

# Changes in eye care during the covid-19 pandemic from Egyptian patients' point of view

Lameece M. Mohamed, Ayah Marrie, Kareem B. Elessawy

Department of Ophthalmology, Cairo University, Cairo, Egypt

Correspondence to Lameece M. Mohamed, MD, Department of Ophthalmology, Cairo University, Cairo, 11431, Egypt.  
Tel: +20 100 105 1455;  
e-mail: lameece@gmail.com

**Received:** 21 June 2020

**Revised:** 1 July 2020

**Accepted:** 16 July 2020

**Published:** 30 December 2020

**Kasr Al Ainy Medical Journal** 2020, 26:60–67

## Purpose

This study aims to understand the impact of COVID-19 on patients' view and willingness to seek ophthalmic services in Egypt. The study analyzes if there were changes in their eye care habits and under the conditions they would seek ocular advice.

## Patients and methods

It is a cross-sectional observational study using a questionnaire that was sent online and the answers were received online. The questionnaire included 31 questions. All questions were closed-ended questions, provided with a list of optional answers (single-answer options or multiple-answer options).

## Results

This study included the responses of 448 participants, who answered the questionnaire fully and included their names and email addresses. Of the participants, 262 were women (58.5%) and 186 (41.5%) were men. The largest age group that answered our questionnaire was between the ages of 20 and 40 years (85.3%). The vast majority of the participants (98%) claimed they would not visit an ophthalmologist during the pandemic and would not undergo any elective surgery.

## Conclusion

Age, medical background, educational level, contact with vulnerable groups, and presence of chronic diseases significantly affect the patients' willingness to seek ophthalmic services. Changes in populations' information and doctor practice are needed in this pandemic.

## Keywords:

COVID-19 pandemic, ophthalmic practice, patient view

Kasr Al Ainy Med J 26:60–67

© 2020 Kasr Al Ainy Medical Journal  
1687-4625

## Introduction

In December 2019, an outbreak of a potentially lethal disease (COVID-19), due to a new coronavirus (SARS-CoV-2), began in Wuhan, China. It has spread rapidly throughout China and subsequently worldwide [1,2]. By March 12 2020, the WHO had declared this outbreak of COVID-19 as a pandemic [3].

This virus differs from other members of the Corona family, with a much higher transmissibility and infectivity. When affected, 80% of patients present with a mild disease that may even pass unnoticed. However, in some patients the disease may end in significant respiratory distress and while the overall mortality rate is about 2.3%, it may reach up to 8% in certain patients, especially in the elderly and those with comorbidities such as immune suppression, respiratory disease, and diabetes mellitus. A significant number of global fatalities have occurred, and the impact is being felt worldwide [4].

The COVID-19 pandemic has changed the medical practice worldwide. Medical care is targeted toward

emergency cases, while elective cases have been postponed. Likewise, many patients have been dissuaded from seeking medical advice or continuing their routine health-care regimen.

On March 18, 2020, the American Academy of Ophthalmology released a statement urging all ophthalmologists to cease providing any services. Such a decision was made based on recommendations from the American College of Surgeons and the Center for Disease Control [5].

The ophthalmic practice encompasses a wide array of services. While some, such as refractive procedures, are considered elective and maybe delayed, others such as retinal detachment are urgent and must be managed immediately. Also, ocular diseases include chronic conditions that require repeated follow-ups, such as

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

diabetic retinopathy and glaucoma and may necessitate frequent investigations and recurring interventions. However, the 'pandemic' status may affect patients' ability or willingness to concur with their recommended management.

This study attempts to understand the impact of COVID-19 on patients' view of and willingness to seek ophthalmic services in Egypt. It also studies the effect of different factors such as age, medical background, educational level, and others on patient decision to follow up chronic eye disease, continue routine eye examination visits, or undergo elective surgeries.

### Patients and methods

Our study was conducted during the period between May 1, 2020 and June 15, 2020. This study was approved by the Ethics Committee of the Ophthalmology Department of Cairo University.

It is a cross-sectional observational study. It included a questionnaire that was sent online and the answers were received online. Questionnaire link is <https://docs.google.com/forms/d/e/1FAIpQLSenb8XVkB99EvhYZfuejguQWabY3zCeSIwvpKJqGH094xHsnw/viewform?vc=0&c=0&w=1>.

Consent was obtained by asking the participants to enter their names and email addresses before responding to the questionnaire.

The questionnaire included 31 questions and took approximately 10 min to complete. All questions were closed-ended questions, provided with a list of optional answers (19 with single-answer options and 12 with multiple-answer options).

Our study population included any man or woman over the age of 20 years. Participants were recruited through personal contacts, social media platforms, and referrals from the participants. Those excluded were those who did not consent (include their name and email), complete the survey, or if they provided contradicting answers.

### Sample size calculation

Sample size was determined according to Gill *et al.* [6], who stated that in populations above one million, in order to have a 95% confidence interval with a 5% margin of error, at least 384 participants were required to fill out the survey. Our study included more than 400 participants.

### Statistical methods

Data were statistically described in terms of mean $\pm$ SD, median and range, or frequencies (number of cases) and percentages when appropriate.

All statistical calculations were done using the computer program IBM SPSS (Statistical Package for the Social Sciences; IBM Corp., Armonk, New York, USA) release 22 for Microsoft Windows.

### Results

Our study included responses of 448 participants, who answered our questionnaire fully and included their names and email addresses.

#### Demographic data

Of our participants 262 were women (58.5%) and 186 (41.5%) were men. The largest age group that answered our questionnaire was between the ages of 20 and 40 years (85.3%) and the least were over 60 years (6.7%) (Table 1).

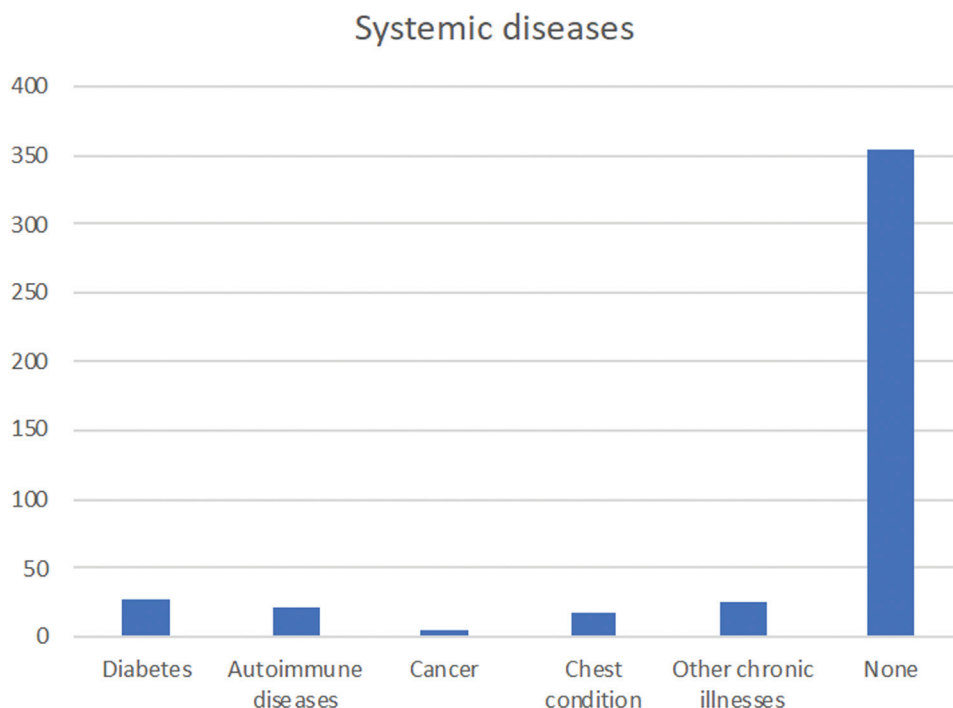
Of the participants 58% worked in the medical field, while 33.5% worked in other fields and only 8.5% were unemployed. The majority of our responders had postgraduate degrees (71%) (Table 1).

Of the participants, 63.4% had children less than 15 years old in their household; 41.1% lived with parents or other elderly individuals (over 60 years); and 18.3% were immunocompromised (diabetics, cancer patients, etc.) individuals living with them in the same household.

**Table 1 Participant demographics**

	N (%)
Sex	
Females	262 (58.5)
Males	186 (41.5)
Age (years)	
20–40	382 (85.3)
40–60	36 (8)
Over 60	30 (6.7)
Occupation	
Health-care workers or in the medical field	260 (58)
Outside medical field	150 (33.5)
Does not work	38 (8.5)
Highest education degree	
Postgraduate studies	318 (71)
University graduates	118 (26.3)
High school diploma	10 (2.2)
No educational degree	2 (0.4)
Marital status	
Married	318 (71)
Single	130 (29)

Figure 1



Systemic diseases.

**Medical history of participants**

In order to define the vulnerable groups, participants responded to multiple option questions regarding whether they suffered from any chronic diseases; 6.4% were diabetic; 4.6% had autoimmune diseases; 0.9% had cancer; 3.7% suffer from chest conditions like asthma and chronic obstructive pulmonary disease and 5.9% had other chronic illnesses (Fig. 1).

**Ophthalmological history**

The majority of patients (51.6%) used to visit their ophthalmologist occasionally (every few years), while the least percentage (7.2%) had never visited an ophthalmologist.

Of them, 38.15% wear glasses only, 3.15% wear contact lenses only, and 4% wear both glasses and contact lenses; 19.2% of the contact lens wearers continued to care for them in the same manner they always did during the COVID pandemic; 38.4% added extra precautions (i.e. hand washing before removal and application), while 42.3% discontinued using their contact lenses and switched to glasses.

Our responders claimed that 41.7% suffer from seasonal eye allergies, 5.4% from recurrent lid swellings and lid cysts, 0.9% from retinal problems, 2.2% from glaucoma, and 1.3% from uveitis (Fig. 2).

**Ophthalmological Practice during the COVID-19 Era**

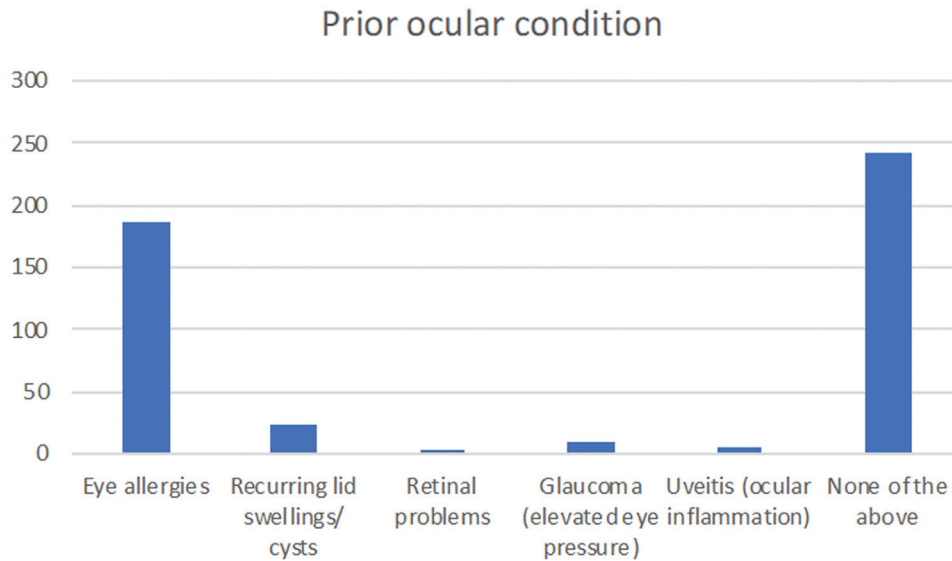
The vast majority of our responders (98%) did not visit their ophthalmologist since the start of the pandemic. Among the 2% who did visit an ophthalmologist during the pandemic, 75% of them visited once, 16.7% twice, and 8.3% had three or more visits (Table 2).

Our questionnaire included questions regarding the reason for which the responder would deem it necessary to visit an eye doctor. The options did not include urgent or severe conditions. Of the responders, 25.6% of would go and seek ophthalmological help during the pandemic if they experienced mild reduction of vision, 15.2% would visit their doctor for allergic symptoms (itching, tearing), 18.9% if they have mild eye pain, redness or tearing, and 52.6% of the responders would not go even if they experienced any of the above symptoms (Table 2, Fig. 3).

Most of our participants (56.9%) claimed they would not change their prescriptions (glasses/ contact lenses) during the pandemic.

Our questionnaire also included questions regarding elective surgeries. Of our participants, 18.5% would do cataract extraction if their doctor recommended doing it during the pandemic, 16.6% would do refractive

Figure 2



Prior ocular conditions.

procedure, 3.8% oculoplastic surgeries, and 67.8% responded that they would not do any elective ocular surgery during the pandemic (Table 2).

#### Safety measures during the COVID-19 pandemic

Participants chose if and where they would seek ocular advice during the pandemic. Of the participants, 73.9% prefer going to a private clinic when needing an ocular examination, 36% prefer eye specialized center/hospital; 1.9% would go to a general hospital; and 5.7% answered that they would not visit a doctor under any condition.

We also asked about the personal precautions that they would undertake when visiting their ophthalmologist, 62.4% will wear a mask, 54.8% will ensure sterilization of the instruments/examination devices, 3.3% would not take any extra protective measures and 25.7% said they would not visit an ophthalmologist (Fig. 4).

Participants were asked about the mode of COVID transmission, multiple options were available for answers. Of the participants 83.3% believe that COVID-19 is transmitted by droplet, 60% by contact transmission, and 29.5% by eye secretions.

The subsequent question in the survey addressed the source of the responders' information about the virus and the pandemic. The majority (65.2%) of our repliers got their information from TV and social media, while only 39% from their health-care providers.

Only 13.8% said that their doctors provide them information on how COVID-19 can manifest and

21.9% said that their doctors encouraged hygiene practice like hand washing and 72.4% answered that their doctors did not do any of that.

When we asked about whether they feel that their health-care providers are practicing safety measures to protect themselves from contracting the disease; 13.8% said yes; 27.6% claimed that not all health-care providers practice the same level of safety measures; 13.8 said they are not provided with sufficient protective gear; and 44.8% were unsure.

#### Discussion

The COVID-19 pandemic has affected almost every aspect of the medical field. Ophthalmology is one of the most exposed specialties, as its physicians rely primarily on clinical examination, which requires a close proximity with the patient on slit-lamp microscope examination. Moreover, during the SARS-CoV epidemic, clinical reports have suggested tears as a route of infection [7].

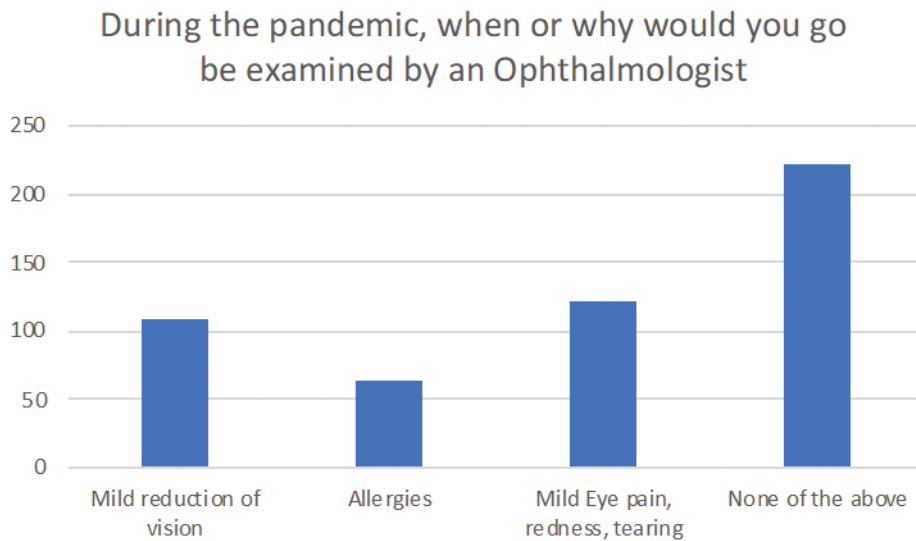
This cross-sectional observational study included 448 participants, aiming to know the effect of COVID-19 on the eye care and the ophthalmic practice according to patients' view and to study the effect of different factors on patient decision to visit an ophthalmologist, continue their routine eye care, or undergo elective surgeries.

The largest group of responders was between the ages of 20 and 40 years, followed by the 40–60-year old age group and the least was from the age group of over 60

**Table 2 Changes in ophthalmic practice during the COVID-19 pandemic**

Questions addressing changes in eye care habits during the COVID pandemic	Answers and percentages	
Contact lens wearers	No change in habits: 2.9%	Shift to glasses: 6.4%
Would you visit your ophthalmologist	Yes: 1.9%	No: 98.1%
Would you visit your ophthalmologist if you experience?	Mild blurring of vision: 25.6%	Mild pain and redness: 28.9%
Will you go to change prescription during the pandemic	Yes: 11.8%	No: 56.9%
Will you go for fundus examination (if diabetic)	Yes: 4.8%	Only if I develop new symptoms: 7.2%
Will you go for IOP follow-up (if glaucomatous)	Yes: 5.9%	Only if I develop new symptoms: 7.6%
Would you do an elective surgery?	Cataract: 18.5%	Refractive: 16.6%
Where would you prefer to visit an ophthalmologist?	Private clinic: 73.9%	Specialized Eye hospital: 36%
What precautions would you take during visit?	Wearing masks: 62.4%	Ensure instrument sterilization: 54.8%
What precautionary measures do you expect to find in an eye clinic?	Spacing in waiting room: 24.9%	Wearing masks by all staff and using sanitizers: 43.8%
What are the modes of COVID-19 transmission?	Droplet: 83.3%	Contact: 60%
Where do you obtain information about COVID 19?	TV/ social media: 65.2%	Own research: 54.8%
Did your ophthalmologist/primary health-care provider provide you with any advice regarding the pandemic?	Information about COVID: 13.8%	Encourage hygiene measures: 21.9%
Did your ophthalmologist/primary health-care provider use any protective measures?	Yes: 13.8%	Not all of them: 27.6%
		Measures not available for them: 13.8%
		I don't know: 44.8%
		Not applicable: 84.9%
		Would not go under any condition: 52.6%
		Maybe: 31.3%
		According to my doctor's recommendations: 10.8%
		According to my doctor's recommendations: 10.6%
		No: 67%
		General hospital: 1.9%
		None: 3.3%
		Instrument sterilization: 40.5%
		Eye secretions: 29.5%
		Health-care provider: 39%
		NA: 72.4%
		Others: 11.4%

Figure 3



Reasons for visiting an ophthalmologist.

Figure 4



Precautionary measures.

years. This reflects the general populations' normal age distribution and those younger individuals are usually more eager to participate in online questionnaires. However, the input of older age groups would have been even more valuable as they are more vulnerable to hazards of a COVID infection and also more liable to multiple chronic ocular diseases (glaucoma, age-related macular degeneration, etc.).

A little over half of our participants work in the medical field, which may affect their responses as they are more aware of the dangers of contacting other people in this pandemic. Of the responders 71% have a postgraduate degree, also making them more likely to have more background knowledge about the current condition.

The presence of young children, elderly, or immunocompromised patients living in the same house poses more responsibility to the responders. They should take more precautions and avoid visiting a hospital or clinics unnecessarily. Likewise, for responders who have chronic diseases as cancers, immunosuppression and chest problems. In our study, we found that 75% of these responders (those with high-risk groups in their households or suffering from chronic illnesses) claimed they would avoid visiting the ophthalmologist for most nonurgent conditions and would not undergo any elective procedure.

In all, 42.3% of contact lens wearers shifted to glasses out of the fear of possible COVID-19 infection.

However, the American Optometric Association stated that this shift is not necessary and contact lens wearers can continue to wear their contact lenses as long as they wash their hands properly before insertion and removal and to avoid touching their faces with unwashed hands [8].

The majority of the participants (98%) did not visit ophthalmologists since the start of the COVID-19 pandemic and 52.6% of the responders claimed they would not go to an ophthalmologist for nonurgent eye complaints (mild pain, itching, or redness). Also, 56.9% claimed that they would not change their prescription for glasses and contact lenses. Regarding elective eye surgeries, 67.8% will not do any nonurgent intervention during this epidemic.

Thus, most of our participants understand the risks of COVID-19 infection and would, as the American Academy of Ophthalmology recommended, avoid unnecessary ophthalmic consultations or surgeries. This may raise the issue of the probable importance of telemedicine in this pandemic to decrease nonurgent hospital and clinic visits [9].

Many of the glaucomatous and diabetic patients claimed they would not continue their routine eye care management. While this is understandable, ophthalmologists must evolve their practices in order for these patients to not miss their follow-ups with potential serious effects. Home visits, specialized times for these patients, and extra safety measures can all help avoid missing necessary eye examinations.

Most participants (73.9%) think that private clinics are safer if they have to go for ophthalmic consultations. Most likely, they believe they will be less crowded and may be unaware that many of the smaller practices may not have the facilities for maintaining the required hygienic measures. However, this comparison requires further investigation.

Only 3.3% of the responders claim they will not take any protective measures while going to ophthalmic visits. Fortunately, this is a small percentage of participants. However, more information about the risk of COVID-19 infection and the importance of protective measures is still needed, as the pandemic is ongoing and precautionary measures should be taken by every individual.

Regarding the mode of transmission of COVID-19, 29.5% of the participants think COVID-19 can be transmitted thorough eye secretions. That has been proposed, but has not been proved till now. Studies

have shown a rare possibility of the presence of viral protein in the tears and conjunctival secretion [10–12].

The main source of information about COVID-19 for the participants was television and social media; hence the importance of proper rechecking of the news released on social platforms to avoid rumors and false news about the diagnosis and management of COVID-19. This was despite the high educational background of most of our participants. It is the duty of all health-care providers to raise awareness and provide accurate, fact-based platforms for their patients.

The 72.4% of responders who visited ophthalmic clinics and hospitals in this pandemic claim that their ophthalmologists did not provide any advice about the protective measures against COVID-19. Most ophthalmologists are highly specialized; however, we believe that during a pandemic, every doctor should use any chance to spread accurate information about COVID-19 and the proper protective measures in order to have a positive impact on the society.

Of the participants 13.8% believe that ophthalmologists and other health-care providers are not provided with sufficient protective measures; although being a small percentage, proper protective measures should be provided to all doctors, not only the ophthalmologists, as infected the doctors can transmit the disease to the public.

---

## Conclusion

Different factors significantly affect the patients' decisions to seek ophthalmic services during this pandemic, such as medical background, educational level, close contact with high-risk groups, and affection by chronic diseases.

After conducting the questionnaire and analyzing the answers, we can conclude that their still remains a significant gap in the proper awareness of the general population about the protective measures and how to avoid getting infected. Also, that all doctors should wear proper protective measures to protect themselves and their patients and provide a source of true information to their patients.

Telemedicine can be used to help the patients to avoid going for nonurgent ophthalmic visits. It may also raise red flags if some of these assumed 'nonurgent' symptoms may actually be more significant and at that point an ophthalmic visit with proper precautionary measures can be advised.

Also, the information provided by the social platforms should be considered carefully to avoid rumors and false information.

The pandemic is far from over, this study only reflects a month and a half of it. The ophthalmic practice must evolve in order to maintain patient safety and at the same time ensure the continuity of proper eye care for all patients.

#### Acknowledgements

The manuscript has been read and approved by all the authors; the requirements for authorship have been met, and each author believes that the manuscript represents honest work.

#### Financial support and sponsorship

Nil.

#### Conflicts of interest

There are no conflicts of interest.

---

#### References

- 1 Lai CC, Shih TP, Ko WC, Tang HJ, Hsueh PR. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): the epidemic and the challenges. *Int J Antimicrob Agents* 2020; 55:105924.
- 2 Wang LS, Wang YR, Ye DW, Liu QQ. A review of the 2019 Novel Coronavirus (COVID-19) based on current evidence. *Int J Antimicrob Agents* 2020; 55:105948.
- 3 WHO Director-General's opening remarks at the media briefing on COVID-19. March 11, 2020. Available at: <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19—11-march-2020>
- 4 Wu Z, McGoogan JM. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72314 cases from the Chinese Center for Disease Control and Prevention. *JAMA* 2020; 323:1239–1242.
- 5 American Academy of Ophthalmology. New recommendations for urgent and non urgent patient care. *Comprehensive Ophthalmol* 2020. Released on the site on 18 March 2020 <https://www.aao.org/headline/new-recommendations-urgent-nonurgent-patient-care>
- 6 Gill J, Johnson P, Clark M. *Research Methods for Managers*. Newbury Park, California: SAGE Publications; 2010.
- 7 Seah I, Xinyi S, Lingam G. Revisiting the dangers of the coronavirus in the ophthalmology practice. *Eye* 2020; 34:1155–1157. <https://doi.org/10.1038/s41433-020-0790-7>
- 8 Contact lens wear during COVID-19. Available at: <https://www.aoa.org/covid-19-patient-resources/contact-lens-wear-during-covid-19>. [Accessed on 17 June 2020].
- 9 Song X, Liu X, Wang C. The role of telemedicine during the COVID-19 epidemic in China – experience from Shandong province. *Crit Care* 2020; 24:178.
- 10 Xia J, Tong J, Liu M, Shen Y, Guo D. Evaluation of coronavirus in tears and conjunctival secretions of patients with SARS-CoV-2 infection. *J Med Virol* 2020; 92:589–594.
- 11 Jun YIS, Anderson DE, Zheng Kang AE, *et al.* Assessing viral shedding and infectivity of tears in coronavirus disease 2019 (COVID-19) patients. *Ophthalmology* 2019; 127:977–979.
- 12 Deng C, Yang Y, Chen H, Chen W, Chen Z, Ma K, Wang J. Ocular Detection of SARS-CoV-2 in 114 Cases of COVID-19 Pneumonia in Wuhan. Amsterdam: Elsevier; 2020. 193.