MyPyramid Tracker Assesses Food Consumption, Physical Activity, and Energy Balance Status Interactively

WenYen Juan, PhD, U.S. Department of Agriculture, Center for Nutrition Policy and Promotion, Alexandria, VA E-mail: wenyen.juan@cnpp.usda.gov*

Shirley Gerrior, PhD, RD, LD, U.S. Department of Agriculture, Cooperative State Research, Education, and Extension Service, Washington, DC

Hazel Hiza, PhD, RD, LN, U.S. Department of Agriculture, Center for Nutrition Policy and Promotion, Alexandria, VA

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**Address for correspondence: WenYen Juan, PhD, Nutritionist, U.S. Department of Agriculture, Center for Nutrition Policy and Promotion, 3101 Park Center Drive, Alexandria, VA 22302; telephone number: 703-305-7600; fax number 703-305-3300;*
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INTRODUCTION

The *2005 Dietary Guidelines for Americans* provide science-based advice to promote health and reduce risks for major chronic diseases through specific recommendations for physical activity and healthful eating.[1] Translating the Guidelines into practical and actionable advice requires an educational approach with personalized guidance.

The Internet is a valuable resource for promoting regular physical activity and healthful eating, offering an efficient access to a large number of people.[2] With increased Internet usage in the past decade, consumers are beginning to benefit from software programs and Web-based communication tools to guide their decisions about health.[2,3] The Internet also offers nutrition educators the opportunity to provide targeted educational information on healthy lifestyles directed to Internet users in a nonthreatening way.

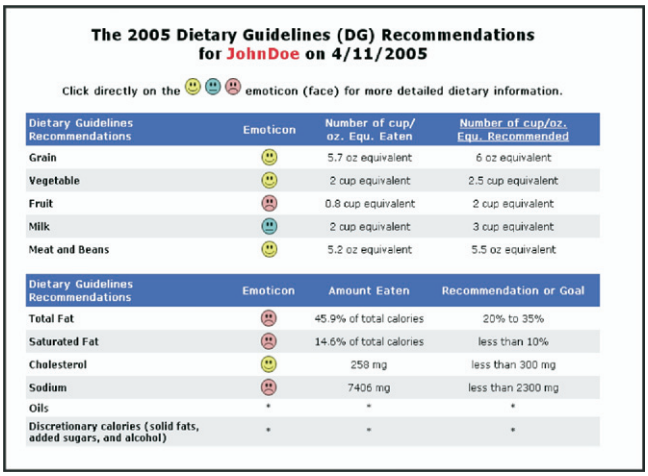
DESCRIPTION

MyPyramid Tracker (on http://www.MyPyramid.gov) is a Web-based self-assessment tool that translates the principles of the *2005 Dietary Guidelines* to help consumers understand their own nutritional and physical activity status and their energy balance over time. It was designed for individuals with some knowledge about food and nutrition and with some experience using computers and the Internet to assess their daily food intake and physical activity interactively and provide personalized feedback based on the results. A log in process allows the user to create a unique name and password ensuring that the information they provide remains confidential. This process also allows the user to access or modify personal information at any time from any location. An anonymous login option, "Check-It-Out," is also available to use the application without saving any information. Users enter personal profile information (age, gender, weight, and height) and then can enter foods eaten and/or physical activity performed in the past 24 hours. Analyses and assessment are based on the calculated energy needs from the information users entered and current nutrition and physical activity guidance.[4]

Personalized feedback based on the self-assessment results includes comparison to Dietary Guidelines, MyPyramid, and Dietary Reference Intakes (DRI) recommendations. Colorful graphics illustrate food intake assessment results, including emoticons (happy, neutral, or sad face) and bar charts (Figure 1). Feedback for physical activity self-assessment includes tables with energy expended from each activity and a physical activity status evaluation (poor, needs improvement, and good). Targeted educational messages are included for both diet quality and physical activity assessment. An energy balance feature summarizes information from caloric intake from food and energy expenditure from physical activity for the day (Figure 2). A history tracking function allows users to monitor food intake of food groups as well as nutrients, physical activity, and energy balance over a selected period of time (from one day up to one year) (Figure 3). A navigation bar on the top of each Web site page allows the user to access the different components of the Web site easily.

DEVELOPMENT AND EVALUATION

The dietary self-assessment portion of MyPyramid Tracker was originally called the Interactive Healthy Eating Index (IHEI). A description of the IHEI and formative research conducted during its development has been published previously.[5] Modules to assess physical activity and energy balance were developed later and became integral parts of the MyPyramid Tracker when the MyPyramid.gov Web site was launched. At that time, the dietary self-assessment module was also updated to reflect the *2005 Dietary Guidelines* and the DRIs. Additional preliminary usability testing was conducted for developing these new components. This testing, which included ease of navigation, content quality, and understandability, was completed among a convenience sample of 185 undergraduate university students who were taking health or nutrition classes using an open-ended questionnaire. University internal review board approval was obtained from each institution. Questions were developed by the authors specifically to test the content and functionalities of the physical activity and energy balance components and were similar to those used in the evaluation of the dietary intake component. Based on the qualitative content analysis of the results, the



The 2005 Dietary Guidelines (DG) Recommendations for JohnDoe on 4/11/2005

Click directly on the emoticon (face) for more detailed dietary information.

Dietary Guidelines Recommendations	Emoticon	Number of cup/ oz. Equ. Eaten	Number of cup/oz. Equ. Recommended
Grain		5.7 oz equivalent	6 oz equivalent
Vegetable		2 cup equivalent	2.5 cup equivalent
Fruit		0.8 cup equivalent	2 cup equivalent
Milk		2 cup equivalent	3 cup equivalent
Meat and Beans		5.2 oz equivalent	5.5 oz equivalent

Dietary Guidelines Recommendations	Emoticon	Amount Eaten	Recommendation or Goal
Total Fat		45.9% of total calories	20% to 35%
Saturated Fat		14.6% of total calories	less than 10%
Cholesterol		258 mg	less than 300 mg
Sodium		7406 mg	less than 2300 mg
Oils	*	*	*
Discretionary calories (solid fats, added sugars, and alcohol)	*	*	*

Figure 1. An example screen of the analysis result for an individual's food intake assessment based on the *2005 Dietary Guidelines* recommendations.

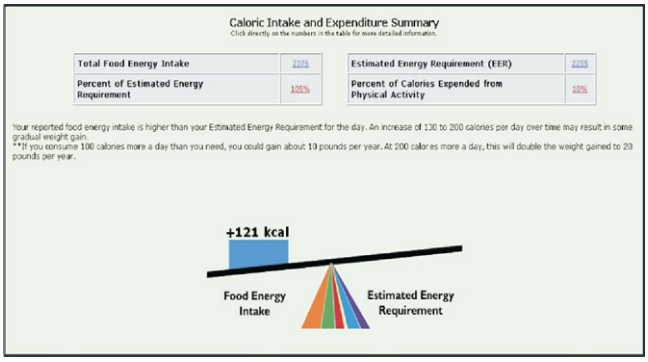


Figure 2. An example screen of the daily energy balance analysis result for an individual.

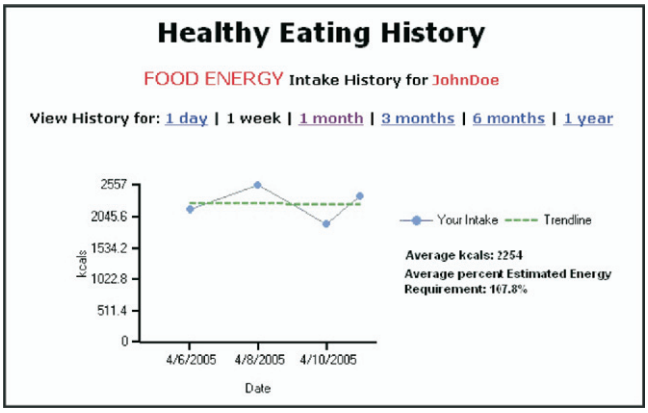


Figure 3. An example screen of history tracking function for an individual's energy intake for a selected period of time, such as for one day, one week, one month, three months, six months, or one year.

key features participants liked the most were the automatic calculations done by the program and the history tracking function. Participants expressed that the nutrition and physical activity self-assessment results were easy to understand and useful. For the study participants, MyPyramid Tracker was a user-friendly, efficient, and effective dietary and physical activity self-assessment tool. Based on their feedback, some modifications were made to improve functionality. A key word search function was added to the physical activity database; educational messages on assessment results were shortened to provide a more concise explanation; and the technical nutrition self-assessment page (individual dietary assessment using probability approach) was displayed via a hyperlink to include a methodological explanation. Although the limited screen display size was identified as problematic for some respondents, it was not modified so that users who may not have a computer screen larger than a 14-inch viewable size can use the tool easily. Based on the preliminary testing results, further large-scale formative testing with the general public is warranted to determine its usefulness for a wider audience.

Since the release of MyPyramid.gov in April 2005, over 1 million user accounts have been established with MyPyramid Tracker, with a 3-fold increase in usage during September to December, which coincides with the fall semester for many schools and universities.

SUMMARY

The intent of the MyPyramid Tracker is to provide a free, interactive self-assessment tool to help individuals better understand their diet quality, physical activity level, and energy balance status through personalized feedback and targeted educational messages. The history tracking function and energy balance option encourage behavioral change and allow for monitoring of changes over time. MyPyramid Tracker can be used for individual self-assessment and monitoring of personal goals along with or as a component of creative intervention programs, classroom activities, distance learning protocols, or personalized nutrition counseling tools for nutrition educators.[6]

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