Original Article

The Status of Enteral Nutrition Formula Use by Dietitians in Hospitals Within Busan and Gyeongnam Area

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ABSTRACT

This study was conducted to analyze the status of medical food selection process in hospitals within Busan and Gyeongnam area. The survey was distributed to 396 hospitals (general, tertiary and long-term care hospitals) and finally 68 surveys were used for analysis. The questionnaire consisted of 9 general items and 10 items related to enteral nutrition (EN). From the survey we found out that general hospitals and tertiary hospitals normally hire clinical dietitian, while long-term care hospitals hire dietitians with no further qualifications ($\chi^2 = 27.918$, $p < 0.001$). A significant relationship was found between hospital size and the priority for choosing medical foods for patients ($\chi^2 = 11.852$, $p < 0.05$). In general and tertiary hospitals, medical foods were provided exactly according to the doctor's prescription, whereas in long-term care hospitals, only half followed the doctor's direction and half of them provided the products that has been conventionally used. There was also a significant relationship between hospital size and the method for determination of nutrition requirements ($\chi^2 = 20.496$, $p < 0.001$). Finally, the priority of considerations when developing a 'medical food guidelines' was shown in the following order; 1) the type of medical food that can be selected according to the disease state, 2) the nutrient content and comparison table for commercial products, and 3) how to manage complications that may occur when supplying medical food for patients. Developing an EN practice guideline for making a sensible selection of medical foods will provide a valuable information for better patient care.

Keywords: Dietary services; Nutritional requirements; Enteral nutrition; Practice guideline

INTRODUCTION

Maintaining adequate nutrition is important for the inpatient recovery. Malnutrition impairs the functions of various organs such as the gastrointestinal tract, kidneys, and heart. It also affects drug metabolism and wound healing, lowers immunity, increases infection rates, delays patient recovery, and increases mortality [1-3].

It has been reported that malnourished patients are 2 to 20 times more likely to develop complications than patients with normal nutritional status [4]. If patients are provided

with early nutrition support in a malnutrition state, it reduces hypermetabolism, preserves body muscle mass and body energy, helps wound healing, reduces the morbidity of sepsis, and eventually reduces the length of hospital stay [5]. Therefore, nutrition support should be provided at an early stage for critically ill patients who need nutritional support, and it is recommended to start within 24–48 hours [6]. 'Foods for special medical purpose' is food provided to people who have limited ability to normally ingest, digest, absorb, or metabolize, or who need sufficient nutrition, or who need restriction or supplementation of some nutritional components [7]. In the case of nutrition support for critically ill patients, tube feeding is recommended as a preferable method compared to intravenous nutrition [8]. Unless patients have unstable digestive tract function such as gastrointestinal bleeding, intractable vomiting and diarrhea, gastrointestinal inflammation, pancreatitis, intestinal fistula with excessive discharge, intestinal ischemia, intestinal obstruction, or short bowel syndrome patients who need intestinal rest for therapeutic purposes, it is recommended if tolerated, to start tube feeding as soon as possible [9,10].

Result from a study conducted in the intensive care unit in Korea, the volume prescribed by doctor was 69.7% of the required calorie for each patient and the volume infused was 86.6% of their volume prescribed. Consequently, the overall volume infused was around 61.7% of their calories required, suggesting that the amount of delivery is far from adequate, which can affect the nutritional status and subsequent recovery [11].

According to the food code (No. 2021-54), enteral formulas are categorized as standard nutrition formula and customized nutritional formulas. Many formulas are available within each category, with significant differences in nutrient composition. Standard enteral formulas have several food types as follows; balanced nutritional formulas for patients, nutritional formulas for diabetics, kidney patients, hydrolyzed protein nutritional formulas for patients with intestinal disease, foods for supplying calorie and nutrition. The needs for specialized formula have resulted in a large number of various products, but normally the doctors at long-term care hospitals use only limited choices of products.

With the increasing needs for medical foods, we investigated the usage of medical foods in the hospitals around Busan Metropolitan City and Gyeongsangnam-do Province. Also, for the purpose of developing a written "enteral nutrition practice guideline" for choosing medical foods, we asked the dietitians what topics to be included in the "guideline". As clinical practice guidelines become more prominent as a key metric of quality healthcare, from this result we might provide valuable tool to the doctors and dietitians for the improvement of patient care who is in need of nutrition support.

MATERIALS AND METHODS

Subject and duration of research

This survey was conducted from July to August 2019, to investigate the selection process of medical foods by hospital dietitians in Busan Metropolitan City and the region of Gyeongsangnam-do Province. The survey was conducted by mail or a face-to-face meeting with dietitians working in tertiary hospitals, general hospitals, and long-term care hospitals. A total of 68 surveys were retrieved and all surveys were used for analysis. This study was conducted with the approval of the Institutional Review Board of Kyungnam University (approval number: 1040460–A-2019–019).

Contents of investigation

The questionnaire consisted of 9 general information and 10 items related to the medical food selection process. General information included the hospital adequacy grade after accreditation, gender, age, career, work of dietitian, and employment status of clinical dietitian. The medical food selection process questions consisted of a total of 10 questions.

It consists of questions regarding the provision of EN formula, nutrition information of the needs, and important information when making a guide.

Statistical analysis

Continuous variables of the general information was calculated by the mean and standard deviation through descriptive statistics analysis. χ^2 test was performed to determine the correlation between the hospital size and the medical food selection variables. All analyses were performed using IBM SPSS statistics version 26.0 (IBM Corp., Armonk, NY, USA).

RESULTS

General characteristics of the hospital size and dietitian

The general characteristics of the hospital size and dietitians are shown in **Table 1**. According to the surveys, 13 respondents worked in general hospitals and 55 worked in long-term care hospitals, and most of them (30 respondents, 44.1%) worked at an institution with 100–300 beds, and most of the respondents belong to the age group of 30's (36.8%) and the highest level of education of the majority of 42 respondents (61.8%) was university graduate. Of them, 50 were dietitians (73.5%) and 18 were clinical dietitians (26.5%). In the length of experience, 34 respondents (50.0%) had worked for 10 or more years. The principal role of dietitians in hospitals was 'the provision of meal for patients' including 'tube feeding of the medical foods' (28.6%).

Detailed answer regarding the provision of enteral nutrition (EN) formula

The results on the provision of enteral formula are shown in **Table 2**. As for the products being used in hospitals, the most commonly used products was balanced nutritional formulas (with fiber, 33.3%) followed by diabetic products (24.6%), balanced nutritional formulas (without fiber) (11.5%), calorie dense products (1.5 kcal/mL, 10.4%), products for kidney patients (9.3%), ready to hang (RTH) products (8.2%), other products (2.2%) and iodine-restricted product (0.5%). The most important consideration when providing the formula was to provide according to the doctor's prescription protocol (57.4%) and secondly conventionally used product in the hospital (35.3%). The first nutritional factor to check when selecting a product is the calorie (64.7%), followed by protein (26.5%) and fiber (2.9%). The method for determining the nutrition requirements was, by the doctor's prescription (80.9%), by using the calculation formula such as height, weight, etc. (13.2%), and by the decision of the nutrition support team (NST, 2.9%). Methods of obtaining answers in case of questions are by the inquiring nurses (39.7%), contacting manufacturer (29.4%) and the nutrition team self-discussions (23.5%). Common problems when using the product were diarrhea (35.6%), dyspepsia (15.0%), vomiting (12.2%), electrolyte imbalance (8.3%), constipation (7.8%), and lack of product diversity (7.2%) and etc.

Table 1. General characteristics of the respondents and the size of the hospital (n = 68)

Category	Values
Age of the respondent	
20s	12 (17.6)
30s	25 (36.8)
40s	22 (32.4)
Over 50s	9 (13.2)
Final educational background	
College graduation	17 (25.0)
University graduation	42 (61.8)
Graduate school graduation	9 (13.2)
Qualification	
Clinical dietitian	18 (26.5)
Dietitian	50 (73.5)
Length of work experience (yr) as clinical dietitian* (n = 18)	
≥ 1, < 5	4 (22.2)
≥ 5, < 10	6 (33.3)
≥ 10, < 15	3 (16.7)
≥ 15, < 20	4 (22.2)
≥ 20	1 (5.6)
Length of work experience (yr) as dietitian[†] (n = 50)	
< 1	3 (4.4)
≥ 1, < 5	12 (17.6)
≥ 5, < 10	19 (27.9)
≥ 10	34 (50.0)
Principal roles for the position as a dietitian[†]	
Providing meals for patient	55 (28.6)
Providing meals for staff	18 (9.4)
Nutrition management for patient	29 (15.1)
Cooking guidance	13 (6.8)
Menu development	42 (21.9)
Management of food ingredients	25 (13.0)
Etc.	10 (5.2)
Category of the hospitals	
General & Tertiary hospital	13 (19.1)
Long-term care hospital	55 (80.9)
No. of hospital beds	
< 100	13 (19.1)
≥ 100, < 200	30 (44.1)
≥ 200, < 300	8 (11.8)
≥ 300, < 400	9 (13.2)
≥ 400	8 (11.8)

Values are presented as number (%).
*Clinical dietitian: dietitians who passed the certification exam after acquiring M.S. degree and 1 year of clinical practice. (certification issued by the Chief of Ministry of Health and Welfare); [†]Dietitian: licensed dietitian who passed national exam with a B.S. in nutrition.

Needs assessment of nutrition label components of the product

The needs for nutrition label of the product are shown in **Table 3**. The dietitians wanted the percentage of the sufficiency compared to the nutritional recommendations (19.5%) on the label, followed by the calorie content (16.9%), the vast quantity nutrients (carbohydrate, protein, fat) consumption rate and content (15.9%), the main electrolyte content (Na^+, K^+) (12.3%) and the fiber content (10.3%).

Suggested topics of enteral formula guide

The dietitians' suggestions when making a guide are listed in **Table 4**. Suggesting topics when making a guide were 'Disease specific product list of formulas' (17.7%), 'Nutrient composition and comparison table' (16.2%), 'How to manage complications (e.g. aspiration,

Table 2. Detailed questions regarding the provision of enteral formulas

Division	Values
The most commonly used products	
Balanced nutritional formulas (with fiber)	61 (33.3)
Diabetic products	45 (24.6)
Balanced nutritional formulas (without fiber)	21 (11.5)
Calorie dense products (1.5kcal/ml)	19 (10.4)
Products for kidney patients	17 (9.3)
RTH products	15 (8.2)
Etc.	5 (2.7)
The most important consideration when providing the formula	
Doctor's prescription protocol	39 (57.4)
Conventionally used product in the hospital	24 (35.3)
Product previously used by patients	2 (2.9)
Most suited Products for patients among various products	2 (2.9)
Etc.	1 (1.5)
The first nutritional factor to check when selecting a product	
Calorie	44 (64.7)
Protein	18 (26.5)
Fiber	2 (2.9)
Micronutrient (minerals and vitamin)	1 (1.5)
Taste, flavor	1 (1.5)
Etc.	1 (1.5)
The method for determining the nutrition requirements	
Doctor's prescription	55 (80.9)
Using the calculation formula such as height, weight, etc.	9 (13.2)
Decision of the nutrition support team	2 (2.9)
Automated calculation developed by the hospital	1 (1.5)
Etc.	1 (1.5)
Methods of obtaining answers in case of questions	
Inquiring nurses	27 (39.7)
Contacting Manufacturer	20 (29.4)
Nutrition Team Self Discussions	16 (23.5)
Consulting with the Nutrition Support Team	3 (4.4)
Inquiring doctors	1 (1.5)
Inquiring pharmacists	1 (1.5)
Common problems when using the products	
Diarrhea	64 (35.6)
Dyspepsia	27 (15.0)
Vomiting	22 (12.2)
Electrolyte imbalance	15 (8.3)
Constipation	14 (7.8)
Lack of product diversity	13 (7.2)
Abdominal distention	11 (6.1)
Aspiration	8 (4.4)
Hyperglycemia	5 (2.8)

Values are presented as number (%).

Table 3. Needs for nutrition label components of products

Category	Values
Percentage of the sufficiency compared to the nutritional recommendations	38 (19.5)
Calorie content	33 (16.9)
Vast quantity nutrients (carbohydrate, protein, fat) consumption rate and content	31 (15.9)
Main electrolyte content (Na^+, K^+)	24 (12.3)
Fiber content	20 (10.3)
Functional component content	18 (9.2)
Micronutrients (minerals and vitamin)	12 (6.2)
Moisture content	11 (5.6)
Osmotic pressure	8 (4.1)

Values are presented as number (%).

Table 4. Suggested topics of enteral formula guide (multiple answers allowed)

Division	Values
Disease specific product list of formulas	59 (17.7)
Nutrient composition and comparison table	54 (16.2)
How to manage complications (e.g. aspiration, diarrhea, constipation, etc.)	49 (14.7)
Methods and precautions for prescribing	42 (12.6)
Solutions for electrolyte imbalance (e.g. hyponatremia, hypokalemia, etc.)	36 (10.8)
Functional components and characteristics	28 (8.4)
Methods of supply	26 (7.8)
How to supply moisture when using food for patients	23 (6.9)
How to manage drug use	15 (4.5)
Etc.	1 (0.3)

Values are presented as number (%).

diarrhea, constipation, etc.)' (14.7%), 'Methods and precautions for prescribing' (12.6%), 'Solutions for electrolyte imbalance (e.g. hyponatremia, hypokalemia, etc.)' (10.8%), 'Functional components and characteristics' (8.4%), 'methods of supply' (7.8%), and 'How to supply moisture when using food for patients' (6.9%).

The correlation of hospital size and final educational background of the dietitians

The correlation of hospital size and final educational background of dietitians is listed in **Table 5**. There was a statistically significant result between the 2 variables (χ^2 = 24.680, p < 0.001), and in the case of general or tertiary hospital there were a lot of highly educated people with a university degree or higher.

The correlation of hospital size and dietitian qualification

The correlation of hospital size and dietitian qualification is shown in **Table 6**. There was a statistically significant result between the 2 variables (χ^2 = 27.918, p < 0.001). In the case of general and tertiary hospital, there were more clinical dietitians than dietitians employed, and in other words, there were more dietitians in long-term care hospitals.

The correlation of hospital size and the most important consideration when providing the formula

Table 7 shows the correlation of hospital size and the most important consideration when providing the formula. There was a statistically significant difference among the variables (χ^2 = 11.852, p < 0.05). In the case of general and tertiary hospital, EN formula were only

Table 5. The relationship between hospital size and final educational background

Hospital size	Final educational background			χ^2
	College graduation	University graduation	Graduate school graduation	
General & tertiary hospital	0 (0.0)	6 (46.2)	7 (53.8)	
Long-term care hospital	17 (30.9)	36 (65.5)	2 (3.6)	24.680[*]
All	17 (25.0)	42 (61.8)	9 (13.2)	

Values are presented as number (%).
[*]p < 0.001 after χ^2 analysis.

Table 6. The relationship between hospital size and dietitian qualification

Hospital size	Qualification		χ^2
	Clinical dietitian	Dietitian	
General & tertiary hospital	11 (84.6)	2 (15.4)	
Long-term care hospital	7 (12.7)	48 (87.3)	27.918
All	18 (26.5)	50 (73.5)	

Values are presented as number (%).

https://doi.org/10.7762/cnr.2022.11.1.9

provided according to the doctor's prescription. Whereas in long-term care hospitals, almost half of the EN formula were provided according to the doctor's prescription protocol (47.3%) and quite frequently (43.6%) conventionally used products in the hospital were used.

The correlation of dietitian qualification and the most important consideration when providing the formula

The correlation of dietitian qualification and the most important consideration when providing EN formula is stated in **Table 8**. There was a statistically significant result between the 2 variables (χ^2 = 9.904, p < 0.001). Clinical dietitians were according to the doctor's prescription protocol 77.8%, whereas dietitian was according to the doctor's prescription protocol (50.0%) and followed by the most commonly used product 44.0%.

The correlation of hospital size and the method for determining nutrition requirements

The correlation of hospital size and the method for determining nutrition requirements is listed in **Table 9**. There was a statistically significant difference among the hospital sizes (χ^2 = 20.496, p < 0.001). In the case of general and tertiary hospitals, 46.2% of the answers indicated that nutrition requirements were determined according to the doctor's prescription protocol. The use of calculation formula was 23.1%. Whereas in long-term care hospitals, EN formula was provided mostly according to the doctor's prescription (89.1%).

Table 7. The correlation of hospital size and the most important consideration when providing the formula

Hospital size	Most important consideration when providing the formula					χ^2
	Doctor's prescription	Conventionally used product	Product previously used by patients	Most suited Products for patients among various products	Etc.	
General & tertiary hospital	13 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
Long-term care hospital	26 (47.3)	24 (43.6)	2 (3.6)	2 (3.6)	1 (1.8)	11.852*
All	39 (57.4)	24 (35.3)	2 (2.9)	2 (2.9)	1 (1.5)	

Values are presented as number (%).
*p < 0.05 after χ^2 analysis

Table 8. The relationship between dietitian qualification and the most important consideration when providing the formula

Dietitian Qualification	Doctor's prescription protocol	Most commonly used product in the hospital	Most suited Products for patients among various products	Product previously used by patients	Etc.	χ^2
Clinical dietitian	14 (77.8)	2 (11.1)	1 (5.6)	0 (0.0)	1 (5.6)	
Dietitian	25 (50.0)	22 (44.0)	1 (2.0)	2 (4.0)	0 (0.0)	9.904*
All	39 (57.4)	24 (35.3)	2 (2.9)	2 (2.9)	1 (1.5)	

Values are presented as number (%).
*p < 0.001 after χ^2 analysis.

Table 9. The correlation of hospital size and the method for determining the nutrition requirements

Hospital size	Doctor's prescription protocol	Using the calculation formula	Decision of the NST	Automated calculation developed by the hospital	Etc.	χ^2
General & tertiary hospital	6 (46.2)	3 (23.1)	2 (15.4)	1 (7.7)	1 (7.7)	
Long-term care hospital	49 (89.1)	6 (10.9)	0 (0.0)	0 (0.0)	0 (0.0)	20.496*
All	55 (80.9)	9 (13.2)	2 (2.9)	1 (1.5)	1 (1.5)	

Values are presented as number (%).
NST, nutrition support team.
*p < 0.001 after χ^2 analysis.

DISCUSSION

This study was conducted for the purpose of analyzing the status of EN formula use for patients in hospitals in Busan and Gyeongnam area. According to the Health Insurance Review and Assessment Service, there are 6 tertiary hospitals, 48 general hospitals, and 342 long-term care hospitals (86.4% of all hospitals) within Busan and Gyeongnam area. We collected a total of 68 questionnaires in this analysis which is 17.8% of total hospitals within the region. Out of 68 hospitals, 19.1% were answers from general and tertiary hospitals and 80.9% were from long-term care hospitals.

In χ^2 analysis, we found significant differences in the final educational length (χ^2 = 24.680, p < 0.001) and the employment rate of clinical dietitian (χ^2 = 27.918, p < 0.001) according to the size of the hospital. The rate of dietitian with university and graduate school degrees, and the number of clinical dietitians were higher in the general hospitals (84.6%, 11/13 persons), and tertiary hospitals (17.7%, 7/55 persons). The employment rate of dietitians who had a clinical dietitian certificate, was similar in hospitals nationwide; 91.1% at a tertiary hospital, 71.4% at a general hospital and 20.9% at a long-term care hospital [12].

When enteral feeding protocols are going to be implemented, hospitals normally utilize multidisciplinary teams to determine if these protocols are beneficial for the patients. However, it is rarely the case in long term care hospitals in Korea. The most important consideration when providing the EN was, to "provide according to the doctor's prescription protocol (57.4%)", followed by "conventionally used product in the hospital (35.3%)," "previously used product by patients" meaning that the products are not necessarily prescribed by the clinician's competence. To reduce the risk of unexpected events and improve patient's recovery and safety, tactful communication opportunity is necessary between the doctor and clinical dietitian [13].

A significant correlation between dietitian qualification and the most important consideration when providing the formula had significant difference (χ^2 = 9.904, p < 0.001). Seventy-seven percent of certified clinical dietitians used EN as the doctor's prescription, while only 50% of dietitians followed doctor's prescription. Almost half of the dietitians used ENs that has been conventionally used within the institution. According to the Korean Medical Act, medical institutions must provide meals to patients [14], and the meals should be provided according to the doctor's prescription. Considering that EN prescription should be used as patient-specific that is prescribed and administered professionally, long term care hospitals are in great need for standardized procedures for daily practice and decision making guideline for safe patient care.

Ideally, attending physicians request consultations with a clinical dietitian prior to providing the patient with a enteral feeding, and the clinical dietitian calculate the requested patient's nutritional and protein needs, recommend appropriate products, and develop a nutritional management plan, including how to supply them. Clinical dietitians in hospitals provide clinical nutrition services that can enhance the therapeutic effect by assessing the nutritional status of patients, establishing a nutrition plan, and providing nutritional counseling and education to improve the nutritional status of patients [15]. However, in the case of small hospitals or long-term care hospitals, even if medical staff and dietitians clearly recognize the importance of clinical nutrition services, the execution status for clinical nutrition service is still low due to the lack of system resources or manpower in the hospital [16].

After EN prescription is made by the doctor, the success of EN relies on the expertise of nutrition support dietitians. One of the professional responsibility of the clinical dietitian is to monitoring biochemical data, anthropometrics, calculating nutrient need, monitoring EN tolerance, etc. Based on these parameters, implementing EN according to nutrient recommendations are essential for successful patient care. In this study, we found that determining nutrition requirements were different depending the size of hospital. In the case of general and tertiary hospital, determining the nutrition requirements according to the doctor's prescription was 46.2% while 23% used calculation formula. Whereas in long-term care hospitals, almost 90% was following the doctor's prescription. This result can be explained as either, dietitians at general and tertiary hospital have more room to intervene, instead of the unilateral decision by the medical doctors when deciding the nutrition requirements of the patients, or having a clinical dietitian credential allows more autonomy in making decisions.

The NST is a multidisciplinary team of doctors, nurses, pharmacists and dietitians. In Korea, interest in NST activities has increased as the 'Intensive Nutritional Treatment' fee has been applied since 2014 [17]. The NST is installed and operated in about 100 places, mainly at secondary and tertiary hospitals, but the level of activity varies depending on the hospital [18]. The main task of NST is monitoring patients who needs tube feeding and provides advice to physician. Most of the hospitals participated in this survey are the long-term care hospitals and rarely have an operating NST. In the study of Park and Lyu [19], it was found that dietitians at long-term care hospitals in the Busan-Gyeongnam region had low awareness of nutrition management and their execution was very poor. Considering that little or no NST activities are conducted at the long-term care hospitals, it is apparent that most of the EN are provided only according to doctor's prescription, and active nutrition management and monitoring is almost impossible.

Common problems when using EN formula were diarrhea, dyspepsia, vomiting, electrolyte imbalance, or constipation. These adverse effects can be caused by the drug being administered, the patient's condition, and the EN formula itself, so it is necessary to identify the cause and implement active nutrition intervention, such as tapering or stopping the product being supplied, or changing the product [20]. These all implies the critical needs of active nutritional intervention by clinical dietitians.

Domestic EN formula market is showing a high growth rate of 12.3% annually in 2011 compared to 2008 [21]. In 2017, the Korean 'Foods for special medical purpose' market size has increased to 5.3 million dollar which was a 47.4% increase from 2013 [22]. With the growing market, various products for meeting special needs from various patients are being developed, but the products used in medical institutions and homes are very limited. Mainly, there is no comprehensive catalog on the characteristics of the product, so dietitians at each medical institution write and use them mainly based on their individual experiences.

In this study, we identified what information was needed by dietitians, it would be helpful if a EN guideline is available with all the needs.

Topics when making a guideline suggested by the dietitians were, 'disease specific product list of formulas' (17.7%), 'nutrient composition and comparison table' (16.2%), 'how to manage complications (e.g. aspiration, diarrhea, constipation, etc.)' (14.7%), 'methods and precautions for prescribing' (12.6%), 'solutions for electrolyte imbalance.(e.g. hyponatremia, hypokalemia, etc.)' (10.8%), 'functional components and characteristics' (8.4%), 'methods

of supply' (7.8%), 'how to supply moisture when using food for patients' (6.9%), 'how to manage drug use' (4.5%), and etc. (0.3%). With these information, it is expected that dietitians will be able to participate more autonomously and professionally in the process of selecting EN and provide adequate nutrition intervention.

Overall, although it is difficult to generalize the result of this study as it is only applicable to the Busan-Gyeongnam region, this study shows us how EN products is prescribed, administered to patients. Also, the results showed us that this procedure using EN products and dietitian's roles were quite different depending on the hospital size. We hope from this result, a movement for 'enteral nutrition practice guideline' will be developed and provided to many local small-size hospitals to improve the EN process and eventually help patient's care.

1. As for the products being used in hospitals, the most commonly used products was balanced nutritional formulas (with fiber, 33.3%) followed by diabetic products (24.6%), balanced nutritional formulas (without fiber) (11.5%), calorie dense products (1.5kcal/ml, 10.4%), products for kidney patients (9.3%), RTH products (8.2%), other products (2.2%) and iodine-restricted product (0.5%).
2. The most important consideration when providing the formula was to provide according to the doctor's prescription protocol (57.4%) and secondly conventionally used product in the hospital (35.3%). The first nutritional factor to check when selecting a product is the calorie (64.7%), followed by protein (26.5%) and fiber (2.9%).
3. The method for determining the nutrition requirements is, by the doctor's prescription (80.9%), by using the calculation formula such as height, weight, etc. (13.2%), and by the decision of the NST (2.9%). In the case of general and tertiary hospitals, 46.2% obtaining the answers indicated that the nutrition requirements were determined according to the doctor's prescription protocol and using calculation formula was 23.1%. Whereas in long-term care hospitals, EN formular was provided mostly according to the doctor's prescription (89.1%).
4. The dietitians wanted the percentage of the sufficiency compared to the nutritional recommendations (19.5%) on the nutrition label, followed by the calorie content (16.9%), the vast quantity nutrients (carbohydrate, protein, fat) consumption rate and content (15.9%), the main electrolyte content (Na, K) (12.3%) and the fiber content (10.3%).
5. Suggesting topics when making a guide were 'Disease specific product list of formulas' (17.7%), 'Nutrient composition and comparison table' (16.2%), 'How to manage complications (e.g. aspiration, diarrhea, constipation, etc.)' (14.7%), 'Methods and precautions for prescribing' (12.6%), 'Solutions for electrolyte imbalance.(e.g. hyponatremia, hypokalemia, etc.)' (10.8%), 'Functional components and characteristics' (8.4%), 'methods of supply' (7.8%), and 'How to supply moisture when using food for patients' (6.9%).

If the ratio of clinical dietitians working in long-term care hospitals increases in the future, it is expected that EN formula would be provided more independently and professionally to patients. This study shows that dietitians recognize the need for 'enteral nutrition practice guideline' and based on this study we hope these needs should be used as important information when making a guide in the future.

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