Clinics of Surgery

Review Article

ISSN 2638-1451 | Volume 5

Virtual Becomes Real: A Literature Review On Virtual Care Clinics in Ophthalmology

Aldebasi T and Gangadharan S*

Department of Surgery, Division of Ophthalmology, National Guard Hospital, Riyadh, Saudi Arabia

***Corresponding author:**

Shiji Gangadharan,
Assistant Consultant, Department of Ophthalmology-MC 1446, National Guard Health Affairs, P O BOX 22490, Riyadh 11426, Saudi Arabia, Tel: 0096611801-1111 ext: 15487, +966562323544;
E-mail: shijisaj@rediffmail.com

Received: 15 June 2021
Accepted: 05 July 2021
Published: 12 July 2021

Keywords:

Virtual Clinic; Ophthalmology; Telemedicine; Asynchronous; Synchronous

Citation:

Gangadharan S, et al., Virtual Becomes Real: A Literature Review On Virtual Care Clinics in Ophthalmology. Clin Surg. 2021; 5(13): 1-4

1. Abstract

Following the pandemic, the health care system with help of information technology has opened a new window of health care delivery, i.e. Virtual care or virtual clinic. “Virtual clinic care” is a term given for all clinical activities in health care system in which patient and physician are not being in the same room at the same time. It is well known that ophthalmology is a field in medicine, which need multi-professional collaboration as well as innovations in its daily service delivery. This review of articles will give an overview of virtual care and its need in ophthalmology in this post pandemic era.

2. Introduction

Virtual clinic care and telemedicine can tackle the mounting pressure on the ophthalmologist to safely see their patients on right time. This literature review will analyze all recently published studies in ophthalmology virtual clinic either in journals or web search. Virtual clinic care can be asynchronous, where patient visit and consultant review take place at different times or synchronous where it involves real time interaction via telephone, videoconference or sms text [1, 2]. Two things we have to analyze when introducing a new system in medicine is its accessibility and acceptability. This need multiple studies and research on this field. Without any study we can say that this type of care can easily reach the individuals who have difficulty for presenting in person especially those in long term nursing care or bedridden ones.

3. Method of Literature Search

Articles studying the virtual clinics in ophthalmology were searched in Medline database using PubMed and google search. Next we reviewed the reference section of each articles to find other related studies. Once these articles were critically reviewed we analyzed again whole literature.

Lee et al in his retrospective analysis of all new patients seen in medical retina virtual clinic in Newcastle eye centre between April 2016 and May 2018 used asynchronous clinics for total of 610 patients [3]. Though it was started in 2016 only for diabetic patients, later it expanded to all new referrals of macular diseases. Referral letters from the periphery (optometrist, Diabetic Retinopathy screening service, general practitioner) are first assessed by a consultant ophthalmologist and if suitable for virtual clinic will be given appointment with documentation on the proforma suspected diagnosis, tests needed and suitable imaging. On the day of appointment visual acuity test, intraocular pressure measurement, dilation if needed and imaging as requested by the consultant ophthalmologist will be done. An explanatory letter was sent to the patient’s prior their attendance describing the nature of clinic that it is for undergoing test without a consultation with doctor and be informed later by a letter about the outcome in terms of diagnosis and treatment plan. In this study nurses and optometrist were trained for all the tests and imaging. The referral letter, completed proforma and images were reviewed by two consultants and re-

sults entered in electronic medical record system. The mean processing time from patient attendance to review was 3.6 days (range 0-5 days). In this study 44% were followed up in virtual clinic, 27.8% were offered face to face clinic appointment and 28%discharged. All of the urgent face to face appointment were seen in a month and received treatment. Prior to this clinic waiting time was 4 months.

Another retrospective study conducted by Christoph Kern et al at Moorfields Eye Hosital, Crydon from April 2018 to January 2019 with main aim to report the implementation and initial result of a cloud based referral platform in retina sub-specialty found a reduction in un-necessary referrals [4]. In this study participating optometrist was trained and they collected clinical data, an optical coherence tomology scan, a 45 degree colour fundus, centered on the macula. After gaining informed consent clinical and test data were uploaded to cloud based referral software. The optometrists were instructed to refer all presumable retinal cases via this platform and others were sent through the conventional general ophthalmic services. Patients were given option either to participate or to be referred to conventional pathway. The consultant ophthalmologist will refine the referral and classify into urgent referral (<4 weeks), routine referral and no referral and at last send a referral decision with diagnosis to each patient. Christoph Kern et al in this study found an average of 9 minutes were taken by the optometrist to gather and send pertinent clinical data and average of 3 mts for consultant for each patient. The highlight of this study is outcome measure i.e 52%reduction in optometrist referral rate. Also 14% of the referrals were urgent referral which was treated in less than 4 weeks' time and 34% for routine referral.

In Kotecha et al's study the feasibility of developing a virtual service in glaucoma outpatient department in Moorfields hospital, London was examined [5]. Apilot safety study was done in 2011 with 6 months' duration to initially analyze the agreement between the clinical decision made by remote reviewer to those made by ophthalmologist on same day of appointment. From March 2014 to April 2015 a service evaluation was done rather than a research. New virtual clinic was introduced with appropriate patients (low-moderate low risk glaucoma and glaucoma suspect) who receive information leaflet explaining their transfer to Stable Monitoring Service (SMS) along with their appointment letter to virtual clinic. Tests are done in streamlined fashion with each staff member having specific role and once done handover to next member. Here Health Care assistant explains the clinic flow to the patient and handover a pretest questionnaire whereas trained technicians will do visual acuity, visual field, OCT and disc images. To assess the patient experience a feedback form along with clinic outcome letter was send. In their evaluation it was found average time for patient journey in virtual clinic was only 51 minutes compared to average patient journey in same hospital for regular glaucoma clinic was 92 minutes. Average time between patient appointment and consultant remote review was 3 days and each consultant reviewed 30-35 patient per 3.5-hour session. The review outcome was with 75 % rebooked in stable clinic and 10% discharged. Majority of patient marked this service as excellent and only < 3% respondent reported poor.

A national survey was done from February 2016 to April 2016 among 92 clinical lead consultant ophthalmologist in National Health Services, United Kingdom using the Survey Monkey online survey platform which comprised 11 questions developed by a team of glaucoma specialist [6]. 92.9% of the respondents of survey rated the efficiency of virtual clinic to be similar to standard care, 3% rated very good and 7.1% described both efficiency and safety as poor. The main reason for not adopting this type clinic among the respondents was insufficient staff, time or fund and also risk of missing pathology. 66.7% of respondents used this virtual clinic to review follow-up patients, 9.5% to assess new patients and 23.8% used for both new and follow up cases.

4. Is Virtual Clinic a 'need' in Ophthalmology

An increase in number of elderly population both in developing and developed countries with proportional increase in eye diseases seek specialist attention and this will reflect a hike in referral from outskirt facilities to ophthalmology services. Also with the introduction of advanced imaging facilities detection rates of asymptomatic conditions and referral to many sub-specialties increased. High rates of unnecessary referrals has brought negative impact on patient's outcomes by overburdening specialist clinical services which in turn increases waiting time of deserved patient to get an appointment and receive treatment. Ophthalmology is a specialty in medicine which is ideal for this means of care because of its capacity to arrive at diagnoses and take a clinical decision in an asynchronous fashion. There are many trials in this field where hospital -based virtual clinic services have been efficaciously carried out which includes glaucoma, ARMD, DR and retinopathy of prematurity [3-7]. Indeed, such pathologies to be addressed as early as 4 weeks, otherwise belated detection will affect final visual outcome.

5. Benefits Eclipsing the Downside

Digital world is very fast that it can identify urgent referral through virtual clinic pathway and prioritize them for timely treatment and reduce the visual loss 4. At the same time can reduce the number of unwanted referrals. Thus this digital solution also establishes a harmonious relationship between the optometrist or referring practitioner and ophthalmologist. Moreover, Ophthalmologist can easily adapt to this cyber landscape and expand the service to an advanced technology and care without affecting patient satisfaction. Remote consultation for chronically illed and dependent patients via synchronous virtual clinic will offer great way of care sparing cost and inconvenience of travel. Those with multiple physical, emotional and practical challenges get advantage of this clinics by

avoiding unnecessary visits.

6. Contemplate Before Start

6.1. Patient Selection

First and foremost, thing to be considered while triaging patients to virtual clinic is which patients can be seen in this services. New referrals, follow-ups, lost appointment, confirmed cases elsewhere with advance disease, urgent referral from emergency care are different types of referrals reach a specialist centre. In multi subspecialty centres this will be a challenge. There should be a Standard Panel's recommendation for each sub-specialty. This should include patient selection for virtual clinic monitoring, streamlined test procedures, trained staffing, data collection etc. as shown in the UK survey [6].

6.2. Type of Virtual Clinic

Kassam et al have reported virtual service in Alberta either remote virtual service where the patient information including test results are send to tertiary centre for recommendation or an inhouse virtual centre in tertiary centre [8]. And both showed same reporting time which will be more suitable in those tertiary centres with many peripheral outskirt centres. Also bedridden and those with immobility issues to be categorized in synchronous virtual clinic where the specialist calls or make videoconference with the patient which is now after a pandemic has become familiar to whole world.

6.3. Tests and Techniques

Selection of imaging techniques for appropriate specialty have an integral role in the success of a virtual clinic. Also selection of proper high quality imaging technique and access to good imaging services will help the reviewer diagnose accurately [4]. Otherwise to recall patient for a face to face visit will be cumbersome.

6.4. Liability and Responsibility

Until virtual clinic is accepted as standard care practice its use raises the potential for increased liability as this field is highly deviated from accepted practice standards. There should be one consultant who will be responsible for such clinic which need to specify in advance officially and have to make clear plan under his supervision [3-6].

6.5. Acceptability and Accessibility

Most of the above articles have recorded the acceptability from patient's perception almost similar to standard care. Colin and Austin showed in their survey understanding of their condition was very good with mean satisfaction of 4.3 out of 5 which was comparable to standard clinic patients.

7. Limitations

Digital divide between younger and old generation will be one of the limitation as continuous watch of sms, email and call needed for timely visit. Same in case of physician selection as not all physician chooses to provide virtual visits to their patients. One of the reason is that concern of not reaching a diagnosis due to factors such as no full history and examination, inadequate image quality unexplained poor vision etc. Cost of setting such clinic with high cost imaging techniques, less space and personnel are also some concerns. Chance of missing pathology especially in DR and AMD will be harmful for patients as well as responsible physician. In Virtual clinic we may lose opportunity for patient education and counselling face to face which is more.

8. The "New Normal"

Virtual clinical care has become a useful model in the post pandemic "new normal". Pandemic crisis has posed challenges in public health care services especially healthcare providers when it mandates social distancing. Xiaohang Wu et al analyzed effectiveness of an ophthalmic based virtual service during Covid-19 and found retinopathy as common reason for face to face consultation where as in virtual visit ocular surface disease was the most cited [10]. Specific disease consultation (67%), symptomatic complaints (56%), prescription renewal (54.6%) was most common indication for virtual service in their analysis. Among the symptomatic group ocular surface disease was the major cause (87.2%). Younger age group seeked this type of consultation for symptom complaints whereas senior (>55 years) used it for prescription renewal. It seems ophthalmology patients are willing to approach and adopt this means of health care delivery. Also this means of service is time saving, breaking geographical barriers with effective forward triage for those needed face to face consultation [11]. A paradigm shift seen post Covid era was acceleration of patient seeking telemedicine in all fields of medicine and many described and analyzed the guidelines to help practices implement telemedicine [14]. Remote ophthalmic monitoring using smartphone cameras, attachments for self hotography, nonmydraitic fundus cameras, optical coherence tomography was not scalable but this crisis will spur such innovations and patients will adopt this approach soon [12-14].

References

1. Jamieson T, Wallace R, Armstrong K, Agarwal P, Griffin B, Wong I, Bahtia S. Virtual Care: A Framework for a Patient-Centric System. Toronto, ON: Women's College Hospital Institute for Health Systems Solutions and Virtual Care. 2015. (2017-01-16).
2. Kimberlyn Marie McGrail, Megan Alyssa Ahuja, Chad Andrew Leaver. Virtual Visits and Patient-centered Care: Results of a Patient Survey and Observational study. J Med Internet Res. 2017;19(5): e177.
3. Jing Xian Lee, Vina Manjunath, S James Talks. Expanding the role of medical retina virtual clinics using multimodal ultra-widefield and optical coherence tomography imaging. Clinical Ophthalmology. 2018; 12: 2337-45.

4. Christoph Kern, Karsten Kortuem, Josef Huemer, David Barkeret al, Moorfields, Dun Jack Fu, et al. Implementation of cloud-based referral platform in ophthalmology; Making telemedicine services a reality in eye care. Br J Ophthalmol. 2020; 104(3): 312-7.

5. Aachal Kotecha, Alex baldwin, John Brookes, Paul foster. Experiences with developing and implementing a virtual clinic for glaucoma care in an NHS setting. Clinical Ophthalmology. 2015; 9: 1915-23.

6. Gunn PJG, Marks JR, Au L, Waterman H, Spry PGD, Harper RA. Acceptability and use of glaucoma virtual clinics in the UK: a national survey of clinical leads. BMJ Open Ophthalmol. 2018; 3: e000127.

7. Chee R, Darwish D, Fernandez-Vega A, Patel S, Jonas K, Ostmo S, et al. Retinal telemedicine. Current Ophthalmology Rep. 2018; 6: 36-45.

8. Kassam F, Amin S, Sogbesan E, Damii KF. The use of teleglaucoma at University of Alberta. Journal of telemedicine and telecare. 2012; 18(7): 367-73.

9. Court JH, Austin MW. Virtual Glaucoma clinics: patient acceptance and quality of patient education compared to standard clinics. Clin Ophthalmology. 2015: 9: 745-9.

10. Wu X, Chen J, Yun D, Yuan M, Liu Z, Yan P, et al. Effectiveness of an ophthalmic hospital-based virtual service during Covid-19. Ophthalmology. 2021; 128(6): 942-5.

11. Hollander JE, Carr BG. Virtually Perfect? Telemedicine for Covid-19. N Engl J med. 2020; 382(18): 1679-81.

12. Sophia Mirza saleem, Louis R Pasquale, Paul A Sidoti and James C Tsai. Virtual Ophthalomology: Telemedicine in a Covid-19 Era. Am J Ophthalmology. 2020; 216: 237-42.

13. Gan K, Liu Y, Stagg B, Rathi S, Pasquale LR, Damji K. Telemedicine for glaucoma: guidelines and recommendations. Telemed J E Health. 2020; 26(4): 551-5.

14. Theodore Bowe, David G Hunter, et al. Telemedicine and e Health. 26: 9.