

Multi-feature Healthcare Application To Improve Usability Of Current Systems

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Abstract

A multi-feature cross-platform application made using Google Flutter framework that adheres to the needs of users of healthcare applications (provided with an easy to use interface to increase usability and empathy). Consists of a wide variety of features which include monitoring records on a daily basis, automated reminders for medication and patient centric solutions. Includes meal planning strategies, timely reminders for users to stay hydrated and location specific medical consultation.

Keywords: – Healthcare, Features, Interface, Cross-Platform.

1. Introduction

The number of devices worldwide amount to over 5.8 billion and there are nearly 6 million multimedia applications available for download in the app stores. As per IQVIA's report, over 318,000 of these are Healthcare apps [10]. As one of the prominent digital behavior change interventions of our time, Mobile Healthcare apps promise to improve health outcomes in a number of ways including helping patients actively measure, monitor, and manage their health conditions. While the demand for Healthcare development is ever increasing and catering to the daily needs of users is critical; relevant and feature rich apps rarely exist. To tackle this problem, numerous surveys were conducted with reports producing a demand for simple features like medicine reminder and daily water tracking. An attempt has been made to improvise the current solutions prevalent in the market by trying to solve the problems faced by users to effectively satiate the high demand.

2. Problem Definition

2.1 Problem Statement

To provide a solution to users by integrating the most required features in a single healthcare application. To provide an easy to use interface with multiple interactive features for faster health recovery focusing mainly on medicine scheduling management.

2.2 Existing System

Healthcare apps are gaining popularity on all mobile device platforms and form the primary basis for smartphones, tablets, and smartwatches [1][5]. With nearly 3 lakh health and fitness-related apps available, only a small percentage (15%) of the dedicated medical apps are linked to medical providers.

Moreover only 1% of these apps are providing relevant assistance. The current solutions provided by the most used apps do not have features such as water tracking, medicine reminders, meal plans (according to users nutrient requirements), relevant information about nutritionists and health centres at nearby locations.

In an exemplary evaluation of medical apps, deficits regarding data integrity, security and privacy issues were also found as described in [4]. The present system is lackluster as healthcare apps require dealing with sensitive patients who have been through a lot of trauma so user interaction must be highly problem specific.

3. Literature Survey

Table 1. Survey of Literature

Sr. No.	Paper	Author	Advantages	Drawbacks
1.	“Mobile Health (mHealth) Apps for Improved Health in Medicine.” [1]	Yang, Stephen & Kamel Boulos Maged. (2014).	Gamification techniques are used to promote behavioural changes in health	Possibility of a feature rich environment is not addressed
2.	“Measuring patient experience: concepts and methods.” [2]	Ahmed F, Burt J, Roland M.(2014)	Information about why patient experience is important to provide medical care and various methods to measure the same	No observation about patient experience being enhanced by using a measuring factor
3.	“Using smartphones and health apps to change and manage health behaviors: a population- based survey.” [3][9]	Ernsting C, Dombrowski SU, Oedekoven M, Kanzler M, Kuhlmeier A, Gellert P. (2017)	Assessment of sociodemographic s, quality of life and health literacy	No engagement from a substantial proportion of the population in using healthcare apps

4.	“The Continued Use of Mobile Health Apps: Insights From a Longitudinal Study” [11]	Isaac Vaghefi (2019)	Understanding continued use of Healthcare apps and individuals’ behaviour based on their usage patterns.	Does not provide additional insights on continued use of Healthcare apps
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As shown in Table 1, Yang, Stephen & Kamel Boulos Maged in “Mobile Health (mHealth) Apps for Improved Health in Medicine.” 2014 (Medicine 2.0'14 Summit & World Congress) proposed various gamification techniques to promote behavioural changes in patient health conditions [1]. Ahmed F, Burt J, Roland M in “Measuring patient experience: concepts and methods.” 2014 (The Patient - Patient-Centered Outcomes Research) explained why patient experience was a major factor in providing medical care. They described various methods of measuring patient experience, including issues relating to validity, reliability and response bias [2]. Ernsting C, Dombrowski SU et. al. in “Using smartphones and health apps to change and manage health behaviours: a population-based survey.” discussed the importance of using smartphone based health apps in medical treatment and monitoring [3][9].

4. Proposed System

The proposed methodology is to introduce a cross-platform application that helps the user by providing relevant features for maintaining good health in their daily routine. It comprises of an interactive user interface which makes the experience enjoyable alongside providing medical care and empathy. This application eliminates the need to download multiple applications for using the features available on a single platform.

4.1 Implementation

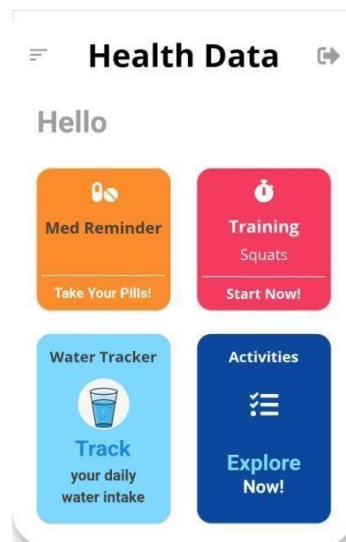


Fig. 1. Interface of the application

Fig. 1. shows the interface of the application which uses interactive colors to represent various features available in the application.

4.2 Medicine Reminder

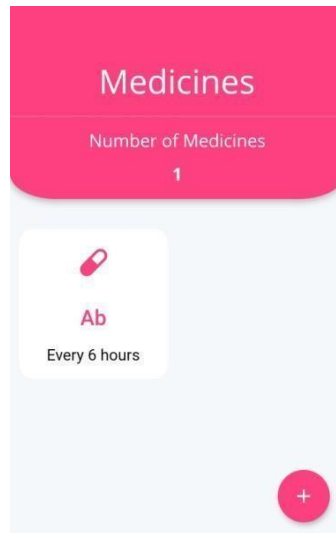


Fig. 2. Medicine Reminder for automated medication notifications

Fig. 2. shows the interface of the medicine reminder feature present in the application which also provides feature discovery options in collectively allowing the user to set a fixed time, select the type of medicine and the duration of intervals before notifying the user.

4.3 Water Tracker

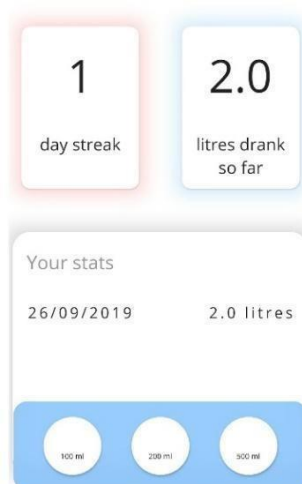


Fig. 3. Water Tracker to track daily consumption

Fig. 3. shows the interface of the water tracking feature present in the application, also allows the user to select the quantity of water and the duration of intervals before notifying the user. Research work as produced in [6][7][8] has been the primary influence for gaining an insight into the exemplary solutions provided by the same.

5. Objectives

The interface allows users to set a reminder for medicines according to their preferences and select medicine type along with tracking daily water intake and getting timely notifications to stay hydrated throughout the day thereby enhancing user experience. Provides easy access to certified nutritionists and health centres close to the users current location and one time meal plans along with specified nutrient quantities.

6. Field Work

Dr. Gudhka's Homoeopathic Care Centre, Mumbai was visited by me as a part of project detailing for research and analysis of the topic.

Dr. Sagar Gudhka (BHMS, Diploma in Personal Counselling), Homeopathy Doctor helped me in collection, analysis and interpretation of patient data which was used in selecting and implementing appropriate features in the application.

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8.1 Journal Article

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