Education

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        My intention is to share the applications of a nutrient data
base system in the area of education as we have established such
applications at the Ohio State University. Computer technology
has made several contributions to education in previous years
including computerized scheduling, computerized data collection
and computerized management. Education has also been able to
utilize the unique diagnostic capabilities of the computer for
actual instruction. Computer assisted instruction, CAI, is a
learner operated educational tool which offers educators an
easily accessible individualized mode of study. The purpose of
the CAI network is to provide readily available, easily revised
education materials to health professionals.

        One CAI course offered through Ohio State consists of a data
bank of 14 nutrient values for each of approximately 1000 food
items. Referred to as "FOODS", the CAI program was designed to
assist clinical dietitians, nurses, medical students and dietetic
students in evaluating diets, food intake records and menus for
their nutritive content. It also aids administrative dietitians
when analyzing recipes and patients when learning to evaluate
their diets.

        The goal of "FOODS" is to perform the calculations and to
provide the required data in the least amount of time from the
most current sources. Presently, the program consists of four
main parts: the nutrient data base, the teaching section, a
reference book, and a computer program to retrieve data and per-
form calculations. I'll highlight each of the components and
then if you have any questions please feel free to address them.

        Data was collected from the large nutrient data base in the
dietary department at the Ohio State University Hospitals for
entry into the "FOODS" program. As was stated previously,
"FOODS" is composed of approximately 1000 food items in 100 gram
portions with corresponding values for 14 nutrients. In con-
trast, the nutrient data base in the dietary department has up to
63 nutrient values for the approximately 6000 food items
presently on file. The food items and nutrients in the "FOODS"
file were selected by dietitians representing the group who were
originally responsible for the CAI program. The data base con-
tains a household conversion code which allows the user to enter

the quantity of the food selected by either approximate measure or by gram weight.

The teaching section is divided into three parts and is built into the program to teach the new user how to use the "FOODS" program. The unique feature of the teaching program is that it allows the user to practice each command as it is taught and prevents progression to the next step of the teaching section without successfully completing the previous one.

The reference book contains some reminder notes from the teaching sections as well as an alphabetized listing of the food items in the nutrient data bank which are further categorized by food group.

The computer program is written to allow the user to retrieve the nutrient data, to plan menus and to analyze nutrient intakes based on stored levels of nutrients in the data base. The user simply types on the teletypewriter, which is connected to the memory bank of the computer, the four-digit food item code which represents the item that the record shows as being consumed. The quantity of intake is entered as well. When all the desired food items and associated quantities have been entered, then the user may request the total value for all of the 14 nutrients or simply a select few.

If the user wishes to monitor the total value of nutrients he is calculating for a modified diet, the "FOODS" program will maintain a running total for up to four nutrients. If and when the user exceeds the established limit, the computer will inform him that the limit has been exceeded and will print the current value of the limited nutrient. For example, if the user was attempting to calculate a 1000 calorie diet he could enter the limitation as 1000 calories and would receive a warning if that level is exceeded. The user may then delete or replace a food item or quantity from the menu and the computer simply subtracts the nutritive values of the changed food item and adds the new nutrient values if the replacement is entered. The nutrient data base can also be used as a reference source to retrieve nutrient data in 100 gram portions for any of the food items on file.

"FOODS" is a component of other computerized educational programs that are used in the CAI network. The medical dietetic students are required to complete four computerized case studies which simulate hospitalized patients on modified diets. The students communicate with the patients, requesting a 24-hour recall of their food intake at home. They have files for laboratory values, for general progress notes, etc. When all sections of the case studies are completed, the students are instructed to compose a menu for the patient which is appropriate for his dietary restrictions. They then turn to the "FOODS" program to satisfy this requirement.

There are terminals for the CAI network both in the hospital

and in the medical library. For use of the dietary department's
nutrient data base there are four terminals within the department
which the students are permitted to use.