

A Review: Future of Pharmacy- Telepharmacy

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ABSTRACT:

The term "tele-pharmacy" is a form of pharmaceutical care in which pharmacists and patients are not within the equal area and can engage the usage of facts and conversation technology (ICT) facilities. It's far the use of digital statistics and telecommunication technology to provide long-distance fitness care and training to sufferers. These services consist of scientific packages together with drug therapy tracking, patient counselling, earlier authorization and replenish authorization for prescribed drugs, and monitoring of formulary compliance, faraway tracking, with the aid of teleconferencing or videoconferencing, and get right of entry to to specialist offerings together with consultation and scientific imaging, as well as nonclinical services such as issuer education, administrative conferences, and persevering with training of health experts the usage of records and conversation technology (ICTs). Tele-pharmacy, a subspecialty of telemedicine, has involved the usage of telecommunications to deliver pharmaceutical offerings to customers located at a distance. The quantity of tele-pharmacy applications within the America and global has been progressively growing. The motive of this studies assignment become to study the impact of the usage of tele-pharmacy on rural hospitals' get right of entry to to pharmaceutical offerings. Tele-pharmacy offerings may additionally include drug overview/tracking, provision of drug records, medicinal drug allotting, verification of oral and sterile compounding, affected person assessment, affected person counselling and medicine remedy management. The implementation of tele-pharmacy structures is swiftly increasing because of the growing affordability of videoconferencing era and the increasing functionality of the pharmacist to securely get admission to electronic affected person health information and carry out traditional

pharmacy exercise sports remotely thru the net. The usage of information and telecommunication technologies has expanded at a speedy fee, which has a robust affect on healthcare transport in many nations.

I. INTRODUCTION:

Pharmacies are critical systems of the health systems and may offer health services in a capillary manner because of their wide diffusion at the least in industrialized nations. Qualified fitness professionals such as pharmacists, besides dispensing medicinal merchandise, can supply recommendation to sufferers on drug assumption regimens and also can provide pharmacovigilance offerings.¹ A reduced human interaction between fitness professionals and sufferers, issues within the evaluation of drug dispensing, and an expanded chance for protection and integrity of patient records represent a few ability negative aspects of tele-pharmacy. Communicate among medical team of workers and doctors with professional opinion for the patient has bartered the face of the treatment - videoconferencing, Teleradiology, Tele-nursing, Tele-pathology, Tele-radiology, and Tele-pharmacy, and so on. are few examples of such initiatives. Tele-pharmacy techniques are used to offer patient care offerings and optimize next outcomes from a distance. These services include scientific programs consisting of drug therapy tracking, patient counselling, earlier authorization and refill authorization for prescription drugs, and tracking of formulary compliance, far off tracking, with the aid of teleconferencing or videoconferencing, and get entry to to professional offerings consisting of consultation and scientific imaging, as well as nonclinical offerings such as provider schooling, administrative conferences, and continuing schooling of health professionals the use of information and conversation technology. Tele-pharmacy acts as a potential alternative to round-

the-clock on-web page pharmacist medicinal drug evaluate for far flung hospitals. generation plays a giant position within the lives of people all around the global and has improved access to hospital therapy in rural regions. Tele-pharmacy studies are available in some countries which include the us, Spain, Denmark, Egypt, France, Canada, Italy, Scotland, and Germany as talked about on this evaluate.²

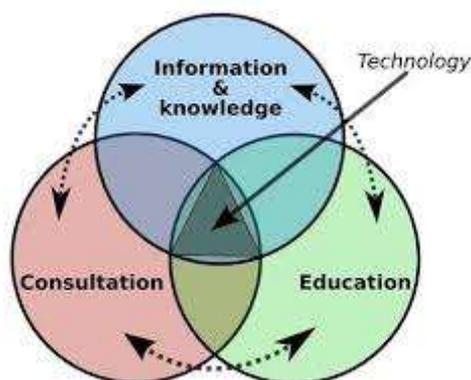


Fig. 1.1 Link between Telehealth and Telepharmacy

TELEMEDICINE:

The term “tele” originated from the Greek phrase “Telos” that means “at a distance” and the time period “medication” derived from a Latin phrase “Meden” that means “to heal”. Telemedicine entails a number of technologies and packages. The most generally described telemedicine exercise is the one that involves the usage of phones, videoconference, and the net. Telemedical packages can be referred as consultations gaining recognition each year when you consider that remedies via telemedical programs seem to gain comparable outputs as those obtained thru face-to-face care. Digitalization method has enabled the development cutting-edge low bandwidth non-public pc-based totally videoconference that has influenced the massive use trendy telemedicine. Telemedicine is frequently used interchangeably with telehealth.³

TELE-PHARMACY

Tele-pharmacy is the utility contemporary telehealth era to pharmacy exercise. Pharmacists provide medicine therapy control to assist sufferers get the nice benefits from their medicinal drugs by means of actively coping with drug therapy and via figuring out, preventing and resolving remedy-related troubles. “Tele-pharmacy” is defined as “the provision modern-day pharmaceutical care

through using telecommunications and data technology to patients at a distance”. regular tele-pharmacy involves offerings consisting of medicinal drug order assessment, dispensing and compounding, drug statistics offerings, affected person counselling, and healing drug tracking.⁴ This permits a certified pharmacist located at a relevant vicinity to oversee a pharmacy assistant or a pharmacy technician located at a far flung site in meting out cutting-edge prescription drugs. this is finished thru audio or video computer hyperlinks. those technologies are advancing tele-pharmacy offerings and permitting pharmacist to contribute successfully in enhancing right use of drugs. The emerging electronic health statistics structures and related technologies, which include fax, and digital health information make information extra effortlessly to be had to pharmacist for review before a dose is available for administration to a patient.⁵

Advantages of Tele-pharmacy:^{6,7}

1. Access to healthcare services- The primary gain is straightforward get entry to to clinical or healthcare offerings at a rural and far flung locations. It enables pharmacists provide high-level pharmaceutical offerings in remote regions which have misplaced or are losing the get right of entry to to healthcare offerings.

2. Economic benefits- Tele-pharmacy has a very good benefit in terms of economy. beginning a new pharmacy store is a good deal high priced. Pharmacists can effectively provide patient session without having earlier practice with tele-pharmacy thru audio or video conferencing which saves the monetary cost of beginning a new pharmacy store.

3. Minimal scarcity of pharmacists- A umber of rural regions and hospitals are going through shortage of pharmacists. because of this scarcity, it makes the provision of medicines to the sufferers with out the e involvement of a pharmacist. This shifts the drugstore services towards clinical workforce like docs and nurses. This state of affairs has potentially created a gadget that isn't perfect which does now not meet the authorities policies. Tele-pharmacy has the capability to deal with these issues. A far flung tele-pharmacy carrier is a feasible choice to cowl those shifts of pharmacy profession to different professions. Tele-pharmacy addresses pharmacist shortages in rural regions and improves affected person get right of entry to to prescription drugs and pharmacy services.

4. Patient satisfaction- Telehealth has an advantage of affected person satisfaction. Tele-

pharmacy has allowed pharmacists to review patient's medicines without them having to tour. This is advantageous inside the aged sufferers lacking their appointments due to the fact they did no longer want to exit in their houses. It has expanded patient belief and pride with the carrier.

5. Effective patient counselling- powerful patient counselling- A examine on tele-pharmacy-related offerings pronounced that pharmacists suggest the usage of the webcam-enabled tele-pharmacy services because they provide better privateness and longer counselling. Tele-pharmacy guarantees extra delight of sufferers in regards to the pharmacist counselling and time required.

Disadvantages of Tele-pharmacy :⁸

1. Pharmacy regulation laws- laws and regulations that govern pharmacy operations do now not adequately deal with the developing tele-pharmacy enterprise. Some of coverage issues, which includes the bodily vicinity of pharmacists that offer tele-pharmacy offerings, minimum quantity of time that pharmacist need to be on site, the types of technology used, and the jobs of pharmacists, pharmacy technicians, nurses, or other healthcare carriers in remedy distribution structures, need to be addressed. Tele-pharmacy remains a novel idea, and there may be a postpone in the implementation of recent legal guidelines. Execution and implementation of complete and uniform tele-pharmacy law remains an undertaking.

2. Operational difficulties- Tele-pharmacy services experience operational and useful resource challenges. Those services might also most effective be feasible with greater complex and complicated equipment with excessive-velocity digital connection. Face-to-face versus far off workflow is regularly overwhelming and much less spontaneous for each sufferers and healthcare carriers.

3. Reluctance to use technology- Reluctance to apply generation- incapability to use the generation is a different disadvantage main to reluctance to apply era. This is extra predominant in aged people who are suspicious approximately technology. The pharmacist's capacity to fully get entry to patient's circumstance is also hindered.

4. Continuity of care -7 ensuring continuity of care and compliance with precise allotting exercise is more complicated on far flung web sites. The use of unauthorized medications or dispensing medicinal drugs without right prescription is tough to control in using telepharmacy services.

OBJECTIVE OF TELE-PHARMACY:⁹

1. To make high quality healthcare available to underprivileged population
2. Save the time wasted by healthcare providers and patients in travelling
3. Reduce cost of medical care
4. Survey and track diseases
5. Case monitoring
6. Provide home care
7. Provide remote critical care

PURPOSE OF TELE-PHARMACY

Tele-pharmacy holds substantial promise to improve get admission to to pharmaceutical care in rural and faraway places. Clinical pharmacists are healthcare specialists skilled to help medication-related worries in medical institution, employees and sufferers. The get right of entry to to those services in rural and remote regions will assist to conquer the shortage of healthcare professionals.¹⁰

Tele-pharmacy gives numerous roles:

1. dispensing medicines
2. Administrative pharmacy offerings
3. clinical pharmacy services

Filling of prescription and counselling the patients can be feasible in video meetings. In far off regions pharmacist can work with physicians in keeping health records.

patient protection improves whilst a pharmacist is within the medical institution premises in rural areas. Tele-pharmacy manages to bridge the gaps in pharmaceutical care to rural groups. It also enables in imparting professional opinion to the far off regions which can be deprived of superior medical facilities.

How does tele-pharmacy work?

Step 1. Prescription arrives at rural areas and is filled

Step 2. Rural centre is connected with urban centre

Step 3. Central pharmacist reviews the prescription

Step 4. Releases the appropriate items to rural centre along with label

Step 5. Barcode is scanned at rural centre to ensure that it matches with the label

Step 6. Medication is supplied to the patient with attached label

Step 7. Central pharmacist provides Video consultation at the end

TYPES OF TELE-PHARMACY:

1. Inpatient (Remote Order Entry Review)- Refers to a pharmacist at a remote location for an inpatient pharmacy at a hospital. The remote

pharmacist review medication orders before the hospital staff administers the drugs to the patient.¹¹

2. Remote Dispensing (Retail/outpatient/discharge)- Remote dispensing site or retail community tele pharmacy is a licensed pharmacy staffed by a certified pharmacy technician. A pharmacist supervises the technician, prescriptions and drugs administered.

3. IV Admixture- IV admixture is defined as the preparation of pharmaceutical product which requires the measured addition of a medication to a 50ml or greater bag or bottle of IV fluid.

4. Remote counselling- Remote patient counselling refers to providing patient counselling via a live and interactive video session or by some means through telecommunication.

TYPES OF TELE-PHARMACY MODELS :¹²

1. Traditional Full-service Pharmacy- These tele-pharmacy sites have complete drug inventories that include prescription and OTC medications along with other health and beauty aids and also general merchandise.

2. Remote Consultation Sites- Prescriptions are prepared at the central pharmacy and are delivered to rural sites. Audio and video computer links are used to deliver patient education and counselling.

3. Hospital Tele-pharmacy- Hospital pharmacists in urban medical centre reviews and verifies the prescription that are issued and sent from rural hospitals. Automated dispensing machine is used to electronically release the medications.

4. Automated Dispensing Machines- Pharmacist at the central location upon receiving the drug order (electronically or by fax) confirms the patient profile, proper drug utilisation review and finally instructs the ADM to release the medication.

STARTING A TELE-PHARMACY

1. Becoming Familiar with The Laws and Rules-
 - a. General Principles
 - b. Point of contact
 - c. License Application
2. Asses the Need
 - a. Develop the community partners
 - b. Secure a physical location
3. Computer
 - a. Patient medication profile
 - b. Screening Drug interaction
 - c. Generating prescriptions with patient instructions
 - d. Billing
4. Video

INVOLVEMENT OF PHARMACIST

Pharmacist can play an active function in any Tele-pharmacy model within the transport of pharmacy offerings. The pharmacist related to in tele-pharmacy fashions ensures high nice care for the network specially areas which include medicine opinions and patient counselling. With the growing populace of patients with continual medical situations, all around the international involvement of pharmacists in tele-pharmacy models to enhance monitoring and inspire medicine compliance can decrease the hazard of medicine errors, unfavorable drug occasions, reduced medication value, and the chances for remedy failure. because of this we want to be careful of a number of the tele-pharmacy models that regularly exclude energetic pharmacist involvement together with internet pharmacies, vending gadget models, mail-order pharmacies, and fashions that shift pharmacist's roles to different healthcare experts which includes medical doctors and nurses. The fashions proved to be a precious aid at web sites, which previously had no pharmacy inputs, and cautioned a fashion in the direction of stepped forward medication documentation, reduced remedy risk, and achievable minimal wellknown of pharmaceutical overview. The impact of pharmacist involvement was further seen in the quantity of orders reviewed, changed, discontinued, or cancelled by a far flung pharmacist, decreased order processing time, and saving cash.¹³

CHALLENGES FOR IMPLEMENTATION OF TELE-PHARMACY IN INDIA

1. Compliance of this technique by users: lack of emotional dating the various patients towards physicians. On some other hand, it's miles a remember of issue for untrained healthcare carriers to convince in coping with the cases even though Tele-pharmacy due to their negative expertise of devices.¹⁴

2. Financial unavailability: excessive cost of generation and its supportive gadgets makes financially unfeasible for diverse businesses and hospitals for the implementation of Tele-pharmacy tasks.¹⁴

3. Literacy rate and language barriers: Literacy rate and language obstacles: poor is literacy fee and very huge variety in languages spoken by extraordinary populations interfere with the implementation of advanced technological competencies.¹⁵

4. Technical pressure: Tele-pharmacy supported by means of various vintage version software and hardware, still wishes to improve with the present

day designing and advances in organic sensors and higher connectivity answers.

5. Quality aspect: Drafting and passing a Telehealth act for India is required which ensures first-rate fitness care and supports the submit-advertising and marketing surveillance application. Registration of telemedicine by using this way after the perusing of popular procedure in order that minimum safety requirements are uniformly adopted.

6. Regulatory bodies: Telemedicine is at the primary level and the authorities has sources and electricity to assist it for higher fitness care delivery.¹⁶

II. CONCLUSION:

Rural residents and communities lack easy get entry to to healthcare offerings because of geographical and demographical factors. A nicely-evolved machine, however, can alternate the exercise of pharmacy this is beneficial to both the rural communities and the health facility or retail pharmacies that deliver these services. Tele-pharmacy holds sizeable promise as a technology to enhance get admission to to pharmaceutical care for human beings dwelling in rural and far off communities. Tele-pharmacy is fast becoming an indispensable a part of cutting-edge pharmacy practice and has the potential to offer exceptional pharmaceutical services, which encompass medicinal drug control, doling out, affected person counselling, and drug facts. Inherent to the adoption of these practices are felony demanding situations and pitfalls that need to be addressed. This method brought significant changes in the fitness of sufferers inside the unavailability of healthcare professionals in remote regions. Tele-pharmacy is an evolving affected person care technology and is now gaining greater giant use around the globe. Tele-pharmacy may additionally have large capacity to convert the transport of pharmaceutical services.

REFERENCES:

- [1]. Pedersen CA, Schneider PJ, Scheckelhoff DJ. ASHP national survey of pharmacy practice in hospital settings: Monitoring and patient education – 2015. *Am J Health Syst Pharm.* 2016;73(17):1307–1330
- [2]. Angaran DM. Telemedicine and telepharmacy: current status and future implications. *Am J Health Syst Pharm.* 1999;56(14):1405–1426.
- [3]. Pedersen CA, Schneider PJ, Scheckelhoff DJ. ASHP national survey of pharmacy practice in hospital settings: Monitoring and patient education – 2015. *Am J Health Syst Pharm.* 2016;73(17):1307–1330
- [4]. Peterson CD, Rathke A, Skwiera J, Anderson HC. Hospital telepharmacy network: delivering pharmacy services to rural hospitals. *J Pharm Technol.* 2007;23(3):158–165.
- [5]. Clifton GD, Byer H, Heaton K, Haberman DJ, Gill H. Provision of pharmacy services to underserved populations via remote dispensing and two-way videoconferencing. *Am J Health Syst Pharm.* 2003;60(24):2577–2582
- [6]. Gaurav Joshia*, KeshavJindala**, NishantGoutamb*, AlkaSharmab. Telepharmacy: A Review, *International Journal of Pharmacy and Pharmaceutical Research*, February 2020 Vol.:17, Issue:3
- [7]. Simone Baldoni 1, Francesco Amenta 1 and Giovanna Ricci 2, MDPI, Telepharmacy Services: Present Status and Future Perspectives: A Review, 1 July 2019, 55, 327
- [8]. Arjun Poudel Lisa M Nissen, Telepharmacy: a pharmacist's perspective on the clinical benefits and challenge, *Integrated Pharmacy Research and Practice*, 26 October 2016, 5 75–82
- [9]. Raghav Sarkar, MBBS, MPH. MS; Brandon J. Metzger, MS; Hannah M. Sayre, MHA; Chelsea M. Slater, MHA; SruthiKatamneni, BDS;MDA; and Alberto Coustasse, DrPH, MD, MBA, MPH, TELEPHARMACY AND ACCESS TO PHARMACEUTICAL SERVICES IN RURAL AREAS, June 29, 2018.
- [10]. Tim Stratton, Department of Pharmacy Practice & Pharmaceutical Sciences, University of Minnesota, Review of Research on Telepharmacy, May 20, 2016, 1-14.
- [11]. Simone et al. Telepharmacy Services: Present Status and Future Perspectives: A Review. *MDPI* 2019; 55(327): 1-12
- [12]. Michelle et al. Pharmacy Services in Telepharmacy: how is it working, where is it working, and what is required to practice in this new setting. *Advances in Pharmacy: Journal of Student Solutions to Pharmacy Challenges.* 2017; 1(1): 1-7



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- [13]. Goodridge D, Marciniuk D. Rural and remote care overcoming the challenges of distance. *ChronRespir Dis*. 2016;13(2):192–203.
- [14]. Sankaranarayanan J, Murante LJ, Moffett LM. A retrospective evaluation of remote pharmacist interventions in a telepharmacy service model using a conceptual framework. *Telemed J E Health*. 2014;20(10): 893–901.
- [15]. Singh, Ranjit, Michael I. Lichter, Andrew Danzo, John Taylor, and Thomas Rosenthal. “The Adoption and Use of Health Information Technology in Rural Areas: Results of a National Survey.” *Journal of Rural Health* 28, no. 1 (2012): 16–27.
- [16]. 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; 2011.