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Research Note

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Teleophthalmology in Rural India: A Struggle or a Boom-Research Note

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ABSTRACT

In the current scenario of pandemic and panic, where human contacts are to be avoided medical facilities have suffered a lot. Patients are afraid to visit hospitals, health specialists are finding it difficult to deliver proper care and treatment. Especially in ophthalmology where slit lamp examinations and direct ophthalmoscopy require close contact to the patients, are avoided nowadays. Despite taking proper precautions, there is state of fear in each and everyone's mind. Tele-ophthalmology was considered to address this fear and was thought to help deliver adequate treatment to the patients. In India, which has a vast difference in its rural and urban population has this teleophthalmology reduced the gap? How much and where Tele-ophthalmology is successful?.

Key-words: Internet, Literacy, Pandemic, Resources, Teleophthalmology

INTRODUCTION

American Telemedicine Association (ATA) says that "telemedicine" is the natural progression of digital healthcare".[1] World Health Organization (WHO) has defined telemedicine as, "the delivery of healthcare services, where distance is a critical factor, by all healthcare professionals using information and communication technologies for the exchange of valid information for the diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of healthcare providers, all in the interests of advancing the health of individuals and their communities."[2] The word "telemedicine" literally translates to 'healing at a distance'.

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It often encompasses health care delivery and also other activities such as education, research, health surveillance, and public health promotion.[3]

ISRO (Indian Space Research Organization) made a modest start in telemedicine in India with a telemedicine pilot project in 2001, connecting Chennai's Apollo Hospital with Apollo Rural Hospital in the village of Aragonda in the Andhra Pradesh district of Chittoor [4].

In an effort to consolidate the available public health data and provide easy access, the Government of India's Ministry of Health has taken on projects like Integrated Disease Surveillance Project (IDSP), National Cancer Network (ONCONET), National Rural Telemedicine Network, National Medical College Network and the Digital Medical Library Network [5]. Some notable examples of successfully developed Indian telemedicine services include mammography services at Sri Ganga Ram Hospital, Delhi; oncology at Regional cancer centre, Trivandrum [6] surgical services at Sanjay Gandhi Postgraduate Institute of Medical Sciences, School of Telemedicine and Biomedical Informatics, Medical

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College Network and the Digital Medical Library Network.[7]

Teleophthalmology- Telemedicine sector providing eye care through digital technology, medical equipment and telecommunications devices. Today, applications of teleophthalmology enables the eye specialists in examining patients in remote areas, ophthalmic disease screening, diagnosis and monitoring; as well as distant learning.[8] Visual images of the eye or retina for disease screening , diagnosis, treatment , and control, are main parts in ophthalmology that can be done frequently via digital imaging. With advancements in technology, resources and internet ophthalmologists are adapting quickly to the changing technology using telemedicine to improve patient access to medical care. Telemedicine has been particularly effective in the diagnosis and monitoring of retinopathy of prematurity (ROP) and diabetic retinopathy as shown in Fig. 1.

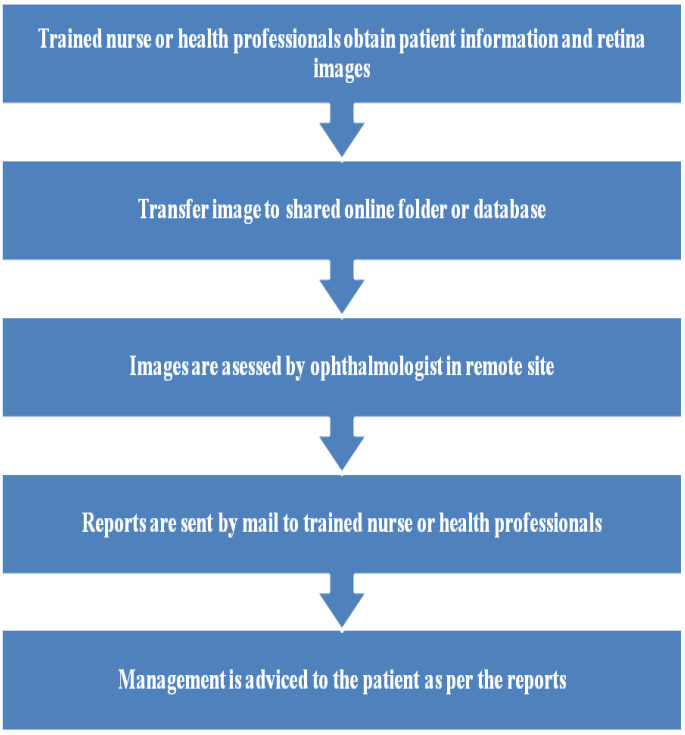

Fig. 1: Screening of Diabetic retinopathy using teleophthalmology

A specialist health-care professional is required to obtain a good fundus photograph, diagnose and treat the patient in these cases. But minor ophthalmological problems can be solved just over the phone by proper history taking and carefully understanding the problems of the patient. This may reduce the unnecessary exposure of the patient and to the doctor.

Internet is now the basic part and necessity of life. One can easily send images or videos to any part of the world via the internet. Where just history is not enough proper images of the eye of the patient can be acquired through video consultation. It can also help in the follow-up of the patient. Images can be saved and compared in each follow-up to check the effect of drugs.

Most patients can be categorized into sub-specialities (e.g. Anterior segment disease, Retina, Oculoplastic, Paediatric ophthalmology etc.) based on their complaints and hence can be the referred to respective specialist department. This will help in decreasing the patient's load on the doctor and providing proper care to the patient.

But all these require good resources, good internet connection and some expertise in the digital field for better communication. Also, the patient's level of understanding and satisfaction can't be ignored.

Tele-ophthalmology in rural India- As of 2011 census, India has 53 urban agglomerations with a population of 1 million. Around 43 per cent of India's urban population lives in these cities.[9] According to 2011 census, 68.84% of the total population leaves in Rural area. Most of these rural cities have scarcity of resources. Electricity and good internet connections are major concern in most of the parts. However, digitalization is taking place at rapid rate but still; most of the areas are still untouched.

In ophthalmology, which consists mostly of geriatric patients, very few of them knowabout handling computers and internet. According to 2011 census, the rural India literacy rate is 67.8%. Adult literacy rate in rural India is 62.6% compared to 82.8% in the Urban areas.[10]

Moreover, elderly patients being unfamiliar withdigital technologies find it hard to communicate their problems and concern.[11] Until and unless a doctor sees them or investigate them, they remain unsatisfied with the treatment being prescribed.

An ophthalmologist needs a better view and close examination of the eye which is not possible even through video conferencing. Slit-lamp examination is an inevitable procedure in almost all the patients, which is again missed in telemedicine. Other basic ophthalmological examinations such as tonometry, fundus examination is not possible without a health care specialist.

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Without a proper diagnosis, proper treatment is impossible. In today's time where ethical issues in the medical field are continuously questioned ophthalmologists also refrain from prescribing medications without proper investigations. There are many ethical concerns in telemedicine which needs to be answered.

Also, the treatment protocol is quite different in ophthalmology. There are drops, ointments, oral medications in ophthalmology, so patients need to understand, what is being prescribed and how to use them. One need to understand, which drop when to administer and how to administer.

CONCLUSIONS

In the current situation of pandemic and panic in public, it can provide relief to both patients and doctors. It can help majorly in preventing the patient to get unnecessarily exposed in the hospital and thus decrease the hospital's load. In India, teleophthalmology has still a long way to go to establish it as a boom. For now, it is a struggle in most parts. Lack of resources, unawareness and the recognition by both the public and the practitioners of emerging technologies are major factors, which are holding the telemedicine to reach its potential. Governments are now starting to take a keen interest and major steps in developing resources to empower telemedicine activities, resulting in a slow but steady growth in its use in public health. Hopefully telemedicine activities will achieve their true potential in a few years time.

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