

Proposal for preventing malnutrition in individuals on a texture-modified diet

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Abstract

Background: The energy and protein provided by texture-modified diets decreases dramatically as the stage increases. To prevent malnutrition in individuals on texture-modified diets, nutrition management detailing the amount of energy and protein required and consumed is needed; however, this has not yet progressed. **Aim:** To consider the factors responsible for the lack of progress in nutrition management. **Methods:** We reviewed the work content of the registered dietitian in Japan. **Results:** It takes over an hour a day to make calculations for the amount of energy and protein consumed for all of these patients, but it turned out that this time cannot be extracted considering the daily work of the registered dietitian. **Conclusion:** To prevent malnutrition, it is necessary to increase the number of registered dietitians.

Keywords

Nutrition management, dietary intake, energy intake, texture-modified food, porridge

Introduction

Japan has become a super-aged society, and the number of elderly with malnutrition has been increasing (Cabinet Office, 2016). It has been reported that malnutrition was observed in 25% of hospitalized patients by the energy intake from food consumption (Kiyama, 2006). Malnourished patients have compromised immune systems, and as complications such as aspiration pneumonia increase, there may be a reduction in lifespan (Miyakojima and Nakamori, 2008; Sura et al., 2012).

Moreover, the incidence of dysphagia, a swallowing disorder that often affects elderly individuals (Serra-Prat et al., 2011), is currently increasing in Japan. A previous Japanese report found that the proportion of people with dysphagia exceeded 40% in hospitals, nursing facilities, and facilities for the aged (Health Promotion Grant Program, 2012). Moreover, it is reported that about 84% of Japanese elderly with dysphagia or possible dysphagia were malnourished or are at risk of malnutrition, as assessed by the 10-item Eating Assessment Tool (Wakabayashi and Matsushima, 2016). Currently, patients with dysphagia are prescribed texture-modified diets (TMDs) according to their ability to chew and swallow food, and among Asian countries, TMDs were first classified in Japan (JSDR Dysphagia Diet Committee, 2013).

In Japan, to prevent malnutrition in patients, the medical insurance and long-term care insurance systems were revised in 2018 and now include a nutrition management plan detailing the amount of energy and protein required

and consumed, in addition to the TMD stage (Ministry of Health, Labour and Welfare, 2018a, 2018b). This can only be calculated by dietitians. However, this management has not yet progressed (Seki, 2018). Therefore, we consider the factors responsible for the lack of progress in nutrition management, by reviewing the work content of a registered dietitian in Japan.

Method

We reviewed the work content of the registered dietitian in Japan for each of the following items.

1. nutritional management for patients with dysphagia;
2. nutritional management in dairy work.

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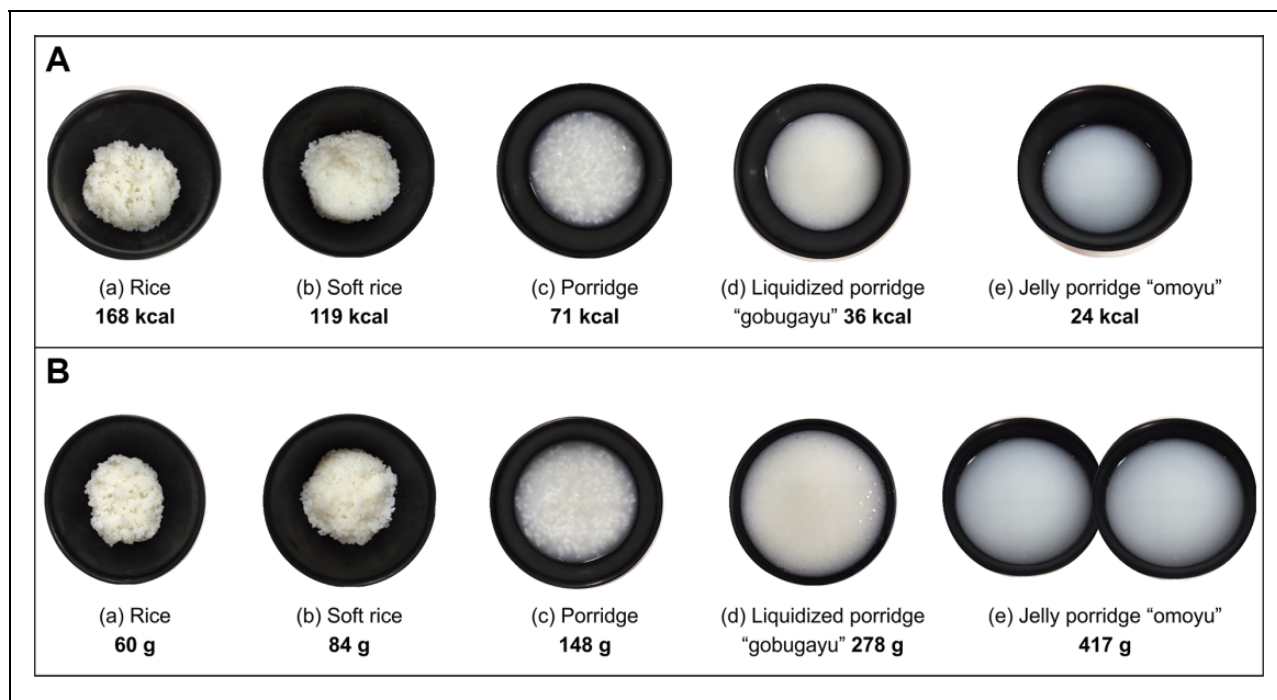


Figure 1. The energy values of 100 g of a staple food (A) and the amount of the staple food required to yield 100 kcal at each stage of a texture-modified diet (B). (a) Normal meal, (b) minced form, (c) moist form, (d) puree form, (e) jelly form.

Results

Nutritional management for patients with dysphagia

In Japan, cooked rice (rice) is a staple food and comprises approximately half of the energy intake of adults. Rice is used to make rice porridge (porridge) according to the stage of the TMD.

Figure 1 shows the energy values corresponding to 100 g of a staple food in each TMD form. Here, the energy content of the staple food decreased with TMD stage progression, such that the energy level of a TMD meal in jelly form has less than a sixth of the energy contained in a normal meal. Accordingly, a patient must eat either 60 g of rice or more than 400 g of jellied porridge to ensure an intake of 100 kcal. This presents a challenge to patients with dysphagia, as consuming such a large quantity of porridge is difficult.

Nutritional management in dairy work

If the registered dietitian knows the amount of energy and protein required for patients, the time to calculate energy and protein intake for patients is as follows

$$55 \times 0.4 \times 1 \times 3 = 66 \text{ (min)}$$

where:

- number of patients served by the registered dietitian: 55 (Ministry of Health, Labour and Welfare, 2017);
- proportion of patients with dysphagia: 40%;

- calculation time of energy and protein intake for one serving: 1 min;
- number of meals served per day: 39.

It takes over an hour a day to make calculations for all of these patients, but it turned out that that time was not available in daily work.

Discussion

Nutritional management for patients with dysphagia

In Japan, for patients with dysphagia, the swallowing team evaluates these patients. Based on the results, speech therapists performed specialized training, nurses provide dietary assistance as needed, and registered dietitians provide a meal tailored to the stage of TMDs and assess energy and protein intake in the assessment and treatment/management of dysphagia. However, so far, little attention has been paid to the energy and protein intake of patients with TMDs. Under hospital or medical facility conditions, the physician and other medical staff use the patient's consumption rate to evaluate dietary intake (Amano and Nakamura, 2018). However, this rate only represents the proportion of the meal that was actually consumed and does not indicate whether this amount satisfied the patient's energy requirements. As a result, it is difficult for clinicians to ascertain why the patient becomes malnourished, despite having consumed an apparently sufficient amount of food (Amano and Nakamura, 2018). To prevent malnutrition of patients, dietitians are required to manage energy and protein levels as well as the stage of the TMD right now.

Nutritional management in dairy work

Registered dietitians provide meals under the direction of the doctor and are responsible for nutritional management for each patient (Ministry of Health, Labour and Welfare, 2018a). However, for the meal provided, the nurse determined the patient's eating rates at the bedside, and based on that, the nutrition support team performed nutrition management for the patient. If necessary, registered dietitians calculate energy and protein intake from the eating rates, then devise a plan to fortify the TMD to ensure that it is high in energy and protein (Sano et al., 2016). However, this does not occur for all patients at risk of malnutrition (Kiyama, 2006). It takes over an hour a day to make calculations for all of these patients; however, registered dietitians cannot find that time considering their daily workload. It takes a similar amount of time anywhere in the world. Therefore, it is necessary to increase the number of registered dietitians so that they have time to calculate energy and protein intake routinely.

Conclusion

The major factor in preventing nutritional management by registered dietitians was the abundance of time spent on it. To prevent malnutrition, it is necessary to increase the number of registered dietitians.

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Author contributions

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Availability of data and materials

All relevant data are within the paper and its Supporting Information files.

Ethical approval

This study was approved by the Ethics Committee of Mitate Hospital (December 2012).


Declaration of conflicting interests

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