EVOLUTION OF AN INNOVATIVE APP FOR HEALTHCARE SUPPORT

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Introduction :

Most of the times patients may forget to take the medicines at proper time as specified in the prescription which may slow the recovery process from the disease/illness. Medication adherence refers to the degree or extent to which a patient takes the right medication at the right time according to a doctor’s prescription has become a serious issue. A rising number of studies have reported that non-adherence may critically affect the patient, thereby raising medical costs. As a solution to this very problem, we are introducing an Android Application (CapsCure) whose objective is to remind the patients of their dosage timings through Notification Ringing and Notification Pop-up in the notification bar, so that the patient is regular in taking medicines. Patients need not to remember their medicine dosage timings as they can set a reminder on their dosage timings by feeding the relevant data into the system.

The alarm can be set for multiple medicines and timings including date and time. A notification will keep alerting them to take the correct dose at correct time of their medicine. It makes a red cross on the dosage which might be missed by the patient to take, it helps in creating a database which will help the Doctor to understand more about the patient present health. While turning off the notification, the patient will be indicating to the system if he/she has taken the medicine or not. Based on the timely feed provided by the patient, the app maintains a record of the patient’s medicine taking history. Many such Medical Reminder Systems have been developed which are effective but, in our project, we are planning to develop the app more interactive by integrating a live chatbot which will enable the patients to interact with the system which is economical, time-saving and supports medication adherence.

Objectives :

This project broadly aims at achieving the following objectives:

1. To remind the patients of their dosage timings through Alarm Ringing system so that they can stay fit and healthy
2. To decrease medication dispensing errors and wrong dosages
3. To get the history about their medications with the help of deep learning chatbot and Artificial Neural Networks which we are planning

Methodology :

In this module, the patient has to manually input the details of his/her medicine prescription including dosage and timing details which get stored into the system database. Based on the medicine taking timings indicated by the patient, the module sets alerts corresponding to the times at which the patient should take a particular medicine. The application also has a reminder for refilling the medicines. The notification is manually turned off by the patient indicating whether the required dosage was taken or not. In case of no response provided by the patient, a red cross is put on the missed dosage.
For the development of the system, the software requirements were as follows:

**Operating System**: Android  
**Minimum Version**: 2.3 (Gingerbread)  
**Software Environment**: Java  
**Database Used**: SQLite  
**Platform Used**: Android Studio

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**Results**:

The survey that we conducted as part of the testing phase showed that the amalgamation of all the functionalities provided by this app is largely useful to the people of all ages in general. The automatic alarm ringing feature was proved to be beneficial to almost all of the total population surveyed. Out of the total number of people surveyed, 90% of the people including students, adults and elderly indicated that they find the alarm system useful. As the users get the schedule of medicine intake time with medicine description, starting and ending date of medicine, notification for refill and automatic alarm ringing system, overall this app was well-praised. However, the app and notification system needs to be improved in order to account for the case when the phone of the patient or user is out of battery. Moreover, the youth today is likely to use the app for maintaining their medicine/supplement intake plans and diets as they do not keep track of the quantity of their medications/supplements. In case a refill is needed, the app reminds them with the refill reminder. Overall, it was found that this app was useful to a large number of people. Sample population size is 100, including people of all ages.

**Conclusion & Future Scope**:

Through this app and the associated survey, we have provided an overview of the various works done in android healthcare management and alarm systems. While this is a full functional app, it does have scope for improvement in terms of features as well as functionality. The app in its current form lacks the functionality of a fully intelligent system (live chatbot) which can prescribe medicines based on the symptoms indicated by the patient/user. The alarm ringing and refill reminder features can be made interactive such that the app gains accurate information about the medicine dose consumed and the exact time for the same. Adding the email notification feature and making the alarm/notifications available to fitness bands will make the app more portable and robust. The app access can also be customised and extended for doctors where they can keep track of the activity of their patients virtually. Lastly, other options for medication adherence can be explored further in future to improve the performance of the present system.