

# Impact of a Basic Nutrition Course for Residents at a Faculty Hospital

## Did It Make a Difference to Demand for Nutrition Consultations?

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### Key Words

Nutrition course · Consultation requests, hospital · Patient malnutrition

### Abstract

**Background/Aims:** To assess whether a basic nutrition course for residents at a faculty hospital improves their knowledge of nutrition and increases the number of consultation requests for nutrition by alerting participants to the high prevalence of undernutrition in hospitals. **Methods:** The residents from 34 departments of basic, internal and surgical sciences were recruited to take a 1-day course. Questionnaires, designed to assess knowledge of nutrition, were completed at the beginning and at the end of the course. The results of the questionnaires and the number of consultation demands for nutrition before and after the course were compared. **Results:** The results of 161 participants were evaluated. The mean ( $\pm$ SE) numbers of correct answers given to the first and second questionnaires were  $14.9 \pm 0.22$  and  $18.7 \pm 0.21$ , respectively ( $p < 0.01$ ). When the number of requests for nutrition consultation during 7-month periods (just before and after the course) were compared, the mean number of requests in each month during these periods were found to be  $1.81 \pm 0.58$  and  $4.06 \pm 1.20$ , respectively ( $p < 0.01$ ). **Conclusions:** A short course of basic nutrition for residents improves their basic knowledge and leads to an increase in the number of consultation requests for nutritional support.

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### Introduction

Malnutrition is associated with longer hospitalization, increased cost, morbidity and mortality [1, 2]. Despite the high prevalence of malnutrition in hospitalized patients [3–6], the assessment of nutritional status is often neglected by the medical staff involved in the primary care of patients [7]. This can cause late identification or non-diagnosis of malnourished individuals.

Additionally, the need to consult the nutrition team is not well recognized by resident physicians, which can result in the team not being used and a subsequent reduction in the quality of care [8]. A basic nutrition course given by experts could help health providers to increase their basic knowledge and understanding of the importance of the timely recognition of malnutrition, and the need to work more closely with the nutrition team.

The present study was conducted to assess whether a basic nutrition course for residents at a faculty hospital would improve their knowledge of nutrition and increase the number of consultation demands for nutrition by alerting participants to the high prevalence of undernutrition in hospitals.

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**Table 1.** Course topics

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Body composition of fluids
Neuro-endocrine response to surgery and trauma
Nutritional assessment
Indications for nutritional support
Access routes for nutritional support
Determination of caloric requirements
Follow-up procedures
Complications of enteral nutrition
Complications of parenteral nutrition
Nutritional products available on the market

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## Methods

A 1-day basic nutrition course was delivered by members of the Nutrition Unit of the Medical Faculty, Uludag University, Bursa, Turkey, on Saturday, January 8, 2005.

### *Nutrition Unit*

The course was given by specialist members of the unit, including senior dietitians, nurses experienced in nutrition, pharmacists and clinicians working in various internal and surgical sciences at the same faculty. The clinicians, who are experienced in nutrition in addition to their specialities, work voluntarily to run the unit and deal with the related work. It is an independent unit of approximately 20 members under 1 manager and is responsible for responding to demands for consultation, nutritional assessment, management of nutritional support or therapy (daily arrangement of nutrition orders, follow-up of laboratory parameters), preparation of nutrition solutions, and the placement and care of nutritional access instruments such as central venous catheters and enteral nutrition catheters, including equipment used for percutaneous endoscopic gastrostomy and surgical ostomy. Due to the high workload, the placement of nasogastric or central venous catheters and the connection of nutritional supplements to access lines is performed on demand, but routine catheter care is carried out regularly by the team. The nurses and dietitians play an important role in most of this work. The unit has its own meeting room and rooms for the preparation of nutritional support solutions. The members meet regularly at least once a week and the unit is also involved in the determination of the nutrition policy at the Uludag University Medical Faculty.

While there is no education programme in nutrition available for residents at our institution, some individual departments, who focus on nutrition education, try to improve their knowledge by lessons and/or meetings. The present nutrition course aimed to give residents a basic knowledge of nutrition. A similar course was also delivered to specialist physicians at the hospital 1 year later, but the results of that have not been analysed in the present study.

### *Consultation Demand*

At the time of the present study, hospitalized patients' primary care physicians were also responsible for the nutritional care of their patients. The physician was free to request consultation from the Nutrition Unit, which functioned on a demand-only ba-

sis. There were no procedures regulating demands for nutrition. This meant that the number of consultations depended on the primary care physician. However, because of recent changes in nutrition policy at our institution, assessment of malnutrition is now required within the first 24 h after admission to the hospital, and is carried out via a questionnaire conducted by residents. According to the results of the questionnaire, the residents then refer to the Nutrition Unit for nutritional assessment. If necessary, members of the Nutrition Unit arrange nutritional treatment, either with or without the primary care physician. The primary physicians still have the authority to make their own prescriptions if they so wish. Although residents have no direct responsibility for patient care, they work in close collaboration with the primary physicians and so play a considerable role in patient care and follow-up. This also applies to requests for consultation.

### *Course Organization*

The course was organized as a 1-day basic nutrition course on a Saturday to minimize absence from work. Regardless of their years in residency, all the residents from 34 departments were recruited on the course. The departments were categorized into 3 groups: basic, internal and surgical sciences.

At the beginning and end of the course, the participants were given 2 different questionnaires, consisting of 25 questions with multiple-choice answers. The tests were completed in 25 min. An equal number of questions related to each topic had been prepared by lecturers. We only included each resident's data when both questionnaires had been answered. The results of the 2 questionnaires, and the number of consultation requests for nutritional assessment or support in the 7-month periods before and after the course, were compared in order to measure the effect of the course.

### *Course Topics*

Following the introduction of the Nutrition Unit and the team members, basic information about neuro-endocrine response to trauma, nutritional assessment, enteral and parenteral nutrition was given by lectures and case presentations for problem-based learning using slides and videos. Each topic, given by a different lecturer took about 20 min, and at the end of each topic, approximately 10 min were allocated for a question-and-answer session (table 1). The total duration of the course, including completion of the questionnaires, was 6 h.

The first session was about the body's composition of fluids and neuro-endocrine responses to surgery and trauma. During the second session the emphasis was on nutritional assessment, the need for routine nutritional screening of patients at risk of developing malnutrition-related complications and the assessment of nutrition status on admission. Current assessment methods were covered, such as anthropometric measurements, the use of subjective global assessment and biochemical indicators. The topic 'parenteral and enteral nutrition' covered indications, access routes, determination of caloric requirements and follow-up procedures during nutritional support. During the discussion of complications of enteral and parenteral nutrition, various problems were mentioned: mechanical (e.g. pneumothorax, air embolus), infectious (e.g. sepsis, thrombophlebitis), metabolic (electrolyte imbalance) and nutritional (deficiency or excess of macro- or micronutrients). In the last session, current nutritional products were briefly introduced.

**Table 2.** Correct answers to both questionnaires

Departments	Residents n	Number of correct answers to questionnaires		p
		before course	after course	
Basic sciences	15	13.46 ± 1.00 (7–20)	16.20 ± 0.80 (11–22)	<0.01
Surgical science	50	15.34 ± 0.413 (8–21)	18.80 ± 0.424 (11–23)	<0.01
Internal science	96	14.90 ± 0.263 (7–20)	19.07 ± 0.236 (13–21)	<0.01
Total	161	14.90 ± 0.225 (7–21)	18.72 ± 0.215 (11–23)	<0.01

Values are means ± SE, with the range in parentheses. p values were calculated by the Wilcoxon signed-rank test.

### Statistical Analysis

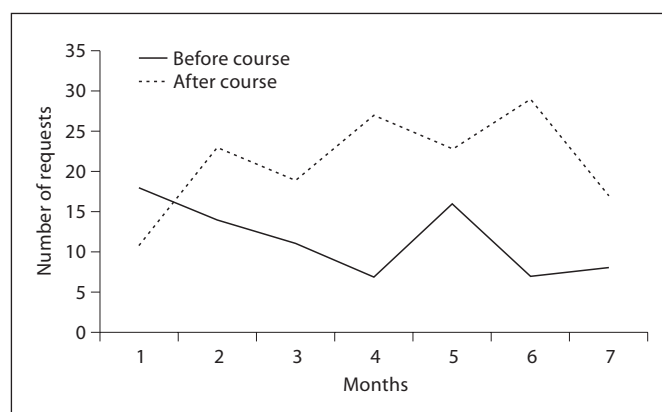
The statistical analysis of the study was performed by the Biostatistics Department of the medical faculty. Mean values were given as mean ± SE. Comparisons within groups were analysed using the Wilcoxon test, and the Kruskal-Wallis test was used for intergroup comparisons. Percentage changes in the correct answers to the questionnaires were calculated for a comparison of repeated measures between the groups. Significance was set at  $p < 0.05$ .

### Results

A total of 200 residents from 34 departments were recruited and after excluding those who did not complete both questionnaires, the results of 161 participants were evaluated. The number of departments participating in the course from basic, internal, and surgical sciences were 6, 17 and 11, respectively. The distribution of the participants from basic, internal and surgical sciences was 15 (9.3%), 96 (59.6%) and 50 (31.1%), respectively.

The mean number of correct answers given to the first and second questionnaires by all residents was  $14.9 \pm 0.22$  (range, 7–21) and  $18.7 \pm 0.21$  (range, 11–23),  $p < 0.01$ . When the results of the questionnaires were compared, there was a significant increase in the number of correct answers to the second questionnaire, and no significant differences were found between the scores of the residents from basic, surgical and internal sciences (table 2).

To measure the impact of the course on the number of consultation requests, the 6 departments from basic sciences not responsible for patient care were excluded. When the consultation requests from the remaining 28 clinical science departments during the 7-month periods just before and after the course were compared, the mean numbers of consultation requests in each month during those periods were found to be  $1.81 \pm 0.58$  (range 0–14) and  $4.06 \pm 1.20$  (range 0–26), respectively,  $p < 0.01$  (fig. 1).



**Fig. 1.** Changes in the number of demands for nutrition consultation before and after the course.

### Discussion

The present study demonstrated that an introductory nutrition course improves residents' basic knowledge and significantly increases the demand for nutrition consultation.

Malnutrition, which adversely affects recovery from surgery, remains a largely unrecognized problem in hospitals [7]. Additionally, the techniques and products for nutritional support are becoming increasingly sophisticated. This situation highlights the need for education on clinical nutrition [3]. Currently, the amount of nutritional education in medical schools remains inadequate, and a substantial portion of the total nutrition instruction occurs during outside courses specifically dedicated to nutrition [9]. In addition to this, the intensive nature of the curriculum for medicine undergraduates would make it difficult to add any courses [10]. It is clear that there is a need for additional instruction in nutritional assessment

during the clinical training years for medical house staff [7]. The aim of the present course was to increase the residents' basic knowledge of nutrition.

The problems above highlight the fact that physicians have minimal training and experience in nutritional support, and consequently this has led to the development of multidisciplinary nutrition support teams in many healthcare facilities [11]. Although a team approach to artificial feeding seems to be more advantageous when compared with a less organized approach by those without expertise [12, 13], there are some controversial issues concerning the contribution of nutrition teams to patient care and outcomes [11]. The analysis of this subject is beyond the scope of the present study, but it should be remembered that good clinical care combines the expertise of many disciplines [14, 15].

It is clear that a nutrition team in the healthcare facility should also take responsibility for improving the residents' basic knowledge of nutrition during clinical training years. This can be partly achieved by organizing basic courses specifically dedicated to nutrition. In the present study, the higher rate of correct answers to the second questionnaire, taken at the end of the course, supports this recommendation.

These courses can help participants to understand their responsibility to make nutrition a part of patient care. Awareness of the importance of a patient's nutritional status by physicians may enable intervention at an earlier stage and allow the nutritional status to improve. If participants gain an increased awareness of the importance of nutrition during the course, they will be able to work closely with the nutrition team to improve the quality of care. In the present study, the number of requests for nutrition consultation was found to have increased significantly after the course. In addition to patient care, team members should undertake to provide nutrition education by organizing meetings at their own healthcare facilities.

A short 1-day course giving a brief overview of basic nutrition had the advantage of not being time-consuming, so there was a high level of participation.

### *Limitations*

The effects of short courses summarizing a complex topic may be low because of the short duration. So, it is not possible to say that residents had excellent knowledge of nutrition at the end of this course. In addition to this, the effects of the course may diminish over time, and the number of demands for consultation may also decrease in parallel. Hence, there may be a need for refresher

courses as a part of continuing education after a certain time period. If there is a need for refresher courses, then the most appropriate time intervals for repeat courses should be identified. To determine time intervals, the same population could be subjected to similar repeated questionnaires in certain time periods. In addition, a significant decrease in the number of consultation demands following the course may also be used as an indicator of the need for a repeat course.

During the preparation of questions in the questionnaires, particular attention was paid to creating similar questions of similar difficulty, but it is impossible to say that both questionnaires were of exactly equal difficulty. Maybe one solution to this would have been that half the participants completed questionnaire 1 at the beginning and questionnaire 2 at the end, and the other participants vice versa.

This course caused an increase in the number of consultations, but we did not assess whether patient outcomes improved or not. This is an important deficiency of the present study, and further studies are necessary to reveal how outcomes change.

The increased number of consultations caused an increased workload, and because of this the Nutrition Unit sought new volunteers experienced in nutrition, which was time-consuming.

In conclusion, a short course of nutritional assessment and support for residents improves their basic knowledge, and leads to an increase in the number of consultation demands for nutritional support. However, the results of the present study do not necessarily mean improved outcomes, so there is a need for further studies to assess the benefit to patients of nutritional assessment and/or support given by the nutrition team.

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