Review Research

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Telehealth for Ophthalmic Nursing Care (Teleopthamology) Patient Due to Covid-19

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Abstract

Background: A large number of users of Telehealth by health workers for eye care of patients to minimize contact with patients during the Covid-19 pandemic. **Objective**: This scoping review discussed the application of teleophthalmology in the care of eye patients during the Covid-19 pandemic. **Methods**: This study followed the acronym PCC (P = population; C = concept; C = context). Journals were obtained through the Pubmed, Science Direct, Clinical Key, and Medline databases. **Result**: A total of 220 findings appeared, then narrowed by the limitation of the last 10 years in the year of publication, full-text article / open access, using English, type of article was a research article, related to Telehealth for eye care patients due to covid-19. After investigating the same paper, it was checked based on inclusion criteria, and finally, six journals were synthesized. **Discussion**: The method used in Teleopthalmlogy was A distinction between asynchronous and synchronous, for example, video visits and smartphones. **Conclusion:** Teleophthalmology was effective and efficient when used during the Covid 19 pandemic. **Recommendation**: It can be used for the initial assessment of patients to reduce the number of patient visits to health facilities, for example, hospitals.

Keywords: telehealth, eyes, covid -19

INTRODUCTION

In 2020, the world was shocked by severe infections with unknown causes. It originated from a report from China to the World Health Organization (WHO) where 44 severe pneumonia patients were found in an area, namely Wuhan City, Hubei Province, China, on the last day of the year 2019 China. Initial allegations were related to wet markets selling fish, sea animals, and other animals. On January 10, 2020, the cause was identified, and the genetic code was obtained, namely the new coronavirus [1].

Globally, until January 23, 2021, the number of confirmed cases of COVID-19 infection reached 96,877,399, including 2,098,879 deaths reported to WHO. Indonesia declared its first case on March 2, 2020, which was suspected of contracting it from a foreigner visiting Indonesia. Issues in Indonesia continue to increase; until January 23, 2021, there have been 965,283 cases with 27,453 deaths [2]. This transmission generally occurs through droplets and contact with the virus. Then the virus can enter the open mucosa. An analysis attempts to measure the rate of transmission based on the incubation period, symptoms, and duration of symptoms with isolated patients. The analysis shows the results of transmission from 1 patient to about three people around him. the possibility of transmission during the incubation period causes the patient-to-person contact period to be longer. Therefore, the risk of infected contact with one patient may be greater [3].

Along with the development of the times, especially in the 4.0 era, along with the more accessible information technology, it is used in the health sphere to help answer all existing health problems. This is also seen as an opportunity to improve the quality of nursing care and increase the reach of nursing services, especially for communities throughout Indonesia, including communities in remote and remote areas. One of the nursing technologies that continues to develop is telehealth nursing or telenursing. It is known that telenursing is growing in various countries, with solid evidence and benefits of its use. It has proved to be an efficient tool to help countries overcome geographic barriers and provide health care information to residents [4].

In 2019, WHO began developing a framework for adopting digital innovations and technologies in healthcare. The WHO recommendation on digital interventions in health care promotes assessment based on 'benefit, harm, acceptability, feasibility, resource use, and equity considerations, and sees this tool as still one - a tool - on the way to achieving universal health coverage and sustainability [5]. Telehealth provides health care services where a distance separates patients and service providers. Telehealth uses ICT (information and communication technology) to exchange information for diagnosis and treatment of disease and injury, research and evaluation, and the continuing education of health professionals. "The term telehealth is generally used with" or synonymously with telenursing, telemedicine, teleconsultation, tele-homecare, e-health, and informatics." Although Telehealth started with telephony, Telehealth now incorporates a variety of evolving technologies, including video conferencing, remote monitoring, telehealth education, digital devices, and other forms of internet-based communication [6].

OBJECTIVE

This scoping review discusses the application of teleophthalmology in the care of eye patients during the Covid-19 pandemic.

METHODS

Research design

This research is a scoping review. The researcher takes an exploratory approach that aims to identify and summarize scientific evidence on the questions that arise, serving as a preliminary exercise for conducting systematic reviews. The following is an appropriate protocol for each database consulted to identify eligible studies. This is a research question that guides all procedures in the scoping review. Thus following the acronym PCC (P = population; C = concept; C = context.

The journals used in the scoping review are obtained through the database provider of the journal Pubmed, Science Direct, Clinical Key, and Medline. The author opens the website HTTP: //www.ScienceDirect. com /, https://www.clinicalkey.com/, https://search.ebscohost.com/. The researcher wrote the keywords according to the MESH (Medical Subject Heading), namely "telehealth," "covid19", and "eyes," and the full text was selected. Direct, Clinical Key, and Medline databases. The keywords that the researcher uses are "telehealth," "eyes," and "covid -19".

Settings and time frame

This chapter discusses strategies for finding journals used in scoping reviews, questions used to review journals adjusted to PCC, and the limitations of taking journals. The time in search is February 2021.

Variables, population, samples

In the case of this study, this scoping review is valid because some specific questions related to the use of Telehealth in eye care/teleophthalmology and COVID-19 at the time of this pandemic are still unclear.

RESULTS & DISCUSSION

In this paper selection process, the researcher uses the Endnote X9 application. Two hundred twenty findings appeared, then narrowed down to the limitation of the last 10 years in the year of publication, full-text article / open access, using English, type of article is a research article, related to Telehealth for eye care patients due to covid-19. After investigating the same papers, 184 papers were obtained. The combinations used in the search terms were checked based on the inclusion criteria, and finally, six journals were obtained.

After evaluation and selection, six scientific articles were included in the scoping review. The number of articles identified in the initial search and included in the limited research on Telehealth during the COVID-19 pandemic focused on ophthalmology. The review consists of six studies in English and all published in 2020.

In 2019, WHO began developing a framework for adopting digital innovations and technologies in healthcare

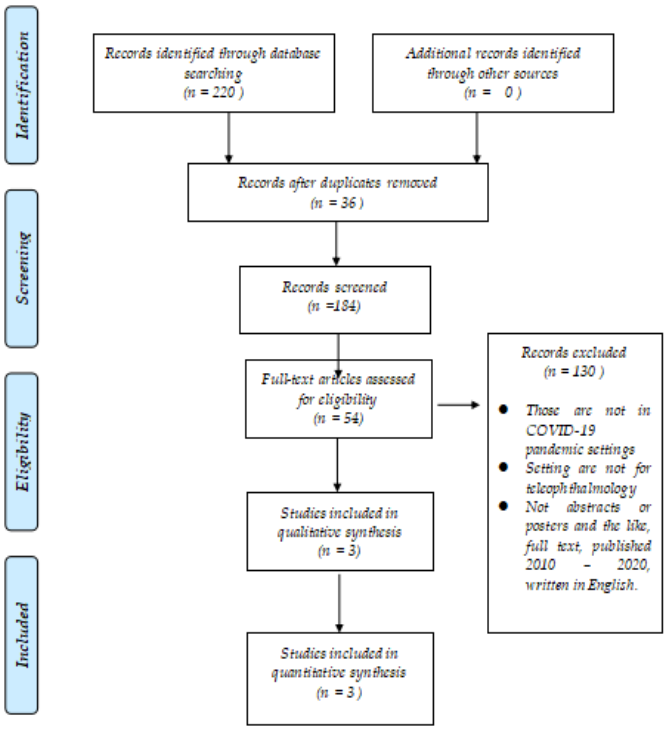

Diagram 1. Prisma Flow Chart

WHO recommendations on digital interventions in health care promote assessment based on 'benefit, harm, acceptability, feasibility, resource use and equity considerations to achieve universal health coverage and sustainability.

Several digital interventions have become a priority, such as the use of telemedicine to complement health service delivery; the use of provider-to-provider telemedicine; specific health information; support for health worker decision-making; digital tracking of health information; and Education. All of this is to meet the need to monitor patient safety, privacy, traceability, accountability, and security, with any plan [7].

Teleophthalmology is a branch of telemedicine specializing in eye care using digital technology By 1975, teleophthalmology had become very important in the intervening decades because of its rapidity as a practical and generally accessible approach to patient care. Teleophthalmology has been used successfully in treating ophthalmological disorders [8].

Table 1. Summary of Selected Content

No	Author	Title	Method	Country	Design of Telehealth	Result
1.	Caroline LS Kilduff etc. (2020)	Creating the Moorfields' virtual eye casualty: video consultations to provide emergency teleophthalmology care during and beyond the COVID-19 pandemic	Quantitative	Inggris	(Attend Anywhere Pty Ltd, Victoria, Australia) purchased by NHS UK in March 2020 on behalf of secondary care to allow for a national provision of video consulting. The platform supports live video consultation completely in a web browser and can be accessed from tablets and smartphones in addition to traditional laptops and PCs. Patients can access the virtual waiting room by following the URL in their browser.	Much remains unknown about video consulting in routine teleophthalmology practices. Operationally, we have rolled out internal dashboards to track video consulting activity across all services. Clinically, services are being audited to describe the safety and clinical results of the video consultation. For example, we are actively monitoring patients with unplanned returns to video consultations.
2.	Ji-Peng Olivia Li etc. (2020)	Digital technology, telemedicine and artificial intelligence in ophthalmology: A global perspective	Qualitative	Cina	5G wireless communication is designed to meet the challenges of serving large-scale complex network connections. This network has very low latency, higher capacity, and increased data transmission rates through the use of high frequency millimeter waves will support virtual reality (VR) allowing users to interact in real time. Patient counseling and preoperative consent may be enhanced by augmented reality, and non-clinical hospital functions such as navigation, particularly for visually impaired patients.	Telemedicine has been shown to be useful in screening for ROP (Retinopathy of prematurity) while being fast, cost-effective, and has minimal impact on systemic status with several clinical studies reporting favorable long-term outcomes.

3.	Gagan Klara etc. (2020)	Incorporating Video Visits into Ophthalmology Practice: A Retrospective Analysis and Patient Survey to Assess Initial Experiences and Patient Acceptability at an Academic Eye Center	Quantitative	USA	Video visit meetings were previously reviewed for patient demographics, indications for visits, diagnosis of visits, subspecialty services, management, and recommended follow-up.	Conducting video visit appointments is particularly challenging in ophthalmology, which relies on complex examinations and relies on tests, such as refraction, tonometry, perimetry, and imaging, to make management decisions. Video visits cannot replace in-person consultations involving slit-lamp examinations, and ophthalmologists should exercise care in determining the circumstances in which video visits are appropriate for triage or routine follow-up.
4.	Lai etc. (2020)	Tele-Neuro-Ophthalmology: Vision for 20/20 and Beyond	Qualitative	USA	Telehealth is an increasingly recognized means of providing health care. Telehealth does not replace but directly supplement and complement ophthalmologic care. Innovations in digital optics of fundus photography, mobile vision testing applications, artificial intelligence, and channel management principles will facilitate further adoption of tele-neuro-ophthalmology .	Telehealth adoption is slowly increasing. In ophthalmology, its uses include screening for diabetic retinopathy and retinopathy of prematurity

5.	Daruich a,b, D. Martinc , D. Bremon d-Gigna ca (2020)	Ocular manifestatio n as first sign of Coronavirus Disease 2019 (COVID-19): Interest of telemedicine during the pandemic context	Qualita tive	Argentina	This case demonstrates that conjunctivitis can be the inaugural manifestation of the COVID-19 infection. It illustrates the interest of telemedicine in ophthalmology during the COVID-19 pandemic, since moderate conjunctival hyperemia can be the first sign of a severe respiratory distress.	This case also illustrates its usefulness and relevance teleophthalmology procedures during the COVID-19 epidemic, which prevents transmission SARS-CoV-2, can help deal with potential COVID-19 patient. The eye doctor must be aware of this unusual thing eye presentation of COVID-19 because they can precede development of severe respiratory distress. Telemedicine has been implemented worldwide in response pandemic COVID-19 to get medical care patient while trying to reduce transmission SARS-CoV-2 to patients, families, and health care staff
6.	Bourdo n etc. (2020)	Teleconsulta tion in primary ophthalmic emergencies during the COVID-19 lockdown in Paris: Experience with 500 patients in March and April 2020	Quanti tative	France	It is the first study to assess the utility of emergency teleophthalmology with a simple smartphone application or web browser and a webcam to manage emergency eye care in a population with sudden restricted access to ophthalmologists.	TC has a sensitivity of 96%, specificity of 95%, positive 87.6% predictive value and 98.6 negative predictive value.

Clinically, the COVID-19 pandemic has many nuances to explore. In this connection, health workers, especially in eye care, can adapt to the new normal so that health services continue to run but still limit contact with patients and minimize the spread of the Covdi 19 virus. One solution is to use Telehealth. Telehealth does not replace but supplements and complements euro-ophthalmologic treatments directly [9].

The method used in Teleopthalmlogy is A distinction, which is made between asynchronous and synchronous. Another technique is consulting hybrids, which combine previous device-based investigations with subsequent live video consultations. In many countries, tele-ophthalmological treatment is based on an asynchronous model. It consisted of screening and monitoring various eye disorders. It also is performed using diagnostic equipment by an ophthalmologist. During the current Pandemic (COVID-19), the demand for teleophthalmology solutions has grown drastically.

The wide availability of modern communication technologies in the population and pre-existing teleconsulting platforms enables immediate and rapid implementation of teleophthalmology. Video consultation (VC) has been introduced in ophthalmology practices and departments worldwide as an alternative to conventional talks to reduce the risk of infection transmission associated with close contact between patients and physicians during examination lights and between patients in waiting rooms. The concept is based on live video consultation.

This consulting approach offers contactless patient consultation instead of the asynchronous method. As such, it has contributed to achieving maximum results at the level of infection prevention while ensuring adequate medical care for the eye patient. Important examination components such as ophthalmoscopy and quantification of eye alignment can be evaluated directly. Virtual Visits to patients will be developed in the future because they can increase access to neuro-ophthalmologic [10].

The simultaneous maturation of multiple digital and telecommunication technologies in 2020 has created an unprecedented opportunity for ophthalmologists to adapt to new treatment models using Telehealth powered by digital innovation. These digital innovations, including artificial intelligence (AI), 5th generation telecommunications (5G) networks, and the Internet of Things (IoT), create an interdependent ecosystem offering opportunities to develop new eye care models that address the challenges of COVID-19 and beyond. Ophthalmology has grown rapidly in some of these areas in part due to a large number of image-based investigations. Telehealth provides a synchronized solution to the challenges facing doctors, eye caregivers, and healthcare providers worldwide.

Countries around the world have taken advantage of this digital innovation to treat diabetic retinopathy, retinopathy of prematurity, age-related macular degeneration, glaucoma, correction of refractive errors, cataracts, and other anterior segment disorders. In addition, countries worldwide have initiated a series of increased containment and mitigation measures during the COVID-19 pandemic, for example, by providing eye care services globally. As ophthalmic services adapt and form a "new normal," the rapid adoption of multiple Telehealth and digital innovations during the pandemic is also starting to develop.

The psychosocial impact of the COVID-19 pandemic can be minimized by using teleophthalmology. About half (49%) of patients felt they would delay seeking care and using video visit facilities. Nearly two-thirds reported that their fears and frustrations were eased by consulting their eye doctor during the video visit. Creating video

visit appointments is particularly challenging in ophthalmology, which relies on complex examinations and tests, such as refraction, tonometry, perimetry, and imaging, to make management decisions. Video visits cannot replace in-person consultations that involve slit-lamp examinations, and doctors and eye caregivers should take care to determine the circumstances in which video visits are appropriate for triage or routine follow-up.

Concerns about technical intricacies, clinical quality, misdiagnosis, and privacy need to be addressed for the broad implementation of video-based eyes, particularly for large-scale deployments, which are suitable, safe, reliable, and user-friendly video visiting platforms [(11)]. Telehealth allows health workers, in this case, doctors and eye nurses, to evaluate their patients remotely.

This can be desirable for several reasons. First, telemedicine could facilitate more efficient and equitable distribution of limited health care resources. This allows providing care to remote areas with a shortage of health workers. In addition, it is also very efficient in time because it can reduce long queues and thus reduce direct contact with patients.

Second, during the COVID-19 pandemic and overcoming the risk of infection in health care settings, telemedicine has increased rapidly and is being incorporated into routine care delivery. The telemedicine patient population aims to serve no longer focused on targeting remote areas. On the contrary, it is rapidly becoming the new standard of care. This allows us also for the patient triage system. So the patient can be assessed using teleophthalmology before the patient comes to the hospital to avoid unnecessary visits and risk of exposure. Various centers around the world have adopted it.

Third, video consultations combined with innovative design services already exist, limiting patient travel and clinic visits while maximizing the quality of telemedicine consultations. In Scotland, the practice of optometry has been strategically regulated several regions to provide primary eye care services [(12)].

The smartphone mounted on the slit-lamp enables biomicroscopic eye videography. Empowering the ophthalmologist to view patient examinations in real-time without the patient present. Moving away from traditional clinic visits may be further aided by using home devices to monitor visual acuity, visual fields, and intraocular pressure [(13)].

The use of teleophthalmology also has a weakness, namely that after it is carried out regularly, if there are hours that are not following the staff, there will be a long delay in the patient consultation queue.

This paper solicits feedback on the proposed methodology. However, our recommendations come from our subjective experience of scoping reviews of various measures in the eye care field, and we recognize that they may not represent the opinions of all the authors of the initial screening study. Apart from our individual experiences with our studies, we have not implemented the whole framework of recommendations. Therefore, readers can determine how to interpret and apply these recommendations robustly in their scoping study research. We invite others to test our offers and continue the process of refining and improving this methodology.

This paper can provide an overview of eye care, for example, in clinical settings. It can be used as reference material for developing telehealth methods or media for eye care, especially in the era of the covid 19 pandemic. In contrast, it can be used in academic settings as an initial study for further research on technology development regarding Telehealth for eye care.

CONCLUSION

With an exploratory approach, this

scoping review aims to identify scientific evidence on the impact of the COVID-19 pandemic on eye care. The study found that the use of Telehealth in this particular regard is teleophthalmology to be very effective and efficient. In addition, it also minimizes the spread of the covid-19 virus because providers do not make physical contact with patients. The method used in Teleopthalmlogy is A distinction, is made between asynchronous and synchronous, for example, video visits and smartphones. Teleophthalmology can be used for the initial assessment of patients to reduce the number of patient visits to health facilities such as hospitals.

REFERENCES

1. Dutta R, Buragohain L, Borah P. Analysis of codon usage of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and its adaptability in dog. Virus Res [Internet]. 2020;288(May):198113. Available
2. Patient T. IJNHS Telehealth for Ophthalmic Nursing Care. xx(xx).
3. Nagra M, Vianya-Estopa M, Wolffsohn JS. Could Telehealth help eye care practitioners adapt contact lens services during the COVID-19 pandemic? Contact Lens Anterior Eye. 2020;43(3):204–7.
4. Souza-Junior VD, Mendes IAC, Mazzo A, Godoy S. Application of telenursing in nursing practice: An integrative literature review. Appl Nurs Res [Internet]. 2016;29:254–60.
5. Felstead A, Reuschke D. A flash in the pan or a permanent change? The growth of homeworking during the pandemic and its effect on employee productivity in the UK. Inf Technol People. 2021;
6. Yousif N, Cole J, Rothwell JC, Diedrichsen J, Zelik KE, Winstein CJ, et al. http://dx.doi.org/10.1016/j.neuropsychologia.2015.07.010%0Ahttp://dx.doi.org/10.1016/j.visres.2014.07.001%0Ahttps://doi.org/10.1016/j.humov.2018.08.006%0Ahttp://www.ncbi.nlm.nih.gov/pubmed/24582474%0Ahttps://doi.org/10.1016/j.gaitpost.2018.12.007%0Ahttps:
7. Li JPO, Liu H, Ting DSJ, Jeon S, Chan RVP, Kim JE, et al. Digital technology, telemedicine and artificial intelligence in ophthalmology: A global perspective. Prog Retin Eye Res [Internet]. 2021;82(June 2020):100900. A
8. Gerbutavicius R, Brandlhuber U, Glück S, Kortüm GF, Kortüm I, Navarrete Orozco R, et al. Evaluierung der Patientenzufriedenheit mit einer augenärztlichen Videosprechstunde während der COVID-19-Pandemie. Ophthalmologe. 2021;118:89–95.
9. Moss HE, Lai KE, Ko MW. Survey of Telehealth Adoption by Neuro-ophthalmologists During the COVID-19 Pandemic: Benefits, Barriers, and Utility. J Neuroophthalmol. 2020;40(3):346–55.
10. Bloch EM, Shoham S, Casadevall A, Sachais BS, Shaz B, Winters JL, et al. Deployment of convalescent plasma for the prevention and treatment of COVID-19. J Clin Invest. 2020;130(6):2757–65.
11. Sinha V, Malik M, Nugent N, Drake P, Cavale N. The Role of Virtual Consultations in Plastic Surgery During COVID-19 Lockdown. Aesthetic Plast Surg [Internet]. 2021;45(2):777–83.
12. Mulholland RH, Wood R, Stagg HR, Fischbacher C, Villacampa J, Simpson CR, et al. Impact of COVID-19 on accident and emergency attendances and emergency and planned hospital admissions in Scotland: an interrupted time-series analysis. J R Soc Med. 2020;113(11):444–53.
13. Safadi K, Kruger JM, Chowers I, Solomon A, Amer R, Aweidah H, et al. Ophthalmology practice during the COVID-19 pandemic. BMJ Open Ophthalmol. 2020;5(1).