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# Importance of Information Technology and Communication Systems in Home Healthcare Services

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**Abstract:** ***Home healthcare services are increasingly becoming an essential part of modern healthcare systems, especially with aging populations, chronic diseases, and the need to reduce hospital stays. Information Technology in home healthcare refers to the use of digital tools, software, and devices to collect, store, manage, and share patient information. Communication systems such as mobile apps, video conferencing, and wearable devices play a crucial role in monitoring patients' health conditions in real time. Communication systems also enable real-time interaction between patients, caregivers, and healthcare professionals, regardless of physical distance. The present study is done to study the importance of information technology platforms in a select homecare service. The study population was divided into three groups-patients, doctors, and IT support staff. The size of the sample is 200 and a simple random sampling technique has been used. Data was collected by issuing questionnaires comprising of three questions to each of the groups separately. The major findings are that from the patient group, 26% reported the booking of appointments to be easy. 32% reported the usage of mobile application pertaining to viewing their data as very difficult. 32.5% reported that the time taken to get their appointment fixed was moderately long, taking about 2 to 3 hours. 31% of the doctors have said that the process of prescription writing to be easy as the software provides them with a master list of symptoms, and generic names of drugs and dosages so that the options can be directly selected from the list. The study suggests that the booking process can be made shorter by a properly coordinated communication system between the patients, PREs, doctors, and the marketing team.***

**Keywords:** Communication Systems, Home healthcare, Information Technology, Mobile application, Telemedicine

## 1. Introduction

Home health care faces challenges, such as funding limitations, large geographic distances that make such resources often more costly for rural patients, and issues of clinical workforce distribution that impose access barriers to these services. It is a general premise that information technology (IT) can address these challenges and enhances home health care services. Advances in telecommunications, web solutions, and social networking tools have the potential to support health care delivery and education. The use of IT can lead to a fundamental redesign of home care processes based on the use and integration of electronic communication at all levels. Many anticipate that IT platforms may lead to patient empowerment and a transition from a passive role, in which the patient is the recipient of care services, to an active role, in which the patient is informed, has choices, and is involved in the decision-making process. Such a transition may be possible due to the active involvement of patients in the management of their disease using home monitoring devices and software, the access to information and online communities, and the use of personal health records maintained by patients themselves.

For Home Healthcare service providers to grow and thrive, they must achieve some of the best key performance indicators (KPIs) and operational efficiency for utilization and billability. At the same time, they need to reduce time-consuming effort and cost non-revenue generating administrative tasks such as billing and payroll. The providers focus should be on its service delivery operations and maximizing the time of its caregiver team providing quality care to patients. With healthcare increasingly shifting to the patient's home, the travel times of the nurses need to be optimized, and they should be spending more time caring for the patient than traveling. Simultaneously, the personal nature of the business leads to patients requesting specific caregivers who they feel deliver the best, compassionate care. Improving the productivity and satisfaction of clinicians will require providing the right tools to manage their workload and creating the right work-life balance. A software platform that provides information on the patient alerts for missed medications/treatments, task lists, and easy-to-use communication tools will significantly improve the productivity of clinicians and caregivers. Optimizing the travel for clinicians will help in enhancing productivity and satisfaction.

### Need for the Study

Home healthcare services which are one of the recent advances in the healthcare industry experience challenges relating to costs of providing care, distribution and allocation of staff, long distances, etc. Hence, the study is done to understand the importance of ITC applications in the home healthcare services

### Objectives

- To understand the perceptions of patients, doctors and IT team with regard to mobile application
- To identify the challenges faced by the home healthcare services.
- To suggest possible measures to overcome the challenges faced.

## 2. Research Methodology

**Scope:** The scope of the present study is to understand the software applications, technology and communication systems used and their role in homecare services.

**Sampling Size:** All the patients who have availed of home healthcare services during the study period, and the doctors, nurses, and support staff were included in the study. A simple random sampling technique has been used to select the patients and the size of the sample is 200, comprising of 180 patients, 15 doctors and 5 IT support team members.

**Sources of Data:** Both primary and secondary sources of data were used. The primary sources of data are questionnaires designed individually for 3 groups – Patients, Medical staff (Providers), Support staff (ITC team).

The secondary sources of data include the past data and reports already available and the studies which have already been done.

**Tools of Analysis and Presentation:** The collected data has been analyzed and presented in the form of charts/grahs.

**Data Analysis**

The questionnaire for patients includes their perception regarding the following parameters:

1) Ease of booking the appointments for the services.
2) Difficulties in the usage of the respective websites or software applications.
3) Time taken to get an appointment online.
4) Suggestions (if any)

**1) From the patients' perspective**

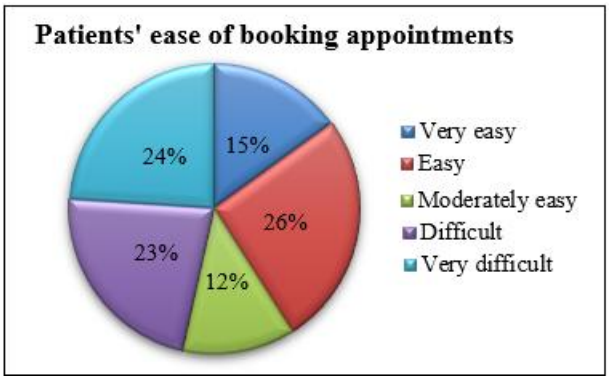


**Figure 1:** Patients' ease of booking appointments through the mobile application

From the above data, it can be inferred that the maximum number of patients, that is, 26% have reported that it has been easy to book appointments through the application.

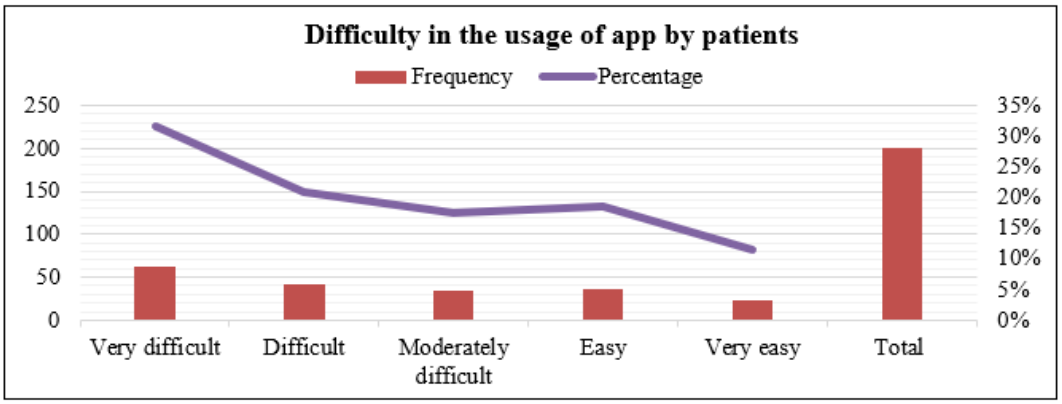


**Figure 2:** Patients' difficulty in the usage of the mobile application

From the above data, it can be inferred that the maximum number of people, that is, 32% have found the mobile application difficult to use.

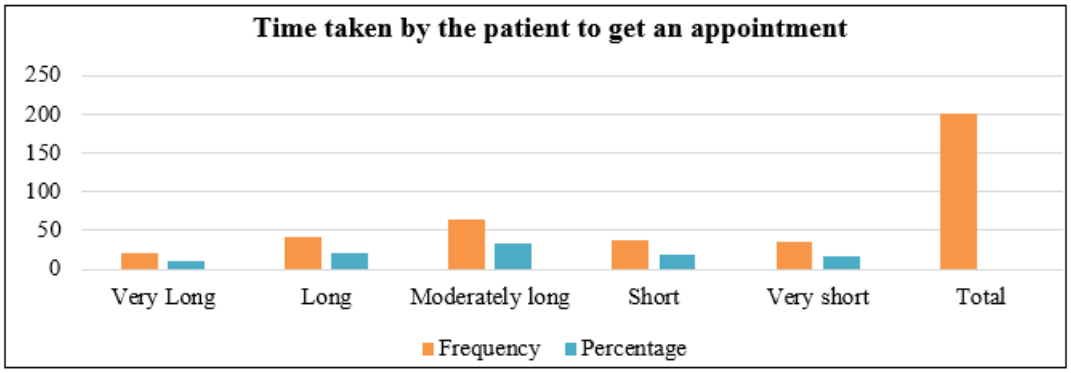


**Figure 3:** Time taken by the patient to get an appointment booked

From the above data, it can be inferred that, the maximum number of patients, that is, 32.5% have reported the appointment booking process as moderately long around 2 to 3 hours.

**2) From the doctors' perspective**

The questionnaire for the medical staff, that is, doctors and nurses includes their perception regarding the following parameters:

a) Ease of responding to the scheduled appointments.
b) Ease of monitoring the patients through respective software applications, tele conferencing tools like audio and video consultations.
c) Ease of prescription writing.
d) Suggestions (if any)

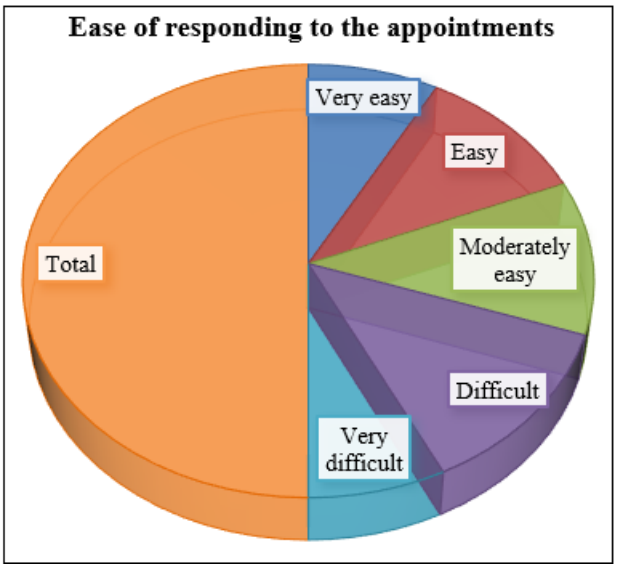


**Figure 4:** Doctors' ease of responding to the appointments

From the above data, it can be inferred that the maximum number of doctors, that is, 25% have reported the process of responding to the appointments as difficult.

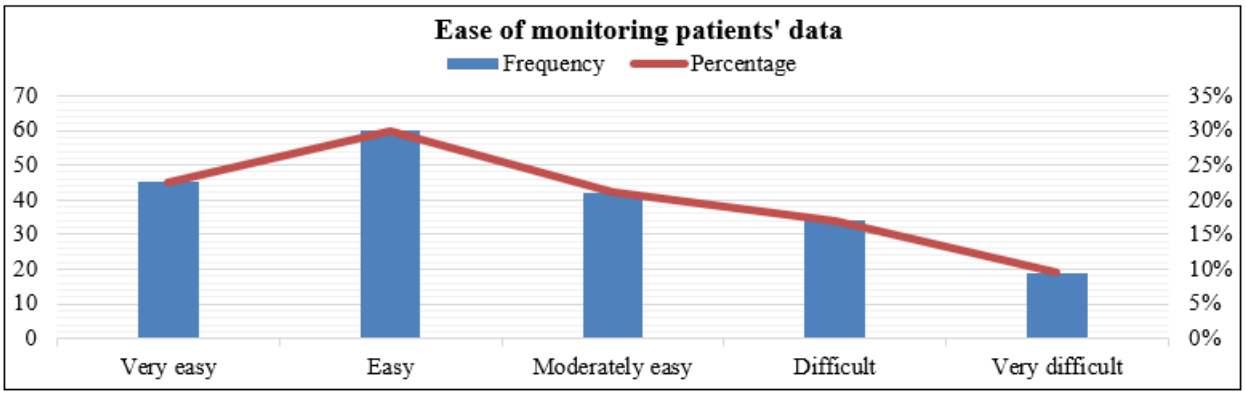


**Figure 5:** Doctors' ease of monitoring the patients' data

From the above data, it can be inferred that, the maximum number of doctors, that is, 30% have found it easy to monitor patient data.

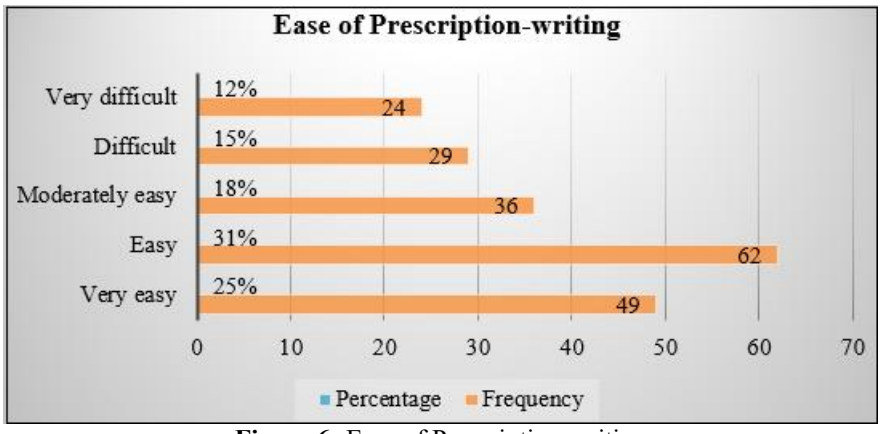


**Figure 6:** Ease of Prescription-writing

From the above data, it can be inferred that the maximum number of doctors, that is 31% found giving prescriptions through the application, easy.

**3) From the IT team's perspective**

The questionnaire for the support staff or the ITC team will include their perception regarding the following parameters:

a) Ease of scheduling appointments with the doctors.
b) Ease of updating the data

c) Ease in implementing the technology and software applications.

d) Suggestions (if any)

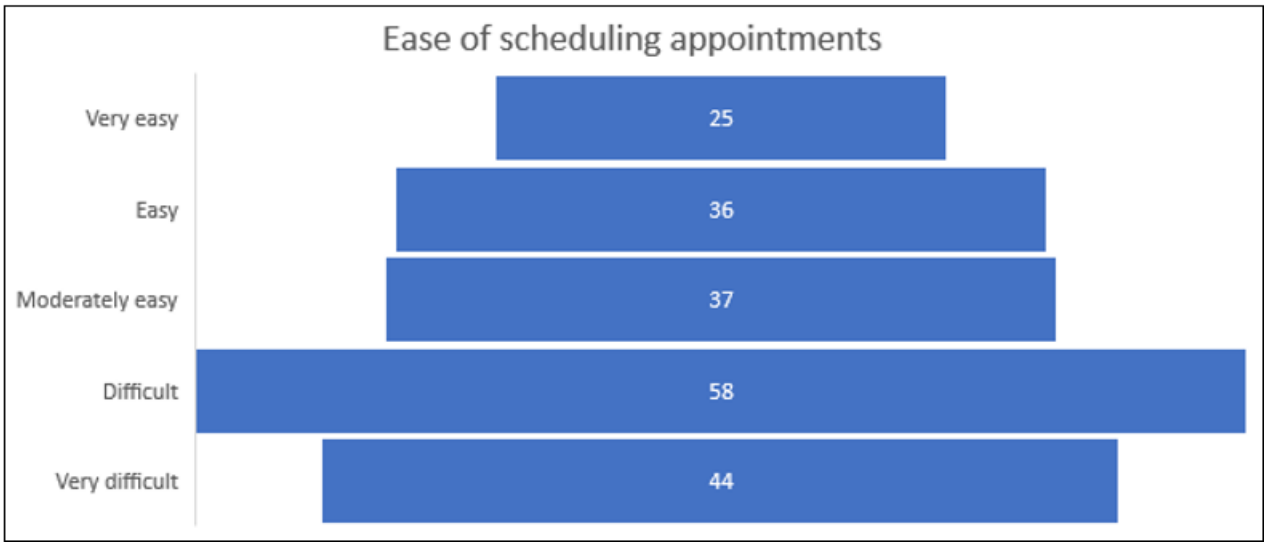


**Figure 7:** Ease of scheduling the appointments

From the above data, it can be inferred that, the maximum number of IT staff, that is, 29% reported that it was difficult to schedule appointments through the application.

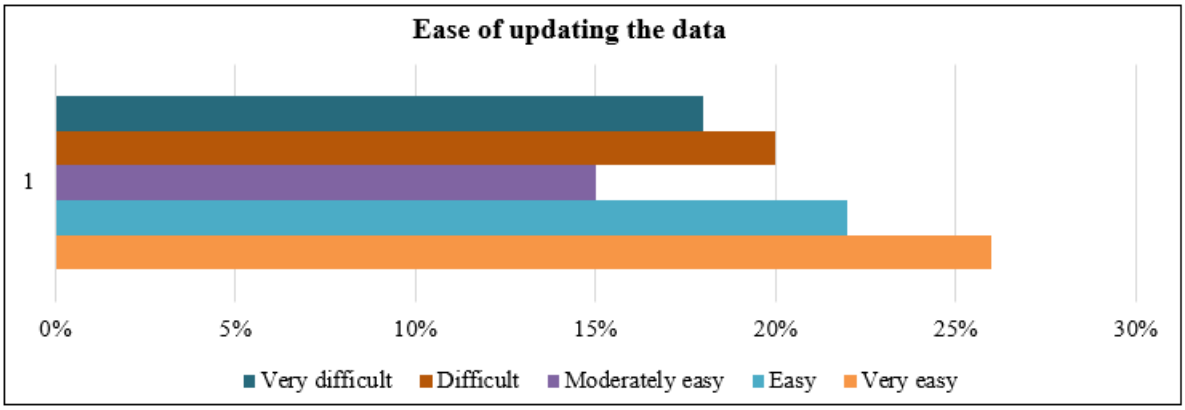


**Figure 8:** Ease of updating the data

From the above data, it can be inferred that, the maximum number of support staff, that is 26% have found it easy to update patients' data on the application.

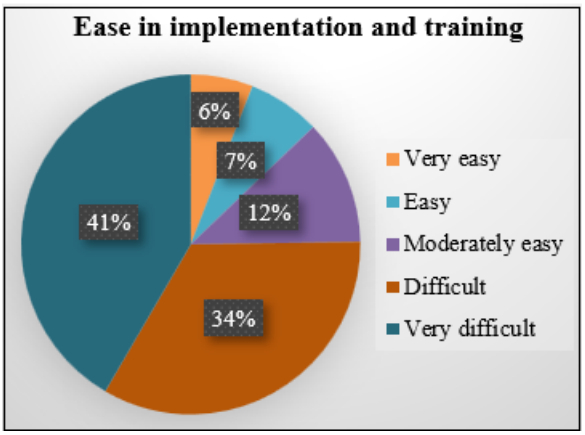


**Figure 9:** Ease in implementation and training

From the above data, it can be inferred that, the maximum number of support staff, that is, 41% have found training and implementation to be very difficult.

## 3. Observations and Inferences

From the study, it is observed that, a maximum number of :

1) Patients, when asked about bookings made through the mobile application, patients have reported it to be easy. The process of registering their details and the doctors available for their required time slots is shown on the application. This has made their booking process easy.
2) Patients have found the regular usage of the application difficult. This is because their EMR details are uploaded much later. Also, they have reported of crashing of the application almost regularly.
3) Patients have reported the confirmation of the booking, taking about 2 to 3 hours. This is because the marketing team has to reach the Patient Representation Executives who in turn act as a point of contact between the patient and the doctor. They find the doctors who are available for that particular time slot and fix the appointment. This entire process is time-consuming.
4) Doctors felt it was difficult to respond to the appointments as they cannot contact the patient directly. The patient's details like phone number and location

cannot be accessed directly until the doctor talks to the PRE.

5) Doctors found the process of monitoring patients' data easy. They have an access to update the patient's data according to the changing clinical outcomes.
6) Doctors have reported the process of prescription writing to be easy as the software provides them with a master list of symptoms, and generic names of drugs and dosages so that the options can be directly selected from the list. Additionally, there is an open text box provided so that the doctors can type according to their requirements if any.
7) IT support staff, when asked about scheduling appointments, have reported it to be difficult. This is because of the requirement of continuous follow-up with the Service Delivery team and the PREs regarding the availability of doctors based on the patient's location and the time.
8) IT team members feel that the process of updating patients' data is easy. This is due to the combined efforts of doctors, the marketing team, and the PREs
9) IT team members reported the process of implementation and training to be very difficult because of the resistance from the employees towards change.

## 4. Summary

The study which was conducted over a period of three months includes three groups – patients, doctors, and the IT support team. A simple random sampling technique has been used to select the population under study. The primary sources of data collection were questionnaires prepared separately for each of the three groups and the secondary source of data was the pre-available descriptive content about DocEngage software and power point presentations of the IT support staff used for the induction of employees.

From the patient group, 26% reported the booking of appointments to be easy. 32% reported the usage of mobile application pertaining to viewing their data as very difficult. 32.5% reported that the time taken to get their appointment fixed was moderately long, taking about 2 to 3 hours.

From the doctors' group, 25% reported that it was difficult to respond to the appointments. 30% reported the process of monitoring the patients' data to be easy. 31% of them said that it is easy to write prescriptions on the application.

From the IT support staff's group, 29% of them reported that the process of scheduling appointments as difficult. 26% said that the process of updating data is very easy. 42% of them said that it is very difficult to implement and train employees regarding the software application.

## 5. Conclusion

From the above study, it can be concluded that Information Technology and communication systems have revolutionized home healthcare services by improving accessibility, efficiency, and quality of care. There is an immense role of information technology and communication systems in home care services. The software application is still in its early stage and needs a lot of improvement.

## 6. Suggestions

1) There should be a proper training program or a demo given to patients whenever they register themselves in the mobile application for the first time.
2) The booking process can be made shorter by a properly coordinated communication system between the patients, PREs, doctors, and the marketing team.
3) For the doctors to respond easily to the appointments, prior information regarding the patient's location and other details should be shared so that the doctors can decide if the location is accessible from their distance and time.
4) Bugs like crashing are to be checked and prevented by the IT team.
5) Resistance towards training and implementation can be reduced by continuous motivation and support from the top management.
6) More training programs are essential for the PREs to communicate quickly so that the IT team can update the data accordingly. This would further help the doctors and patients to easily view and monitor their data respectively.

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