Web Based Personal Nutrition Management Tool

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Abstract. Internet is being used increasingly as a resource for accessing health-related information because of its several advantages. Therefore, Internet tailoring becomes quite preferable in health education and personal health management recently. Today, there are many web based health programs designed for individuals. Among these studies nutrition and weight management is popular because, obesity has become a heavy burden for populations worldwide. In this study, we designed a web based personal nutrition education and management tool, The Nutrition Web Portal, in order to enhance patients' nutrition knowledge, and provide behavioral change against obesity. The present paper reports analysis, design and development processes of The Nutrition Web Portal.

Keywords: Nutrition, web portal, web based education, nutrition education, and personal nutrition management.

1 Introduction

People access health-related information by books and other reading materials, watching television or video, using computer-based learning interventions, etc. [1] In addition to these tools, usage of the World Wide Web to access health-related information is increasing rapidly. It is reported that fifty-two million (55%) of American adults with Internet access, 38% of Turkish internet users had used Internet to get health information [2, 3]. Internet technologies have many advantages to access health information easily. For example, one can get health information to his or her learning needs whenever and wherever they need, anonymously, without having to talk with anyone and freely by web technologies [4, 5]. Therefore, Internet tailoring becomes quite popular in health education and personal health management recently.

According to Online Health Search 2006 performed by Fox et al, 80% of American internet users, or some 113 million adults, have searched for information on at least one of seventeen health topics. Among all topics; "Specific disease or medical problem", "Certain medical treatment or procedure" and "Diet, nutrition, vitamins, or nutritional supplements" are the ones which were most searched over the web [6].

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Therefore, there are many web based education and personal health management tools focused on these areas.

Nutrition and weight management is a popular issue among web based health education and management studies. Likewise, this study focused on nutrition education and personal nutrition management because, obesity has become a heavy burden for populations worldwide. The World Health Organization estimates that around one billion people throughout the world are overweight and that over 300 million of these are obese and if current trends continue, the number of overweight persons will increase to 1.5 billion by 2015 [7]. The overall prevalence rate of overweight was 25.0% and of obesity was 19.4% in Turkey [8]. Moreover, excessive weight is associated with a high incidence of cardiovascular diseases, type-2 diabetes mellitus, hypertension, dyslipidemia, osteoarthritis, and some cancers [7]. To avoid harmful effects of obesity and overweight on health, many nutrition education programs were designed by health professionals or public services.

Nutrition education is an important factor against obesity. Because, it is important to make people aware of their nutritional status, intake levels, weights as first step to maintaining their healthy behaviors or done necessary behavioral changes. To develop beneficial dietary habits, people should be informed with accurate knowledge about their own nutrient intakes [9] and this can be achieved easily by using internet technologies. In addition, web based programs provide participants personalized information that is relevant to specific needs of individuals.

Therefore, in order to enhanced patients' nutrition knowledge, we planned to design a web based personal nutrition education and management tool named as The Nutrition Web Portal. The present study reports analysis, design and development processes of The Nutrition Web Portal. Evaluation section is excluded because it is still uncompleted.

2 Method

The goal of this study is to develop a web-based tool, The Nutrition Web Portal, which provides nutrition education modules and opportunity to save and follow personal nutrition records for individuals to help their nutrition management. The portal was prepared in three phases as planning, development and evaluation. In present study, the evaluation phase is excluded because it has not been completed.

Phase 1 involved interview with dieticians, analysis of Turkish nutrition and diet web sites, literature review, determination and organization of contents and design of the portal. Phase 2, development of the portal, involves creating a database, designing and programming of the web site. During this phase SQL Server 2005, C#, ASP.NET, ADO.NET was used.

3 The Nutrition Web Portal

The portal consists of two major sections; nutrition education and personal nutrition management tool. Its personalization was provided by membership. One, who wants

to use the portal must registries by filling the user registration form and determines not only his or her user name and password but also his/her nutrition habits and physical characteristics.

The goal of the Nutrition education is to provide basic nutritional knowledge to adults. Target population for educational modules of the Nutrition Portal is adults who have basic internet skills. The objectives of the educational program defined by nutrition expert are:

- Individuals understand basic concepts about nutrition,
- Define overweight and obesity and their bad effects on human life,
- Learns the ways to prevent from obesity,
- Be able to record, monitor and conclude nutrition measurements of themselves such as BMI, calorie intake,
- Learn how to plan healthy menus,
- Learn to ways to control their weight.

Nutrition education program was designed as modules on several topics. In each module, in order to motivate user and interact with the content, several learning activities, quizzes, games etc. planned. On the web site, there is also a feedback section which users can write their opinions about the education. These feedback forms will be used when evaluating the web site. The Algorithm of Nutrition Web Portal is shown in Figure 1.

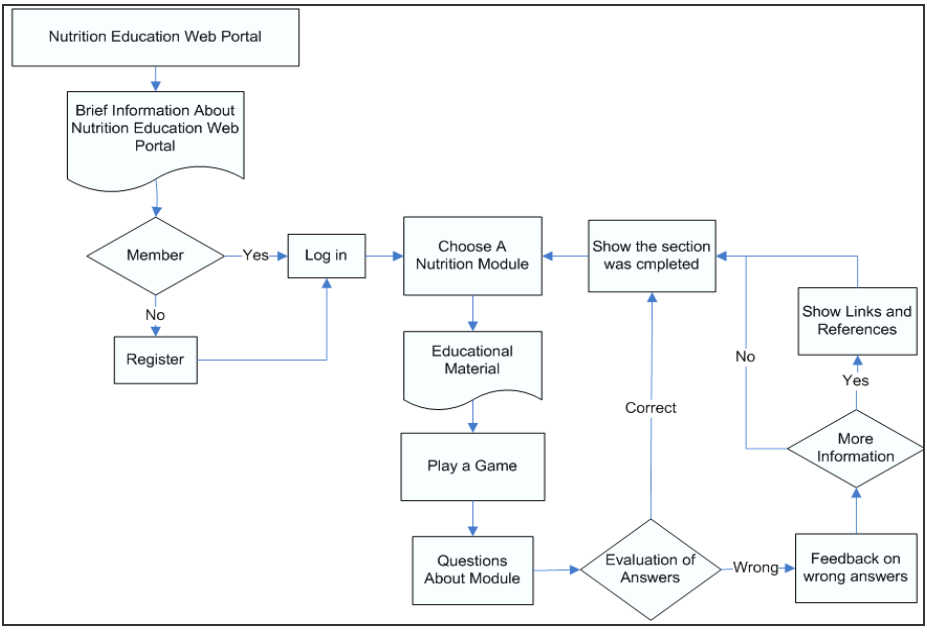

Fig. 1. The Algorithm of Nutrition Web Portal

Fig. 2. Personal daily nutrition intake record page

The portal does not only present nutrition information but also provides personal nutrition management tools. Such as calculating, recording and monitoring services for nutrition data. As recording personal nutrition data, individuals can follow the variations on their record via lists and graphs (Figure 2, Figure 3). By using two calorie calculators, which include calorie data of international and national foods, people can record and monitor their calorie intake. In addition, portal provides daily personal feedback about nutrition intakes of users. These features may help individuals to manage their weight and change nutrition habits.

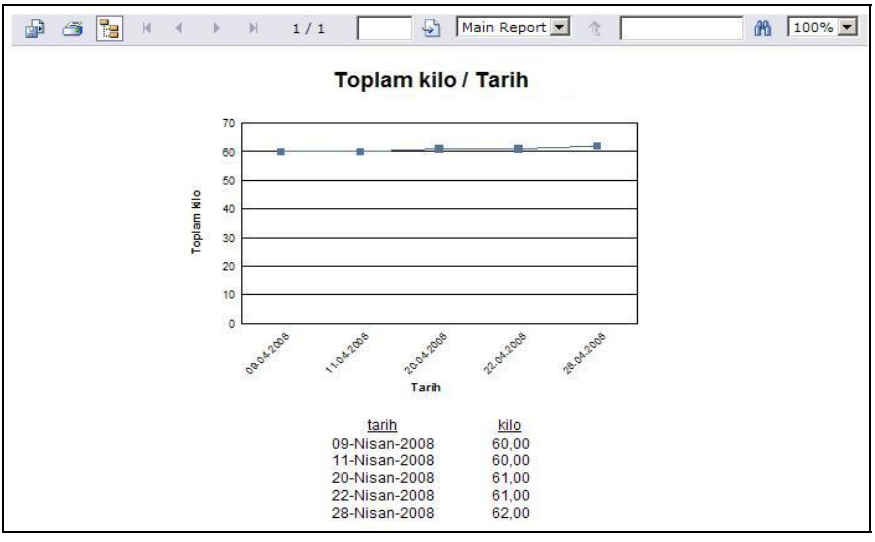

Fig. 3. The feedback page which shows personal weight changes via time

4 Conclusions

Obesity is one of the important health problems in all over the word. Considering its advantages and growing usage rates, Internet may help to increase awareness about personal health management. By providing saving and monitoring opportunities of their personal health record, it may also help people to form necessary nutritional habits and behavioral changes to avoid obesity.

In this study, we presented a web based nutrition education and management tool developed by using Internet technologies, mentioned its design and development processes. The Nutrition Education Portal may be an alternative way to achieve nutrition knowledge and manage personal nutrition behaviors. In order to observe its short term and long term effects, evaluation studies need to be conducted.

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