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DEVELOPMENT OF APPLICATION ENCOMPASSING DATABASE OF GLYCEMIC INDEX, FUNCTIONAL FOODS AND CARB COUNTING OF INDIAN FOODS

Susmi Satheesh Kumar — Assistant professor, Department of Food Processing Technology and Management, Hindusthan College of Arts and Science, Coimbatore.

Dr.B.Premagowri* — Assistant professor, Department of Clinical Nutrition and Dietetics, PSG College of Arts & Science, Coimbatore. *Corresponding Author

ABSTRACT Smartphone apps may be an innovative medium for delivering individual health behaviour change intervention en masse. This study aims to develop a mobile application containing the database of glycemic index (GI) values of Indian foods and functional foods and to aid patients with type 1 diabetes to count their carbohydrates for intake. This application was developed with the help of a computer science expert. The development process started by electing the platform with samples, then collecting and sorting the required data followed by its demonstration to the faculty members and students. This application is also useful for the general public to choose functional foods with potential health benefits. This app is useful for patients having type-1 diabetes to adjust their rapid acting insulin dosage by counting the carbohydrates. It was concluded that smartphone apps can be an innovative medium for treating certain medical condition of patients, delivering important health information and giving education to the general population.

KEYWORDS : mobile application, database, glycemic index, carb counting, functional foods

INTRODUCTION

Smartphones are gaining in popularity with this population group and software applications ("apps") used on these mobile devices are a novel technology that can be used to deliver brief health behaviour change interventions directly to individuals en masse, with potentially favourable cost-utility (Hebden et al., 2012). The commercial sector has developed numerous apps for weight loss that include information on nutrition and physical activity, although the majority are based on calorie counting approaches and may not always reflect best practice guidelines for weight management (Gan and Farinelli, 2011).

Diabetes is a chronic illness that requires continuing medical care and ongoing patient self-management education and support to reduce the risk of long-term disability and prevent complications. In this review, self-management refers to "tasks that an individual must undertake to live well with one or more chronic conditions. These tasks include gaining confidence to deal with medical management, role management, and emotional management. Self-management processes are inherently data intensive, requiring acquisition, storage, and analysis of large amounts of data on a regular basis (Gayar et al, 2013).

Advances in smart phone technology and wireless networks have resulted in increased adoption and enhanced capability, leading to opportunities for improved diabetes self-management. This study aims to develop a mobile application containing the database of glycemic index (GI) values of Indian foods and functional foods and to aid patients with type 1 diabetes to count carbohydrates.

In the present world 70% people are online. This very concept flashes light to the need of developing a nutrition app in the present world. This app helps the diabetic patients with rapid acting insulin to keep a count on their daily calorie intake. It also helps the general public to know the benefits of functional foods. This app contains the database of glycemic index (GI) values of Indian foods and functional foods and to aid patients with type 1 diabetes to count carbohydrates (Wolever et al., 1994). Reliable tables of glycemic index (GI) compiled from the scientific literature are instrumental in improving the quality of research examining the relation between GI, glycemic load, and health. The GI has proven to be a more useful nutritional concept than is the chemical classification of carbohydrate (as simple or complex, as sugars or starches, or as available or unavailable), permitting new insights into the relation between the physiologic effects of carbohydrate-rich foods and health (Powell et al., 2002). The GI concept is useful for identifying foods in the habitual Indian diet with attributes of the desired glycemic effect such as delayed peak rise and low area under the curve (Urooj and Puttaraj, 2000).

As there are not many apps purely for Indian foods, we have focused on providing details of most of the Indian foods that are commonly used (Gopalan et al.,1989). Glucose control following meals is an important component of the management of type 1 diabetes (T1D) to reach optimal diabetes control aiming at an effective prevention of long term diabetic complications (Kennedy, 2014). Carbohydrate (CHO) counting of meal intakes is recommended in the guidelines of T1D management in clinical practice. The benefits of CHO counting have been well documented, including reduced post meal glucose excursions, improved HbA1c levels, increased flexibility in the choice of meal content and better quality of life (Wagle, 2016). This app aims for improving the adoption, usability, and integration of diabetes self-management applications in the patients' daily routine and in the context of the larger health care organization.

Methodology

Data Source

The development process consisted of three stages: (1) deciding on the specifications, (2) selecting the platform and (3) creating the design. The flow chart for developing the mobile application is given in figure 1.

Stage 1: Deciding on the Specifications

The first stage of this process involved defining the purpose of the app. This required specifying the relevant public from the society, and the potential data to be collected. The fundamental purpose of the app was to support the diabetic patients with rapid acting insulin. The primary objective of our study was to use the Android application on smart phone by the T1D patients to track their daily food intakes.

Stage 2: Selecting the Platform

Usually, apps are developed for one specific operating system (*native* app), such as iOS, Android, Windows, Symbian, and BlackBerry, or developed as *Web-based* apps. Native apps run locally on a smart phone's operating system in a way that is analogous to programs running on a desktop computer. Web-based apps run like a Web page, whereby the app operates on

an external server and the user accesses the app through the Web browser on their mobile device. So through the development of this app people can access to the app easily. As everyone has a mobile device at the present world, people can get hold on the calorie consumption on their finger tips.

Stage 3: Creating the Design

Back End

The collected database will be stored in software's such as SQL or Mysql. The database will be stored in a tabular form. The tabulation consists of various fields where the database can be stored. Here, all the data information's will be stored for the functioning of the app.

Front End

Front end is otherwise called a user interface. In the front end software such as eclipse is used. Here data's from the back end will the coded to the front end. This software mainly works on the designing, formatting and the functionality of the app.

Connectivity

Through connectivity the database from the back end will be coded to the front end. In certain cases the database can be stored through the front end also.

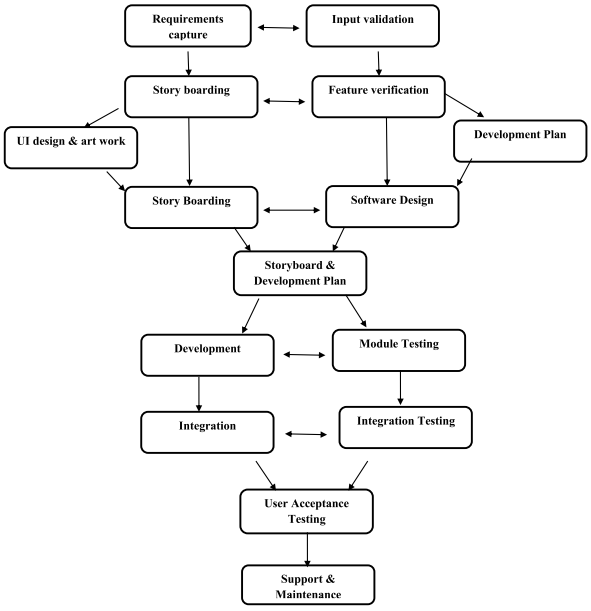

Figure1: Flow chart on development of Mobile App

Expected Outcomes

This application can be installed from play store and will be useful for the general public to choose foods with potential health benefits. Patients having type-1 diabetes can use this app to adjust their rapid acting insulin dosage by counting carbohydrates and can fine tune their blood glucose levels (Martin et al., 2011).

CONCLUSION

Smartphone apps may be an innovative medium for delivering individuals with required details on their daily calorie intake. For the target population through the available technologies, existing commercial apps, doesn't get complete information for the type- 1 diabetes patients to keep an account on their daily calorie intake and to alter their diet with the functional foods. As this app contains the main three aspects such as the database of glycemic index (GI) values of Indian foods and functional foods and to aid patients with type 1 diabetes to count carbohydrates.

This application will be useful for the general public to choose foods with potential health benefits .Patients having type-1 diabetes can use this app to adjust their rapid acting insulin dosage by counting carbohydrates.

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