



Impact of Precautions on the Sustainability of Ophthalmology Practice in an Eye Clinic in Türkiye during the COVID-19 Pandemic

COVID-19 Pandemisi Sırasında Türkiye'de Bir Göz Kliniğinde Alınan Önlemlerin Oftalmoloji Uygulamasının Sürdürülebilirliğine Etkisi

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ABSTRACT

Objectives: The eye examination may carry the risk of coronavirus disease-19 (COVID-19) for healthcare workers (HCWs) since it requires a close examination of the patient. The current study aimed to examine how HCWs' working conditions and personal precautions affect the sustainability of ophthalmology practice in an eye clinic during the pandemic period.

Methods: A questionnaire survey was applied to 70 HCWs in an eye clinic between June 01, 2020, and February 28, 2021, about their working conditions and protective measures they took against COVID-19. Sixty HCWs answered the questionnaire. In addition, the number of examinations and surgeries performed during the given study period was compared to the previous year.

Results: Among the participants, the mean age was 38.12±9.53 years, and the rate of transmitting COVID-19 was 8.82% during the study period. Of the 6 HCWs with COVID-19, 4 shared the resting room with more than 5 people, and all of them removed their masks in the resting room. The hospital-acquired COVID-19 rate was 4.41%. The rate of using the N95 mask was 46.7%. HCWs stated that the most important point they paid attention to was ventilating the room as a precaution (82%). HCWs who always washed and disinfected their hands and always worked with windows and room doors open were 48.3%, 45%, 55%, and 40%, respectively. HCWs who always use protective glasses or goggles and biomicroscopic shields were 5% and 33.3%, respectively. The total number of examinations and surgeries decreased significantly during the study period compared to the previous year ($p<0.005$).

Conclusion: During the pandemic period, the use of N95 protective masks along with general measures and physical conditions that allow ventilation of the working environment can be effective in preventing the spread of the virus. In addition, it would be important that HCWs take protective measures not only in the study room but also in the resting room. Overall, it could be possible to continue ophthalmology practice by taking these necessary precautions.

Keywords: Coronavirus disease 2019; eye clinic; ophthalmology practice; pandemic; precautions.

ÖZET

Amaç: Göz muayenesi, hastanın yakın muayenesini gerektirdiğinden sağlık çalışanları için koronavirüs hastalığı (COVID-19) riski taşıyabilir. Bu çalışmada, pandemi döneminde bir göz kliniğinde sağlık çalışanlarının çalışma koşullarının ve kişisel önlemlerinin oftalmoloji uygulamasının sürdürülebilirliğini nasıl etkilediğinin incelenmesi amaçlandı.

Yöntem: Çalışmada, 01 Haziran 2020-28 Şubat 2021 tarihleri arasında bir göz kliniğinde görev yapan 70 sağlık çalışanına çalışma koşulları ve COVID-19'a karşı aldıkları koruyucu önlemler hakkında anket uygulandı. Altmış sağlık çalışanı anketi yanıtladı. Ayrıca, verilen çalışma döneminde yapılan muayene ve ameliyat sayıları bir önceki yıla karşılaştırıldı.

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Bulgular: Katılımcıların çalışma süresi boyunca yaş ortalaması $38,12 \pm 9,53$ yıl ve COVID-19 bulaşma oranı %8,82 idi. Altı COVID-19'lu sağlık çalışanının dördü, dinlenme odasını beşten fazla kişiyle paylaştı ve hepsi dinlenme odasında maskelerini çıkardı. Hastane kaynaklı COVID-19 oranı %4,41, N95 maskesi kullanma oranı %46,7 idi. Sağlık çalışanları, dikkat ettikleri en önemli noktanın önlem olarak odanın havalandırılması olduğunu belirtti (%82). Ellerini her zaman yıkayan ve dezenfekte eden, pencere ve oda kapılarını her zaman açık tutarak çalışan sağlık çalışanları sırasıyla %43,8, %45, %55 ve %40 idi. Her zaman koruyucu gözlük veya kalkan ve biyomikroskopik kalkan kullanan sağlık çalışanları sırasıyla %5 ve %33,3 idi. Toplam muayene ve ameliyat sayısı çalışma döneminde bir önceki yıla göre önemli ölçüde azaldı ($p < 0,005$).

Sonuç: Pandemi döneminde N95 koruyucu maskelerin kullanılmasıyla birlikte çalışma ortamının havalandırılmasını sağlayan genel tedbirler ve fiziki koşulların sağlanması virüsün yayılmasının önlenmesinde etkili olacaktır. Ayrıca sağlık çalışanlarının aldıkları koruyucu önlemleri çalışma odasının yanı sıra dinlenme odasında da almaları önem taşımaktadır. Bu gerekli önlemler alınarak oftalmoloji pratiğine devam etmek mümkün gözükmektedir.

Anahtar sözcükler: COVID-19; göz kliniği; oftalmoloji pratiği; pandemi; önlemler.

The coronavirus disease 2019 (COVID-19) pandemic, which has affected the whole world, has necessitated many measures in health institutions to prevent viral spread. These measures may cause delays and disruptions in normal health services.^[1] The ophthalmology department particularly may carry the risk of COVID-19 for healthcare workers (HCWs) and patients since it requires close examination of the patient. Ophthalmic diagnoses and treatments may include procedures such as aerosol-generating eye pressure measurement, laser treatments, or surgical procedures. For this reason, precautions such as reducing the number of patients in the outpatient clinic and triage, as well as postponing elective surgeries, and increasing the use of telemedicine are offered to reduce the risk of COVID-19 transmission.^[1,2] However, this may lead to the progression of diseases such as glaucoma, retinal diseases, inflammatory eye diseases, tumors, and irreversible vision loss because of the delay in diagnosis and treatment caused by lengthened referral times.^[3,4]

In order to reduce the viral spread, measures to be taken individually, apart from central and general measures, have been investigated during hospital practice. Personal precautions include many measures such as paying attention to social distance, mask use, frequent cleaning of the environment, disinfection of devices, hand hygiene, use of disposable gloves and personal protective equipment, and avoidance of aerosol-generating processes.^[5-7]

In this study, the general and personal measures taken against the pandemic in an eye clinic in Türkiye between June 01, 2020, and February 28, 2021, and the quantitative values of the health services at that time were revealed, and the correlation of these values with the COVID-19 pandemic rates across the country was made. This study aimed to investigate the sustainability of ophthalmology practice during the pandemic period.

Methods

This observational study was carried out in accordance with the standards of the Helsinki declaration and was approved by the Research Protocol and Ethics Committee (Haydarpaşa Numune Training and Research Hospital 2021/135). Informed written consent for data collection was obtained from all participants.

The study consisted of three parts:

For the first part, a questionnaire survey was applied to 70 HCWs at the eye clinic, questioning about their personal precautions, personal habits, and working environments during the COVID-19 pandemic between June 01, 2020, and February 28, 2021.

In the second part, the number of patients who were seen on an appointment basis in the Ophthalmology Clinic, the number of patients who applied with an ophthalmic emergency, and the number and types of elective and emergency surgeries were obtained from the hospital data bank, and these data were compared with data from the previous year.

In the third part, the COVID-19 pandemic data announced on the official website of the Turkish Ministry of Health during the time period included in this study were evaluated.

The Physical Condition of the Eye Clinic and the Distribution of Personnel According to the Floors

The eye clinic is a 4-story building with 600 square meters of floor space separate from the general hospital building. On the ground floor, there are 10 outpatient rooms, a referral desk with 3 secretaries and 1 security guard, as well as a technician's and a nurse's room. Each of the outpatient rooms is 25 square meters, and all have windows opening to the outside environment. The first floor contains rooms for ophthalmic sub-specialities such as YAG and Argon

laser, fluorescein fundus angiography, optical coherence tomography and topography, peripheral visual field testing rooms, and a room for the ophthalmic nurse, as well as a counter desk with three secretaries. The second floor contains rooms for the doctor, the secretary, and an examination room for the hospitalized patients. The third floor serves as an inpatient service. The operating room is located under the ground floor and includes six operating rooms of 40 square meters each. It also contains locker rooms, rooms for the secretary and nurse, and the rest rooms. There are two elevators in the clinic.

General Measures Taken by the Turkish Ministry of Health

Every Turkish citizen has been given a COVID management and information code by the Turkish Ministry of Health. This digital code, which is also loaded into a smartphone application, indicates whether the person has COVID-19 or not or was in close contact with the COVID-19 suspect and therefore is under quarantine. Outpatient clinic examination appointments are made online or by phone. The appointment system is integrated with this digital code system. The code system does not allow an outpatient appointment for those with COVID-19 or who display a contact warning in this code system.

Measures Taken by the Hospital Management

N95 masks are distributed daily to all physicians, nurses, and personnel who are likely to come into contact with any positive patient. The use of surgical masks by other personnel is recommended and is given in unlimited numbers.

In general, patients are allowed to enter the clinic not earlier than 10 min before their scheduled appointment.

Patients are not allowed to enter the clinic without surgical masks. If the patient does not have a mask, it is provided by the hospital administration.

Disinfectant liquids in dispenser bottles were placed at many points throughout the clinic.

The use of air conditioning is not allowed.

The frequency of cleaning common areas has been increased by the related cleaning staff. The door handle and device surfaces are disinfected at frequent intervals.

Measures Taken Inside the Operating Room

All patients are taken to the operating room with a surgical mask.

The transition period from the end of one operation to the beginning of the next operation has been extended.

The reverse transcription-polymerase chain reaction (RT-PCR) test is performed 24 h before surgery if it will be performed under general anesthesia. A history of contact with a person with COVID-19 or the presence of COVID-19 is carefully investigated in patients who will be operated on under local anesthesia.

Oxygen is not given to patients under the drape during an operation with local anesthesia.

Operating room ventilation is done with a high-efficiency particulate-absorbing (HEPA) filter.

Time Period of the Study

On March 11, 2020, when the pandemic was first seen in the country, all HCWs implemented strict protection measures. In addition, all HCWs of the eye clinic were also assigned to the general 'COVID-19 Clinic' between March and May 2021, and therefore the eye clinic only accepted ophthalmic emergencies. For these reasons, this period was excluded from the study.

In addition, HCWs reduced their personal precautions after the 2nd dose of the vaccine. Therefore, the period after February 28, 2021, was not included in the study.

The study investigated the aforementioned points between June 1, 2020, when the normalization period began, and February 28, 2021, which includes the end of the 2nd dose vaccination of HCWs.

Statistical Analysis

Statistical analysis was performed using SPSS Version 22 (IBM SPSS, Türkiye). Descriptive statistics were expressed as mean, standard deviation, or median with range (minimum-maximum) for continuous variables and as a number of observations and percentage for categorical variables.

The normality distribution of the data was tested with the Kolmogorov-Smirnov test in the comparison of the number of surgeries and examinations performed during the pandemic period and the previous year. Data with a normal distribution were analyzed with the independent t-test, and data without a normal distribution with the Mann-Whitney-U test.

Results

Of the 70 HCWs at the eye clinic, 60 (40 women and 20 men) answered the questionnaire. Table 1 shows the characteristics

Table 1. Characteristics of healthcare workers

| | |
|------------------------------------|------------|
| Age, years (mean±SD) | 38.12±9.53 |
| BMI (kg/m ²) (mean±SD) | 24.20±3.51 |
| Sex (n) | |
| Female | 40 |
| Male | 20 |
| Distribution of HCWs (n) | |
| Doctor | 21 |
| Nurse | 18 |
| Other | 21 |
| Smoker (n) | |
| Yes | 20 |
| No | 40 |
| Use of refractive glasses (n) | |
| Yes | 11 |
| No | 49 |
| Use of contact lens (n) | |
| Yes | 8 |
| No | 52 |

SD: Standard deviation; BMI: Body mass index; HCWs: Healthcare workers.

of HCWs. Twenty-one (35%) of the participants were doctors, 18 (30%) nurses, and 21 (35%) other health personnel. The mean age was 38.12±9.53 years, and the BMI was 24.20±3.51.

Ten of the HCWs were dealing with more than 200 patients. The average number of patients that the HCWs encountered daily was 53.44±40.25 (except for 10 HCWs who encountered more than 200 patients and 1 HCW who encountered <5 patients a day). HCWs were in close contact with 36.8±18.08 patients on average, closer than 50 cm per day.

Eleven (18.3%) of the HCWs were using refractive glasses, and eight (13.3%) were using contact lenses. Twenty (33.3%)

of HCWs were smokers (mean 6.3±3.21 cigarettes/day). Eighteen (30%) of the HCWs were using surgical masks, 6 (10%) double surgical masks: 8 (13.3%) FFP2, and 28 (46.7%) N95 masks. Thirty-six (60%) of the HCWs had their lunch in the break room, and 24 (40%) had their lunch in the common dining hall. There were 10 (16.7%) who never took off their masks during meals or in the rest room simultaneously with other employees, 24 (40%) who sometimes did, and 22 (36.7%) who usually did. HCWs stated that they cared mostly about the need to ventilate the room during meals or in the rest room (82%). Nineteen (31.7%) of the HCWs were taking vitamin supplements.

Twelve HCWs (20%) stated that they cleaned the study rooms and the devices in these rooms every 2 h, 5 (8.3%) every 3 h, 26 (33.3%) twice a day, and 17 (28.3%) once a day. Moreover, 37 HCWs (61.7%) stated that they cleaned the resting rooms once a day, 16 (26.7%) twice a day, 5 (8.3%) 3 times a day, and 2 (3.3%) 4 times a day.

Table 2 shows the personal precautions and working conditions of the HCWs.

The rate of HCWs who reported that they always applied hand washing and hand disinfection was 48.3% and 45%, respectively. The rate of those who did not wear any bonnets, did not wear special clothes, and did not use protective glasses, goggles, or a transparent shield for the slit-lamb biomicroscope was 56.7%, 46.7%, 71.7%, and 9.5%, respectively. The rate of those who never used the hospital elevator on purpose was 36.7%. The rate of HCWs whose room doors and windows were always open while working and/or resting was 40% and 55%, respectively. In the study period, 6 of the 70 HCWs (4 doctors and 2 nurses) caught COVID-19.

Table 2. Personal measure of healthcare workers

| | Never | | Sometimes | | Often | | Always | |
|---|-------|------|-----------|------|-------|------|--------|------|
| | n | % | n | % | n | % | n | % |
| Use of glove | 16 | 26.7 | 15 | 25 | 14 | 23.3 | 15 | 25 |
| Hand washing | 0 | 0 | 5 | 8.3 | 26 | 43.3 | 29 | 48.3 |
| Use of disinfectant | 1 | 1.7 | 7 | 11.7 | 25 | 41.7 | 27 | 45 |
| Use of bonnet | 34 | 56.7 | 12 | 20 | 2 | 3.3 | 12 | 20 |
| Use of special outfit | 28 | 46.7 | 12 | 20 | 2 | 3.3 | 18 | 30 |
| Use of protective glasses or goggle | 43 | 71.7 | 13 | 21.7 | 1 | 1.7 | 3 | 5 |
| Working with biomicroscopic Shield (only doctors, n=21) | 2 | 9.5 | 6 | 28.5 | 5 | 23.8 | 7 | 33.3 |
| Working with room door open | 7 | 11.7 | 17 | 28.3 | 12 | 20 | 24 | 40 |
| Working with the window open | 3 | 5 | 9 | 15 | 15 | 25 | 33 | 55 |
| Use of elevator | 22 | 36.7 | 21 | 35 | 12 | 20 | 5 | 8.3 |

Table 3. The number of COVID-19 positive cases, causes and their task in the study interval

| | The study interval (July 1, 2020–February 28, 2021) n=68 ^[1] |
|--|--|
| The number of (+) cases (ratio, percent) | 6 *(6/68, 8.82%) |
| The number of causes (ratio, percent) | Hospital 3 (3/68, 4.41%) Elsewhere 3* (3/68, 4.42%) |
| The task distribution | Doctor: 4* Nurse: 2 |

*One person did not answer to the questionnaire

[1], Two healthcare workers were excluded from the total population because of their immunity.

Table 4. Personal measure and habits of healthcare workers with COVID-19

| | Subject 1 | Subject 2 | Subject 3 | Subject 4 | Subject 5 |
|---|------------|------------|------------|----------------------|------------|
| Task | Doctor | Doctor | Doctor | Nurse | Nurse |
| Number of close contact with patients (closer than 50 cm per a day) | 30 | 50 | 50 | 250 | 30 |
| Cause of COVID-19 | Family | Hospital | Hospital | Hospital | Family |
| Use of mask/type | Always/N95 | Always/N95 | Always/N95 | Always/Surgical mask | Always/N95 |
| Use of glove | Often | Sometimes | Sometimes | Always | Often |
| Hand washing | Often | Often | Often | Always | Always |
| Use of disinfectant | Often | Often | Often | Always | Often |
| Use of bonnet | Never | Never | Never | Never | Always |
| Use of special outfit | Never | Always | Always | Never | Always |
| Use of protective glasses or goggle | Never | Never | Never | Sometimes | Sometimes |
| Working with biomicroscopic shield | Always | Often | Sometimes | - | - |
| Working with room door open | Sometimes | Never | Often | Always | Often |
| Working with the window open | Always | Often | Often | Always | Always |
| Use of elevator | Never | Often | Often | Sometimes | Sometimes |
| Number of HCWs in the rest room | 2 | 10 | 10 | 5 | 10 |
| Use of mask in the rest room | No | No | No | Sometimes | No |
| Use of refractive glasses | No | No | No | No | No |
| Use of contact lens | No | Yes | Yes | No | No |
| Smoker | No | No | No | No | No |

HCWs: Healthcare workers.

None of these HCWs had a known systemic disease before. Of these HCWs, 3 had acquired the disease from the hospital and 3 from elsewhere. Table 3 shows the personal measures and habits of HCWs with COVID-19. Of the HCWs with COVID-19, 4 shared the resting room with more than 5 people, and all of them removed their masks in the resting room. There were 10 HCWs who did not want to answer the survey; only one of them caught COVID-19 during the period studied. Excluding 2 HCWs who had an infection before the study interval and were thought to have developed immunity, the rate of COVID-19 transmission in the clinic was 6/68 (8.82%) during the study period. The rate of hospital-ac-

quired infections was found to be 3/68 (4.41%) in the date range included in the study (Table 4).

Table 5 shows the comparison of the number of examinations and surgeries performed in some months during the previous year and during the study period. Accordingly, the total number of patients examined and the number of operations performed decreased significantly ($p < 0.005$, $p < 0.005$, respectively).

Figure 1 shows the number of COVID-19 cases in the country and the total eye examinations and total surgeries in the eye clinic during the time period in this study. The correlation between

Table 5. The numbers of monthly examinations and surgeries in pandemic period and previous year

| | Pandemic period (n) (mean±SD) | Previous year (n) (mean±SD) | p |
|------------------------|-------------------------------|-----------------------------|---------|
| Total examination | 8527.67±1442.37 | 13142.22±2387.49 | <0.001* |
| By appointment | 7525.22±1224.97 | 11680.11±1892.59 | <0.001* |
| Ophthalmic emergency | 864.67±190.37 | 1206.56±102.62 | <0.001* |
| Total surgery | 954.22±212.85 | 1494.11±496.35 | 0.012* |
| Elective | 947.89±213.47 | 1484.56±494.03 | 0.012* |
| Emergency | 6.33±2.69 | 9.56±4.44 | 0.081 |
| Cataract surgery | 168±56.85 | 319.78±106.48 | 0.003* |
| Corneal surgery | 10±4.44 | 28.78±11.34 | <0.001* |
| Glaucoma surgery | 11.78±4.26 | 17.67±10.32 | 0.199 |
| Vitreoretinal surgery | 11.11±4.75 | 15.89±7.54 | 0.127 |
| Intravitreal injection | 341.33±43.04 | 368.44±95.85 | 0.455 |
| Oculoplastic surgery | 21.56±13.27 | 37±17.07 | 0.049* |
| Strabismus surgery | 4.22±3.42 | 5.33±3.08 | 0.48 |

*p<0.05, Independent-T test or Mann-Whitney-U test. SD: Standard deviation.

eye examinations, total surgeries, and the number of COVID-19 cases was not significant (p=0.729 and p=0.745, respectively).

Discussion

In this study, the personal precautions and working conditions of HCWs in an eye clinic during the pandemic period in Türkiye were evaluated, and the number of examinations and surgeries in the clinic was compared with the data of the previous year. In addition, the correlation of these data with the pandemic data of the Turkish Ministry of Health was evaluated.

The World Health Organization (WHO) reported that the number of HCWs constitutes 2–3% of the entire population, and the COVID-19 notification rate is 14%.^[8] Accordingly, one-seventh of all COVID-19 cases are HCWs. A meta-analysis also reported that the predicted prevalence of SARS-CoV-2 infection was 11% in HCWs.^[9] However, the COVID-19 rate was 8.82% in our clinic. In addition, the hospital-acquired COVID-19 transmission rate in our clinic was 4.41% for 9 months, which is lower than WHO rates. One study has announced the rate of catching COVID-19 in HCWs within a month as 5.62%.^[10] This study supports our study results.

Aerosol-generating devices in ophthalmic examinations and surgeries can be effective in preventing virus spread. In addition to the devices, aerosols generated by coughing, sneezing, and speaking also carry risks. For this reason, it is reported that the ventilation system with HEPA filters is especially important.^[11] In addition, the use of N95 masks provides greater protection compared to surgical masks.^[12-14] Since it may not be readily available in all clinics around the

world, the use of an N95 mask is recommended for procedures that particularly contain aerosols.^[15] However, due to the likelihood of close contact in our clinic, all HCWs in the eye clinic were provided with N95 masks unlimitedly. In addition, during the pandemic period, no patient was treated without an appointment, except for emergencies, and the appointment system was integrated into the digital coding system to protect HCWs from viruses. It was ensured that the patients comply with the appointment times, and in doing so, the patient density in the building was kept to minimum as possible. Hand disinfection units were put in every area, and surgical masks were provided for all patients.

The physical conditions of the clinic may be important in the spread of the virus. Airborne droplets, which are of great importance in the spread of the virus, can remain in the air for

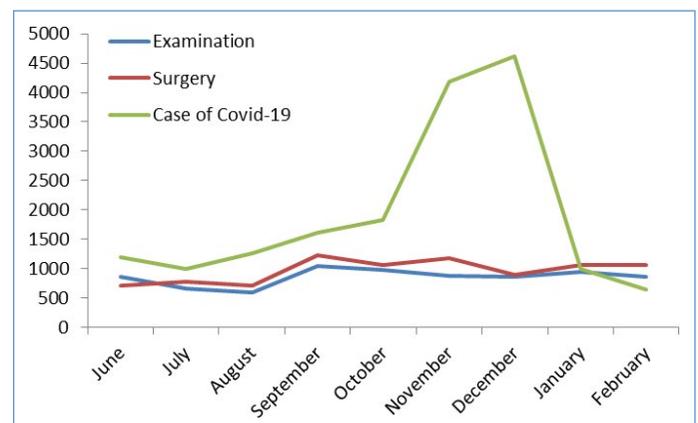


Figure 1. The number of COVID-19 cases in the country and total eye examinations and total surgeries in the eye clinic during the time period.

a long time and be transmitted to others over distances of more than one meter.^[16] One study noted that natural ventilation can reduce COVID-19 infections compared to artificial ventilation.^[17] Larger areas and naturally ventilated examination rooms opening to the outside environment can reduce the spread of the virus.^[18] In our study, ventilation through the opening of windows to the outside environment and the door of the examination room was stated as a common protection method used by all HCWs. In addition, the majority of the HCWs reported that they did not use the elevator because it was a closed and narrow space. This should draw attention to horizontal architecture instead of multi-story buildings in hospitals. These issues may be important in the architectural planning of hospital buildings in the future.

Close contact for 15 min over 24 h with people infected with COVID-19 has been considered as important for viral transmission. This contact period may occur 1 time, or cumulatively, depending on the total viral exposure during the day.^[19] In our study, there were 5 HCWs, all of them were secretary, technical personnel, or nurses, who were in contact with nearly 500 people per day at a distance of <50 cm. However, only one of these people had a COVID-19 infection. The low rate of COVID-19 in these individuals may be due to the short duration of close contact with patients. A meta-analysis reported that the incidence of COVID-19 was higher in nurses.^[9] However, in our study, the incidence was higher among the doctors than the other hospital personnel. This high rate may be due to the long-term close contact of doctors with patients.^[20] On the other hand, all HCWs with COVID-19 were strictly following general precautions in the study room. However, of the 6 HCWs with COVID-19, 4 shared the resting room with more than 5 HCWs, and all of them removed their masks in the rest room. There was no complete evidence of transmission from the resting room in the COVID-19 transmission in our study. However, the conditions of the resting room and the missing measures may facilitate the spread of the virus.^[20]

One of the most important methods of protection from the virus is hand hygiene. Although the glove provides good protection, it can create a false sense of security; furthermore, it can be a source of contamination during removal.^[21] In our study, the HCWs preferred hand washing and hand disinfection instead of using gloves for hand hygiene. In addition, the rate of safety biomicroscopic shield use was very high. There are several studies documenting COVID-19 genetic material in conjunctival swabs and tears.^[22] For this reason, it is recommended to use a shield and/or protective glasses during close contact with the patients.^[7]

A recent study reported the presence of viral RNA in the aqueous humor taken during cataract surgery in patients who were PCR-negative before surgery.^[23] Also, lacrimal surgeries are not recommended due to their proximity to the nasal mucosa.^[24] However, there are studies reporting that emergency and elective ophthalmic surgery can be performed after taking all necessary precautions.^[25] Despite the pandemic, examinations and surgeries continued unabated by taking the necessary precautions in our clinic.

In Türkiye, the Ministry of Health shared the number of severely ill patients in the first 6 months of the pandemic; after October 2020, the number of COVID-positive cases was also shared on the website. In addition, there is no information as to exactly what proportion of HCWs caught the disease during this period. This is our main limitation. However, when compared with the data of the WHO, it can be assumed that this rate is relatively low in our clinic. However, this assumption must be carefully evaluated due to the small number of HCWs in our clinic. However, this study can provide a perspective for sustainable eye exams and surgeries in an eye clinic.

Conclusion

In conclusion, the hospital-acquired COVID-19 transmission rate in our clinic was lower than the WHO's rate. This study showed that the use of high-grade protective masks (N95) and physical conditions that allow ventilation of the environment, in addition to general precautions, can be effective in preventing the spread of the virus. However, it would be important for HCWs to take the same protective measures they take in the working room in the rest room as well. Therefore, we conclude that it could be possible to continue ophthalmology practice after taking the necessary precautions.

Disclosures

Ethics Committee Approval: The study was approved by Haydarpaşa Numune Training and Research Hospital Clinical Research Ethics Committee, Date: 24.05.2021, decision number: 2021/135.

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Conflict of Interest: None declared.

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References

- Lai THT, Tang EWH, Chau SKY, Fung KSC, Li KKW. Stepping up infection control measures in ophthalmology during the novel coronavirus outbreak: An experience from Hong Kong. *Graefes Arch Clin Exp Ophthalmol* 2020;258:1049–55.
- Saleem SM, Pasquale LR, Sidoti PA, Tsai JC. Virtual ophthalmology: Telemedicine in a COVID-19 era. *Am J Ophthalmol* 2020;216:237–42.
- Napoli PE, Nioi M, d'Aloja E, Fossarello M. Safety recommendations and medical liability in ocular surgery during the COVID-19 pandemic: An unsolved dilemma. *J Clin Med* 2020;9:1403.
- Toro MD, Brézin AP, Burdon M, Cummings AB, Evren Kemer O, Malyugin BE, et al. Early impact of COVID-19 outbreak on eye care: Insights from EUROCOVCAT group. *Eur J Ophthalmol* 2021;31:5–9.
- Salica JP, Potilinski C, Querci M, Navarro I, Rivero JS, Daponte P, et al. A year of living dangerously: Challenges and Recommendations for safely performing ophthalmic surgery during the COVID-19 pandemic, from start to finish. *Clin Ophthalmol* 2021;15:261–78.
- Romano MR, Montericcio A, Montalbano C, Raimondi R, Allegrini D, Ricciardelli G, et al. Facing COVID-19 in ophthalmology department. *Curr Eye Res* 2020;45:653–58.
- Chu DK, Akl EA, Duda S, Solo K, Yaacoub S, Schünemann HJ; COVID-19 Systematic Urgent Review Group Effort (SURGE) study authors. Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: A systematic review and meta-analysis. *Lancet* 2020;395:1973–87.
- WHO. Keep health workers safe to keep patients safe. Available at: https://www.who.int/docs/default-source/world-patient-safety-day/health-worker-safety-charter-wpsd-17-september-2020-3-1.pdf?sfvrsn=2cb6752d_2. Accessed Sep 17, 2020.
- Gómez-Ochoa SA, Franco OH, Rojas LZ, Raguindin PF, Roa-Díaz ZM, Wyssmann BM, et al. COVID-19 in health-care workers: A living systematic review and meta-analysis of prevalence, risk factors, clinical characteristics, and outcomes. *Am J Epidemiol* 2021;190:161–75.
- Sabetian G, Moghadami M, Hashemizadeh Fard Haghighi L, Shahriarirad R, Fallahi MJ, Asmarian N, et al. COVID-19 infection among healthcare workers: A cross-sectional study in southwest Iran. *Virology* 2021;18:58.
- Nazarenko Y. Air filtration and SARS-CoV-2. *Epidemiol Health* 2020;42:e2020049.
- Bartoszek JJ, Farooqi MAM, Alhazzani W, Loeb M. Medical masks vs N95 respirators for preventing COVID-19 in healthcare workers: A systematic review and meta-analysis of randomized trials. *Influenza Other Respir Viruses* 2020;14:365–73.
- FDA. N95 respirators, surgical masks, and face masks. Available at: <https://www.fda.gov/medical-devices/personal-protective-equipment-infection-control/n95-respirators-surgical-masks-and-face-masks>. Accessed Sep 15, 2021.
- Workman AD, Jafari A, Welling DB, Varvares MA, Gray ST, Holbrook EH, et al. Airborne aerosol generation during endonasal procedures in the era of COVID-19: Risks and recommendations. *Otolaryngol Head Neck Surg* 2020;163:465–70.
- Yu AY, Tu R, Shao X, Pan A, Zhou K, Huang J. A comprehensive Chinese experience against SARS-CoV-2 in ophthalmology. *Eye Vis Lond* 2020;7:19.
- WHO. Modes of transmission of virus causing COVID-19: Implications for IPC precaution recommendations. Available at: <https://www.who.int/news-room/commentaries/detail/modes-of-transmission-of-virus-causing-covid-19-implications-for-ipc-precaution-recommendations>. Accessed 29 Mar, 2020
- Chen WQ, Ling WH, Lu CY, Hao YT, Lin ZN, Ling L, et al. Which preventive measures might protect health care workers from SARS? *BMC Public Health* 2009;9:81.
- Morawska L, Tang JW, Bahnfleth W, Bluyssen PM, Boerstra A, Buonanno G, et al. How can airborne transmission of COVID-19 indoors be minimised? *Environ Int* 2020;142:105832.
- CDC. Interim guidance for managing healthcare personnel with SARS-CoV-2 infection or exposure to SARS-CoV-2. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-risk-assessment-hcp.html>. Accessed 21 Jan, 2022.
- Mandić-Rajčević S, Masci F, Crespi E, Franchetti S, Longo A, Bollina I, et al. Source and symptoms of COVID-19 among hospital workers in Milan. *Occup Med Lond* 2020;70:672–79
- CDC. Using personal protective equipment (PPE). Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html>. Accessed Aug 19, 2020.
- Aiello F, Gallo Afflitto G, Mancino R, Li JO, Cesario M, Giannini C, et al. Coronavirus disease 2019 (SARS-CoV-2) and colonization of ocular tissues and secretions: A systematic review. *Eye Lond* 2020;34:1206–11.
- Koo EH, Eghrari AO, Dzhaber D, Shah A, Fout E, Dubovy S, et al. Presence of SARS-CoV-2 viral RNA in aqueous humor of asymptomatic individuals. *Am J Ophthalmol* 2021;230:151–55.
- Vinh DB, Zhao X, Kiong KL, Guo T, Jozaghi Y, Yao C, et al. Overview of COVID-19 testing and implications for otolaryngologists. *Head Neck* 2020;42:1629–33.
- Berkenstock MK, Ishii L, Giessler B, Quaty J, Biggs M, Buck P, et al. Implementation of novel protocols in an ophthalmic ambulatory surgical center to resume surgical procedures during COVID-19. *Qual Manag Health Care* 2021;30:69–73.