Enhancement of Select Foods at Breakfast and Lunch Increases Energy Intakes of Nursing Home Residents with Low Meal Intakes

Purpose of Study
Nursing facilities frequently provide enhanced or fortified foods in order to increase energy intake among residents with inadequate PO intake or those experiencing weight loss. The purpose behind this study was to determine whether the energy and protein enhancement of certain menu items would increase calorie intake among long-term care residents.

Materials and Methods
The study was approved by the Institutional Review Board of Florida International University and conducted at a skilled nursing facility in southern Florida. Patients were able to participate as long as they were not younger than 60 years old, a Hospice patient, on a tube feeding, renal diet, pureed diet, thickened liquids, ate only in their room, or required feeding assistance. A total of 33 subjects participated. Subjects were categorized into 2 groups: “smaller eater” (daily intake of <1,150 kcals) or “bigger eater” (daily intake of >1,150 kcals). Research assistants obtained height and weight measurements, and all necessary patient information was available by Minimum Data Set and medical records.

The study was a single-blind randomized cross-over design where each subject was tested under three menu conditions: control (no meals enhanced), only lunch enhanced, and both breakfast and lunch enhanced. Based on food-intake patterns, two breakfast foods and two lunch foods were chosen for enhancement in the experimental protocol: hot cereal and juice at breakfast and soup and starch dish at lunch. Foods were enhanced by making the recipes more “rich: by
addition of fats, starchy ingredients and sweetened substances. Each of the three conditions were tested on a Tuesday and Thursday. Each food item was weighed on an electronic balance before and after service to the nearest gram. All statistical analyses were performed using SPSS 14.0 for Windows.

**Results**

Subjects’ average age was 87.3 ± 8.6 years and an average BMI of 25.1 ± 3.6. In the lunch-enhanced condition, only the smaller eaters achieved a substantial increase in kilocalories across breakfast and lunch meals; average increase was only 3 kcal for the bigger eaters, but 167 kcal for the smaller eaters. In the breakfast- and lunch-enhanced condition, the cumulative energy intake was much greater than the control condition for both bigger and smaller eaters (increases of 323 and 200 kcal, respectively). Cumulative protein intakes were less influenced by food enhancement than were kilocalorie intakes.

**Conclusions**

Providing enhanced and/or fortified foods among residents at long-term care facilities who experience weight loss or inadequate kcal intake is part of a food-first approach to increase nutrient intakes. Data presented in this study suggests that an enhanced food program is likely to be effective at increasing energy intake, especially with smaller eaters. In order to achieve a substantial increase in nutrient intake through food enhancement, facilities should choose foods that are consumed in large amounts by residents for maximum benefits. Staff should also encourage the residents to consume the enhanced foods at the beginning in the meal before reaching satiety or fatigue. Results suggest that a significant increase in protein intake is more difficult to achieve from enhanced foods, and should not be a primary intervention for protein increase.
**Article Critique**

**Population Selection**
The study was only done at one nursing home chosen in southern Florida. The pool of subjects was minute and possibly inadequate to achieve sufficient results. Aside from the lack of subjects, the subjects were of different gender, ages, sizes, dx, and kcal intake. This possibly leads to inaccurate comparison.

**Methodology**
This study was limited in the points being testing. Besides only lunch-enhanced and breakfast- and lunch- enhanced foods, the researchers could have tried only breakfast-enhanced, only dinner-enhanced, and all meals enhanced to achieve which is most beneficial for the residents. Another possible problem with this study was the amount of days tested and serving different meals on each day. The type of entrée served may have influenced the resident to eat less or more of the enhanced foods. The data reveals that the characteristics of the long-term care residents (smaller vs bigger eaters) as well as the specific foods chosen for enhancement may have a considerable impact on the magnitude of change in nutrient intake.

**Reported Results**
The study was limited due to the fact that the three conditions were only evaluated on a single-menu day. Although overall results are consistent with similar studies, the analysis of the impact on smaller vs. bigger eaters is unique. Further studies should specifically evaluate the effectiveness of food enhancement in a large number of smaller eaters, particularly those who are under-eating, have protein-energy malnutrition, or who have recently experienced substantial weight loss.
Validity

The design of this study was unique in that it only compared the effects of enhancement of only two foods at lunch to enhancement of two foods at breakfast and lunch. Considering only the bigger eaters, one might conclude that there is little or no benefit from enhancing lunch. However, the smaller eaters tend not to eat a lot of any one food or at any one meal. Intakes seem to be fairly evenly distributed across the day and intake of any one food can be highly variable. These data suggest that it is necessary to enhance more than one food at more than one meal in order to consistently achieve a substantial daily increase in energy intake.

Practical Application

The results from this study, although possibly skewed, may be beneficial to those residents who are considered “smaller eaters” or who have lost weight. There was an increase in kilocalorie consumption but the small increases in protein intake achieved by the enhanced foods at breakfast and lunch did not result in a statistically significant increase in protein intake across the three meals. It may be more beneficial to add items to the menu with a higher protein content.

Citation