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Effect of COVID-19 Pandemic on Statistics of Ophthalmology Out-patient and Emergency: Pre-lockdown and Lockdown period: A retrospective study.

Sankar S[1], Wadwekar B[2], Srinivasan R[3], Kandasammy R[4]
[1]*Student, Department of Ophthalmology, Pondicherry Institute of Medical Sciences, Puducherry*
[2]*Associate Professor, Department of Ophthalmology Pondicherry Institute of Medical Sciences, Puducherry*
[3]*Professor &Head, Department of Ophthalmology Pondicherry Institute of Medical Sciences, Puducherry*
[4] *Lecturer, Department of Biostatistics, Pondicherry Institute of Medical Sciences, Puducherry*
Corresponding author: Dr.Sarala Sankar
Postgraduate student,Department of Ophthalmology
Pondicherry Institute of Medical Sciences
Kalapet, Puducherry- 605014

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ABSTRACT:
Purpose:
This is a retrospective study was done in a tertiary care hospital to study the impact of COVID-19 pandemic on ophthalmology outpatient attendance and emergency statistics during the Lockdown period compared to the Pre-lockdown phase.
Methods:
The data was taken from the electronic medical records of the patients who visited ophthalmology Outpatients department (OPD) and emergency services. Patients reporting ocular complaints from the period of 25th March 2020 to 31st July 2020(Lockdown Period) and the corresponding period in last year:25th March to 31st July 2019 (Pre lockdown period)
Results:
A total of 3201 patients with ocular complaints had visited the hospital during both Lockdown and Pre-lockdown phase. Of these, 641 (20%) were patients in the Lockdown period and 2560 (80%) in the Pre-lockdown. During lockdown, 8.6% were from emergency and 91.4% from OPD. During Pre-lockdown, 6.1%in emergency and 93.9% in OPD. The mean age of patients presenting to the emergency was 32.9 ± 18.8 years in both the groups. In OPD, the mean age of patients who visited the hospital was 45.2 ± 19.0 years in the Pre-lockdown period and 38.1 ± 16.7 years in the Lockdown period. The ratio of patients near and far from the institute was 8:1 during lockdown compared to Pre-lockdown ratio 4.1
Conclusion:
The current study shows, there was a significant reduction in the number of patients visiting hospital in OPD and emergency during the lockdown. The COVID 19 pandemic has effected ophthalmology practice in hospitals.
KEYWORDS: COVID-19, Pre-lockdown period, Lockdown period, Statistics

I. INTRODUCTION

The government of India declared a total lockdown across the country as a part of its efforts to control the disease spread because of the COVID 19 pandemic. The restrictions came into force at midnight on 24th March 2020 and were enforced for 21 days [1] The entire healthcare system went in a sudden, unexpected crisis of a lockdown, due to COVID-19 Pandemic [2] As a result of this lockdown, all regular out-patient departments (OPD) across hospitals and clinics in India were to be shut and all elective surgeries were deferred, but emergency healthcare services continued to function. A further period of partial lockdown came into force until Ophthalmologists across the country temporarily ceased routine clinical services at their respective practice locations. [3]

Ophthalmology practice was most affected. It affected the practices in multiple ways, which included concerns for the health of their staff and patients. It leads to equally great concern about the economic challenges to be faced ahead. There was a drop in the number of patients visiting the hospitals because of lockdown as well as the fear of visiting hospitals, which had an impact on the economy. Clinics that have based their revenues on mainly elective procedures have seen their income drop by 99%.[4]

Hence, we planned to study the impact of COVID-19 pandemic on ophthalmology OPD and emergency statistics pre-lockdown and Lockdown

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phase. Secondary objectives were to determine the demographics and diagnosis of the patient who visited the hospital during Lockdown.

II. METHODS

This retrospective study was conducted at a tertiary care hospital in Puducherry. This hospital covers various places within the Puducherry territory and surrounding states such as Tamil Nadu, Kerala, Telangana. This study was performed after obtaining approval from the Institutional Ethics committee. The electronic medical records of the patients who visited ophthalmology OPD and emergency with ocular complaints during the period of 25th March 2020 to 31st July 2020(Lockdown Period) and the corresponding period in last year (25th March to 31st July 2019) were retrieved. Information about their presenting complaints, residence, and final diagnosis were extracted. We excluded ninety-eight case records with incomplete demographic information and diagnosis from the Pre-lockdown group in OPD. The data collected were entered in a Microsoft Excel sheet and converted to SPSS software. Simple descriptive analysis was done. Categorical data were expressed in terms of percentage. Continuous data were expressed as mean ± Standard deviation. Chi-square test/Fisher's exact test was used to assess the association of categorical variables. A p-value of less than 0.05 was considered statistically significant

III. RESULTS:

Overall, including OPD and emergency, there were, 3201 patients with ocular complaints who visited the hospital during both Lockdown and Pre-lockdown phase. Out of total patients, 80% presented during the Pre lockdown period and 20% in the Lockdown period [Figure 1]

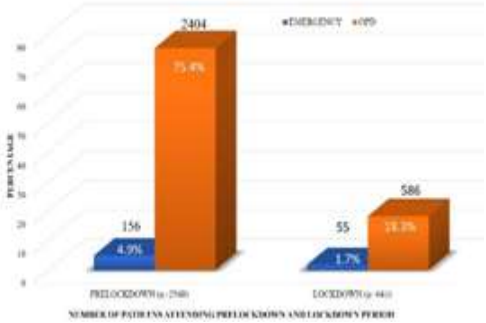

Figure 1: Number of patients who visited hospital during Pre lockdown and Lockdown

The mean age of patients presenting to the emergency was 32.9 ± 18.8 years in both the group (Pre-lockdown period 32.3 ± 19.3 years and in the Lockdown period 34.6 ± 17.4). There was a decrease in the number of visits in all age groups except 40 to 60 years of age in the lockdown period [Figure 2].

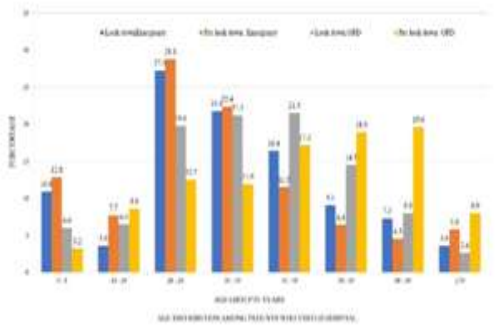

Figure 2: Age distribution among patients who had visited hospital

In OPD, the mean age of patients who visited the hospital was 45.2 ± 19.0 years in the Pre-lockdown period and 38.1 ± 16.7 years in the Lockdown period. There was a reduction in the number of visits of patients above 60 years age and children less than 12 years in the Lockdown period compared to the Pre-lockdown period (P-value: <0.005) [Figure 2].

In Pre-lockdown male patients visit to OPD was 1229, verses female which was1175 (M: F=100: 96) [Figure 3]. The male patient visits in an emergency to the hospital was 3 times more than female (117:39) in Pre-lockdown. In Lockdown, the OPD visits by males were 314, against female 272 (M: F=100: 87). While in Lockdown emergency, the number of males visiting the hospital was 3 times that of females (41:14). The number of female visits was reduced in the Lockdown period (P-value: <0.005).

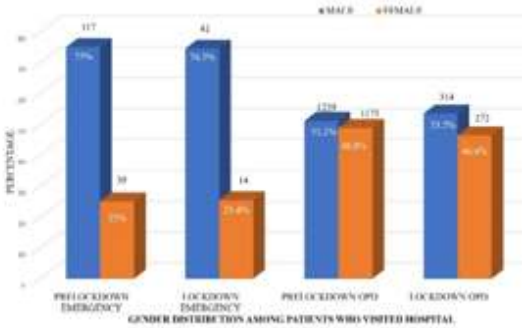

Figure 3: Gender distribution among patients who had visited hospital

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We found that patients who had visited the hospital were from various places in India such as Pondicherry, Tamil Nadu, West Bengal, Telangana, Kerala, Bihar, and Andaman.

In the emergency and OPD, during the Lockdown period, there were more patients from Pondicherry than from Tamil Nadu. In the Pre lockdown period, visits from Tamil Nadu patients were more when compared to Pondicherry (P-value < 0.005) [Figure 4].

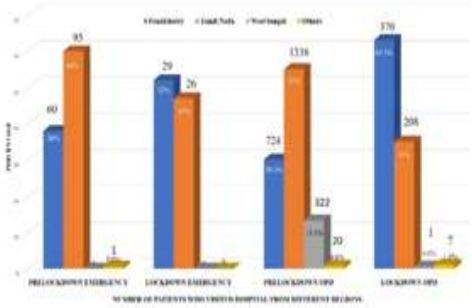

Figure 4: Number of patients who had visited from different regions

This institute is situated in the Ganapathichettikulam village which is about 14kms from North of downtown Puducherry at Kalapet on the East coast road. Therefore, it covers many villages around the institute which belong to Tamil Nadu. Hence, we further divided overall emergency data, as near the institute and away from the institute and found that in emergency approximately 80-90% patients were from near institute residence [Figure5]

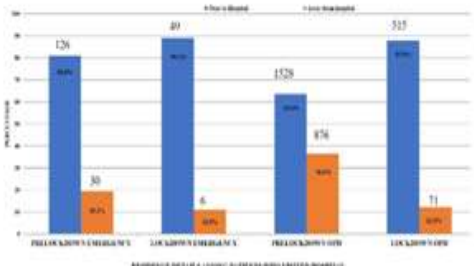

Figure 5: Residence details among patients who had visited hospital

Overall (including both lockdown and Pre-lockdown period), we had 2990 OPD, and most of the patients in OPD was from near the institute but in lockdown OPD there was an increase in patients from near the institute (P-value <0.005) [Figure 5].

In the Pre-lockdown period, out of 156 emergency cases, 68(43.6%) patients presented due to ocular trauma [56 cases (82%) were due to road traffic accidents]. The second most common presentation was conjunctivitis followed by corneal abrasion. Amongst lockdown emergency cases out of 55, 30 (54.5%) patients presented due to ocular trauma [12 cases (40 %) were due to road traffic accident] whereas the rest of the 25 cases presented due to other conditions such as conjunctivitis, corneal abrasion following corneal foreign body.

In OPD, during the Lockdown period, a maximum number of patients presented with complaints of conjunctival pathology 18.7%, followed by a refractive error in 13.3%. Even in the lockdown period, 9.8% patients came for a regular eye check-up. Around 5.6% of patients had cataract work up. Whereas, in the Pre-lockdown period, 14% of patients had cataract work up and 11.1% of cases came for follow-up after their cataract surgery. Four hundred and fifty-four (18.8%) cases had a refractive error, 188(7.8%) cases had routine eye check-ups and 100(4.1%) cases had retinopathy changes which were reduced in the lockdown period. In both groups, Conjunctivitis was the most common presentation.

Table: 1 Ocular diagnosis of patients presented to Hospital

Ocular diagnosis	PRELOCKDOWN EMERGENCY	LOCKDOWN EMERGENCY	PRELOCKDOWN OPD	LOCKDOWN OPD
Trauma	68 (43.5%)	30(54.5%)	14 (0.58%)	37 (6.3%)
Lids	7 (4.4%)	6(10.9%)	145 (6.0%)	39 (6.6%)
Conjunctiva and Sclera	32 (20.5%)	10(18.1%)	316 (13.1%)	110 (18.7%)

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Retinopathy	5 (3.2%)	3(5.45%)	100 (4.1%)	11 (1.87%)
Uvea	1 (0.6%)	1(1.8%)	31 (1.2%)	18 (3%)
Cataract	2 (1.28%)	0	338 (14%)	33 (5.6%)
Pseudophakia follow up	1 (0.6%)	1(1.8%)	268 (11.1%)	21 (3.5%)
Cornea	30 (19.2%)	4(7.27%)	99 (4.1%)	60 (10.2%)
Orbit	1 (0.6%)	0	18 (0.7%)	4 (0.6%)
Neuro ophthalomology	9 (5.7%)	0	49 (2%)	4 (0.6%)
Refractive error	-	-	454 (18.8%)	78 (13.3%)
Routine eye screening	-	-	188 (7.8%)	58 (9.8%)
Normal Ocular study	-	-	92 (3.8%)	60 (10.2%)
Presbyopia	-	-	226 (9.4%)	44 (7.5%)
Glaucoma	-	-	66 (2.7%)	9 (1.5%)
Total	156	55	2404	586

IV. DISCUSSION

The OPD and emergency cases in our Institute was decreased during Lockdown period to 18.3% and 1.7% compared to the corresponding months in the previous year, Pre-Lockdown (75.1% OPD and 4.9% emergency). This might had a serious impact on the patient, staff and hospital economy and students teaching [3,6]

World Health organization (WHO) declared COVID 19 a pandemic early in March 2020 [7] Nationwide 1st phase lockdown was implemented on 23rd march to 14th April 2020 for 21 days. Although ophthalmologists were not involved directly in handling this pandemic, unfortunately, they were affected.[7] This was particularly so in the multispecialty hospitals such as ours as this was declared a 'COVID hospital' and treated COVID patients including moderate and severe category. Hence, there was hesitancy among non-COVID patients in consulting here. An aerosol generation has also been a cause for concern. The elective surgeries have been suspended by ophthalmic societies in the entire world, as cataract surgery especially phacoemulsification was supposed to cause aerosol generation.[8]

Lockdown was extended till July 31with some restrictions. During this period, the All India Ophthalmic Society (AIOS) had also provided guidelines and precautions to ophthalmologists. These included postponing of the scheduled appointments for all elective procedures; reduction of the workforce; entry point screening and triaging of patients; regular sanitization of furniture; social distancing norms in waiting halls, outpatient department (OPD) of the patient flow to minimize crowding. [7] With the announcement of lockdown, most hospitals also gave out official notification in all the regional dailies requesting patients to visit the hospital only in case of an ocular emergency. The public responded well to the lockdown guidelines which had a significant effect on OPD statistics of hospitals in India and other COVID-affected countries.

The OPD and emergency cases in this Institute was decreased to 18.3% and 1.7% compared to the number of patients had visited the hospital during the corresponding period in the previous year was 75.1% in OPD and 4.9% in emergency [Figure 1] Hence, there was an overall decrease in the number of patients during the lockdown period. This reduction reflected the

effects of a strict curfew. People started avoiding the hospital visits, for routine illness for the fear of getting infected with COVID 19, as most hospitals were converted to COVID care hospitals, which led to further reduced OPD statistics. A similar study from literature reported that they also found to have a 96.5% decrease in the number of cases in the outpatient department and 99.7% suspended cataract surgeries during the lockdown compared to their corresponding time in the last year. [9] The decrease in the number of patients presenting to OPD was also reported by other authors depending upon the region and profile of the institute. [10]

In OPD, the mean age of patients who visited the hospital was 45.2 ± 19.0 years in the Pre-lockdown period and 38.1 ± 16.7 years in the Lockdown period which indicate there was a decrease in the number of old people presenting to OPD during the lockdown. However, children (<12 years) and older people (>60 years) made significantly lesser visits compared to corresponding data in the previous year [Figure2]. The reason could be because they are vulnerable to COVID infection, and they avoided unnecessary hospital visits and elective procedures. This is to be expected as the first wave was said to particularly affect the elderly and they were forewarned to stay home Pellegrini et al. had similar observations in his study that the mean age of presentation was seen at young age and decreased visits by children and older people during lockdown compared to the previous year [9] The mean age of patients presenting to the emergency was 32.9 ± 18.8 both in Pre-lockdown and lockdown group. This could be explained by the fact, the ocular trauma was the most common ocular emergency during both Pre-lockdown, and lockdown in our setting. There is significant evidence in the literature that shows that ocular trauma occurs more commonly in younger people. [12,13]

During the Pre lockdown period OPD visits, the ratio of male to female was 1.0 which was approximately the same as in Lockdown [Figure 3]. While another study suggested reported lower female visits in OPD, which they suggested may be due to females preferred to work from home and involved in household activities. [9, 10] While in emergency visits male to female in Pre lockdown was 3:1 which remained the same in lockdown, though there was an overall decrease in the number of male and female who visited the hospital during the lockdown period. [Figure 3]

The ratio of patients near and far from the institute was 4:1 during Pre lockdown which became 8:1 during the lockdown, which suggests the decreased visit from patients staying far. The reason may be due to inter-state transportation being affected and there was strict screening with E-pass to avoid the people from other states limiting the spread of COVID-19. There was no study supporting the findings reported regarding the residence importance.

Most of ocular emergencies in our hospital comprised of ocular trauma both Pre-lockdown and Lockdown [Table 1]. Ocular trauma has been reported to be more common among males due to their more involvement in driving vehicles, risky occupations, better access to health services, and more time spent outside compared to females. [12,13] This might be the reason for 3 times more emergency visits of males than females.

In OPD, in both groups, conjunctivitis was the most common presentation. In Pre-lockdown, 338(14%) patients had cataract work up and 268 (11%) cases underwent cataract surgery and completed follow-up in the postoperative period. During the lockdown period, around 33 (5.6%) patients had cataract work up but none of them had cataract surgery. Those who had advanced cataracts were given dates early and less advanced cataracts were given dates to be operated later. All elective procedures were withheld during the lockdown period. 4.1% retinopathy cases had visited hospital whereas, in lockdown period only 1.87% had visited. Babu et al found that eye irritation was the most common presentation in their institute. His reports suggest, 99.7% suspended cataract surgeries during the lockdown compared to their corresponding time in the last year.[9] Nair et al in his study, found that the majority of ophthalmologist in India avoided practice during lockdown and cessation of elective surgeries. [11] The most common presentation in an emergency in both lockdown and the pre-lockdown group was ocular trauma (Prelockdown 43.6%, Lockdown 54.5%). But trauma cases were relatively more during the lockdown, as other emergency cases number decreased. RTA was reduced in lockdown to 40% compared Prelockdown (82%) which could be due to the reduced road traffic because of curfew and restriction on interstate travel. The ocular trauma cases during lockdown include orbital fracture, lid tear, corneal abrasion. All emergency cases were operated following appropriate guidelines. Other emergency cases such as patients with phacomorphic glaucoma, phacolytic glaucoma were advised to get operated. Babu N et al in his study reported that they performed emergency procedures during the lockdown in case of open globe injury, lens-induced glaucoma. [9]

V. CONCLUSION

The present study shows, there was a significant reduction in statistics of the number of patients visiting hospitals in OPD and emergency during the lockdown. There was a significant drop in visits of patients staying far from the hospital as also the elderly and children. There was a drop in the number of surgeries performed. The COVID 19 pandemic has affected ophthalmology practice. Hence, we need proper guidelines and build up infra-structures to safely treat needy patients in such situations.

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