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Compliance with the international and national guidelines for new normal ophthalmic practice patterns during the pandemic and post-pandemic COVID-19 era

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ABSTRACT

Purpose: To assess compliance with the international and national guidelines for new normal ophthalmic practice patterns during the pandemic and post-pandemic COVID-19 era.

Materials and Methods: An online questionnaire tool was used for this longitudinal observation study. It was conducted in two phases among practicing ophthalmologists in southern India. The first phase of the study, with 31 survey questions, was conducted in December 2020, and the second phase of the study, with four questions, was conducted in December 2023. Data was analysed using SPSS software, and qualitative variables were presented as numbers and percentages.

Results: A total of 186 ophthalmologists responded to the mail with a response rate of 47%. 37% were young ophthalmologists in the age group of 30–40 years, and 78% were operating surgeons. During the pandemic era, 72% of ophthalmologists followed triage at the hospital front desk, and 34.5% followed teleophthalmology, whereas in the post-pandemic era, only 8% of them followed the triage system. Personal protective equipment was utilised efficiently by all the participants during the pandemic era, whereas in the post-pandemic era, Likert scale showed that 62% of them completely stopped wearing face masks. 86% of them followed proper instrument cleaning methodology in the outpatient department, which declined to 5% in the post-pandemic era.

Conclusion: Triage, teleophthalmology, usage of a face mask, proper instrument sterilisation, and surgical precautions were some of the simple new normal practice patterns that can be followed in the post-pandemic period to prevent COVID and other deadly infections by health care professionals.

Key message: Healthcare practitioners can prevent themselves from acquiring COVID-19 and other deadly infections such as disease 'X' in the post-pandemic period by implementing basic new normal practice patterns such as triage, teleophthalmology, face mask usage, adequate equipment sterilisation, and adhering strictly to surgical precautions protocols.

1. Introduction

Ophthalmologists are highly susceptible to coronavirus infection 2019 (COVID-19) due to their close proximity to the examination of infected patients as well as aerosol contact with conjunctiva.[1,2] Several guidelines have been released in a short period of time to curtail the spread of infection to the health care professions;[3–5] however, it is unclear how many of these suggestions are actually being implemented in the clinical practice of ophthalmology. Thus, in this study, we intend to assess practical measures taken by ophthalmologists to prevent transmission of infection during the pandemic and post-pandemic era and

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to suggest new standards for post-pandemic ophthalmic care that would ensure both patients and ophthalmologists safety.

2. Materials and Methods

A longitudinal, observational study using an online questionnaire was conducted among practicing ophthalmologists in southern India. The Institutional Ethics Committee granted ethical clearance for the study, and corresponds with the principles of the Declaration of Helsinki.

The study was conducted in two phases. The first phase of the study was conducted between December 21, 2020, and December 26, 2020, and the second phase of the study was conducted between December 4, 2023, and December 9, 2023.

For the first phase of the study, we developed an open online survey link with five sections. The first section explains the goal of the study, its duration, and the participants' freedom to discontinue participation at any point during the study. An informed consent form was obtained from the ophthalmologist after reassuring that the confidentiality of the data would be maintained and used for research purposes only.

The second section collects their demographic details, field of specialisation, years of experience in ophthalmology, and practicing patterns, including tele-ophthalmology. The third section collects data on protective measures to be implemented in the outpatient department (OPD), including triage and usage of personal protective equipment as recommended by the World Health Organization (WHO)[3] and Ministry of Health and Family Welfare, Government of India.[4] The fourth section gathers information on hygienic measures to be followed with OPD instruments after contact with patients, as recommended by the All India Ophthalmological Society.[5] The fifth section gathers information for the analysis of surgical scenarios in the pandemic era.

A total of 31 survey questions was created using Google Forms. The questionnaire was validated by five expert ophthalmologists (three from teaching institutions and two from private practice) for better understanding of patient care practice in institutional and private practice settings. The questionnaire was pilot tested on 10 ophthalmologists and questionnaire was revised based on their suggestions.

The link to the validated questionnaires was sent to the ophthalmologist through email, which was obtained from state association of ophthalmologists. Personal mails and messages through smartphone applications were sent to encourage more ophthalmologists to participate in the study. Only those data with completed questionnaires were considered except for surgical scenarios section. More than one response could not be submitted from the same internet protocol address.

Four validated questionnaires, drawn from international and national recommendations, were used for the second phase of the study to evaluate if potential preferred practice patterns in the post-pandemic era were being followed. These questions were sent only to those who had responded to the initial questionnaire.

All the data were exported in Microsoft Excel sheets instantly from the Google Drive link, and statistical analysis was performed using the SPSS (Statistical Package for the Social Science) software, version 17.0, and qualitative variables were presented as numbers and percentages.

3. Results

3.1. Demographic profiles of the participated ophthalmologist in the study

The questionnaire link was sent to 400 ophthalmologists practicing in southern India, of whom only 186 responded to the mail; thus, the response rate was 47%. Active participation of about 37% (68/186) was observed in the 30-40 age groups, and about 8% (14/186) of participants were aged above 60 years (Table 1). Female ophthalmologists [58% (108/186)] have actively participated in the study compared to male ophthalmologists [42% (78/186)]. About 74% (138/186) of participants were working in the private sector, and 26% (48/186) were working in the public sector. Among them, 57% (104/186) of participants were working in teaching institutions, followed by non-teaching tertiary care institutions, individual private, and group practices. A general ophthalmologist of about 79.5% (148/186) responded to the questionnaires more actively than a speciality ophthalmologist. The majority of the study participants [44% (81/186)] had more than 15 years of experience in the field of ophthalmology.

3.2. Results of the practice pattern during the Janta curfew

Approximately 28% (52/186) of study participants practiced even during the Janta curfew, which was in effect from March 25, 2020, to June 8, 2020. The remaining ophthalmologists ceased to practice at that time, and 65.5% (122/186) of them resumed their practices immediately following the Janta curfew phased unlock, while 6.5% (12/186) of them did not resume their practices until after the complete phased unlock, which occurred after December 2020. Sixty-nine percent (36/52) of the 52 study participants who were practicing during lockdown were employed by educational institutions; these comprised 10 government and 26 private teaching institutions.

Approximately 50% of teaching institution ophthalmologists (52/104) continued to provide their services even during a complete lockdown, in contrast to 19.5% (16/82) of individuals from other hospitals. Approximately 24% (36/148) of general ophthalmologists

Table 1: Demographic profiles of the ophthalmologists who participated in the study during the pandemic era

Demographic profiles		Number of participants	Percentage
Age	≤30 years	20/186	11%
	31-40 years	64/186	37%
	41-50 years	40/186	22%
	51-60 years	44/186	24%
	≥61 years	14/186	8%
Sex	Male	78/186	42%
	Female	108/186	58%
Working sector	Private	138/186	74%
	Government	48/186	26%
Working place	Teaching institution	104/186	57%
	Non-teaching tertiary care institution	32/186	17.2%
	Group practice	18/186	9.67%
	Individual practice	32/186	17.2%
Field of practice	General ophthalmologist	148/186	79.5%
	Cornea	10/186	5.4%
	Retina	8/186	4.3%
	Glaucoma	6/186	3.2%
	Cataract	6/186	3.2%
	Orbit & oculoplasty	6/186	3.2%
	Pediatric ophthalmologist	2/186	1%
Experience in ophthalmic practice	≤5 years	48/186	26%
	6 to 10 years	36/186	19%
	11 to 15 years	20/186	11%
	More than 15 years	81/186	44%
Practice during Janta curfew	Provided continuous services	52/186	28%
	Stopped their services	134/186	72%
Practicing teleophthalmology	Before pandemic	14/186	7.5%
	After pandemic	50/186	27%
	Not involved in teleophthalmology	122/186	65.5%

and 42% (16/38) of specialty ophthalmologists worked during total lockdown. 50% (6/12) of the study participants who were over 60 years old were general ophthalmologists, making up 6.5% (12/186) of those who gradually resumed practice after December 2020.

Of the participants, 27% (50/186) had only started practicing teleophthalmology during the pandemic, whereas 7.5% (14/186) had already done so prior to the pandemic. Teleophthalmology was not practiced by the remaining 65.5% (122/186) of ophthalmologists.

3.3. Results of protocols to be followed in the outpatient department

Triage was conducted by 72% (134/186) of study participants, of whom 67% (125/186) performed triage at the hospital front desk and 5% (9/186) performed triage over the phone. In the hospital waiting area, 96.7% (180/186) of the study participants advised the compulsory wearing of masks for the patients and their attenders and 95% (176/186) of them provided hand sanitizer to the patients. A temperature check was done by 74% (138/186) of the ophthalmologists before consultation, and strict social distancing was maintained by 84% (156/186) of the ophthalmologists in their hospital. Attenders were not allowed inside the waiting hall by 48% (90/186) of them.

It was observed that 47% (87/186) of the ophthalmologists used only an N95 mask while seeing the patients, 33% (62/186) used both an N95 mask and a surgical mask, and 20% (37/186) of them used only a three-ply surgical mask. Of which, only 34% (63/186) of them changed the mask once every six hours, 54% (101/186) of them did not change at all, and the remaining 12% (22/186) changed the mask only when needed. Apart from face mask protection, 64% (119/186) of the ophthalmologists maintained a social distance of one metre from the patients during examination; 51% (95/186) of them used hand gloves; 35% (65/186) used face shields; 20% (37/186) used protective goggles; eight percent of them used full personal protective equipment (PPE); and 91% (169/186) used a breath shield attached to the slit lamp. It was noted that three percent of them did not take any of the precautions other than wearing a face mask.

For the safety of hospital staff, 65% (120/186) of the study participants advised them to wear N95 or surgical masks, of which only 13% (24/186) of ophthalmologists advised them to wear N95 masks only.

Regarding ventilation in the OPD, 75% of them kept their consultation room open with strictly no air conditioner (AC), 8.6% used AC with appropriate filters, 2% used portable filtering units, and 14% did not take additional precautions for proper air flow in the consultation rooms.

3.4. Results of equipment cleaning methodology adopted in OPD

Generally, for cleaning the instruments in the OPD, 55% (102/186) of the ophthalmologists used alcohol-based sanitizer, 31% (58/186) used sodium hypochlorite solution, and 14% (26/186) of them used various other methods for disinfection.

For cleaning the head rest, chin rest, joystick, on/off switches in the slit lamp, autorefractometer, and other instruments, 65% (121/186) of the research participants used 1% sodium hypochlorite solution, 14% (26/186) used 1% bacillocid extra solution, 8% (15/186) used alcohol wipes, and 13% (24/186) used other cleaning techniques. Furthermore, it was reported that 41% (77/186) of them used to clean slit lamps after seeing every patient, 33% (61/186) cleaned at the beginning and end of working hours, and the remaining 26% (48/186) cleaned only when it was needed. Tonometer tip cleaning was done with 70% alcohol solution by 37% (69/186) of ophthalmologists; 13% (24/186) of them used 1% sodium hypochlorite solution; 9% (17/186) used disposable tips; 6% (11/186) used tap water; and the remaining 35% (65/186) did not use contact tonometer during the pandemic era. Trial frames and trial lenses were cleaned after examining every patient by 34% (63/186) of the study participants, 28% (52/186) cleaned only when it was needed, and the remaining 38% (71/186) cleaned at the beginning and end of the office hours.

It was observed that 52% (97/186) of the study participants used sodium hypochlorite spray for disinfecting the consultation room; 7% (13/186) used fogging, 5% (9/186) used UV light, and 36% (67/186) used other techniques of disinfection.

3.5. Results of preventive measures adopted in surgical procedures during the pandemic era

In the study, 78% (145/186) of participants were operating surgeons, and 22% (41/186) were senior ophthalmologists practicing only medical ophthalmology. Among them, only 23% (33/145) of study participants operated during the lockdown period, of which 88% (29/33) were working in teaching institutions (25 from the private sector and 4 from the public sector). Among the surgeons, 42% (61/145) of them made the COVID test mandatory for all patients scheduled for surgeries; 33% (48/145) did it only for selected cases; and the remaining 25% (36/145) did not perform the test before surgeries. Among them, 25% (36/145) of surgeons advised chest x-rays for all patients scheduled for surgeries; 4% (6/145) advised computerised tomography (CT) chest; 6% (9/145) advised both CXR and CT chest; and 65% (94/145) of them were not in favour of this test.

In the operating room, 74% (107/145) of surgeons used N95 masks apart from regular operation theatre (OT) dress, 15% (22/145) used N95 masks and goggles with regular OT dress, and only 11% (16/145) of them used full PPE in the OT. While operating, 88% (127/145) of them felt uncomfortable with the N95 mask, and 52% (75/145) of them specifically reported breathing difficulties with face mask.

Among 145 surgeons, 104 ophthalmologists were exclusively phacosurgeons. About 80% (83/104) of phacosurgeons stopped phacoemulsification cataract surgery during the lockdown period. 92% (133/145) of the surgeons stopped performing aerosol-generating procedures like vitrectomy and dacryocystorhinostomy during complete lockdown.

3.6. Results of compliance with a possible new normal practice pattern in the post-pandemic era

A set of four questions was sent again to 186 ophthalmologists who participated in the first phase of the study, of whom only 172 responded to the questionnaire. It was observed that only 8% (14/172) of the participants were following the triage system in the current clinical situations, compared to 72% (134/186) in the pandemic era (Figure 1). Forty percent (68/172) of the ophthalmologists continued to practice teleophthalmology, which was nearly identical to the pandemic era. The frequency of wearing a face mask was assessed using a Likert scale, and it was observed that only 2% (4/172) of the ophthalmologists

were wearing masks regularly, and 62% (107/172) of them almost completely ceased the usage of a face mask while seeing the patients (Figure 2). In the post-pandemic era, proper instrument cleaning protocols were assessed by a Likert scale, and 5% (9/172) of the study participants were still following them, and 25% (43/172) of them completely stopped following the protocols (Figure 3).

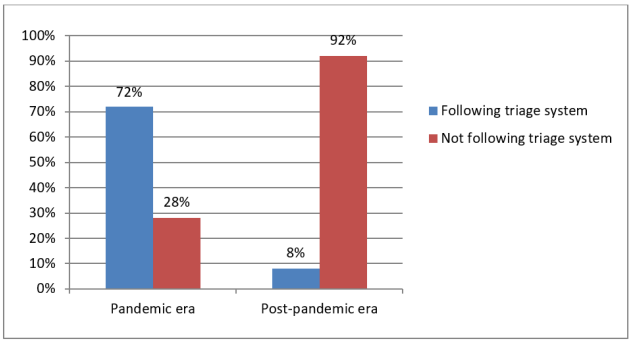

Figure 1: Comparison of study participants following triage system in the pandemic and post-pandemic eras

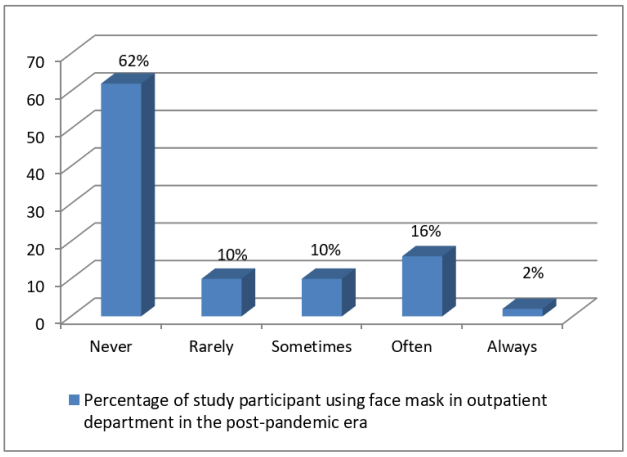

Figure 2: Frequecy of study participants using face masks in outpatient department in the post-pandemic era

4. Discussion

COVID-19, an infectious disease, prompted the World Health Organisation (WHO) to declare the outbreak a Public Health Emergency of International Concern (PHIEC) on January 30, 2020 and a pandemic on March 11, 2020. And more than three years into the pandemic, WHO proclaimed that COVID-19 is no longer a PHIEC on May 5, 2023.[6] This does not mean that the pandemic has come to an end, but we have mastered the strategies for controlling and preventing the spread of the virus, which has now become an endemic in the community.

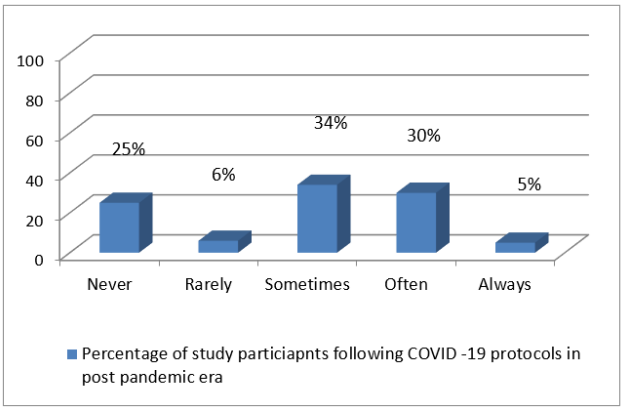

Figure 3: Frequency of study participants following proper instrument cleaning methodology in outpatient departments during the post-pandemic era

Numerous COVID outbreaks were documented in many nations, particularly in relation to the transmission of the delta-to-omicron variant, which poses a great threat to human life and increases burden on the health care system.[7–9] In the current situation, the JN.1 lineage was identified by the WHO on December 19, 2023, as a variant of interest that was rapidly spreading COVID infection across the world.[10]

WHO and its Technical Advisory Group for Virus Evolution (TAG-VE) state that previous vaccination status remains cross-reactive against the JN.1 variant, reducing its severity and symptomatic case burden on the national health care system. However, it may exacerbate respiratory symptoms and could even cause death in immune-compromised patients.[10] Thus, they continue to recommend Member States prioritise specific actions to better address uncertainties relating to antibody escape and the severity of JN.1

Infections with COVID-19 are not the only viruses that can infect medical personnel; ebola, nipah and henipaviral, marbung virus, rift valley fever, zika virus, and disease "X" can also result in fatal infections.[11] In this view, we recommend continuing to adopt new normal ophthalmic practice pattern in the post-pandemic COVID era to protect ourselves from contracting the various other fatal infections.

Various studies have demonstrated the evolution of ophthalmic practice patterns in the COVID era,[12–16] but it is unknown how well ophthalmologists follow these established procedures in the post-pandemic period. Following the COVID policy as provided by the International and National Health Care System also presented many practical challenges,[3–5] including suffocation in wearing personal protective equipment for a long time, cost-effectiveness in providing health care, and creating awareness among patients.

Therefore, in the current study, we analysed the basic preventative actions that patients and medical personnel, such as doctors and nurses, can be continued to prevent infection. The middle-aged practicing ophthalmologists actively participated and shared their experiences during the COVID-19 pandemic era. About 78% of ophthalmologists stopped their practice during complete lockdown, and similar results were observed in the study conducted by Nair et al.[12] In the study, it was observed that 72% of the study participants followed the triage system at the hospital front desk, but it declined to only 8% in the post-pandemic era.

Teleophthalmology, a boon of modern technology,[17,18] has been utilised in the COVID era. However, its use in ophthalmology is limited due to the complex examination system and use of advanced instruments.[19] A four-fold increase in usage of technologies was observed in our study, whereas a two-fold increase was observed in the study conducted by Sahay et al.[13] The ophthalmologists who were involved in teleophthalmology in the pandemic era continued even in the post-pandemic era. However, the majority of the participants did not involve themselves in practicing teleophthalmology.

Personal protective equipment, including a face mask and face shield, poses great difficulties for the health care professional in breathing normally and leads to mask-associated dry eye diseases (MADE).[20] In our study, all the ophthalmologists used face masks, either N95 masks or surgical masks, which have declined to only 10% in the post-pandemic period. This is a simple precautionary measure that can be taken to avoid infection from the patient during the slit lamp examination.

Thus, we recommend adopting the following undemanding preventive measures in the post-pandemic period to avoid COVID infection. Patients should attend their appointment accompanied by only one caretaker to avoid overcrowding. At the hospital front desk, triage should be done by medical staff, patients should be instructed to wear face masks, temperature should be checked, hand sanitizer should be provided, social distancing should be maintained, patient waiting areas and consulting rooms should be well ventilated, and AC should be used with appropriate filters. Teleophthalmology should be encouraged.

During consultation, the use of a face mask is mandated; hand hygiene should be taken care of after seeing every patient; a breath shield should be attached to the slit lamp; and instruments that come into contact with the patients should be cleaned appropriately, either using a 1% sodium hypochlorite solution or alcohol wipes. It is advisable to limit the use of mobile phones during consultations to prevent the spread of viruses and contamination.[21]

Symptomatic cases should be screened for COVID infection before any surgical procedures. Povidone-iodine 5% applied to the ocular surface prior to surgery has been demonstrated to be effective against SARS-CoV and is therefore thought to protect against SARS-CoV-2.[22] Since continuous, profuse irrigation of the ocular surface with saline reduces the likelihood of dispersing aqueous particles, the preferential use of ophthalmic viscosurgical devices (OVD) is advised for all ocular procedures that may require hydration of the ocular surface.[19] In the operating room, there should only be the minimum personnel necessary and their movement should be minimized

The limitations of the study include recall bias, and some of the responses of participants may not reflect actual practice methods. However, we must be vigilant to combat the outburst of COVID or other fatal infections at any time.

5. Conclusion

In the study, we found out that all the COVID protocols for ophthalmic practice were well taken care of by the majority of ophthalmologists during the COVID era, but they were not followed in the post-pandemic era. Triage, teleophthalmology, usage of a face mask, proper instrument sterilisation, and surgical precautions were some of the simple new normal practice patterns that can be followed in the post-pandemic period to prevent COVID and other deadly infections by health care professionals.

6. Source of Funding

None.

7. Conflict of Interest

None.

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