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REVIEW ARTICLE

Telepharmacy services: A concise review

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ABSTRACT

Telepharmacy is a most rapidly expanding area of transmission and communication within biopharmaceutical care delivery, mostly in rural areas. Telepharmacy has been embrace to supply pharmaceutical services to underprivileged areas and discussing the situation of pharmacist shortage. It can be used as a tool to decrease the load or burden on the medical management and increase drug dispensing welfare in community pharmacies. The motive of this review is to find out how telepharmacy is nowadays being practiced within society, its success, and how it is being modulated across the United States and also to evaluate the influence of telepharmacy services on patient welfare, cost. Advantages and restrictions of telepharmacy are explained as well. There are three class of pharmacy practice, namely prescription and resolution of drug therapies, remote education and handling of "special pharmacy", support to clinical services. In general, distinct telepharmacy services were accompanied and successful by a fulfilment of their targets. Nowadays the insufficiency of health employees, and pharmacists is a challenging topic that the health system have to face. The use of new telecommunication technology like telepharmacy is a promising approach to resolve these problems.

INTRODUCTION

The benefit of information and telecommunication technologies has extended at a rapid rate, which has a powerful impact on healthcare system in the world [1]. Telepharmacy is a current concept that consults to healthcare services, pharmaceutical services such as prescription verification, patients counselling by a certified chemist for the patients who are came across at a long distance from a healthcare centre or remotely located hospital, pharmacy [2]. The providing of pharmacist concern by registered pharmacists and pharmacies by the use of telecommunications to patients located at a distance is actual definition of telepharmacy [3]. It is a advanced concept similar to telemedicine and it had a outstanding impact especially in underserved community [4]. Pharmacy closures are a progressively common problem in rural areas. Telepharmacy is a probable solution to this problem [5, 6].

Rural communities have restricted access to essential healthcare facilities, due to the closure of local pharmacies [7]. Pharmacies that presently work in remote regions face the difficulties of service sustainability due to retention and recruitment of pharmacists. Technology has come up to conquer some of these difficulties to patient care. Telemedicine especially telepharmacy, recognizing to be an authorizing technology that consider a inventive and unique way to deliver standard pharmacy services to regional and rural areas particularly [8, 9].

Telemedicine

The term tele is arises from the Greek word "Telos" means "at a distance" and the term "medicine" is derived from a Latin word "Meden" means "to heal" [10]. World Health Organization defined Telemedicine as the transporting of healthcare services, where gap or distance is a analytical factor, using information and communication technologies by all medicare professionals for the interchange of valid information for prevention, diagnosis, and treatment of injuries, research and evaluation,

and disease, and for the continuing education of healthcare providers, all in the interests of advancing the health of human beings and their communities. (Reprinted from World Health Organization. *WHO Group Consultation on Health Telematics. A Health Telematics Policy in Support of WHO'S Health-For-All Strategy for Global Development: Report of the WHO Group Consultation on Health Telematics 11–16 December. Definition, concept and functions of health telematics. Pg 10. Copyright [1998])* [11].

Applications of telemedicine are outline the potential responsibilities for pharmacists [12]. It can be utilized for remote sensing, decision making and collaborative presentations for the real time management, planning of patients at a long distance. The use of information and telecommunication technologies is parcelling the health services, also telemedicine expressed as combination of subjects from the field of medicine, informatics and telecommunication [13].

Telepharmacy

Telepharmacy, corresponding to telemedicine, it is a more current concept that related to pharmaceutical service provision. The National Association of Boards of Pharmacy determines the definition of telepharmacy as "the providing of pharmaceutical care by the use of utilization of telecommunication and information technologies to patients at a distance [14]. At a remote location and without the physical appearance of a pharmacist telepharmacy provides clinical pharmacy services and the distribution of a prescription at a remote place or location. Normally telepharmacy includes services such as drug information services, dispensing and compounding, medication order review, therapeutic drug monitoring, and patient counselling [15].

Telepharmacy acts as a positive alternative to around the clock on site pharmacists remedy review for remote hospitals [16]. This has been utilized by many healthcare companies and organizations as another master plane of extending pharmacy broadcasting in areas where 24-hours pharmacy services are unavailable [17]. The emerging technologies such as, electronic health records and fax build information more effortlessly available to pharmacists for analysis before a dose is available for administration to a patients. These technologies are more developed telepharmacy services and in which authorizing pharmacist to give or contribute competently in improving medication use [18].

Objectives of Telepharmacy

- Survey and tracking of diseases.
- Home care, Case monitoring, and remote critical care.
- To build a standard life available to needful or under-privileged population.
- Saving the time of both the patients who are travelling from one location to another location and health care providers.

How Does Telepharmacy Work?

In general, minor rural pharmacy, hospitals, or clinic in an outlying area is associated to a commonly utilized service model in huge urban center that has important access to pharmacist staff. This connection is feasible through automated dispensing machine, novel software and videophone system [19].

Table 1: Various types of telepharmacy models [14, 19, 20]

Types	Process
Traditional full-service pharmacy	Filling prescriptions, patient counselling, and medication reviews etc;
Remote consultation sites	Prescriptions are made ready at the central pharmacy and are supplied to the rural sites. Video and Audio computer links are used to carry outpatient counselling and education.
Hospital Telepharmacy	Hospital pharmacists in non-rural medical centre reviews processes and illuminate the prescription.
ADMs	Pharmacist at a central place receives drug order and conducts proper drug utilization review, confirms the patient profile and ultimately instructs the ADM to release the medication and patient counselling is conducted with the help of video and audio computer links.

Based on whether the site is a pharmacy or clinic the pharmacy nurses or technicians may receive the prescription from patients who pass on to these sites to the central site, which is then handled by a qualified pharmacist. The central pharmacist analyse the prescription and deliver

the proper items at the rural site. The pharmacy technologist at the rural site then scans the bar code so that the prescription match up with its label and convey it to the patient [21]. At the termination of the procedure the central pharmacists come up with a two way video conference and meeting for the patient to assure that they know and understand the medication administration and use [22].

Automated dispensing machines, are not always every time affordable for clinics and small rural hospitals. Another alternative was determined and developed by research workers in USA, ND, Fargo where a technologists under the videoconference administration of a central pharmacist for repackaging, relabeling and dispensing. Those medications are then dispensed through the automated dispensing machines when available [23].

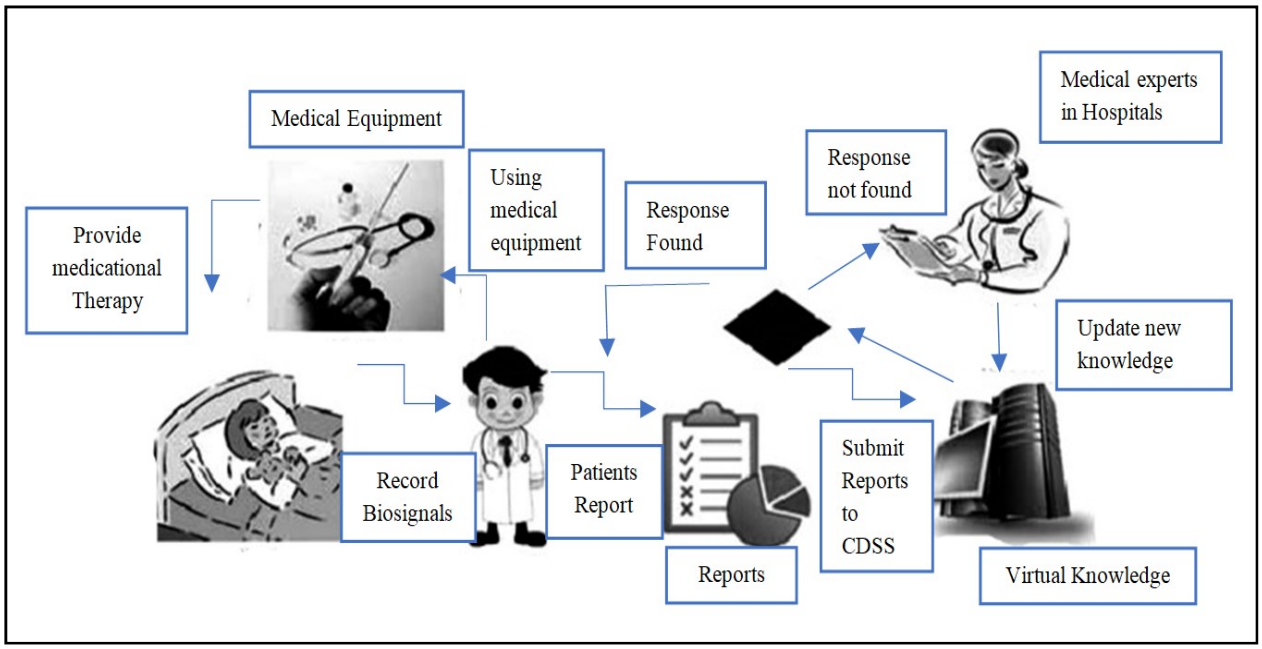

Figure 1: Outline of Telepharmacy

Clinical Benefits and Challenges of Telepharmacy [24-27]:

Advantages:

- Access to health protection services.
- Economic Benefits.
- Patient satisfaction.
- Effective patient counselling.
- Minimal scarcity of pharmacist.

Disadvantages:

- Laws of pharmacy regulation.
- More money, efforts, and time.
- Operational difficulties.
- Continuity of care.
- Inability to use technologies.
- Security.

Importance of Pharmacist Involvement:

In any telepharmacy model pharmacist plays an very important role in delivery of pharmacy services and pharmacist ensures that highly standard care for patient counselling and medication review [28]. In 2013 survey when hospital pharmacy are closed the influence of telepharmacy services has shown that connection of pharmacists in the remote analysis of medication orders resulted in a decline number of adverse drug reactions described [29]. A 2012 study is suggested that adverse patient outgrowth together with patient death and prolonged hospitalization may have been prevented or stopped using telepharmacy services [30].

In Lee's 2005 survey around 50% of Pharmacists presently serving in rural and remote communities specify that they were interested in using telepharmacy to manage home medication reviews (HMR) [31]. HMR via telepharmacy have the prospective to deliver an outstanding service to the remote and rural communities. A study suggested that in telepharmacy models when involvement of pharmacists is there has assisted or helped in tracking and improved medication mistakes rates [32]. A model demonstrated that a desirable resource at sites, which earlier has no pharmacy inputs and recommended a trend

towards upgraded medication documentation, obtainable minimum standard of pharmaceutical review and reduced medication risk [33]. The influence of pharmacist collaboration and involvement was further seen in the number of orders modified, reviewed, discontinued, and cancelled by a remote medical practitioner, saving money, and reduced order processing time [33].

CONCLUSION

Telapharmacy place a crucial role in holding the patient's health and minimize the geographical barriers to the individuals who live in the rural areas and come up with a healthy and safe communication between the patients and prescribers. Telepharmacy is a patient care technology in present days. Due to electronic prescriptions and time saving technologies the functions of prescribers and patients have been increased. It is rapidly becoming an essential part of current pharmacy practice that has capacity to give quality pharmaceutical services such as patient counselling, dispensing, medication management, and drug information. A completely developed system, however can transform the practice and implementation of pharmacy which is beneficial for hospital pharmacy as well as rural communities to deliver these services.

REFERENCES

[1] Poudel A, Nissen LM. Telepharmacy: a pharmacist's perspective on the clinical benefits and challenges. Integrated Pharmacy Research & Practice. 2016; 5: 75.

[2] Strnad K, Shoulders BR, Smithburger PL, Kane-Gill SL. A systematic review of ICU and non-ICU clinical pharmacy services using telepharmacy. Annals of Pharmacotherapy. 2018 Dec; 52(12): 1250-8.

[3] Baldoni S, Amenta F, Ricci G. Telepharmacy services: present status and future perspectives: a review. Medicina. 2019 Jul; 55(7): 327.

[4] Sherman J. Telepharmacy-a Promising Alternative for Rural Communities. Pharmacy times. 2007; 73(2): 65.

[5] Skoufalos A, Clarke JL, Ellis DR, Shepard VL, Rula EY. Rural aging in America: Proceedings of the 2017 connectivity summit. Population health management. 2017 Dec 1; 20(S2): S-1.

[6] Pathak S, Haynes M, Qato DM, Urick BY. Peer Reviewed: Telepharmacy and Quality of Medication Use in Rural Areas, 2013–2019. Preventing Chronic Disease. 2020; 17.

[7] Musgrove R, Jackson MS, Belanger K, Benson W, Borders T, Dalton K, Emanuel-McClain C, Clearwater SC, Evans K, Lodge R, Fabre MB. National Advisory Committee on Rural Health and Human Services.

[8] Todd K, Ullrich F, Mueller K. Rural pharmacy closures: implications for rural communities. Rural Policy Brief. 2013 Jan 1(2012 5): 1-5.

[9] Kimber MB, Peterson GM. Telepharmacy enabling technology to provide quality pharmacy services in rural and remote communities. Journal of Pharmacy Practice and Research. 2006 Jun; 36(2): 128-33.

[10] Zundel KM. Telemedicine: history, applications, and impact on librarianship. Bulletin of the Medical Library Association. 1996 Jan; 84(1):71.

[11] In WH. A Health Telematics Policy in Support of WHO's Health-for-all Strategy for Global Health Development: Report of the WHO Group Consultation on Health Telematics, 11 e 16 December, Geneva, 1997. World Health Organization.

[12] Angaran DM. Telemedicine and telepharmacy: current status and future implications. American Journal of Health-System Pharmacy. 1999 Jul 15; 56(14):1405-26.

[13] Güler NF, Übeyli ED. Theory and applications of telemedicine. Journal of medical systems. 2002 Jun; 26(3):199-220.

[14] Casey MM, Sorensen TD, Elias W, Knudson A, Gregg W. Current practices and state regulations regarding telepharmacy in rural hospitals. American Journal of Health-System Pharmacy. 2010 Jul 1; 67(13):1085-92.

[15] Keeys C, Kalejaiye B, Skinner M, Eimen M, Neufer J, Sidbury G, Buster N, Vincent J. Pharmacist-managed inpatient discharge medication reconciliation: a combined onsite and telepharmacy model. American Journal of Health-System Pharmacy. 2014 Dec 15; 71(24): 2159-66.

[16] Cole SL, Grubbs JH, Din C, Nesbitt TS. Rural inpatient telepharmacy consultation demonstration for after-hours medication review. Telemedicine and e-Health. 2012 Sep 1; 18(7):530-7.

[17] National Association of Boards of Pharmacy. The Model State Pharmacy Act and Model Rules of the National

Association of Boards of Pharmacy. National Association of Boards of Pharmacy; 2007 Aug.

[18] Pedersen CA, Schneider PJ, Scheckelhoff DJ. ASHP national survey of pharmacy practice in hospital settings: monitoring and patient education—2015. American journal of health-system pharmacy. 2016 Sep 1; 73(17):1307-30.

[19] Peterson CD, Anderson Jr HC. The North Dakota telepharmacy project: restoring and retaining pharmacy services in rural communities. Journal of Pharmacy Technology. 2004 Jan; 20(1):28-39.

[20] Casey M, Elias W, Knudson A, Gregg W. Implementation of telepharmacy in rural hospitals: potential for improving medication safety. Upper Midwest Rural Health Research Center. 2008 Dec.

[21] Association of Pharmacy Registering Authorities Inc. Best practice model for the supply of pharmacy services to residential care facilities. Canberra: APRA; 1997; p. 1-16.

[22] Benrimoj SI, Werner JB, Raffaele C, Roberts AS. A system for monitoring quality standards in the provision of non-prescription medicines from Australian community pharmacies. Pharmacy World & Science. 2008 Apr; 30(2):147-53.

[23] O'Connor M, Fisher C, French L, Halkett G, Jiwa M, Hughes J. Exploring the community pharmacist's role in palliative care: Focusing on the person not just the prescription. Patient education and counseling. 2011 Jun 1; 83(3):458-64.

[24] Win AZ. Telepharmacy: Time to pick up the line. Res Social Adm Pharm. 2015, June 23; pii: S1551-7411(15) 0119-9. DOI: 10.1016/j.sapharm.2015.06.002. [Epub ahead of print].

[25] Raynor K. Telepharmacy services bring new patient care opportunities. Am J Health Syst Pharm. 2013; 70(7): 565–566.

[26] Gordon HL, Hoeber M, Schneider A. Telepharmacy in a rural Alberta Community Cancer Network. J Oncol Pharm Pract. 2012; 18(3):366–376.

[27] Freisner D, Scott DM. Exploring the formation of patient satisfaction in rural community telepharmacies. J Am Pharm Assoc. 2009; 49(4):509–518.

[28] Lam AY, Rose D. Telepharmacy services in an urban community health clinic system. J Am Pharm Assoc. 2009; 49(5):652–659.

[29] Collins B, Borders TF, Tebrink K, Xu KT. Utilization of prescription medications and ancillary pharmacy services among rural elders in west Texas: distance barriers and implications for telepharmacy. J Health Hum Serv Adm. 2007; 30(1):75–97.

[30] Pharmaceutical Society of Australia. Professional Practice Standards. Version 4. ©. Pharmaceutical Society of Australia; 2010; Deakin West ACT 2600.

[31] Lee WY. Telepharmacy to improve healthcare provision by community pharmacists in rural and remote Australia [honours thesis]. Hobart: University of Tasmania; 2005.

[32] Russell TG. Establishing the efficacy of telemedicine as a clinical tool for physiotherapists: from systems design to randomised controlled trial [PhD thesis]. Brisbane: University of Queensland; 2004.

[33] Department of Health and Aged Care. Pharmacy access remoteness index of Australia 2001/2002. Available from <www.gisca.adelaide.edu.au/pharm/pharia/2001/pharia200.html>. Accessed 22 June 2002.