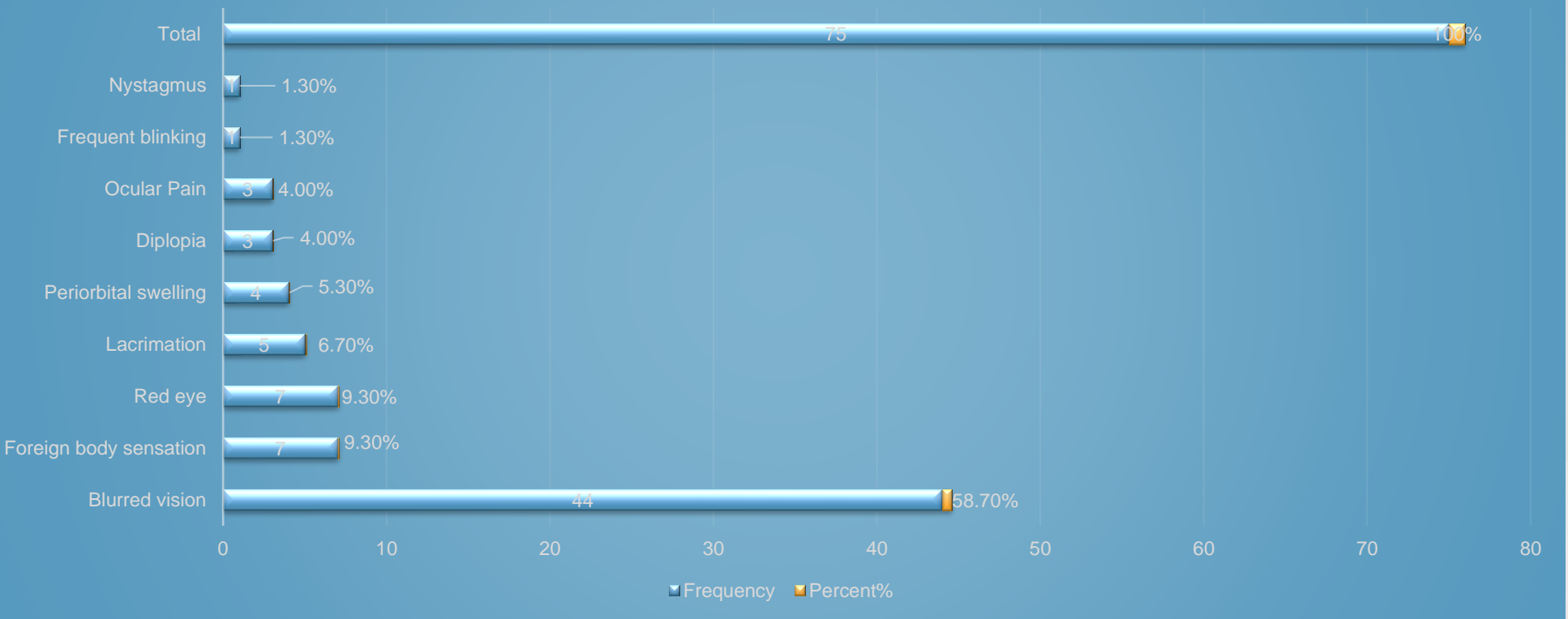




Chief complaints of study group participants.

| Chief complaint | Frequency | Percent% |
|------------------------|------------------|-----------------|
| Blurred vision | 44 | 58.7% |
| Foreign body sensation | 7 | 9.3% |
| Red eye | 7 | 9.3% |
| Lacrimation | 5 | 6.7% |
| Periorbital swelling | 4 | 5.3% |
| Diplopia | 3 | 4.0% |
| Ocular Pain | 3 | 4.0% |
| Frequent blinking | 1 | 1.3% |
| Nystagmus | 1 | 1.3% |
| Total | 75 | 100% |

Chief complaints of study group participants



Chief complaints of study group participants



Ocular manifestations

Multiple punctate
epitheliopathy



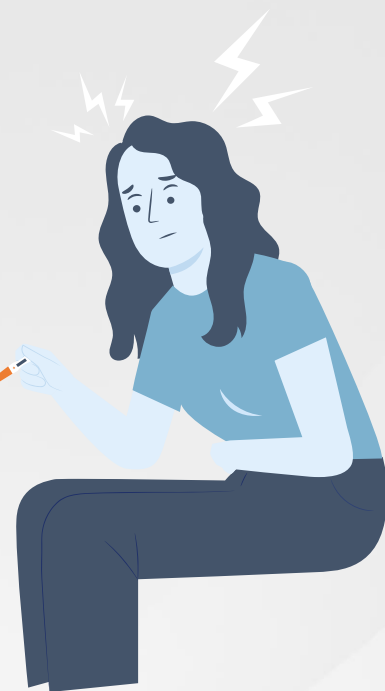
Follicular
conjunctivitis



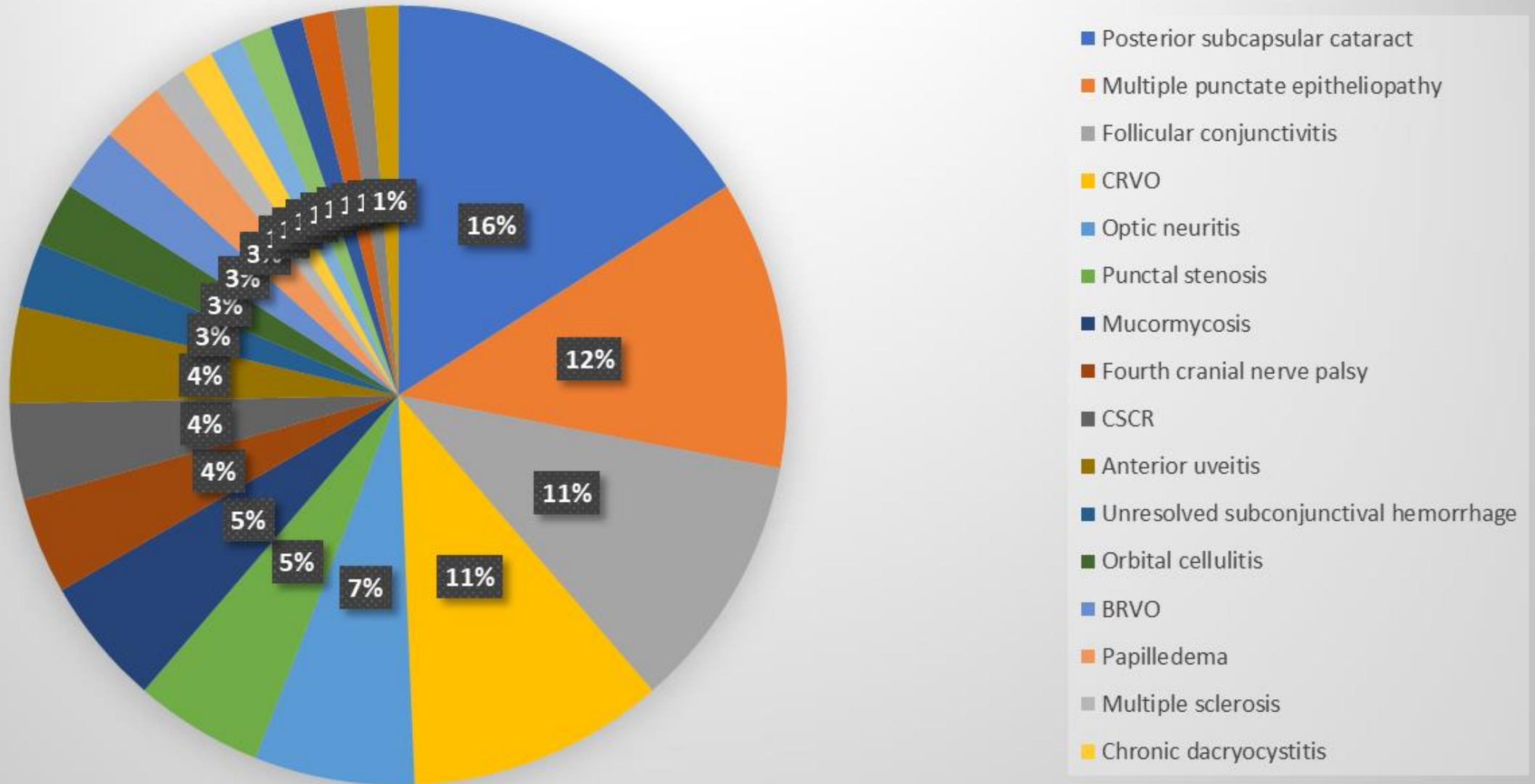
Posterior
subcapsular cataract



CRVO



Ocular manifestation of COVID-19 patients



| Ocular Manifestation | Frequency | Percent% | Ocular Manifestation | Frequency | Percent % |
|---------------------------------------|-----------|----------|--------------------------------|-----------|-----------|
| Posterior subcapsular cataract | 12 | 16.0% | Orbital cellulitis | 2 | 2.7% |
| Multiple punctate epitheliopathy | 9 | 12.0% | BRVO | 2 | 2.7% |
| Follicular conjunctivitis | 8 | 10.7% | Papilledema | 2 | 2.7% |
| CRVO | 8 | 10.7% | Multiple sclerosis | 1 | 1.3% |
| Optic neuritis | 5 | 6.7% | <u>Chronic dacryocystitis</u> | 1 | 1.3% |
| <u>Punctal stenosis</u> | 4 | 5.3% | Vestibular neuritis | 1 | 1.3% |
| <u>Mucormycosis</u> | 4 | 5.3% | VKH | 1 | 1.3% |
| Fourth cranial nerve palsy | 3 | 4.0% | Valsalva retinopathy | 1 | 1.3% |
| CSCR | 3 | 4.0% | Multifocal choroiditis | 1 | 1.3% |
| Anterior uveitis | 3 | 4.0% | Anterior scleritis | 1 | 1.3% |
| Unresolved subconjunctival hemorrhage | 2 | 2.7% | Anterior necrotizing scleritis | 1 | 1.3% |

Ocular manifestation of COVID-19 patients

The background features a light gray gradient with several stylized virus icons in blue and dark blue scattered across the space. In the bottom-left corner, there is a circular graphic with a network diagram of nodes and lines.

LET'S FIGHT THE VIRUS TOGETHER!

You can keep yourself safe at home!

10TH EVOLVING PRACTICE OF OPHTHALMOLOGY
MIDDLE EAST CONFERENCE

DISCUSSION:

In 2022, after the outbreak of coronavirus disease, SARS-CoV-2 virus has reached six continents and is responsible for the death of more than 6 million human beings till now. It is mainly a disease of the respiratory system but it may affect many other organs including the ocular system as reported in many studies. This study evaluates the ocular manifestations of COVID-19 disease in Kurdistan region, Iraq as the first study to see the light in this particular area of the world.



This study has found that the blurring of vision was the most common symptoms among the patients (58.7%). Conjunctivitis like symptoms such as foreign body sensation, red eye and lacrimation comes next in line in order of frequency. Periorbital swelling, diplopia and ocular pain had been reported less frequently by the patients. Other reports worldwide showed a wide and significant heterogeneity for all the presenting ocular symptoms. Chen *et al.* reported that 12.7% had blurred vision, 20.9% with dry eye and 11.7% with foreign body sensation . Perlman *et al.* has reported 29.1% with dry eye and 19.1% with ocular pain. On the other hand, GuemesVillahoz *et al.* had reported 50% of cases had red eye, 8.3% subconjunctival hemorrhage, and pterygium in 5.5% . Rokohl *et al.* found that 34.26% of patients had burning sensation, 31.4% had epiphora and 20.2 % had photophobia . This study has shown that posterior subcapsular cataract is the most common ocular manifestation (16%) in COVID-19 patients. Chen *et al.* reported 1.6% cases presented with cataract while Abrishami *et al.* reported 7.7% cases of cataract . Cataract development due to can be explained by three points; the increase of oxidative stress on the lens by the viral infection, increase in use of systemic corticosteroids, and the development of uveitis secondary to COVID-19 as this and many other studies reported .

This study has shown ocular surface problems represents the next most common diagnosis after cataract. Most commonly reported is follicular conjunctivitis, multiple punctate epitheliopathy and punctal stenosis. The prevalence of conjunctivitis varied from <1% to 63.6% ·this agrees with Bostanci *et al.* and Oncul *et al.* Conjunctivitis has been reported to be the first clinical manifestation of COVID-19 infection. Yet, it is not clear if the conjunctivitis is part of a local reaction or a response to systemic stimuli .



In terms of retinal pathology, this study revealed eight cases of central retinal vein occlusion with three cases in the age range between 11 and 25 years. CRVO was followed by CSCR and BRVO in order of frequency. Walinjkar *et al.*, Sheth *et al.*, Invernizzi *et al.*, and Gaba *et al.* have reported CRVO as a sequela to COVID-19 patients with varying severity and outcome. The development of CRVO can be explained by the fact the COVID-19 infection is a procoagulant state with elevation of cytokine, prothrombin and D-Dimer. Added to that, the involvement of respiratory tract results in hypoxia which is an important risk factor for CRVO development.



On the other hand, Sanjay et al has reported a case of CSCR after COVID-19 infection; the status of stress due to illness and the use of corticosteroid may justify the development of CSCR . Various forms of uveitis had been reported by this study; mostly anterior non granulomatous uveitis, a case of VKH and one case of multifocal choroiditis. Collange *et al.* presented a patient with posterior uveitis, Mazzotta *et al.* described a patient with anterior uveitis, and Pascual *et al* reported a case of pan uveitis. There is one reported case of multifocal choroiditis by Providencia *et al* . The deregulation of the immune and inflammatory status of the eye caused by COVID-19 may explain the development of various types of uveitis .



Optic neuritis, fourth cranial nerve palsy, and papilledema were the most common neuro-ophthalmological manifestation in this study. There has been reports by Dinkin *et al.*, Falcone *et al.*, Pascual-Goni *et al.*, and Belghmaidi *et al.* on multiple ocular cranial nerve paresis. Zhou *et al.* also reported a case of optic neuritis. The presence of ACE2 receptor on the nerve ending and it is being used by the virus in order to enter the tissue makes the nerves a favorable target to the virus. Orbital cellulitis and Mucormycosis, which is life threatening, has also being reported by this study. Such orbital involvement had been reported by Turbin *et al.* and Shires *et al.* Again, the decrease and deregulation of the immune system and the use of systemic corticosteroid may contribute to the development of such complications. One of the limitations of this study is that it was conducted in one city with a small size and non-diverse; so, we should not draw the inference that those results can be applied on greater population. To the best of our knowledge, this is the first study in Kurdistan region that studied the ocular manifestation of COVID-19 disease.

CONCLUSIONS ABOUT THE COVID-19



COVID-19 infection is a multi-systemic can cause a variety of ocular clinical symptoms and complications. Blurred vision and conjunctivitis like features are the most common ocular presentation of the infection. Posterior subcapsular cataract was the most common ocular diagnosis made in patients post COVID-19 infection.

Recommendation.

Further studies with larger sample size are needed to study

- 1.The ocular manifestations during the early stages of COVID-19 infection.
- 2.Long term outcome of ocular manifestation and complications related to the virus
- 3.Possible ocular adverse effect of the multiple vaccines available now.

TIPS OF PREVENTION



Cover nose and mouth
with masks



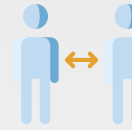
Use alcohol-based
sanitizers or soap



Cover nose and mouth
when you sneeze



Reduce your outings
and social contacts



Keep a distance of at
least one meter



Call the doctor if you have
difficulty breathing



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- 4. Bertoli F, Veritti D, Danese C, Samassa F, Sarao V, Rassu N et al. Ocular Findings in COVID-19 Patients: A Review of Direct Manifestations and Indirect Effects on the Eye. *Journal of Ophthalmology*. 2020;2020:1-9.

