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A REVIEW ON TELEPHARMACY AND DIGITAL HEALTH PLATFORMS

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ABSTRACT

By increasing accessibility, efficiency, and patient outcomes, telepharmacy and digital health technologies have revolutionized the delivery of healthcare. The historical history, tools, components, applications, difficulties, and new advancements in telepharmacy and digital health integration are all examined in this paper. Pharmacist shortages, medication safety, and the management of chronic diseases have all been successfully addressed by telepharmacy, which is the delivery of pharmaceutical care using telecommunication technologies. In order to handle clinical and genetic data and improve patient care and healthcare operations, digital health makes use of information and communication technology.

KEYWORDS: Telepharmacy, community pharmacy, clinical pharmacy, telepharmacy of care, internet pharmacy, pharmaceutical care.

INTRODUCTION TELEPHARMACY: A MODERN HEALTHCARE SOLUTION

By providing pharmaceutical care via telecommunication technologies, telepharmacy enables patients in underserved or rural areas to get pharmacist services without requiring in-person visits. Initially, it was implemented to promote pharmaceutical safety and solve the scarcity of pharmacists. Telepharmacy has seen significant advancements, particularly during the COVID-19 pandemic.

DIGITAL HEALTH

By analyzing clinical and genetic data, digital health makes use of information and communication technology to enhance patient care. By improving health outcomes, expanding clinical research, and simplifying processes, it has completely transformed

healthcare. One prominent example is the diabetes management software BlueStar, which was among the first digital health aids to receive FDA clearance.

MATERIALS AND METHODS

The literature analysis for this study was completed during January and February of 2019. The Pub Med library was used for the research, with "telepharmacy" as the entering term. Only English-language publications released between 2012 and 2018 were included in the selection process; review articles were not.

64 papers were found using this search. Two researchers independently conducted an additional study using a traditional method that involved reviewing the retrieved papers' titles and abstracts. Additionally, papers were assessed using the Newcastle–Ottawa Scale (NOS) standard criteria [8]. The overall quality of the studies was classified as poor (scoring 0–4), moderate (score 5–6), or good (score 7–9). Due to their lack of relevance to the subject or their poor performance on the aforementioned criteria, 46 articles were disqualified from additional analysis.

- **Support to Clinical Services**

1. Medication Adherence

The Pharmacological Intervention in Late Life (PILL) program was created to assist veterans in rural Maine, USA, with adhering to their prescription regimens following hospital discharge. Polymedication, the daily administration of many medications to elderly persons, can lead to a number of iatrogenic issues. PILL was created to help patients manage their medications more easily by helping them with pharmacist phone calls. In the event of issues, the PILL pharmacist could speak with the primary care team directly to suggest potentially unsuitable drugs or treatment interactions.

2. Clinical Pharmacist Shortage

Clinical pharmacists are medical professionals with training in providing hospital staff and patients with medication-related support. Health systems face difficulties in providing this service in remote and/or rural locations. A remote pharmacist intervention has been implemented by the Nebraska Medical Center and Mount Isa Hospital to provide underprivileged hospitals with appropriate pharmacy support for safe hospital inpatient treatments.

3. Pharmaceutical Counselling Activity

Home drug delivery (HDD) is a new method of delivering medications that involves sending pharmaceuticals straight to patients' homes or places of employment. This saves time and money, particularly for patients receiving long-term pharmaceutical treatment who frequently visit pharmacies or hospitals to pick up their medications. HDD is particularly useful and of great relevance in rural or geographically dispersed places. Hospital pharmacists in Spain oversaw this service, which was provided to HIV (Human Immunodeficiency Virus) patients. In Denmark, a somewhat comparable program was created. This involved giving patients who received their medications at home or obtained them online direct pharmacist counseling. Community pharmacists primarily offered this counseling through phone or video calls. Both experiences succeeded in ensuring that patients received proper care. Time and money savings and patient satisfaction were not insignificant outcomes.

- **Remote Education and Handling of "Special Pharmacies"**

1. Medical Staff Training and Patient Education

The Children's Cancer Hospital in Cairo, Egypt, and the St. Jude Research Hospital in Memphis, Tennessee, USA, have established telepharmacy training. Staff training was required when this center started in July 2007. A group of pharmacists from the St. Jude Research Hospital largely used videoconferencing to impart their expertise on pediatric oncology in order to improve the education of the Egyptian staff.

In order to increase medication use and treatment adherence, telepharmacy approaches were also employed to teach patients with pulmonary disorders, specifically asthma and chronic obstructive pulmonary disease (COPD).

2. Remote Surveillance of Anti-Neoplastic Medication Preparation

Anti-neoplastic drug formulation was overseen via telepharmacy. Using this method, a remote pharmacist used a camera system to monitor technicians' actions while they prepared anti-neoplastic medications. Two hospitals—the La Rochelle Hospital Complex (La Rochelle) and the Institute Paoli Calmettes (Marseille)—were involved in this type of strategy in France. To prevent contamination of preparations, cameras were positioned outside the operating area. The Community Cancer Network of Alberta (Canada) created a telepharmacy service akin to this. A provincial push to consistently use this type of methodology as a standard in the preparation of oncological medicines followed this study.

3. Control of Medicine Chests in Seagoing Vessels

Qualified medical professionals are not carried on board merchant (cargo) ships. The ship's captain or another officer he has assigned is in charge of all medical tasks, including maintaining the ship pharmacy. Ship officers' inadequate pharmacological and pharmaceutical expertise makes it challenging to oversee and maintain the ship pharmacy, also known as the ship's medicine chest. The International Radio Medical Center (Centro Internazionale Radio-Medico, C.I.R.M.) in Rome created the PARSI software, which makes it simpler for a pharmacist on land to verify and oversee the ship pharmacy's right treatment. There are two categories in the software: medications and medical equipment. When medications and medical equipment are removed, the program records them and notifies users if a replacement is required. One of PARSI's features is that it can function without an internet connection. Given that ships cannot always have reliable internet connections, this is a useful benefit.

INTEGRATION OF TELEPHARMACY AND DIGITAL HEALTH

With numerous benefits like increased accessibility, patient convenience, cost savings, effective drug administration, and better health outcomes, the combination of telepharmacy and digital health has completely transformed the delivery of healthcare. Clinical pharmacists can assess inpatient medications remotely in rural hospitals thanks to telepharmacy, which greatly lowers prescription mistakes and enhances treatment results. By monitoring adherence and upholding stock management, automated methods such as LED blister packs with microprocessors have demonstrated efficacy in managing chronic diseases, further reducing medication errors.

HISTORICAL EVOLUTION OF TELEPHARMACY AND DIGITAL HEALTH

Telepharmacy Over time, significant technological developments have given rise to the concepts of telepharmacy and digital health. The telephone invented by Alexander Graham Bell in 1876 made remote medical consultations possible, as seen in 1879 when a physician used the phone to diagnose a baby's illness. Later, in 1925, Hugo Gernsback presented the concept of the "Teledactyl," a future apparatus intended for robotic tool-based remote patient examinations. Basic digital technologies were introduced into the healthcare industry in the 1950s, automating repetitive processes like data entry and payroll.

LIMITATIONS OF TELE PHARMACY AND DIGITAL HEALTH INTEGRATION

1. Technology Knowledge and Availability

2. Issues with informed consent and confidentiality.
3. Communication Gaps with Healthcare Providers
4. Algorithmic
5. Device Limitations and Accessibility.
6. Lack of Inclusive Data.
7. Possibility of Technological Progress

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