

Standard precaution measurements during ophthalmology practice in the pandemic stage of COVID-19

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Abstract

• **AIM:** To take specific precautions and keep a safe practice during providing ophthalmology health services without compromising the patient's safety as well as the team workers and the community in the pandemic stage of corona virus disease 2019 (COVID-19).

• **METHODS:** Applying patient circulation scheme implemented in our ophthalmology centers with the guidance of ministry of health infection control guidelines started from the moment that we receive a call or WhatsApp message or Facebook inquiry from patients until 21d after patients first visit if any. Four directions were taken. First, community awareness of the disease and the ophthalmology related advices in how eye can transfers the infection and how to protect our eyes not to be infected through videos interviews of our consultants and distribution in social media like Instagram, Facebook, WhatsApp pages radio and TV interviews as well as leaflet health awareness for distribution for public. Second, scheduling of patients' appointments to prevent overcrowdings and cross infection. Third, protective measurements tools in the center to detect and prevent any exposure of the patients to patients and to protect medical staff, COVID-19 scoring system was set up to identify patients with fever, respiratory symptoms, acute conjunctivitis or recent travel to outbreak areas and to encourage these individuals to postpone their appointments for at least 21d. Proper use of personal protective equipment was implemented. Stopping all the elective surgeries keeping only the emergency types advised by fourth: how to deal with our patients if they need an urgent ophthalmological intervention and how to deal with suspected cases of corona if any cases detected.

• **RESULTS:** Our measures helped our colleagues to try

to keep providing ophthalmology health services without increasing the incidence of infection for COVID-19 until this pandemic is over.

• **CONCLUSION:** In our practice, ophthalmologists should work with new aura of social media to facilitate the non-direct communication with the patients through maximizing the use of communication technology to keep contact with their patients and deal safely with COVID-19 cases.

• **KEYWORDS:** corona virus; COVID-19; Instagram; Facebook; WhatsApp; personal protective equipment

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INTRODUCTION

The World Health Organization (WHO) announced corona virus disease 2019 (COVID-19) which is very fast growing worldwide health emergency problem^[1], corona virus diseases was first reported in Wuhan China in November 2019 with wide spread all over the world within few weeks and up till now still new countries are recording new confirmed cases^[2]. COVID-19 is a respiratory disease with symptoms of fever, dry cough, headache, possible progression to pneumonia and severe acute respiratory syndrome^[3]. Other symptoms such as diarrhea, body aches and possible death in 2.3% of cases. Way of transmission is mainly droplet with many theories of possible airborne, direct contact, touching infected surfaces and rubs your nose or mouth or eyes and feco-oral transmission with highly contagious profile also considered recently. Incubation period ranges between 2 to 14d^[4] according to Centers for Disease Control and Prevention (CDC) with rare confirmed cases after 24d^[5]. The purpose of this article is to show how we can keep a safe role in maintaining providing our ophthalmology health services without compromising the patient's safety as well as the team workers and the community. WHO suspects that the infection is almost droplet like other corona virus that caused severe acute respiratory syndrome (SARS) outbreak in February 2019^[6-7]. Dr. Li Wenliang, an

ophthalmologist in Wuhan Central Hospital was confirmed as a victim of COVID-19 transmitted to him from an asymptomatic glaucoma patient^[8]. He was one among six other healthcare workers who were already infected and died because of confirmed COVID-19^[2]. And so, theories of infection from subclinical cases by droplets of secretions were suggested^[9]. Also, transmission of infection from droplets to the conjunctiva in cases that don't have eye protection measures. As ophthalmologists have very close contact to patient's eye and airways during slit lamp examination risk of transmission of infection is suspected to be very high^[10-12]. Conjunctivitis is an uncommon first presentation of COVID-19 patient even before fever or cough. Thus, transmission can happen in some cases if no protection is done^[10-11]. In 2003, SARS coronavirus was already isolated from patient's tears sample, giving high belief that novel coronavirus can be also present in tears secretions^[11]. The American Academy of Ophthalmologist advises all the ophthalmologists to use protective measures while examining patients suffer from conjunctivitis with respiratory symptoms and have history of international travel^[12]. Elderly people are the high risks group patients of mortality and morbidity of COVID-19, and as ophthalmologist we face these group of patients very commonly^[4-13]. Visiting eye clinic and doing eye examination and investigations and also operations can be a potential risk to transmit infection in the health facility among patients and healthcare staff^[14].

METHODS

Strategy to Face the Pandemic In January 2020, Omani Ministry of Health (MOH) announced emergency alert through circular to all healthcare facilities to be ready to face novel corona virus. As we have a huge number of patients who visit our centers for consultation and for operations in Muscat and Buraimi, we were alert about scheduling the patient visits so to avoid any possible crowd and possible infection transmission among the patients and staff, putting in consideration that positive cases may be asymptomatic. Applying patient circulation scheme implemented in our ophthalmology centers with the guidance of ministry of health infection control guidelines started from the moment that we receive a call from patients until 21d after patient first visit if any.

As an emergency strategy for our center, we divided our work to four directions: 1) community awareness; 2) scheduling patient's appointments to prevent overcrowding and cross infection; 3) protective measure tools in the center during and after visit; 4) deal with ophthalmological urgent case andwith suspected or confirmed COVID-19 case.

Community awareness Videos, messages and leaflets are made by our consultants regarding COVID-19 risk, ways of infection and ways of protection. They are launched through our website, channels and social media pages of our centers,

Figure 1 Questionnaire form as per Omani MOH algorithm.

our aim is to make sufficient community awareness of the disease and to the ophthalmology related advices in how can eye transfers infection and how can you protect your eye^[15]. TV and radio interviews were done among the community awareness campaigns of COVID-19 as well.

Scheduling patient's appointments to prevent overcrowding and cross infection As a global recommendation to keep people home as much as possible to stop the fast wide spread of the COVID-19, our aim was to reduce number of the visiting patients to our centers unless really urgent cases. This is a process has to be done with a trained ready staff and understanding patient and/or relatives. Staff education concerned about what is COVID-19, case findings, ways of infection, precautions must be taken for suspected and confirmed cases. Omani MOH algorithm and infection prevention and control guidelines were discussed specific questionnaire form based on MOH algorithm was created (Figure 1).

Infection prevention and control measures according to WHO and Omani MOH recommendations are followed: hand sanitizers and posters of hand hygiene and personal contact no hand shake signs are fixed on walls. Cleaning in the center by trained staff is instructed to be regular every one hour by sodium hypochlorite 0.1%-0.5%. Safe distance marks are put in red color lines and spaces on the floor in front to reception desk, waiting areas and investigations rooms (Figure 2).

Medical staff informed to put surgical or N95 mask, gloves, head cover, eyes or face shield and to wear aprons (Figure 3).



Figure 2 Waiting area A, B: Posters of hand hygiene and personal contact are put on walls in all rooms. Care of cleaning in the center by cleaner is instructed to be regular every one hour by sodium hypochlorite 0.1%-0.5%; C, D: Safe distance marks are put in red color lines and spaces on the floor in front to reception desk, waiting areas and investigations rooms.

MOH algorithm is printed on clear big posters and fixed on desks and center. Medical director instructed all the staff that he will do temperature scan every day to all the team before starting work thus feverish one will be back to home. Patient urgency sorting through clinic and operations log books, patients were divided into groups according to their cases and filtered to know urgent cases. Each receptionist, nurse and doctor was responsible about some group of patients to put for them their schedule. Each receptionist had to call group of patients to inform them that doctor has seen the file of him/her, and the doctor advises for near or late visit. Recording of all phone calls were documented in the phone log book of the center and patient's file. Social media messages were also used. Messages through WhatsApp, Facebook and Instagram for the patients who like to make them as the preferred way to contact were sent and documented.

Phone calls and social media messages aimed also to alert about early case detection. A questionnaire was filled during the phone call or sent through social media message. All patients had to give idea about history of fever, cough, and body aches and/or respiratory symptoms, history of travelling to epidemic country within 14d of this call, contact with feverish, chest disease patients or red eye patients, recent visit to any hospital, occupational history.

All patients who are scheduled to visit the center within this period were instructed to come alone if possible or with maximum one healthy partner. All patients and instructed to



Figure 3 Medical staff informed to put surgical or N95 mask, gloves, head cover, eyes or face shield and to wear aprons.

come putting disposable surgical mask and gloves. All patients are instructed to postpone the appointments if they feel they are not well or feeling sick.

Protective measure tools in the center during and after visit Measures to deal with the patients during clinic work and surgical work is directed mainly toward strict infection prevention and control. All patients are considered as suspected case.

Patient's visit circle is planned once he comes to the center. Once that patient and his partner reaches that center, they must log through an assessment desk to scan their temperature, then fill a sheet including a COVID-19 questionnaire according to

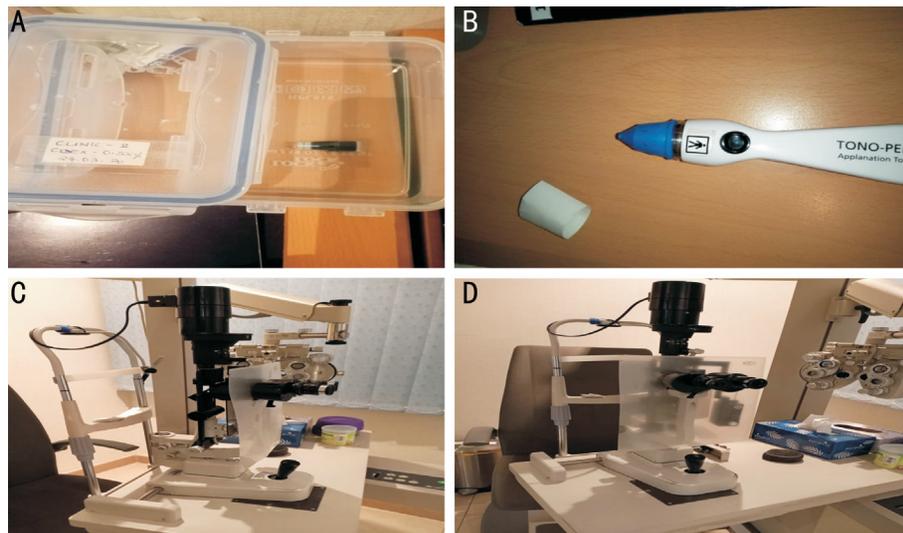


Figure 4 Inside clinic precautions A: Applanation tonometer can be used guided that cone is soaked with Cidex; B: Tonopen with disposable cover is used to measure IOP; C, D: Hard plastic slit lamp barrier that covers all the area between the doctor's face and patient's face to protect both of them from any infection that may come from that close contact.

points sent from the Omani MOH. Hand sanitizer is located at the desk. Surgical mask and disposable gloves are given to any patient and/or partner who is coming without them, and they are informed to discard them again at this desk before leaving the center. Putting in consideration those feverish patients more than 38°C with suspected history to be directed immediately to isolation room for assessments by trained staff on this case. As a rule by the center administration, the patient and his partner are guided by an accompanying nurse to the reception desk to collect the patient's file with respect to the red colored safety distance marks on the floor. Before the patient enters the investigation room or the clinic, doctor, nurse or technician is ready with full personal protective equipment (PPE). A surgical mask, hand gloves, an apron and a face/eye shield are put^[16]. Machines and chairs are cleaned by the trained staff. When the room is ready to receive the patient, patient then is allowed to enter. Doctors are aware to check COVID-19 screening sheet again before starting examination or investigations. For examination, we use hard plastic slit lamp barrier that covers all the area between the doctor's face and patient's face to protect both of them from any droplet spread of infection.

Only Tonopen with disposable cover is used to measure IOP, applanation tonometer can be used guided that cone is soaked with cidex (Figure 4).

Doctors are instructed to give follow up appointments as far as possible according to patient urgency status and to instruct the patient to be in contact with him or the center hotlines for any emergency or any inquiry^[17]. After the patient leaves the clinic or investigation room, the room is closed and instructed not to receive any patient until cleaned with the responsible staff. The patient and partner is guided by the accompanying nurse to the reception desk or pharmacy to collect medicines from our

pharmacy without paper prescriptions as the electronic medical file system allow pharmacist to know the needed medicine and the advised dose and frequency and to confirm next visit date. Before they leave, they discard the hand gloves at the assessment desk to be collected with the center wastes.

Deal with ophthalmological urgent surgical cases and patients with suspected or confirmed COVID-19 case

Urgency score list of the American Academy of Ophthalmologists is followed to sort the patients who are in urgent need for intervention or operations. On 19th March, after surgeon's decision about urgent need for operation, preparation of the patient is done according to his COVID-19 screening sheet. We considered any feverish patient with or without suspected history of COVID-19 is positive case until ruled out. Operating under general anesthesia is restricted as possible to highly selected cases *e.g.* child to avoid any droplet aerosols^[18]. MOH alert is done through the hotline if the patient is suspected to be COVID-19 positive case. A certain operation room in the theatre is selected for suspected COVID-19 in case of emergency. Operating staff is minimal in number as possible. They are prepared by PPE contains face shield, N95 mask, sterile disposable gloves, sterile disposable gown and full head to neck cover and over shoes. Patient is prepared by gown and gloves, shoe cover, head cover and surgical mask. All instruments used are disposable. After the operation is finished, discarding of all disposable PPE and instruments in specific medical waste bin with specific biohazard bag then sealed and labeled to discard according to MOH recommendations. The room is closed and disinfected with the trained staff. The patient is transferred to the isolation room till evaluated by the MOH team or till his COVID-19 test result is confirmed. Operating team is followed up and instructed to report any

manifestations suspecting COVID-19 infection. We contacted all patients who visited the center after 14 and 21d if it is not needed for them to come for follow up visit by phone call or social media messages. Patients who decided for them to come back for follow up, they also need to follow the same instructions of the previous visit. PCR results of the patients who were suspected to be positive COVID-19 are followed. It will guide us for the further management either followed up at our center according to our slandered precautions if negative result, or followed by the ophthalmology team in the isolation hospital of MOH fed by medical report from us, moreover arranged visit of our surgeon to examine the patient in the isolation hospital with previous arrangement with the MOH medical team in positive cases can be done.

DISCUSSION

COVID-19 is fast growing disease that influenced all over the world and as a health care ophthalmology provider we should keep maintaining our practice to the minimal required limits at least to deal with the urgent cases with standard precaution measurements that lead us for safe practice as well as helping in the screening of the disease. In our study we focus more on the social media communication such as WhatsApp, Facebook, Instagram to communicate with our patients and the new patients to decrease the cross infection by decreasing the number of patients visiting our centers. In Lai *et al*'s^[19] study, they concentrate on phone call and messages. Also in our practice we give patients chance to communicate with doctors as well. Community awareness campaign were made to help the community understanding the nature of eye related problems associated with COVID-19 which is not the case with the Lai *et al*'s^[19] study. We had almost same precautions in the screening and the check desk they made patients triage. In their study the did not mention about the follow plans of each patients that came to the center which is very important to decrease the risk of center acquired infection to any of the patients during his first visit^[19]. Other studies encourage the patients to shift from contact lens to eye glasses and if they cannot do so for any reason they should have extra care for the contact lens and the container and the solution we did not recommend contact lens at all. The CDC offer general guidelines to slow the spread of disease in which our study agree with them and focus on almost the same points^[20]. University of Alabama at Birmingham Eye Care, the clinical arm of the UAB School of Optometry, has introduced telehealth eye care. A computer or smartphone with the Internet is best for a telehealth conference call. Some care can be provided simply and allows patients to receive eye care at home. Doctors can do vision assessment; examine certain parts of the eye. Most importantly, the doctor will be able to ask vital questions regarding the eye health to determine

if there is a need to see a patient in person immediately or in the future^[21]. In our practice we introduced similar social media communication between our doctors and the patients through Facebook, Instagram, and WhatsApp to decrease the need of visiting our facility and decrease the unnecessary overcrowdings.

The American Academy of Ophthalmology (AAO) suggested serological test to detect humoral antibody kit responses to COVID-19 and also recognizes the potential role of fast serologic testing for ophthalmologists and other health care providers as well as patients when considering resumption of elective visits and surgeries. However, the FDA has not yet undertaken independent reviews of these tests for accuracy and reliability. In our study we did not do the serological test because it's expensive and not available^[22]. Our study did not mention the eye related ways to diagnose COVID-19 like tear examination for virus detection or how we can treat conjunctivitis related signs or the effect of the recommended hydroxyl chlorquine tablets on the eye during the treatment course which of course needed further studies and updated reports^[23]. We believe always that prophylaxis protection is much far better than treatment and we have to help our patients with safe practice.

CONCLUSION

Our measures can provide help to our colleagues all over the world to try to keep providing ophthalmology health services if needed without increasing the incidence of infection for COVID-19. In our practice we are advising ophthalmologists to work with new aura of social media to facilitate the non-direct communications and to maximize the use of communication technology with the current outbreak. Moreover further studies are needed to evaluate ophthalmology practice related spread of infections during COVID-19 pandemic out breaks in the near future.

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