Chapter 7
Interactive Virtual Consultation and Disease Diagnosis Using Machine Learning Approach

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ABSTRACT

Businesses that provide care remotely are far from the scope of virtual care. It offers a delivery channel for particular patient populations with applications that do not need in-person examinations or presence, even though it cannot be assumed to be the solution to all health-related questions. According to the scoping reviews, virtual care includes a significant information generation method called disease diagnosis, considered as the very first step towards treating the illness. Along with video conferencing technologies for consulting the doctors to achieve care supervision. Application of rehabilitation, remote consultation, and emergency services are efficient ways to use in attention to achieve well-being. Machine learning is one such way to achieve disease diagnosis based on information provided by the user with a high accuracy using various approaches. In this chapter, a novel approach of random forest approach with modifications is used.

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1. INTRODUCTION

Self-care is an essential component of the lifestyle. Traditionally, assistance groups have used provider-centric models (e.g., hospitals). Patients can request treatment in provider-centric models by going to the office of the provider or planning outings to help facilities (Arslan et al., 2021). A patient who wants to learn about polygenic disorders for managing their hypoglycemic agents would go to a polygenic disorders education clinic with information from respective glucometers for identification of a nurse (RN), dietician, or medical professional so they can get the help they need from their suppliers (Ogunmola et al., 2021).

Through the development of new tools that promote a patient-centric style of care, technology advancements have the potential to strengthen already existing patient-provider interactions. When providers and aid organizations work to increase patient access to care, which may include offering services like telehealth visits, a patient-centric model of care is created (Sharma et al., 2021a). The possibility exists for the scenario depicted in the top outline to materialize since virtual care can increase how convenient it is for patients to receive treatment from their suppliers. Many technologies, such as Skype® and FaceTime®, are available in the global communications market to facilitate asynchronous communication across time-based virtual connections (Bansal et al., 2022).

These technologies allow for the connection of loved ones regardless of distance or time differences. When using these standard technologies to provide assistance, there are privacy concerns around (PII) non-public identifiable information and (PHI) protected health information (Gunturu et al., 2023). PII means information that recognizes distinguishing identifiers supported by persons, such as a reputation, social security number, driver's license, etc. ((Sharma et al., 2021b).

The patient's letter may include details from their medical records, such as their name, anamnesis number, or biometric identifiers, but it may also contain details about their passport, driver, and other personal information (PII) ((Sharma et al., 2021c). As a result, businesses all over the world have created tools designed specifically for use as an aid (Suthar et al., 2022). These solutions make it possible for businesses to adhere to local privacy laws, such as the Insurance Portability and Accountability Act in the United States (HIPAA) (Sonnad et al., 2022).

Virtual tools in Canada conform to the Personal Data Protection and Electronic Documents Act and the Freedom of Information and Protection of Privacy Act (FIPPA), as well as the Office of the Information and Privacy Commissioner (PIPEDA). In order to supply technologies that are suitable to the privacy and security norms of those many countries, providers must adapt to the completely different regulations that exist in each country. These actions serve to safeguard private information about a person from improper use or dissemination in our information-rich society (Uike et al., 2022).

Online healthcare has been a general word framed to refer to a particular form of treatment because many of those instruments can be used without the patient or provider being physically present. Although the concept of virtual care is not one of replacement, the general public does not fully understand it in terms of the services it offers or how it differs from conventional telehealth or, perhaps, face-to-face encounters. The location of the patients is the key differential between these three service delivery methods.

In-person, interactions become very evident in this situation because the patient will be in close proximity to their supply, whether it be at work for the provider or locally, like a neighbourhood doctor who sees patients at their homes. In the early days of telehealth, a patient would have a video call with their respective provider belonging to a medical workplace through a comfortable place like home where video conferencing devices had been developed on the patient's as well as the provider's side.