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Development of Nutriguru-Interactive Nutrition Based Website

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***Abstract*: This paper represents the overview on the design and develop an interactive personalized Diet-Aid web services. The system provides intelligent, personalized web services of Diet plan for users.**

***Keywords*: BMI, Calorie calculator, Diet plan, website.**

1. Introduction

Good nutrition habits will help standing food health. So, nutrition assessment is essential to improve individuals' health through improving their food habits. Increasing health care through food will decrease the expenses on medical care and improve awareness among citizens to minimize their exposure for diseases. Nutritional awareness was defined as self-perception of the importance assigned to eating balanced meals, and classified as high, moderate, or of little importance. It is the ability to receive and differentiate sensory stimuli. Diet quality, improved income affected on nutritional awareness. Nutrition knowledge associated with healthy eating 25 times more. Lower educational level decline knowledge level; differences in knowledge between socio- demographic status and men knowledge is poorer than women's, educational level, age and kind of occupation were the most important determinants of the women's nutrition knowledge. (Leyla A. and Abu-Hussein, 2017).

A healthy diet is essential for optimal nutrition and health outcomes through all stages of the life-cycle. Unhealthy diets are connected to any or all forms of deficiency disease and various diseases. World Health Organization (WHO) recognizes unhealthy diets together with inadequate physical activity as one of the risk factors for non-communicable diseases. High fat intake, low fruit and vegetable intake, overweight and obesity, physical inactivity, raised blood glucose, raised blood pressure, raised total cholesterol, high salt/sodium intake are among the exposures that result in non-communicable diseases (NCDs). The prevalence of obesity and NCDs has been rising across the world even as under-nutrition and communicable disease burden remains high. An analysis of India's disease burden from 1990 to 2016 showed that heart diseases cause the foremost deaths in India whereas dietary iron deficiency is that the biggest contributor to disability. High prevalence of each anaemia and heart diseases shows the rising problem of the double burden of under-nutrition and over nutrition in India. Unhealthy diets are a major contributor to the present syndemic. The worldwide food system is unhealthy not just for humans, however conjointly for the environment. On one hand, our existing diets contribute to multiple forms of deficiency disease and also the rising incidence of NCDs. (Manika Sharma et al, 2020). Poor nutrition and physical inactivity have vital and negative implications for individuals and society at large. On the individual level, poor nutrition and physical inactivity are risk factors for obesity, type 2 diabetes, and cardiovascular disease. On the societal level, unhealthy lifestyles produce an important economic burden through largely preventable diseases. Thus, focus has turned to prevention, like modification of behavioural risk factors to reduce incidence of illness. Several evidence-based clinical interventions have been developed to assist people manage their diet, weight, and physical activity (DWPA), and a plethora of open-access and/or industrial DWPA programs are available via the web. Internet-delivered programs are distinctive in their ability to cost-effectively reach massive numbers of users across geographically distributed areas, give anonymity for users who want it, and reduce time and travel demands that in-person programs necessitate. New technologies provide great opportunities for nutritionists to measure thoroughly food and nutrient intakes from large populations at comparatively low cost and in real time. Online tools and apps have become more widely available; care must be taken to ensure evidence-based and valid tools are used. (Janet E. Cade, 2016)

The prevention and treatment of diet-related diseases may be a pressing issue of worldwide concern. With an accurate assessment of dietary consumption and eating behaviour it ought to be possible to prevent and treat several nutrition-related diseases and to keep up balanced eating patterns. As a part of the dietary assessment method, healthcare professionals ask for to assess people's dietary patterns to then recommend corrective actions. Understanding and recording what, and once when eat, essentially depends on accurate dietary assessment tools, and mobile health (mHealth) technology holds great promise as an approach. It's estimated that more than 5 billion individuals worldwide own mobile devices, and more than half of these are smart phones. Mobile-assisted approaches for dietary monitoring may reduce costs associated with execution time and involvement of specialists and more significantly

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measuring errors that typical ways of dietary assessment, like food diaries. (Maria F. Vasiloglou et al, 2020). Technology is consistently evolving and ever-changing the world drastically. It has transformed almost each field through new technologies, globalization and innovation; nutrition education isn't any exception to this. The nutrition educators need to rethink their teaching need to adapt the quick changing need of the world and society. In this regard, there's a necessity to explore how available e-learning and technologies is utilized to boost learning and teaching, still on embrace quality learning trends like customized and mobile learning. The usage of smart phone and mobile data has grownup exponentially within the last 5 years. This has resulted in an exceedingly surge in mobile application usage.

Indeed, in 2016 alone, Apple Company inc. had declared that two million mobile applications were downloaded by over 130 billion times. In a similar trend, health education in the form of mobile tools has gained abundant quality over the last decade. More significantly, these mobile tools have been found to be more effective, particularly in promoting healthy dietary habits. there's also enough evidence to suggest that mobile learning or computer based nutritional education is more effective in changing people's feeding habits and it's currently being adopted by nutrition educators. With technology based intervention like web or mobile tool, it's possible to provide pertinent information that is based on personal attribute like eating behaviour, perceived barriers and based. Since this information is personally relevant and simply accessible, this can mimic "person" to "person" counselling. (B. S. Pushpa et al, 2018).

People can acquire knowledge by variety of providers including dietitians, nutritionists, and medical practitioners and from a variety of sources including school or tertiary-education programs, books, the mass media and increasingly the internet. However, the information provided may not be exhaustive. In this regard, there is a growing need for diet counselling and education sessions to help persons improve their eating habits. There is also need to develop a suitable tool for intervention such as mobile application to educate and to act as a personal nutritional product resource guide that can be used by normal people when required. Hence, it is important to develop proper nutritional strategy in the form of web or mobile application which can help to improve nutritional knowledge, attitude and practice. This, in turn, helps people to improve their nutritional status, physical and physiological characteristics such as fitness. In this article, we describe the aims, key features, software development of a web application named NUTRIGURU which gives proper nutritional guidelines to the users.

2. Objectives

- To create awareness on balanced diet for age.
- To collect, store and standardize the dietary information
- To develop an interactive website called NUTRIGURU

3. Results and Discussion

Nutriguru is a Web-based application has been developed in PHP platform has been completed and is available in English language. We can access this website in web browsers like Google chrome, internet explorer etc. It consists of user profile, BMI calculator, calorie requirement, RDA of carbohydrate, protein and fat, and menu plan. Data synchronization to the server has been successfully integrated and the application was fully functional. A web administrator page has been developed for management of user data. The application is currently made available on online platform in the form of website.

NUTRIGURU Features

1) User Profile

The prototype for NUTRIGURU Web-application starts with user's registration with their particulars such as username, password and email address. Upon registration, the user will be directed to the home page. The home page will display the BMI calculator.

Fig. 1. Login page of nutriguru

2) BMI Calculator

The home page will display the BMI calculator. Body Mass Index is a simple calculation using a person's height and weight. The formula is BMI = kg/m2 where kg is a person's weight in kilograms and m2 is their height in metres squared. For BMI calculating there are columns for height, weight, age, gender and activity level. These attributes were later used for calculating energy requirement, RDA of carbohydrate, fat and protein.

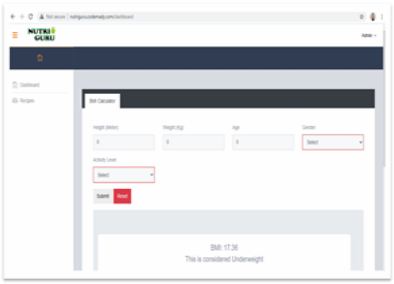

Fig. 2. Home page of nutriguru

An additional feature in the home page is quick links for educational module. This includes fat, protein, carbohydrate and the number of servings that should be consumed.

Energy requirement: Nutriguru calculates total energy requirement based on user's weight, gender and physical activity level. Nutriguru tabulates daily dietary need of carbohydrates, protein and fat and generates a nutritional analysis report in the form of info-graphics as shown in Fig.3.

Fig. 3. Infographic representation

3) Food log

Nutriguru also offers users the ability to plan their meals from the food database. It was developed as a dynamic feature, so that users are allowed to mix and match the given food menu sets from different food category database provided in the website. Since different users have different energy requirements depending on their profile, the energy requirement value is displayed as reference for menu planning activity. The food items were given under the icon named 'recipe'. The food items were given along with some nutritional information. The nutritional information includes the amount of calories and macronutrients such as carbohydrate, fat and protein present in the food item. The servings were also mentioned here (fig. 4).

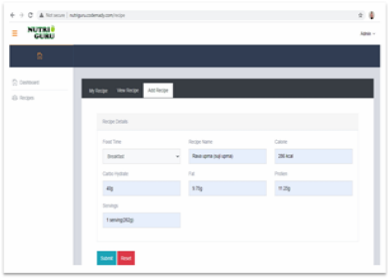

Fig. 4. Nutritional information of rava upma as displayed in the Nutriguru website

4) Food menu

Nutriguru will provide food planning from a given sets of menu. By entering the timing or recipe name the user can search the food item from the given food category database provided by the website. From the food log (fig. 5) the user can add the food items to 'My Recipe' which indicates the personalised menu.

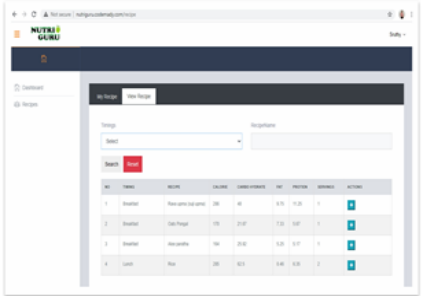

Fig. 5. Food log

4. Conclusion

This study done to design and develop an interactive personalized Diet-Aid web services. The system provides intelligent, personalized web services of Diet plan for users. .

We can access this website in web browsers like Google chrome, internet explorer etc. It calculates total energy requirement based on user's weight. It offers users the ability to plan and record their meals from a food database and provides nutritional information of the selected food. The prototype was developed by customizing the calorie specification and dietary intake details according to serving size of the local Indian foods. Additionally, have additional features such as energy requirement, total food intake and nutrient analysis. There is no need to installed, the user can access the application in online platforms without downloading it and use it for the intended purposes. Upon completion of registration, the user will be able to calculate total energy requirement based on his/her weight. Based on the user's dietary intake, the system will calculate actual energy intake and provide details on macro nutrients. The information gathered will be used to tabulate a report for the user on his/her dietary requirements and generates a nutritional analysis report in the form of infographics. These data are stored via the internet to a virtually hosted database through a sync facility. NUTRIGURU is convenient to access as a website and could easily expand into public domain. Since it contains nutrient details of local Indian food, it will be a value added feature in comparison with existing internet based applications. NUTRIGURU can serve as a useful personal digital nutritional guide for individuals. The development and evaluation of Nutriguru fills the lack of access to evidence-based eHealth nutrition apps that align with existing dietary recommendations by creating a high-quality, engaging, and evidence-based app for individuals and learn about healthy eating and nutrition.

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