

Utility of telemedicine in ophthalmology clinic during COVID-19 era

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Received date: February 03, 2021; **Accepted date:** March 09, 2021; **Published date:** March 11, 2021

Citation: M Hasaneen, Shivani M Mehta, V Natarajan, A Hasan, N Iqbal, et al. (2021) Utility of telemedicine in ophthalmology clinic during COVID-19 era. *Biomedical Research and Clinical Reviews*. 3(3); DOI: [10.31579/2692-9406/049](https://doi.org/10.31579/2692-9406/049)

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Abstract:-

Due to safety concerns to health care workers and the patients alike, hospitals are have been in a desperate search for medical supplies and physicians in the face of overloaded hospitals. The need for social distancing to safeguard the health care personnel and patients have warranted new tools for running an ophthalmic clinic. Before the implementation of social distancing measures, most patients were ignorant of a telemedicine option in clinical visits. Also, leading telehealth platforms have reported a tremendous increase in virtual patient visits. This rise has been proportional to the regional impacts brought by coronavirus infection. In this review article, we tried to highlight the challenges faced by healthcare providers and patients in the ophthalmology clinic.

Key words:- covid-19; telemedicine; ophthalmology; screening

Introduction:

The COVID-19 pandemic has had an enormous impact on all specialty clinics also including ophthalmology practices globally. This pandemic and the resultant social distancing policies have put immense pressure on the world's economy, governments' functioning, and health care services delivery. This has ramifications in the form of cancellations of elective surgical procedures in operation theatres and non-critical or emergency patient appointments at outpatient clinics [1-3]. During the first wave of COVID-19, many centers pursued emergency surgeries without interruption, however, elective procedures had to be ceased across many health centers [2-6]. Similar questions are being asked regarding the postponement of outpatient clinic visits.

Due to safety concerns to health care workers and the patients alike, hospitals are have been in a desperate search for medical supplies and physicians in the face of overloaded hospitals. Moreover, operational challenges during this crisis and the need for social distancing to

safeguard the health care personnel and patients have warranted new tools for running an ophthalmic clinic [6-8].

Since the beginning of the COVID-19 pandemic, strict social distancing measures; have fostered the use of telemedicine technology. It has become a vital tool to lessen the pressure on physicians and patients alike to cope up with the current challenges [5-7]. However, it is worth noting that the type of bond is a virtual one between doctors and patients [8]. Moreover, addressing issues of patients' privacy and maintaining secure communication is also of paramount importance. [7-10]. The Centers for Disease Control and Prevention has recommended the utilization of telemedicine in place of live clinic visits due to the expected extended duration of social distancing [11-12].

In the current scenario, patients are searching for social distance based digital health care options, manifested by the recent increase in its demand reported by various telehealth companies [11-14]. Before the implementation of social distancing measures, most patients were ignorant of a telemedicine option in clinical visits [12-15]. Nowadays,

leading telehealth platforms have reported a tremendous increase in virtual patient visits. This rise has been proportional to the regional impacts brought by coronavirus infection [13-16]. In this review article, we tried to spotlight the challenges faced by healthcare providers and patients in the ophthalmology clinic.

Methods:

We did search on PubMed, Medline database publications using: COVID-19, Ophthalmology clinic, telemedicine clinic. The publications included were special communications, reviews, conferences papers, books and research studies regarding the subject matter over last one year.

Discussion:

In the face of COVID-19 restrictions and social distancing policy, issues about the Ophthalmology clinic include managing the triage, judicious utilization of staff, and efficient engagement of patient-physician during the virtual interaction. Telemedicine has assisted in averting the cancellation of clinical outdoor patient consultations in the developed world in the current pandemic. It has the potential to be employed for routine cases and oncological consultations. A telemedicine clinic serves different purposes such as tackling the triage acute problems, improvement of medications compliance by the patients, patients' reassurance, and timely follow-up of chronic conditions [15-19].

Practitioners have changed the way of traditionally dispensed health services for maintaining social distancing and quality health services at the same time. In one study, virtual clinic outcomes were encouraging. They mentioned that scheduled virtual appointments excluding no-shows, their technical success rate reached 92% [20]. Finkelstein. et al. mentioned a similar rate of 96% [21]. There are many possible reasons for variations in results mentioned in studies on the telemedicine success rates. This may be due to the nature of the visits, discrepancy including demographics, and possible differences in scheduling and patient reminders. There can be further improvement in the efficiency of telemedicine by doing reassessments of care plans, prudent rescheduling of pending appointments, or interventional procedures. Furthermore, proper and effective advertisement of telehealth services may also improve the efficacy of telehealth clinics [21-25].

There may be two modes of the offering of Telemedicine: scheduled telephonic interaction or video calls. Video call interactions have an advantage when used for triage because of the video content but can also be utilized for any of the objectives discussed in the previous paragraph. Staff should be trained enough to ensure optimum network connectivity and integrity of hardware. Saleem et al described their observations that large screens (tablets) were better than small screens (mobile phones) for video consultations [16].

It is vital to prioritize and categorize patients according to needs that may vary from patient to patient. For example, patients may be scheduled for a video call or a scheduled verbal (telephonic call). Sometimes, the doctor may decide the type of visit as deemed appropriate. Another thing to be taken care of is the difference of virtual-visits for new patients versus the old follow-up patients. It is prudent to offer video call for new patients [16, 21, 26, 27]. Lastly, emergency calls should be taken instantly. Patients' detailed history is of paramount importance. Supporting staff or technicians can compile and document the essential information to aid the evaluation and management process. At times customized questionnaires can be helpful when filled by the patient before the video call virtual interaction [23-27].

In an ophthalmology clinic, after history taking, visual acuity measurement is an important component of evaluation which can be handled by supporting staff, nurses, or technicians by utilization of Amsler grids, printed chart, or with help of a specially designed mobile

app. Apart from these, mobile and online refraction tools are also available for this purpose. It is, however, important to note here that these tools are not as accurate as in-office testing. Nonetheless, it is a need of the hour to validate such tools to furnish remote assessment of ophthalmic vital signs utilizing these available tools [16, 27, 28, 30, 31].

Intraocular pressure can be measured by utilizing a Sensimed Triggerfish contact lens and iCare Tonometer for remote eye assessment. Besides being expensive they lack accuracy and validation [24-31]. Another useful modality is the finger tensions method that can easily be performed by the patients [28]. In this method, patients may explain the extent of the hardness of the eye comparing it to common things like a texture of a certain fruit. However, a note of caution is warranted here as such remote-based modalities require proper instructions to patients regarding the self-performed finger tensions. Moreover, such subjective responses of the patients need to be meticulously gauged on a case-by-case basis. The parking lot is another place that can be used for ophthalmologic basic assessments to lower the people density and exposure during the COVID-19 situation. However, much more improvements are needed in this regard to bolstering up remote ophthalmology clinical practices [32]. There have been several advancements in technology, one example of which is the smartphone retinal imaging, not so far designed for use at home [31-33]. At present, the establishment of far apart clinical units for special ophthalmology tests may serve as a safe and plausible alternative to inadequate home based testing. It will help maintain the social distancing in the face of the pandemic.

Examination on remote-based ophthalmology clinic requires high-resolution internet connections, the utilization of larger screens with higher-resolution to maximize the quality of image accession and observation. Management plans including prescriptions and alterations in medications, necessary referrals, acquisition of consent for an already planned procedures, rescheduling intervention dates can be easily conducted by using video consults. Smartphone high-resolution cameras for patient-photography remotely controlled slit-lamp tools, fundus cameras, and prudently scheduled video calls may help in promoting virtual clinics in ophthalmology. As far as surgeries are concerned, a patient's COVID-19 test should be negative prior to surgery and the appropriate protective protocols should be utilized by the members of surgical team [36]. Tele ophthalmology has been more boldly used in patients during this pandemic, paving way for bolstering telehealth.

Conclusion:

The extraordinary situation created by the COVID-19 pandemic has resulted in disruption to practices in all specialties of medical services including ophthalmology. However, technology and innovation have paved the way for development and refinement in the utilization of teleophthalmology. Still, technological improvements in terms of software, internet quality and the hardware are required in this challenging specialty for accuracy and objective assessments of the patients at a remote place.

Financial Support: none

Conflicts of interest: none

Informed consent: Taken from patient regarding whole procedure.

Permissions: -none

Conflict of interest: There is no conflict of interest. We hereby transfers, assign, or otherwise convey all copyright ownership, including any and all rights incidental thereto, exclusively to the journal, in the event that such work is published by the journal. We would like to suggest no referees for the article.

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