Clinical Nutrition (2008) **27**, 800–805

available at www.sciencedirect.com

ScienceDirect

http://intl.elsevierhealth.com/journals/clnu

ORIGINAL ARTICLE

Meeting the nutritional requirements of hospitalized patients: An interdisciplinary approach to hospital catering

S. Iff [a], M. Leuenberger [a], S. Rösch [a], G. Knecht [b], B. Tanner [b], Z. Stanga [a,c,*]

[a] *Division of Endocrinology, Diabetes and Clinical Nutrition, Bern University Hospital, University of Bern, Bern, Switzerland*
[b] *Department of Catering, Bern University Hospital, University of Bern, Bern, Switzerland*
[c] *Department of Internal Medicine, Bern University Hospital, University of Bern, Bern, Switzerland*

Received 13 May 2008 ; accepted 27 July 2008

KEYWORDS
Hospital food;
Quality assurance;
Hospital food recommendations;
Food waste;
Hospital catering

Summary
Aim of study: The study served to assure the quality of our catering, to locate problems, and to define further optimization measures at the Bern University Hospital. The main objective was to investigate whether the macronutrient and energy content of the hospital food complies with the nutritional value calculated from recipes as well as with the recommendations issued by the German Nutrition Society (DGE).
Material and methods: Prospective, randomized, single-center quality study. Complete standard meals were analyzed over seven consecutive days for each seasonal menu plan in one year. The quantitative and qualitative chemical content of a randomly chosen menu was determined by an external laboratory.
Results: Sixty meals were analyzed. The amount of food served and the ratio of macronutrients contained in the food satisfactorily reflected all recipes. Not surprisingly, the energy and carbohydrate content of our meals was lower than in the German recommendations, because the report of the DGE is based on the sum of meals, snacks and beverages consumed over the whole day and not only on the main meals, as we analyzed.
Conclusions: Periodic quality control is essential in order to meet recommendations and patients' expectations in hospital catering. Members of the catering service should undergo regularly repeated skills training, and continuous efforts should be made to ensure portion size

* Corresponding author. Division of Endocrinology, Diabetes and Clinical Nutrition, Inselspital, Bern University Hospital, CH-3010 Bern, Switzerland. Tel.: +41 31 632 42 46; fax: +41 31 382 43 60.
E-mail address: zeno.stanga@insel.ch (Z. Stanga).

0261-5614/$ - see front matter
doi:10.1016/j.clnu.2008.07.008

for all delivered meals. Food provision in the hospital setting needs to be tailored to meet the demands of the different patient groups, to optimize nutritional support, and to minimize food waste.

Introduction

The provision of good quality food, fluids, and nutritional care is an integral part of the therapeutic care in a hospital. Meeting patients' nutritional requirements will help them get well. Optimizing menu design, adapting menus, and improving the mealtime atmosphere are vital steps to fight malnutrition in the hospital. When a menu is planned, disease- or therapy-related feeding problems such as loss of appetite, changes in taste perception, or difficulty chewing and swallowing must be taken into account. On the one hand, the hospital's catering department must be able to deal with individual patients' needs as well as offering a balanced menu that meets the patients' nutritional requirements. On the other hand, from an economic point of view, food wastage should be minimized, since wastage can be as high as 67%.[1]

The term food chain (Fig. 1) has been adopted to emphasize that all stages in the provision of food must be adequate, from screening of patients and planning of menus to the distribution and serving of the food.[2] It is desirable for hospitals to appoint a multidisciplinary and multiprofessional nutrition steering group, including the clinical nutrition team, to oversee all aspects of nutritional care, from catering to artificial nutrition. A failure at any point disrupts the system. The system on the ward should be designed to prevent interruption of meals by procedures, rounds, etc. Food waste and intake should be monitored and audited regularly, with modification of policies as necessary. Furthermore, quality control initiatives should evaluate whether recommendations for adequate hospital nutrition are met. Various aspects of food provision should be monitored regularly, including portion control, presentation, flavor and texture, temperature, timing of service, and patient satisfaction.

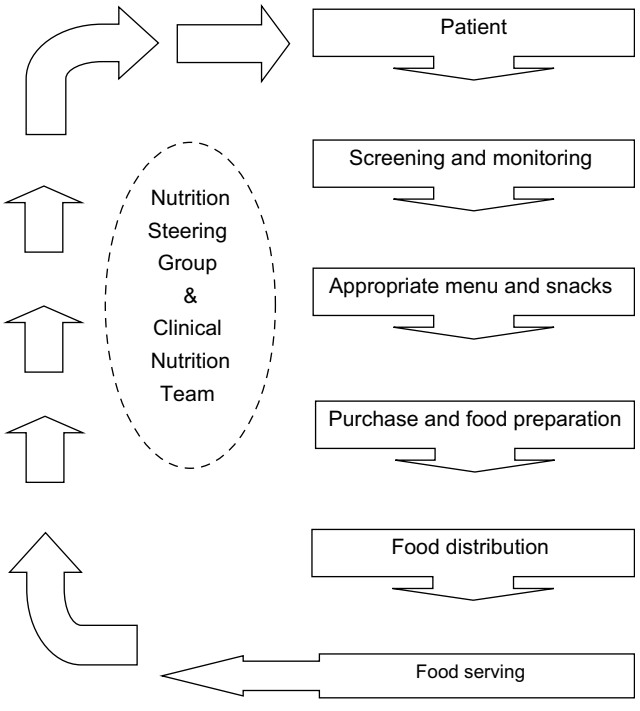

Figure 1 The food chain.

Portion control is an important part of quality control, and is often poorly addressed or non-existent. There is insufficient recognition of evidence that in-patients of different sexes and ages and with different nutritional status and disease processes have different energy and protein requirements. In Switzerland there are no specific guidelines for hospital catering. Therefore, because the cultural eating habits, the gross national product per capita, as well as budgets for meal preparation in the two countries, are comparable,[3] we abide by the recommendations issued in 2004 by the German Nutrition Society (DGE).[4]

The main aim of the current study was to investigate whether the macronutrient and energy content of the food in our hospital complies with the recommendations issued by the DGE.[4,5] Further objectives were to determine whether the food provided on the plate corresponds to the amount calculated by the recipes, and to find out whether our catering service has improved since the last analysis in 1996. The results of the study should help us to initiate, if necessary, a reform of the catering at our hospital, to adjust institutional recommendations and guidelines for menu planning, and to locate difficulties in meal service, in terms of continuous quality assurance.

Material and methods

The hospital kitchen at the Bern University Hospital in Bern, Switzerland, provides around 2000 patients meals per day, roughly 75% of which are standard menus. In this prospective, randomized, single-center quality study, complete standard meals (breakfast, lunch and dinner) of four different seasonal menu plans produced at the Bern University Hospital were analyzed. Energy, protein, fat, carbohydrate and salt (defined as NaCl) content of all standard menus prepared over seven successive days in the months of April, June, September and December were analyzed in an external laboratory (UFAG Laboratories AG, Sursee, Switzerland). The four test series corresponded to one calendar week each within a tri-weekly seasonal menu plan. This seasonal menu plan was repeated during a whole season (three months). The April test series evaluated the spring menu, the June series evaluated the summer menu,