

## Publication trend of COVID-19 and non-COVID-19 articles in the Indian Journal of Ophthalmology during the pandemic

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**Purpose:** To analyze the trend of COVID-19-related and non-COVID-19-related articles published in the Indian Journal of Ophthalmology (IJO) during the COVID-19 pandemic. **Methods:** A retrospective analysis of all COVID-19 and non-COVID-19-related articles published in all the issues of IJO from January 2020 to March 2021 was performed. The data were obtained from the official website of IJO, Editor IJO monthly email, and PubMed. The monthly data were analyzed and a comparative analysis was done. The articles were segregated as Original, Review, Case Report/Series, Letter to the Editor/Commentary, Guest Editorial, Research methodology, Point-Counterpoint, Consensus Criteria, Ophthalmic Images, Photo Essay, Surgical Techniques, and AIOS Meeting Papers. **Results:** Out of 1343 articles published in IJO during the pandemic, 182 (13.55%) were COVID-19-related and 1161 (86.45%) were non-COVID-19-related articles. Among COVID-19 articles (182), majority were letter to the editors 66 (36.26%), followed by original articles 39 (21.42%), commentaries 24 (13.18%), editorials 18 (9.89%), and preferred practices 13 (7.14%). The least were case reports five (2.74%), current ophthalmology and innovation three (1.64%) each, and one (0.54%) each of consensus criteria, images, and photo essays. In the non-COVID-19-related articles (1161), maximum were original articles 276 (23.77%), followed by case reports 179 (15.41%), photo essays 157 (13.52%), and commentaries 141 (12.14%). The least were three (0.25%) consensus criteria and two (0.17%) each of current ophthalmology and innovations. The lockdown issue with 223 articles, postlockdown phase 1 had 267, postlockdown phase 2 had 321, and postlockdown phase 3 with 316 (1127 articles) articles in IJO showed a rising trend in a number of published articles compared with the prelockdown issues (216 articles). **Conclusion:** The quality and quantity of articles published in IJO increased and improved significantly. The results were seen with progressive improvement in citations and impact factors of the journal.

**Key words:** COVID-19, Indian Journal of Ophthalmology, non-COVID-19, publication trend

The World Health Organization declared the coronavirus disease (COVID-19) caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) a world pandemic on March 11, 2020.<sup>[1]</sup> On 24 March 2020, the Government of India ordered a nationwide lockdown for 21 days, limiting the movement of the entire 1.3 billion population of the country as a preventive measure against the coronavirus disease in India.<sup>[2]</sup> The COVID-19 pandemic observed an exponential surge in the number of COVID-19-related articles published across journals of all the medical specialties, and ophthalmology was not far behind.<sup>[3]</sup> We agree that a crisis may generate opportunities for new learning. It is also encouraging to note from the experience that the research publications did not slow down during or after a pandemic.<sup>[4]</sup> Most medical journals experienced a tremendous inflow of submissions during this pandemic time. There was an exponential upsurge in the publications of research papers during this time.<sup>[5]</sup> There could be several reasons for it viz., the researchers and clinicians had more time due to curtailment in their clinical practice during the forced lockdown and

opportunity to write and finish their research work (which was otherwise challenging during the normal working hours) and family commitments.<sup>[5]</sup> It would, however, be interesting to see, if there would be any reciprocal future dip in submissions to reflect a period in which clinical research has ground to a halt.

The Indian Journal of Ophthalmology (IJO) is a peer-reviewed open access monthly published journal by the All India Ophthalmic Society (AIOS).<sup>[6]</sup> It publishes technical and clinical articles in the field of ophthalmology under the terms of Creative Commons Attribution Non-Commercial Share Alike 4.0 licenses.<sup>[7]</sup> The previously published papers have highlighted a bibliometric analysis of ophthalmology papers published from 2001 to 2006 in peer-reviewed journals, and have assessed the productivity, trends in journal choice, publication types, research funding, and collaborative research from Indian Ophthalmology.<sup>[7]</sup> A recent paper also showed a scientifico-metric analysis of the IJO in detail.<sup>[7]</sup> Banu *et al.* in their article depicted an overview of ophthalmology

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COVID-19-related articles comprehensively.<sup>[8]</sup> In another article, Reitingner *et al.* showed that as compared to 2019, there was a 22.1% increase in ophthalmology publications (2838) from March through August of 2020, most prominent from May through August (an increase of 28.8%, 2222 publications). They also showed that 3.9% of the ophthalmology publications (742/18,817) from January to August 2020 were related to COVID-19.<sup>[9]</sup> A large number of editorials have been published depicting the trend of COVID-19-related publications in various specialties. However, to our knowledge, none of the previous articles have analyzed the trend of COVID-19 and non-COVID-19-related articles published in the Indian Journal of Ophthalmology during the COVID-19 pandemic. This article aims to report the publication trend of COVID-19 and non-COVID-19-related articles published in all the issues of the Indian Journal of Ophthalmology from January 2020 to March 2021. This will also highlight the comparative analysis of various types of manuscripts published and also the trends of publication during prelockdown, lockdown, and postlockdown phases.

## Methods

A retrospective analysis of all COVID-19 and non-COVID-19-related articles published in different issues of IJO from January 2020 to March 2021 was done. The study complied with the tenets of the Declaration of Helsinki. The study did not involve the study participants; hence, study approval was not obtained from the Institutional Review Board (IRB) of the Institutional Ethical Committee (IEC). The data was obtained from the website of IJO and was reconfirmed with the official monthly mail sent by the MedKnow team and by the respected Editor of IJO in the personal mail as well as PubMed search engine online. The articles were segregated based on

the type of manuscript; Original Article, Review Article, Case Report/Short Case Series, Letter to the Editor/Letter in Response, Guest Editorial, Research methodology, Point-Counterpoint, Consensus Criteria, Ophthalmic Images, Photo Essay, Surgical Techniques, Tales of Yore, and AIOS Meeting Papers. All manuscripts with a tag of a clinical study, clinical trial, comparative study, brief communication, controlled clinical trial, journal article, and randomized controlled trial were categorized as original articles. The total data was tabulated in the form of tables. Table 1 contains COVID-19-related articles published month-wise starting from the lockdown phase i.e., from the April issue onward. Table 2 contains non-COVID-related articles published from January 2020 onward. Table 3 describes a comparison of articles published in the prelockdown, lockdown, and postlockdown phases 1, 2, and 3. Prelockdown phase as considered by authors include January-March 2020, lockdown phase means April-June 2020, postlockdown phase 1 means July-September 2020, postlockdown phase 2 means October-December 2020, and postlockdown phase 3 means January-March 2021. Table 3 also depicts the total number of articles published during the year 2020 (COVID-19- and non-COVID-19-related articles). In addition, Table 4 depicts the total number of articles published in IJO year wise (2010–2020) with growth rate every year.

## Results

A total of 1343 articles were published in IJO during the COVID-19 pandemic. It included 182 (13.55%) COVID-19-related articles [Fig. 1] and 1161 (86.55%) non-COVID-19 articles [Fig. 2]. Among the COVID-19 articles [Fig. 1], a maximum proportion was formed by letter to the editors 66 (36.26%) followed by original articles 39 (21.42%), commentaries 24 (13.18%), editorials 18 (9.89%), and preferred practices 13 (7.14%).

**Table 1: COVID-19-related articles (postlockdown) published during the COVID-19 pandemic**

Article Type	Apr 2020	May 2020	June 2020	Jul 2020	Aug 2020	Sep* 2020	Oct 2020	Nov 2020	Dec * 2020	Jan 2021	Feb 2021	Mar 2021	Total
Original Article	0	1	4	5	2	0	2	7	0	2	6	10	39
Review Article	0	2	0	3	0	0	0	0	0	0	0	1	6
Case Report/Short Case Series	0	0	0	0	1	0	1	1	0	0	0	2	5
Letter to the Editor	0	6	9	13	6	0	7	4	0	14	5	2	66
Commentary	0	1	4	8	1	0	0	3	0	1	2	4	24
Editorial	1	3	2	4	0	0	3	3	0	0	0	2	18
One minute Ophthalmology	0	0	0	0	0	0	0	0	0	0	0	0	0
Current Ophthalmology	0	0	1	2	0	0	0	0	0	0	0	0	3
Preferred Practices	0	1	2	9	1	0	0	0	0	0	0	0	13
Perspective	0	0	0	0	0	0	0	0	0	0	0	0	0
Point-Counterpoint	0	0	0	0	0	0	0	0	0	0	0	0	0
Consensus Criteria	0	0	0	0	0	0	0	1	0	0	0	0	1
Innovations	0	0	0	0	0	0	0	1	0	0	1	1	3
Ophthalmic Images	0	0	0	0	0	0	0	1	0	0	0	0	1
Photo Essay	0	0	0	0	0	0	0	0	0	0	0	1	1
Surgical Techniques	0	0	0	0	0	0	1	1	0	0	0	0	2
Erratum	0	0	0	0	0	0	0	0	0	0	0	0	0
AIOS Meeting Papers	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	14	22	44	11	0	14	22	0	17	14	23	182

\*September 2020 was a special issue on Uvea. December 2020 was a special issue on Refractive surgery

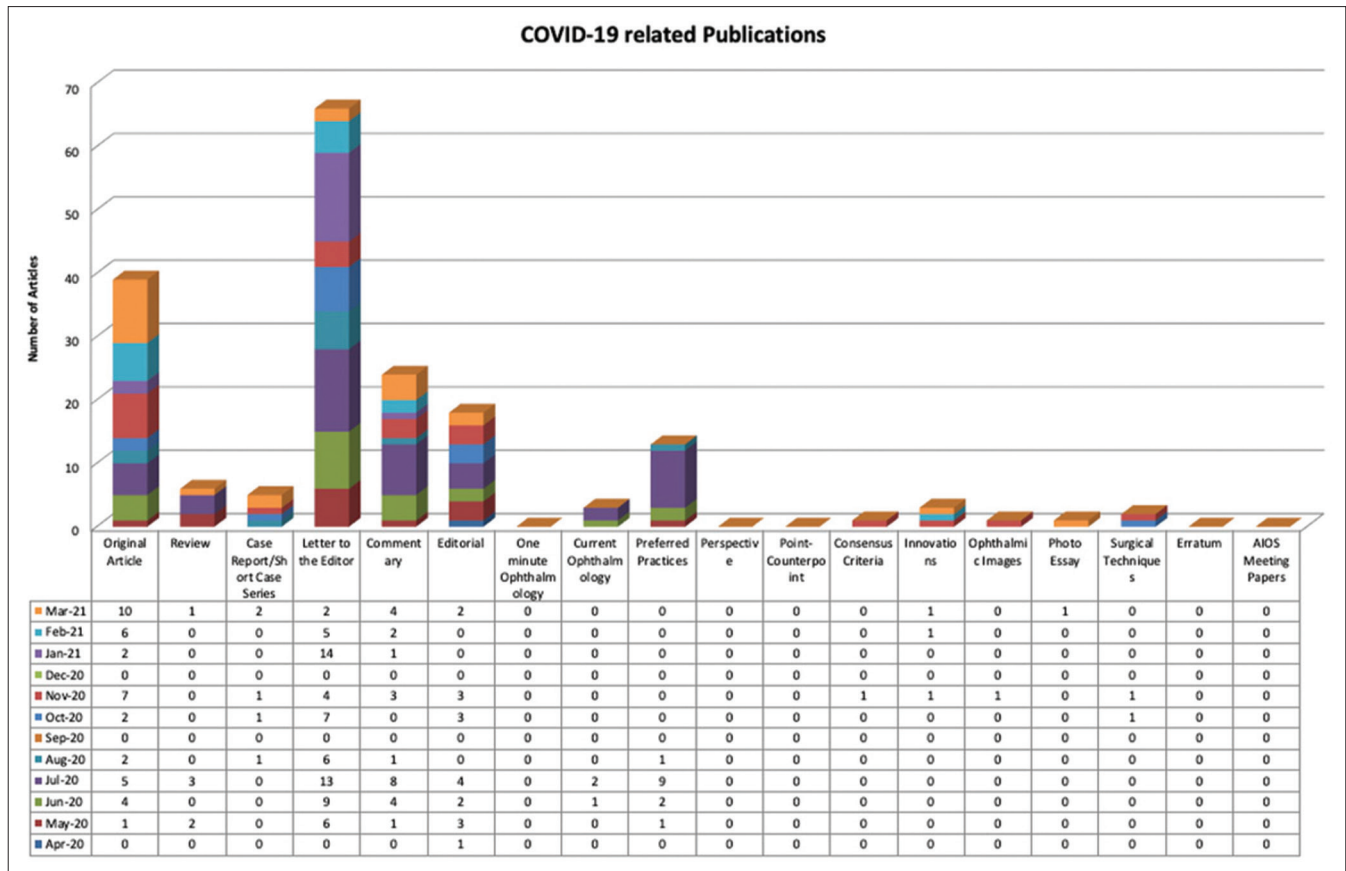


Figure 1: Image depicting the trend of postlockdown COVID-19-related publications in Indian Journal of Ophthalmology during COVID-19 pandemic in the form of a bar diagram

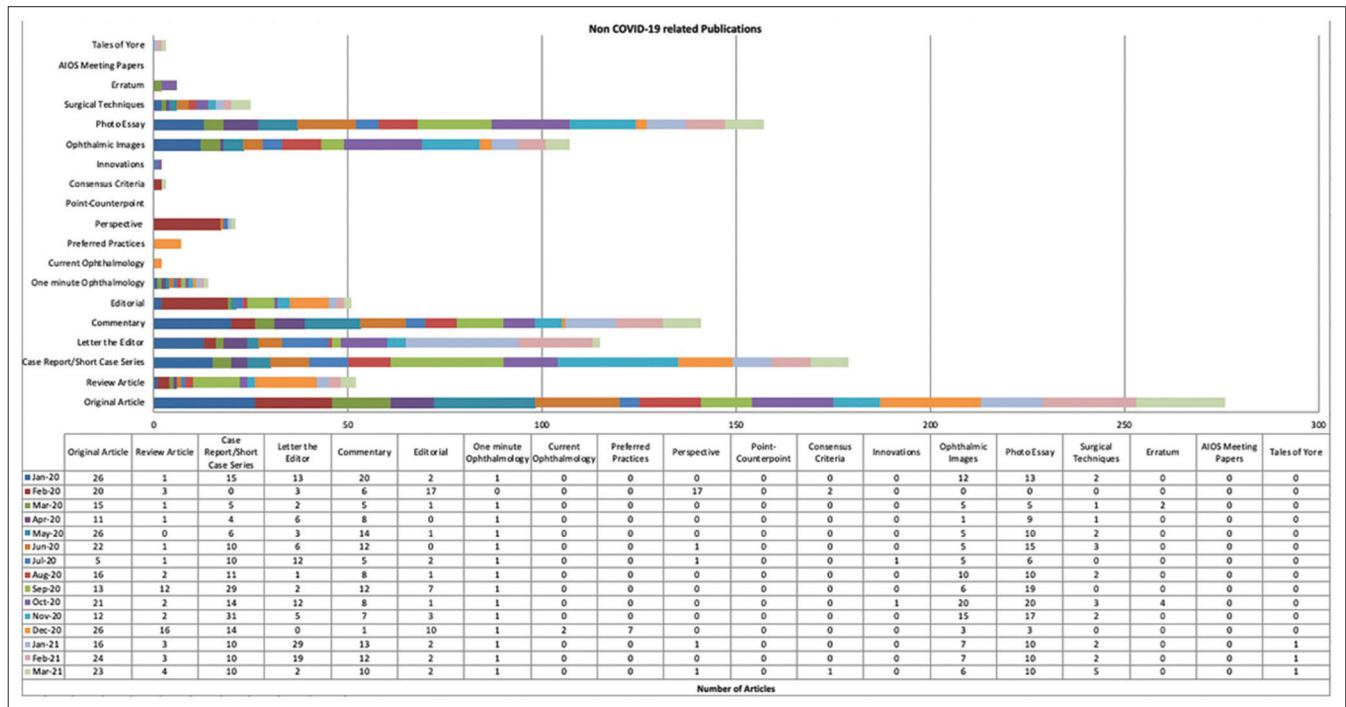


Figure 2: Image depicting the trend of non-COVID-19-related publications in Indian Journal of Ophthalmology during COVID-19 in the form of a bar diagram

**Table 2: Non-COVID-19-related articles published during COVID-19 pandemic**

Article Type	Jan 2020	Feb* 2020	Mar 2020	Apr 2020	May 2020	Jun 2020	Jul 2020	Aug 2020	Sep* 2020	Oct 2020	Nov 2020	Dec* 2020	Jan 2021	Feb 2021	Mar 2021	Total
Original Article	26	20	15	11	26	22	5	16	13	21	12	26	16	24	23	276
Review Article	1	3	1	1	0	1	1	2	12	2	2	16	3	3	4	52
Case Report/Short Case Series	15	0	5	4	6	10	10	11	29	14	31	14	10	10	10	179
Letter the Editor	13	3	2	6	3	6	12	1	2	12	5	0	29	19	2	115
Commentary	20	6	5	8	14	12	5	8	12	8	7	1	13	12	10	141
Editorial	2	17	1	0	1	0	2	1	7	1	3	10	2	2	2	51
One minute Ophthalmology	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	14
Current Ophthalmology	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
Preferred Practices	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	7
Perspective	0	17	0	0	0	1	1	0	0	0	0	0	1	0	1	21
Point-Counterpoint	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Consensus Criteria	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	3
Innovations	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Ophthalmic Images	12	0	5	1	5	5	5	10	6	20	15	3	7	7	6	107
Photo Essay	13	0	5	9	10	15	6	10	19	20	17	3	10	10	10	157
Surgical Techniques	2	0	1	1	2	3	0	2	0	3	2	0	2	2	5	25
Erratum	0	0	2	0	0	0	0	0	0	4	0	0	0	0	0	6
AIOS Meeting Papers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tales of Yore	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3
Total	105	68	43	42	68	76	49	62	101	107	95	83	95	91	76	1161

\*Note -February 2020 was a special issue on Community Ophthalmology. September 2020 was a special issue on Uvea. December 2020 was a special issue on Refractive surgery

A maximum number of publications were in July 44 (24.17%), followed by March 2021 23 (12.63%), March and November 2020 with 22 (12.08%) each, May and October 2020 and 2021 with 14 (7.69%) each, August 11 (6.04%) and April 1 (0.54%). A detailed analysis of this has been described in Table 1.

Among the non-COVID-19 articles [Fig. 2], there were a total of 276 (23.77%) original articles, 179 (15.41%) case reports, 157 (13.52%) photo essays, 141 (12.14%) commentaries, and 107 (9.21%) ophthalmic images. The maximum publications were in October 107 (9.21%), January 105 (9.04%), and September 101 (8.69%). The least were in March 42 (3.61%) and April 43 (3.70%) [Table 2]. In the prelockdown, lockdown, and postlockdown phase 1, 2, and 3 comparisons, maximum articles were published in January 105 (9.04%) followed by June 98 (8.44%) and July 93 (8.01%). The lockdown issues with 223 (19.20%) articles, postlockdown phase 1 had 267 (22.99%), postlockdown phase 2 had 321 (27.64%) (total 811 articles) articles, and postlockdown phase 3 had 316 (27.21%) in IJO showed a rising trend in several published articles compared to the prelockdown issues with 216 (18.60%) articles [Fig. 3]. The detailed analysis has been described in Table 3 and Fig. 4.

Among the total 1343 articles [Fig. 4] published in IJO during the COVID-19 pandemic, the maximum were original

articles 315 (23.45%), followed by case reports 184 (13.70%), letter to the editor 181 (13.47%), commentaries 165 (12.28%), and photo essays 158 (11.76%), and the maximum articles were published in October 121 (9%), November 117 (8.71%), January 2021 112 (8.33%), January 105 (7.81%), and September 101 (7.53%). The detailed analysis has been described in Table 3.

A steady increase in the growth rate of publications was noted in IJO from the year 2016 onward with 66.47% in 2018, followed by 44.74% in 2020, and 33.45% in 2017. A sudden spike was noted in 2013 with 60.62%. The detailed analysis has been depicted in Table 4 and Fig. 5.

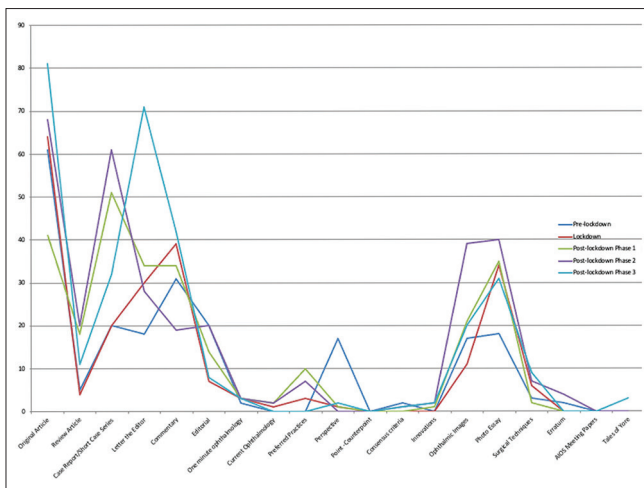
## Discussion

Clinical and medical research has always been the cornerstone in discoveries of better ways to prevent and treat diseases. However, time and again the medical research has remained demanding and ever challenging.<sup>[10]</sup> Several hurdles such as developing a hypothesis, locating funding, involving clinical trial units, developing agreements with sponsors, obtaining ethical committee approval, attaining patient consent for participation, and carrying out a sizeable amount of paperwork (obtaining data) need to be overcome.<sup>[11,12]</sup> In addition to the above, publishing a scientific article requires

**Table 3: Total article published in IJO during COVID-19 era**

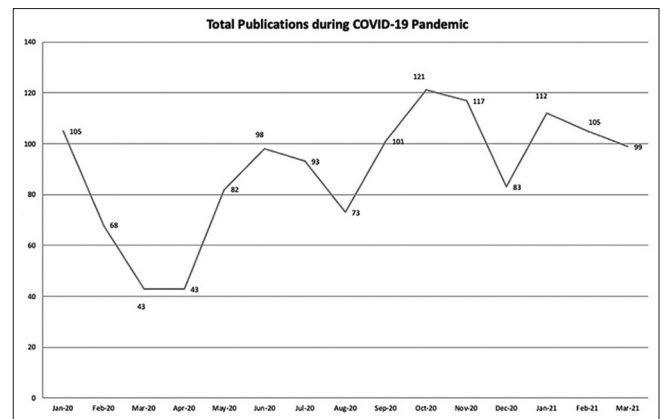
Article Type	Prelockdown			Lockdown			Postlockdown Phase 1			Postlockdown Phase 2			Postlockdown Phase 3			Total
	Jan 2020	Feb* 2020	Mar 2020	Apr 2020	May 2020	June 2020	July 2020	Aug 2020	Sep* 2020	Oct 2020	Nov 2020	Dec* 2020	Jan 2021	Feb 2021	Mar 2021	
Original Article	26	20	15	11	27	26	10	18	13	23	19	26	18	30	33	315
Review Article	1	3	1	1	2	1	4	2	12	2	2	16	3	3	5	58
Case Report/Short Case Series	15	0	5	4	6	10	10	12	29	15	32	14	10	10	12	184
Letter the Editor	13	3	2	6	9	15	25	7	2	19	9	0	43	24	4	181
Commentary	20	6	5	8	15	16	13	9	12	8	10	1	14	14	14	165
Editorial	2	17	1	1	4	2	6	1	7	4	6	10	2	2	4	69
One minute ophthalmology	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	14
Current Ophthalmology	0	0	0	0	0	1	2	0	0	0	0	2	0	0	0	5
Preferred Practices	0	0	0	0	1	2	9	1	0	0	0	7	0	0	0	20
Perspective	0	17	0	0	0	1	1	0	0	0	0	0	1	0	1	21
Point -Counterpoint	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Consensus criteria	0	2	0	0	0	0	0	0	0	0	1	0	0	0	1	4
Innovations	0	0	0	0	0	0	1	0	0	1	1	0	0	1	1	5
Ophthalmic Images	12	0	5	1	5	5	5	10	6	20	16	3	7	7	6	108
Photo Essay	13	0	5	9	10	15	6	10	19	20	17	3	10	10	11	158
Surgical Techniques	2	0	1	1	2	3	0	2	0	4	3	0	2	2	5	27
Erratum	0	0	2	0	0	0	0	0	0	4	0	0	0	0	0	6
AIOS Meeting Papers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tales of Yore	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3
<b>Total</b>	<b>105</b>	<b>68</b>	<b>43</b>	<b>43</b>	<b>82</b>	<b>98</b>	<b>93</b>	<b>73</b>	<b>101</b>	<b>121</b>	<b>117</b>	<b>83</b>	<b>112</b>	<b>105</b>	<b>99</b>	<b>1343</b>

Note -February 2020 was a special issue on Community Ophthalmology. September 2020 was a special issue on Uvea. December 2020 was a special issue on Refractive surgery



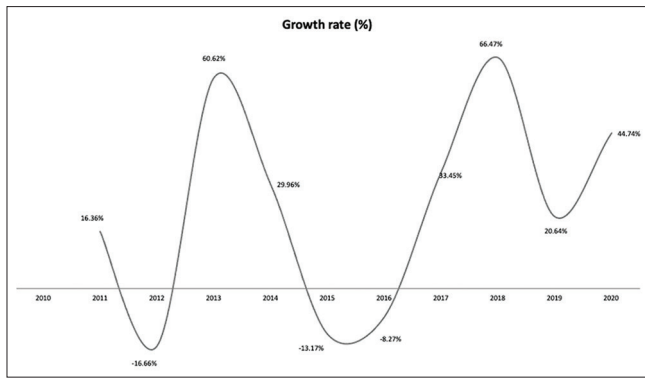
**Figure 3:** Image depicting trend of phase-wise publications in Indian Journal of Ophthalmology during COVID-19 pandemic—neck to neck comparison

data analysis, writing, submission, critical reviewing, multiple revisions, and finally publication. At each step, human interaction is required, and to achieve this individuals need to have the time and be focused to achieve the goal.<sup>[13,14]</sup> The current worldwide COVID-19 pandemic has certainly stretched the available human resources to meet those needs.<sup>[15,16]</sup> The same trend was observed for publications in IJO during this COVID-19 pandemic.



**Figure 4:** Image depicting the trend of total publications in Indian Journal of Ophthalmology during COVID-19 pandemic in the form of double U

A total of 1343 articles were published in IJO during the COVID-19 pandemic. It included 182 (13.55%) COVID-19-related articles and 1161 (86.55%) non-COVID-19 articles. A ratio of 1:6 of COVID-19 vs. non-COVID-19 articles was maintained, despite the sprint for publishing for COVID-19-related articles in every field. The first three issues had only non-COVID articles since at that time the pandemic was peaking up and most of the journals were observing a transition phase considering COVID-19-related publications. The first COVID-19 article was an editorial by the respected editor of IJO<sup>[17]</sup> and was published in April issue



**Figure 5:** Image depicting the total number of articles published year wise and growth rate of the Indian Journal of Ophthalmology from 2010 to 2020

**Table 4:** Total number of article published in IJO year-wise (2010-2020) with a growth rate every year

Year	Article Published (A)	Percentage % (A/N)	Growth rate (%)
2010	165	3.80%	
2011	192	4.42%	16.36%
2012	160	3.69%	-16.66%
2013	257	5.92%	60.62%
2014	334	7.70%	29.96%
2015	290	6.68%	-13.17%
2016	266	6.13%	-8.27%
2017	355	8.18%	33.45%
2018	591	13.63%	66.47%
2019	713	16.44%	20.64%
2020	1032	23.80%	44.74%
	4335 (N)		

catering to the changing needs of the research community. This probably ignited the spirit for quality submissions related to COVID-19, which was evident in the subsequent issues of IJO. Moreover, there was an overall increased rate of submissions noticed post announcement of lockdown as the clinicians got more time for research and academics. April onward there was a continuous upsurge in COVID-19-related publications except in the special issues on Uvea (September) and Refractive surgery (December). At the same time, the editors of IJO had to face a lot of challenges such as hard copy dissemination, timely and bimonthly online update of publications, expanding the capacity of the journal for COVID-19 articles, expedited review process, fast processing, and publications of COVID-19 articles and simultaneously matching the quality and quantity of non-COVID-19 publications. It was quite evident that the quality and quantity kept on increasing with every issue during the pandemic. The parameters that used to assess the quality of articles were the number of views, number of reads in a short time, number of PDF's downloaded from the IJO website, number of manuscripts printed, the number of accesses online, citations of the article, and rapid growth in impact factor of the IJO. The impact factor of IJO had remarkably increased from 0.961 in 2017, 0.977 in 2018, and finally 1.25 in 2019. This was only possible due to the quality review by the reviewers, expedited work by the editorial team, publishing articles based on merit in a short period, and a high number of citations.

Among the COVID-19 articles [Table 1 and Fig. 1], majority were letter to the editors 66 (36.26%) followed by original articles 39 (21.42%), commentaries 24 (13.18%), editorials 18 (9.89%), and preferred practices 13 (7.14%). A large number of letters to the editors<sup>[18,19]</sup> could be attributed to an urge of researchers to share the limited experiences related to COVID-19 from their clinics with the ophthalmology fraternity. Moreover, this is a short version of submission that comes with an advantage of a lesser word limit, thus enabling fast write-up, expedited review process, and allows the faster spread of the message. The original articles were mainly focused on either knowledge, attitude, and practice (KAP)<sup>[20]</sup> analysis of COVID-19, preferred practice pattern during lockdown<sup>[21]</sup> compared with the previous year or varied presentations of patients with COVID-19 such as conjunctivitis.<sup>[22]</sup> The editorials were more focused on COVID-19-related literature by the experts. The preferred practice patterns formed the core of COVID-19 publications as it was important to set the guidelines in the country for clinical ophthalmology practice during the upsurge of a pandemic.

Apart from this, there were 6 (3.29%) review articles viz., teleophthalmology,<sup>[23]</sup> COVID-19 prophylaxis,<sup>[24]</sup> long-term corneal preservation techniques,<sup>[25]</sup> therapeutic opportunities to manage COVID-19,<sup>[26]</sup> lessons learned during COVID-19 pandemic,<sup>[4]</sup> and ophthalmic manifestations of COVID-19.<sup>[27]</sup> Surprisingly, there were only five (2.74%) case report, one (0.54%) on follicular conjunctivitis,<sup>[28]</sup> two (0.10%) on central retinal vein occlusion (CRVO),<sup>[29,30]</sup> one on (0.54%) COVID-19-associated papilledema,<sup>[31]</sup> and one on (0.54%) Adie-Holmes syndrome associated with COVID-19<sup>[32]</sup> probably owing to lack of documented evidence and COVID-19 testing facilities at majority centers in India. In addition, there were three (1.64%) articles on current ophthalmology, which added flavor and value to the COVID-19 research. These included sanitizer aerosol-driven ocular surface disease (SADOSD),<sup>[33]</sup> differential diagnosis of acute ocular pain (teleophthalmology),<sup>[34]</sup> and impact of COVID-19 on visually disabled.<sup>[35]</sup> Amazingly, there were two (0.15%) articles on surgical techniques, which probably embarked on the surgical innovations in the COVID-19 era. These were U-shaped tools<sup>[36]</sup> for follow-up of corneal ulcers during the COVID-19 pandemic and four-in-one keratoplasty during the COVID-19 pandemic.<sup>[37]</sup> There were few interesting innovation on safe slit-lamp shield (SSS),<sup>[38]</sup> virus,<sup>[39]</sup> and aerosol<sup>[40]</sup> containment box for retinopathy of prematurity, which was helpful as a protective barrier against COVID-19 transmission and was readily adopted by many ophthalmologists across the country.

Maximum COVID-19-related publications came in July 44 (24.17%), followed by 23 (12.63%) in March 2021, 22 (12.08%) in March 2020 and November, 14 (7.69%) each in May and October, 11 (6.11%) in August, and one (0.54%) in April. This can be attributed to maximum manuscript submissions during the lockdown and expedited processing of articles by the editorial team. A high number was also seen in March 2021 showing growing interest of researchers towards COVID-19 work. The editorial<sup>[17]</sup> by the respected editor in the April issue of IJO probably ignited the spark for COVID-19 publications. Despite barriers and hurdles, the journal stood high and matched with utmost standards and quality of COVID-19-related publications throughout the year 2020 and also during 2021.

Among the non-COVID-19 articles [Table 2 and Fig. 2], there were a total of 276 (23.77%) original articles. The quality, quantity, and trend for original articles were constant throughout the year except during April and July issue owing to transition during the lockdown and more focus to accommodate more COVID-19-related publications. Throughout the year there were 179 (15.41%) case reports published. These were very few during the initial 6 months, and gradually increasing numbers were seen in the last 9 months (till March 2021). A landmark achievement was birth of a separate sibling journal for case reports. Indian Journal of Ophthalmology Case Reports inaugurated on January 1<sup>st</sup>, 2021 which is a quarterly publication. The first issue had a total of 30 case reports, 30 photo essays, and 20 ophthalmic images, which we have equally divided 10 each in the first 3 months of 2021 for comparative analysis. February 2020 was a special issue on community ophthalmology with supplements but had no case reports. The whole year saw in all 157 (13.52%) photo essays. The trend was similar throughout the year except during the initial half due to lockdown and COVID-19-related publications. In addition, there were 141 (12.14%) commentaries, which set high peer-review standards and quality manuscripts by experts in their fields. There were 107 (9.21%) ophthalmic images with a maximum of 20 (1.72%) being during the latter half of the year (in October). The increased number of case reports and images in the latter months could probably be explained to finish the backlog of manuscripts accepted in the same category till June 2020.

Moreover, the hybrid nature of publications was seen with publications in form of 115 (9.90%) letter to the editors, 51 (4.39%) editorials, 52 (4.47%) review articles, 25 (2.15%) surgical techniques, 21 (1.80%) perspective, 14 (1.20%) one-minute ophthalmology articles, 7 (0.60%) preferred practices, 3 (0.25%) consensus criteria, and 2 (0.22%) current ophthalmology and innovations each. Despite COVID-19-related challenges, the IJO standards were kept high by invited review articles, guest editorials, and one-minute ophthalmology articles. There was a new introduction in the form of Tales of Yore article from January 2021. Another important observation is that there were three main issues on Community Ophthalmology (February), Uvea (September), and Refractive Surgery (December). The special issues opened the opportunity for specialty publications and expert intellectual content by stalwarts in the field. The hallmark of IJO has always been the review articles by all esteemed national and international experts. The section on innovations in IJO definitely cannot be missed. IJO opened a gateway for innovations making it probably the best-fit journal with amazingly high impact factor. The seven (0.77%) articles were focused on preferred practices and were published amazingly all came in refractive surgery issue of December, which made making it extra special for the readers. These innovative and collaborative efforts by the editorial board were probably the main reason for the impact factor hike during the year. This is evident by the increased growth rate of the published articles since 2016 [Table 4] and an increasing number of citations day by day. Overall, the maximum articles were published in October 107 (9.21%), January 105 (9.04%), and September 101 (8.69%). The least was in March 42 (3.61%) and April 43 (3.70%) probably due to COVID-19-related challenges like lockdown, hard copy postal issues and expedited publication

process, social and mental issues related to the new virus, and stress of securing families.

Table 3 highlights the comparison of different types of publications in different phases of lockdown, prelockdown, lockdown, and post lockdown phases 1, 2, and 3. June 22 (12.08%) and July 44 (24.17%) had maximum articles published related to COVID-19 followed by a sudden dip probably due to focusing on special uvea issues in September. November 2020 and March 2021 again had a spike with 22 (12.08%) and 23 (12.63%), respectively. A U-shaped curve was seen from January to July with a maximum article in January 105 (10.22%) (non-COVID-19) and minimum in April 42 (4.08%) and then again rising during October 121 (11.78%) and November 117 (11.39%). This can be attributed to COVID-19-related challenges and the transition phase during the lockdown. Another important observation is that there was again an upsurge in the COVID-19-related article during 2021 probably because the researchers had collected a good amount of data with evidence, with reduced restrictions and COVID-19-related challenges. Similarly, Fig. 4 highlights the total number of articles published during the pandemic.

To conclude, from a research point of view, COVID-19 pandemic will be remembered as an era which created gateways and opened the door for innumerable research opportunities for the researchers from all field including ophthalmology. There was an unprecedented increase in the number of publications on COVID-19 since the disease started. The most benefitted were the juvenile researchers. The various reasons for increased submissions and high numbers of quality publications on COVID-19 in IJO were (a) Due to lockdown in the country and rest of the world and with suspended clinical activities, the researchers got ample amount of time to write manuscripts and convert them in expedited publications, (b) The prestigious IJO was also inviting COVID-19 related articles, which made it much easier for authors to publish as the editorial process was also fast track, (c) Also, most of the experienced researchers wanted to share their experience of patient profile and rare findings in patients with COVID-19 during the pandemic, and (d) Lastly, the stalwarts in their respective also shared their experience for preparing the AIOS preferred practice guidelines for examining and operating the patients with safety during COVID-19 pandemic.

The COVID-19 pandemic, an infectious disease caused by SARS-CoV-2 motivated the scientific community to work together to gather, organize, process, and share experiences on the novel biomedical hazard.<sup>[16]</sup> The IJO made full justice to the COVID-19 research in Indian ophthalmology and the world by publishing quality content.

## Conclusion

The substantial number of publications on COVID-19 in IJO indicate the seriousness and widespread consequences of this disease and the inquisitiveness to find solutions to combat it through sharing personal experiences and research on this topic. Despite the adverse circumstances during the pandemic, a balance was maintained between the publication trend of COVID-19 and non-COVID-19-related articles. The IJO through its varied spectrum of publications during this pandemic has continuously gained heights and has set a benchmark for sister journals in Ophthalmology during the COVID-19 pandemic.

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## Conflicts of interest

There are no conflicts of interest.

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