Original Article

Knowledge, attitude, and practice of ophthalmic manifestations in COVID-19 patients at a tertiary care center

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Purpose: Since the start of the COVID-19 pandemic, various manifestations have been reported, including ophthalmic symptoms, especially with the different mutations and variants that have occurred over the last few years. In view of this, our study was conducted to gauge the knowledge, attitude, and practices of patients toward the ophthalmic manifestations of COVID-19. **Methods:** This was a hospital-based, cross-sectional, observational study. Patients who had tested positive for COVID-19 were asked to answer a detailed questionnaire about their knowledge of COVID-19 ophthalmic symptoms, their experience with the symptoms, and their attitude and practice toward the same. The data collected was analyzed using Microsoft Excel, and the Chi-squared test was used to determine significant differences in the results among different demographic profiles. **Results:** Our study found that 82 (39%) of the 210 participants were aware that COVID-19 could present with symptoms in the eyes. A total of 47 participants had experienced eye symptoms of COVID-19. Among them, only 15 (31.91%) consulted and received treatment from an ophthalmologist or general physician for the same. Most of them (59.57%) did not seek any treatment, and 8.5% self-medicated or used non-allopathic forms of medicine. The most common symptom was redness of the eyes, reported by 57.44% of those who had eye symptoms. **Conclusion:** Most people were unaware of ocular manifestations of COVID-19 and most of those who were aware were medical professionals. Amongst those who developed symptoms, only a minority sought medical treatment.

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The COVID-19 pandemic has burdened healthcare systems since December 2019. It started from local health centers in Wuhan, China, reporting about patients with pneumonia of unknown cause. Virus isolation with Vero E6, Huh-7 and human airway epithelial cell lines was performed from the bronchoalveolar lavage specimen of the affected patients. The isolated virus was named 2019-nCoV.[1] This virus belongs to the *Coronaviridae* family and is also called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).[2] This virus rapidly spread across the globe and was declared a pandemic by March 2020.

Since the start of the COVID-19 pandemic, various systemic manifestations have been reported and plenty of theories of pathogenesis have been postulated, especially with the different mutations and variants that have occurred over the last few years.

Various ophthalmic manifestations have also been reported, the most common being viral conjunctivitis. More anterior segment findings have been described and they include follicular conjunctivitis, viral keratoconjunctivitis, episcleritis, hemorrhagic and pseudomembranous conjunctivitis, and blepharitis. Some of the posterior segment findings are retinal vascular occlusions, vitritis, acute retinal necrosis, and serpiginous choroiditis. Neuro-ophthalmic conditions like papillophlebitis, optic neuritis, Miller Fisher syndrome and cranial nerve palsy, neurogenic ptosis and CVA associated with visual loss have also been reported. Orbital manifestations of the virus are not many but tend to be present when associated with other systemic co-morbidities. This includes dacryoadenitis, orbital cellulitis and sinusitis, and the dreaded mucormycosis infection.[3]

The COVID-19 virus and all of its ocular manifestations have brought about a need to better understand the symptoms with which the patients would present to an ophthalmologist.

Our study aimed to assess the knowledge of ophthalmic manifestations of COVID-19 in COVID-19-positive patients. It also assesses the attitude toward these ocular manifestations and the practices that the patients would follow to further manage the condition.

Methods

Our study was a cross-sectional, observational study that was conducted from the month of May 2021 to July 2021. The sample

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size was calculated using Population Proportion Formula and data was collected for the study from 210 responses received from a detailed questionnaire.

The criteria for inclusion in the study were patients who tested positive for COVID-19 and were admitted to our hospital for treatment of the same, and patients visiting the OPD of or admitted to our hospital for ailments other than COVID-19 but who previously tested positive for COVID-19 within the last 3 months and have recovered.

The questionnaire was developed to estimate the knowledge of the ophthalmic manifestations of COVID-19, the attitude of the patients toward these manifestations, and their practice regarding them.

The statistical analysis was done using Microsoft Excel and the Chi-squared test was used to determine significant differences in the results among different demographic profiles.

Results

Demographic characteristics

A total of 210 participants were included in the study. The majority of the participants (48.09%) were between the ages of 18 and 29 years followed by the 30–39 age group (20.95%). Four percent of the participants were illiterate, 11% had school-level education, and the remaining 85% had graduate-level of education. Medical professionals made up 20% of the participants.

Knowledge, attitude, and practice assessment [Figs. 1 and 2]

Our study found that 82 (39%) of the 210 participants were aware that COVID-19 could present with symptoms in the eyes. None of the participants with education levels below that of a graduate was aware of COVID-19 eye symptoms. There was a significant difference in knowledge among medical professionals, with 85% being aware of the symptoms and only 27% being aware among non-medical professionals (Chi-squared statistic 48.0383, P value < 0.000001). The study did not find any significant difference in knowledge based on gender or age group.

A total of 47 participants had experienced eye symptoms of COVID-19. Among them, only 15 (31.9%) consulted and received treatment from an ophthalmologist or general physician for the same. Most of them (59.57%) did not seek any treatment and 8.5% of them self-medicated or used non-allopathic forms of medicine. There was no significant difference in treatment-seeking behavior among different genders, age groups, education levels, or occupations.

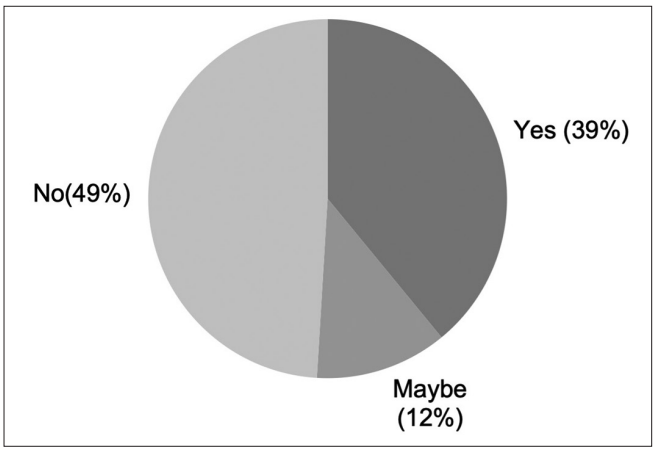

Figure 1: Awareness of ophthalmic manifestations of COVID-19 among patients

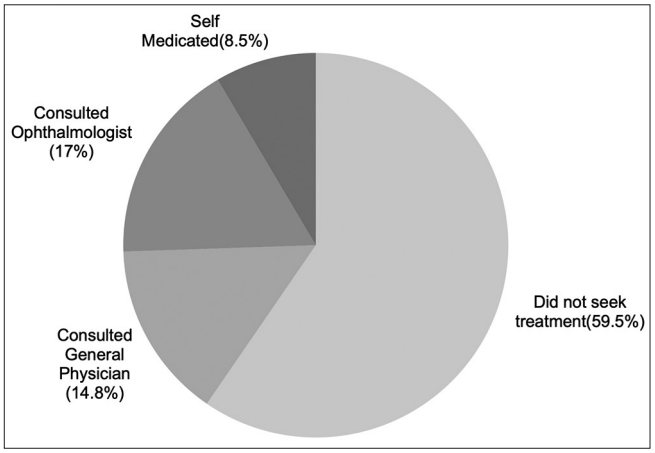

Figure 2: Attitude and practice of treatment-seeking behavior among patients who had ophthalmic symptoms of COVID-19

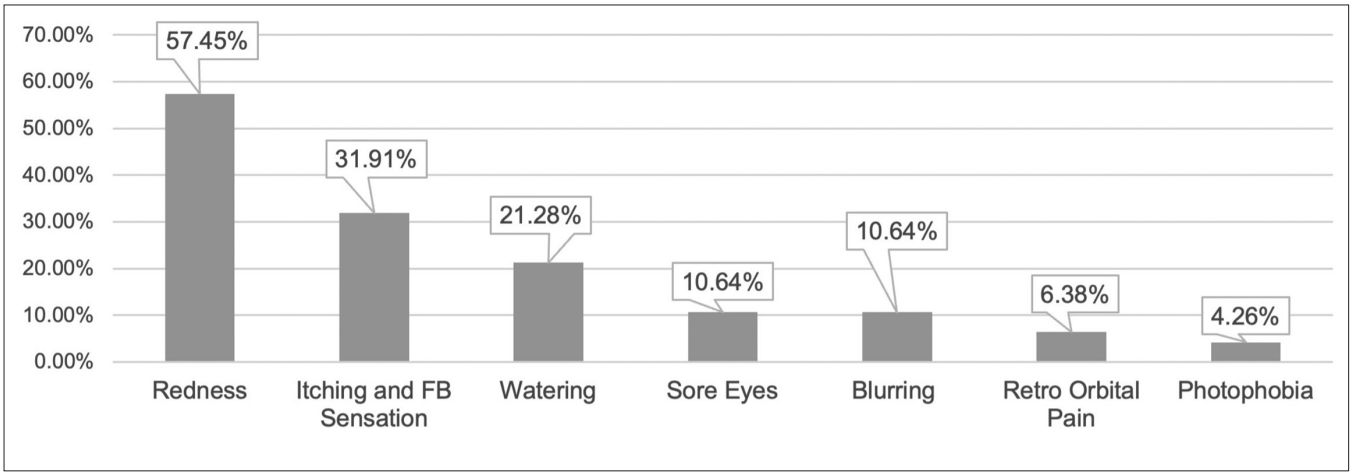

Figure 3: Distribution of ocular symptoms among COVID-19 patients who had ophthalmic manifestations

Symptoms [Fig. 3]

Among the 47 (22.38%) of our participants that experienced eye symptoms of COVID-19, the majority of them, that is, 74.46% developed them within five days of experiencing the other systemic symptoms. One of our participants experienced retro-orbital pain before the other symptoms. The most common symptom was the redness of the eyes, reported by 57.44% of the 47 participants.

Discussion

In our study, we found that when it comes to knowledge of COVID-19 and its ophthalmic manifestations, only 39% of those who participated were aware of the ocular symptoms and signs; however, the majority were medical professionals. This implies that not many people outside of the medical community are aware that COVID-19 could present with ocular symptoms, let alone the symptoms that they could present with. The lack of awareness concerning these symptoms brings to notice the need to educate the general public on the possible ocular symptoms that patients can present with. Increasing awareness can help with early detection and thereby prevent further complications and spread of COVID-19.

We also found that only 22% of people in the study suffered from ocular manifestations, with most of them developing it within five days of developing other COVID-19 symptoms. Out of the symptomatic people, only 31.9% consulted with a doctor while the majority choose to do nothing. This could be because the most common symptom was the redness of one or both eyes and this could be considered a mild symptom. Sindhuja *et al*.[4] reported that mild conjunctivitis was the most common ocular manifestation of COVID-19 in their study, with the main presentation being conjunctival congestion. A hand-to-eye contact correlation was observed amongst those who developed conjunctival congestion as well as respiratory illness in a study by Chen *et al*.[5] An alternative reason for the poor treatment-seeking behavior could be the lack of access to healthcare due to the lockdown.

When it comes to attitudes in the management of the ocular symptoms of COVID-19 infection, there was no significant difference in their attitudes based on gender, age group, education, or occupation. This could be because the ocular symptoms were not observed more in any of the above groups in particular.

In our study, we found that most people were unaware of the ocular manifestations of COVID-19 and those who were aware were medical professionals. Among those who developed symptoms, only a small minority sought medical treatment which could be because the symptoms were not severe enough to do so.

Conclusion

We conclude that education of the general population to increase awareness of ophthalmic manifestations of COVID-19 is required to promote treatment-seeking behavior that can aid in timely detection and prevention of complications and further transmission of the disease.

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Conflicts of interest

There are no conflicts of interest.

References

1. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, *et al*. A novel coronavirus from patients with pneumonia in China, 2019. New Engl J Med 2020;382:727-33.
2. Wu P, Duan F, Luo C, Liu Q, Qu X, Liang L, *et al*. Characteristics of ocular findings of patients with coronavirus disease 2019 (COVID-19) in Hubei province, China. JAMA Ophthalmol 2020;138:575-8.
3. Sen M, Honavar SG, Sharma N, Sachdev MS. COVID-19 and eye: A review of ophthalmic manifestations of COVID-19. Indian J Ophthalmol 2021;69:488-509.
4. Sindhuja K, Lomi N, Asif M, Tandon R. Clinical profile and prevalence of conjunctivitis in mild COVID-19 patients in a tertiary care COVID-19 hospital: A retrospective cross-sectional study. Indian J Ophthalmol 2020;68:1546-50.
5. Chen L, Deng C, Chen X, Zhang X, Chen B, Yu H, *et al*. Ocular manifestations and clinical characteristics of 535 cases of COVID-19 in Wuhan, China: A cross-sectional study. Acta Ophthalmol 2020;98:e951-9. doi: 10.1111/aos. 14472.