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Telemedicine Services in Ophthalmology: A Review of Studies

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Abstract : Telemedicine is the use of telecommunication and information technologies to provide health care services that would often not be consistently available in distant rural communities to people at these remote areas. Teleophthalmology is a branch of telemedicine that delivers eye care through digital medical equipment and telecommunications technology. Thus, teleophthalmology can overcome geographical barriers and improve quality, access, and affordability of eye health care services. Since teleophthalmology has been widespread applied in recent years, the aim of this study was to determine the different applications of teleophthalmology in the world. To this end, three bibliographic databases (Medline, ScienceDirect, Scopus) were comprehensively searched with these keywords: eye care, eye health care, primary eye care, diagnosis, detection, and screening of different eye diseases in conjunction with telemedicine, telehealth, teleophthalmology, e-services, and information technology. All types of papers were included in the study with no time restriction. We conducted the search strategies until 2015. Finally 70 articles were surveyed. We classified the results based on the'type of eye problems covered' and 'the type of telemedicine services'. Based on the review, from the 'perspective of health care levels', there are three level for eye health care as primary, secondary and tertiary eye care. From the 'perspective of eye care services', the main application of teleophthalmology in primary eye care was related to the diagnosis of different eye diseases such as diabetic retinopathy, macular edema, strabismus and aged related macular degeneration. The main application of teleophthalmology in secondary and tertiary eye care was related to the screening of eye problems i.e. diabetic retinopathy, astigmatism, glaucoma screening. Teleconsultation between health care providers and ophthalmologists and also education and training sessions for patients were other types of teleophthalmology in world. Real time, store–forward and hybrid methods were the main forms of the communication from the perspective of 'teleophthalmology mode' which is used based on IT infrastructure between sending and receiving centers. In aspect of specialists, early detection of serious aged-related ophthalmic disease in population, screening of eye disease processes, consultation in an emergency cases and comprehensive eye examination were the most important benefits of teleophthalmology. Cost-effectiveness of teleophthalmology projects resulted from reducing transportation and accommodation cost, access to affordable eye care services and receiving specialist opinions were also the main advantages of teleophthalmology for patients. Teleophthalmology brings valuable secondary and tertiary care to remote areas. So, applying teleophthalmology for detection, treatment and screening purposes and expanding its use in new applications such as eye surgery will be a key tool to promote public health and integrating eye care to primary health care.

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