Chapter 2
Enhancing Telemedicine Workflow Through Secure Image Transmission

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ABSTRACT

In the field of telemedicine, the incorporation of secure image transmission technologies and workflow automation, with a particular emphasis on the impact these technologies have on service delivery. Secure image transmission, which is accomplished through encryption protocols, virtual private networks (VPNs), and cloud-based platforms, makes it possible for medical professionals to share medical images in a manner that is both secure and fast. Through the use of real-time

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image sharing, diagnostic accuracy can be improved, delays can be reduced, and treatment decisions can be made more quickly and effectively. The automation of workflows also helps to streamline administrative and clinical tasks, which reduces the likelihood of errors caused by humans and increases operational efficiency.

INTRODUCTION

Professionals can diagnose, assess, and treat patients from a distance with the help of telemedicine, which is the practice of providing medical services remotely using digital communication tools. Technology such as messaging apps, mobile platforms, phone calls, and video conferencing are used in this approach (Pandey, B. K. et al., 2024a). Improving access to care is the main goal, especially for those who live in underserved or remote areas with limited access to facilities or experts. Real-time interactions, store-and-forward techniques, and continuous monitoring are the three ways that remote consultations can be conducted. Instant assessments, symptom evaluations, and prescription advice are all possible during real-time consultations via video or live chat, which mimic in-person meetings. When medical data, like images (Shahul, A. et al., 2024) or medical records, are sent so experts can review them later, this is referred to as store-and-forward. Get second opinions on MRI scans and X-rays, for example, is a non-urgent situation where this method works well. Typically used for long-term condition management, remote monitoring entails tracking a patients vital signs or health metrics via wearables or sensors (Pandey, D. et al., 2024). Enhancing service accessibility is among the many notable benefits. There is no need to travel for consultations for those who live in remote areas or have restricted mobility. Managing chronic conditions such as diabetes or heart disease requires careful attention to detail (Pandey, B. K. et al., 2024b). Furthermore, by optimizing resource utilization and reducing in-person visits, digital approaches ease the burden on healthcare facilities. The other two major advantages are convenience and cost savings. Individuals save money and time on travel, and healthcare systems save money on maintaining physical facilities and scheduling in-person visits. Regular patient interaction helps identify health problems early and allows for prompt intervention. Notwithstanding, certain obstacles persist, including safeguarding information transfer, upholding confidentiality, and surmounting technological constraints in areas with inadequate internet connectivity.