

A Nutrition Database Informatics Tool for Using Data from National Food Consumption Surveys

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Background:

National food consumption surveys can provide a wealth of knowledge to nutrition researchers; however, due to the great volume of available data, it is not always easy to access that data in a meaningful way.

Purpose:

To develop a nutrition database informatics tool that provides immediate access to the data from both national food consumption surveys and their corresponding food coding databases.

Procedures:

Steps in the development process included:

Step 1 | Identify the types of information needed for the tool.

- Data from three national food consumption surveys:
 - USDA Continuing Survey of Food Intakes by Individuals 1994-1996 (CSFII 94-96)
 - National Health and Nutrition Examination Survey 1999-2000 (NHANES 99-00)
 - National Health and Nutrition Examination Survey 2001-2002 (NHANES 01-02)
- Data from three food coding databases:
 - USDA Continuing Survey of Food Intakes by Individuals 1994-1996 Technical Support Files (CSFII 94-96 TSF)
 - USDA Food and Nutrient Database for Dietary Studies 1.0 (FNDDS 1.0)
 - USDA National Nutrient Database for Standard Reference 16-1 (SR 16-1)
- "Mentions" data based on each national food consumption survey
 - A mention is defined as an individual report of a food during a 24-hour recall.
 - The mentions were calculated for all participants age 5 years and older.

Step 2 | Develop a search algorithm for users.

- To search on food codes, food descriptions, and "includes statements."
- To browse the databases using the food groups from the CSFII 94-96 TSF.

Step 3 | Develop a user interface to provide easy access to each type of data to the user.

- Users can search for food codes by description, food code, and food group. For the resulting food codes, a user can view the food description with the "Includes statement" and any recipe modifications. (Figure 1).
- The recipe details, including any existing recipe modifications, can be viewed (Figure 2). Each ingredient includes an ingredient code, ingredient description, and information about the amount of ingredient in the recipe.
- The nutrients for each food code can be compared with the nutrients for up to four other food codes (Figure 3). Differences in nutrients are displayed as percentages with significant differences highlighted in red.
- The subcode and portion information, including portion description and gram weight, can be viewed (Figure 4).
- The mentions for each food code can be viewed based on any combination of the national nutrition surveys (Figure 5).

Results:

Westat nutritionists are currently using the tool to develop food probes for the National Cancer Institute (NCI) Automated Self-Administered 24-Hour Recall (ASA24) instrument. The tool is used to identify the appropriate food code for each food probe/answer sequence. When more than one food code can be selected for a given food probe/answer sequence, the nutritionist uses information about recipe ingredients, nutrient values, and mentions to assign a food code.

Conclusion:

This nutrition database informatics tool allows a user to easily search and view food code information from national surveys including food descriptions, include statements, recipe ingredients and modifications, nutrient values, available portion sizes, and frequency of consumption.

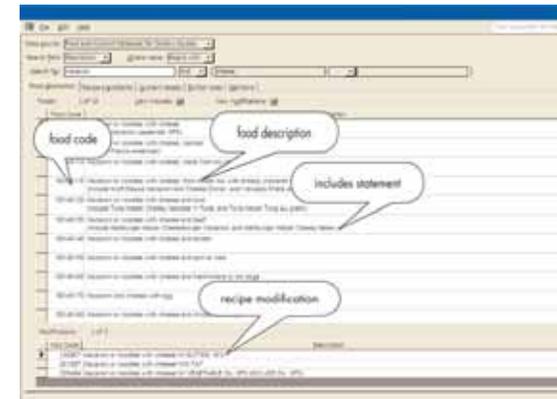


Figure 1. Search Screen with Results for Macaroni Showing the Food Description Details, Includes Statements, and Recipe Modifications.

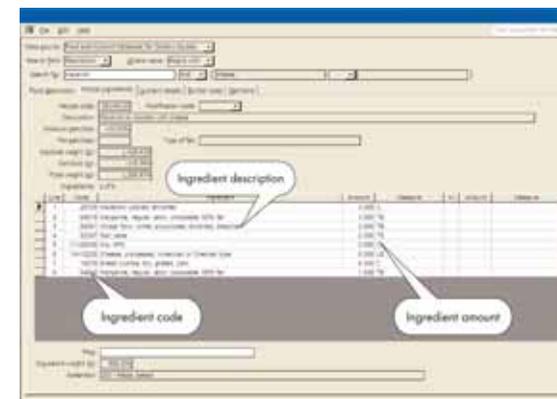


Figure 2. Search Screen with Results for Macaroni Showing the Recipe Details.

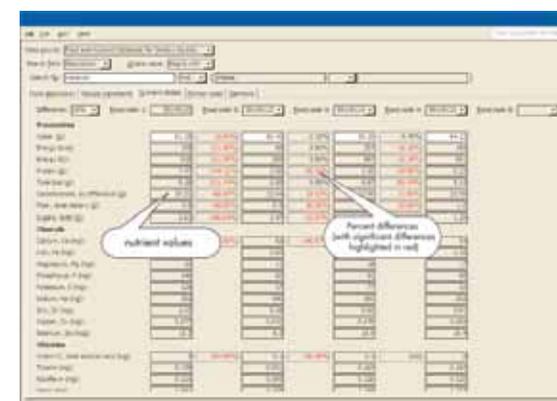


Figure 3. Search Screen with Results for Macaroni Showing the Nutrient Details and Nutrient Comparison.

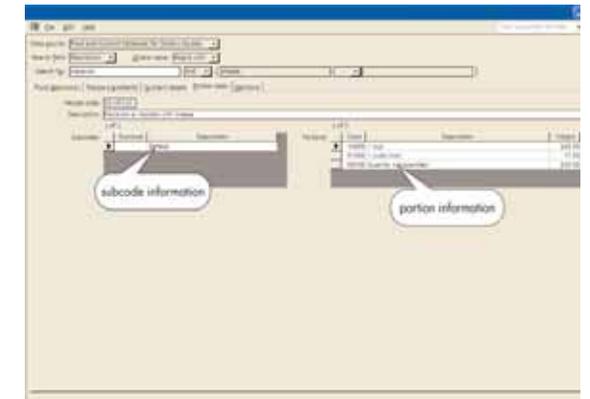


Figure 4. Search Screen with Results for Macaroni Showing the Subcode and Portion Information.

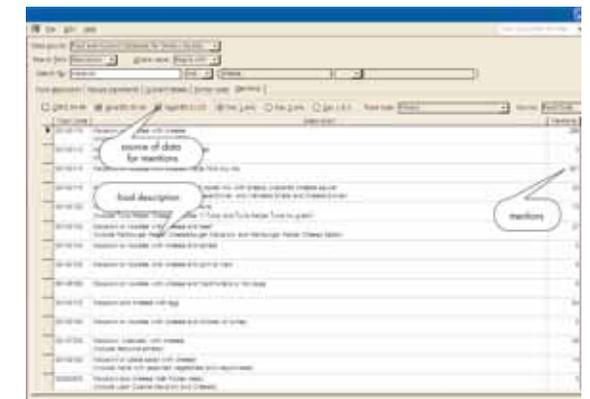


Figure 5. Search Screen with Results for Macaroni Showing the Mentions from NHANES 99-00 and NHANES 01-02.