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Original**Determining Calcium requirement of Vietnamese women aged 55-65 years old**

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ABSTRACT Purpose. Research was conducted to determine Calcium (Ca) requirement for Vietnamese women aged 55-65 years old, using the Ca balance method. **Methods.** There were 14 women participated in the study. Each subject was provided with a controlled diet in 2 stages: the first 15 days with a Ca intake of about 300 mg/day, the next 15 days with a Ca intake of about 600 mg/day. Ca intake is calculated based on the database of Vietnamese Food Composition Table. Between the two stages is a 15-days of washing out, in which subjects ate their usual diet at home. Dietary intake, feces samples and urine samples were collected during both stages for quantitative Ca analysis using atomic absorption spectrometry (AAS). Ca metabolic balance was calculated for each dietary Ca level. Ca requirements were estimated based on the linear regression correlation between Ca intake and Ca metabolic balance. **Results and conclusion.** Research results show that the Ca requirement of the subjects is 625 mg/day. The Recommended Dietary Allowance (RDA) of Ca for postmenopausal women aged 55-65 years in rural areas is 750 mg/day. More research is needed to determine RDA of Ca for different age groups of Vietnamese.

INTRODUCTION

In recent years, there has been increasing evidence of an association between Ca intake and bone health. Adequate and continuous Ca intake throughout life will contribute to strong bones, increase peak bone mass in adulthood and reduce bone loss in old age, thereby contributing to the prevention of rickets in children, and osteoporosis in the elderly (1). Therefore, research on Ca requirements for each age group and each stage of life is a matter of great concern (2, 3).

Ca requirements for each age group have been studied decades ago. There have been many scientific research projects published and widely applied in many countries around the world (1, 4, 5). However, with current knowledge, Ca requirements depend greatly on physical activity level, nutritional status, age, gender and race. The Ca RDA for people over 50 years old in the US and Canada is 1200 mg/day, in France it is 900 mg/day, in England it is 700 mg/day and in Australia it is 800 mg/day (6-8).

There are many methods to determine Ca requirement such as: determining the requirement by calculating the total amount of Ca excreted in urine and feces (factorial method), the epidemiological investigation method and the balance method. Among them, the balance method is accepted and used the most by scientists because of its high accuracy and feasibility (4). According to this method, the average Ca requirement in adults is determined by the linear

regression correlation between Ca intake and Ca metabolic balance. Accordingly, Ca requirement is calculated as the diet at which intake and output are equal (balance=0) (1).

In Vietnam, the rate of osteoporosis in adults is 9%, relatively high compared to other countries in the region (9). Meanwhile, the average Ca intake in adults is still <500 mg/day (10). Ca requirements have been recommended by the National Institute of Nutrition (NIN) based on scientific evidence recommended by the World Health Organization and consultation with other countries in the region (11). Until now, there has been no publication about results of researches on Ca requirements in Vietnamese's adults. Therefore, the authors conducted research to find the Ca requirement in women aged 55-65 years, an age group at high risk of osteoporosis, with the hope that the research results will contribute to enrich the scientific evidence in order to develop Dietary Reference Intake (DRI) for Vietnamese people.

MATERIALS AND METHODS

1. Location: Viet Hung commune, Kim Thanh district, Hai Duong province, Vietnam

2. Time: from November 2007 to February 2008

3. Design: Estimated Ca requirement in subjects based on the linear relationship between Ca intake and Ca metabolic balance, with 2 Ca intake levels of 300 and 600 mg/day corresponding to 2 study stages. Using a linear regression analysis model, Ca requirement was determined as the Ca intake at which balance = 0 (**Fig 1**).

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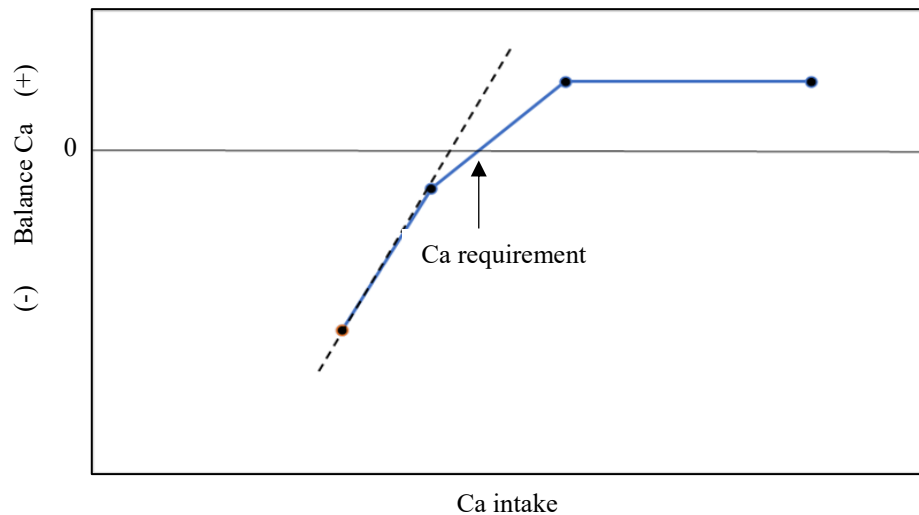


Fig 1. Linear regression analysis model between Ca intake and Ca metabolic balance to estimate Ca requirement

Stage 1: Subject were taken a diet with Ca concentration of about 300 mg/day for 15 days according to a calculated menu, based on the database of Vietnamese Food Composition table (12). The first 10 days (adaptation period) is the time for the subject to adapt to the new menu.

5 days later was the sample collection time: subject still ate the same diet as above. In addition, 24-hour feces and 24-hour urine were collected for analysing Ca concentration.

Stage 2: Subject ate a Ca diet of about 600 mg/day for 15 days, including 10 days of adaptation period and a 5-day of collecting feces and urine samples.

Between the two stages was a 2-weeks of washing out, the subject ate the usual diet at home (4).

4. Subject and sample size

Selection criteria: Women 55 - 65 years old, more than 5 years postmenopausal, voluntarily participating in the study, BMI from 18.5 to 23, has 1-2 children, bone density was normal, did not take drugs that affect Ca metabolism/products containing Ca within 1 month before the study, Ca intake in the past 3 months was 300-400 mg/day.

Exclusion criteria: Have one of these diseases: cirrhosis, duodenal ulcer, high blood pressure, colitis, kidney disease, kidney stones, often constipated.

Sample size: 12 people (4). After adding 15% of the subject who might give up, the estimated study sample size is 14 people.

Selecting subject: Women aged 55-65 years in the same village were invited to participate in screening survey to select 14 eligible subjects for the study.

5. Methods and applied techniques

5.1. Screening and selecting subjects:

Interviewed with general information about age, number of children, menstrual status, medical history...

Collected anthropometric measurements: weight, height to calculate BMI. Measured bone density using quantitative ultrasound through the heel bone to identify subjects with osteoporosis (speed of sound index <1503 m/s). Assessed general diet by 24 hours recording method for 3 non-consecutive days, plus asking. Assessed Ca intake over the past 3 months using the semi-quantitative questionnaire (SQFFQ) method.

5.2. Analysis of Ca content in local drinking water: By atomic absorption spectroscopy (AAS) method.

5.3. Preparing menus to achieve 2 levels of Ca intake of approximately 300 mg/day and 600 mg/day, taking into account the amount of Ca from drinking water and water used to prepare dishes. Other nutritional values of the menus (energy, protein, lipid, carbohydrate) were equivalent to usual diets of subjects.

5.4. Deployment:

5.4.1. Providing subjects a controlled diet:

In each stage of study, subjects were provided with free meals for 15 days (3 meals/day), at a centralized dining location, under the supervision of NIN's staff. Subjects were asked not to eat any food or drink other than provided meals.

5.4.2. Collecting food samples

For each meal, the researchers prepared 15 meals (14 meals for subjects, 1 meal for analysing Ca concentration in the meal). The 15th portion of 3 meals a day were collected, mixed well and ground with a food processor. After grinding, 50g of food was put into a jar with a tight lid, stored in the freezer and weekly transferred to the NIN for storage at -20°C until analysing Ca concentration.

5.4.3. Collecting feces samples

Before the first meal of day 11, each subject ingested 1 g of carmine marker (a red substance that is not involved in metabolic processes in the body). When the red color of Carmine appears in the subject's feces, sampling begins and the red-colored portion of the stool is removed. The subject's feces are also collected in the following days. On day 15, after the last meal, 1 g of carmine was administered to each subject. Sampling ended when the feces turned the red color of carmine. The red feces were later removed. The fecal samples from all subjects were stored for 5 days at room temperature in sealed boxes labelled with the code of each subject (each subject had 5 boxes for 5 days). After the fecal samples were collected for all 5 days, all samples in each subject's 5 boxes were collected, shredded and mixed well. Approximately 50 g of feces were placed in a jar with a tight-fitting lid and taken to the NIN, where they were stored at -20 °C until analysis.

5.4.4. Collecting urine samples

24-hour urine samples were collected immediately after the first intake of carmine over a period of about 2 hours (subjects were asked to urinate completely before taking carmine) until the end of the night on the 15th day. Using a special sampling device (product made in Japan), 1/50th of the urine volume was stored after each urination. The subjects could carry the device with them day and night. After each day, this device was returned to the researcher, who collected, stored and analysed the urine samples. Each subject's urine was stored in a separate bottle (labelled with date and code). The urine was preserved with a 6N-HCL acid solution. (20 - 30 ml for a 24-hour urine sample) at a temperature of 5-8°C. The 5-day urine of each subject was collected, mixed well, 50 ml was poured into a bottle with a large lid and taken to the NIN where it was stored at -20°C until analysis.

5.4.5 Monitoring and evaluation.

Daily monitoring of water intake, body weight, feces and urine, and unusual health manifestations of the subjects during the research process. Body weight was measured in the morning on an empty stomach.

The subjects' diet was monitored throughout the study. The subjects' physical activity was maintained as usual throughout the study period.

5.4.6 Analysing Ca concentration in food, feces and urine.

Food, feces, and urine samples were spiked with HNO₃ acid prior to analysis. After inorganic combustion, the Ca concentration of the sample was analysed using the AAS method.

5.4.7. Method for estimating Ca requirement:

Balance of Ca metabolism (Ca balance) was estimated based on the equation:

$$\text{Balance Ca} = \text{Ca intake} - \text{Ca output}$$

$$\text{Ca output} = \text{Ca in feces} + \text{Ca in urine}$$

$$\text{Ca absorption rate (\%)} = \frac{\text{Ca intake} - \text{Ca in feces}}{\text{Ca intake}} \times 100$$

Use a linear regression model to estimate Ca requirement based on two dietary levels of 300 and 600 mg/day, refer to the method of Jackman and CS (4, 13)

Recommended Ca requirement (RDA) is estimated according to the following equation (4, 14):
RDA = Ca requirement x 1.2

6. Data analysis

Dietary data and menus are calculated using ACCESS software, with the database of Vietnamese Food Composition Table.

Data was analysed by using SPSS software. Linear regression analysis was used to estimate Ca requirements.

RESULTS

After screening, 14 eligible subjects were invited to participate in the study. Throughout the study, all subjects consumed no food or drink other than the meals offered, physical activity remained as usual, and all followed the instructions for collection of feces and urine samples. All subjects consumed the offered meals every day and had no health problems.

Table 1. General characteristics of the subjects at the beginning of the study

Variables	Mean ± SD
Age (years)	58 ± 3,8
Height (cm)	154,5 ± 1,6
Weight (kg)	47,1 ± 3,4
BMI	19,8 ± 1,3
Ca intake in the past 3 months (mg/day)	346,8 ± 40,5
Bone density (SOS, m/s)	1521,9 ± 18,1

Table 1 shows the general characteristics of the subjects at the beginning of the study. The subjects were on average 58 years old and had a normal BMI

of 19.8. The average Ca intake of the subjects in the 3 months prior to the study was 346.8 ± 40.5 (mg/day).

Table 2. Dietary characteristics of subjects (24-hour recording method in 3 days)

Nutritional value	Mean ± SD
Energy (kcal)	1813 ± 232.1
Protein	
Total (g)	56.0 ± 21.6
Animal protein (g)	29.0 ± 18.5
Lipid	
Total lipid (g)	25.3 ± 11.3
Animal lipid/ Total lipid (%)	52.8 ± 17.8
Mineral	
Ca (mg)	377.5 ± 134
Fe (mg)	12.9 ± 7.8
Vitamin	
Vitamin A (mcg)	0.19 ± 0.94
Carotene (mg)	4.7 ± 3.9
Vitamin D (mcg)	0.28 ± 0.55
% Energy	
Protein	12.3
Lipid	12.9
Carbohydrate	74.8

Table 2 shows the general diet of the subjects, with average energy intake is 1813 ± 232.1 (kcal/day), protein intake and lipid intake are 56.0 ± 21.6 g/day and 25.3 ± 11.3 g/day, respectively. The subjects' dietary energy mainly came from carbohydrates, with a P: L: C energy ratio of 12.3%:12.9%:74.8%.

3 menus for Ca levels of approximately 300 mg/day and 3 menus for Ca levels of approximately 600 mg/day had been designed with energy, carbohydrate, protein, and lipid values approximately equivalent to those shown in Table 2 to ensure the experimental diet is diverse and similar to the subject's usual diet.

Table 3. Results of analysing Ca concentration in the diet

Menu	Ca concentration in the diet (mg/day)	
	Stage 1	Stage 2
Menu A (n=5)	327.6 ± 15.7	605.6 ± 7.7
Menu B (n=5)	306.1 ± 21.2	595.8 ± 6.7
Menu C (n=5)	317.6 ± 8.8	605.8 ± 13.4
Average (n=15)	317.1 ± 18.1	602.4 ± 10.1

Data are presented as mean ± SD

Table 3 shows the results of analysing Ca concentration in the diet provided to the subjects. Results shown that Ca concentration in the diet

assessed directly by food sample analysis has a value nearly equivalent to the Ca diet estimated based on the Vietnamese Food Composition Table (12).

Table 4. Ca balance of subjects

	Stage 1	Stage 2
Ca intake (mg/day)	317.1 ± 18.1	602.4 ± 10.1
Amount of Ca in feces (mg/day)	309.7 ± 95.2	498.2 ± 193.6
Amount of Ca in urine (mg/day)	150.3 ± 36.4	146.0 ± 53.7
Metabolism balance= Intake-Output (mg/day)	-130.0 ± 101.6	-10.1 ± 203.6
Amount of Ca absorbed (mg/day)	20.2 ± 95.2	136.1 ± 193.1
Ca absorption rate (%)	6.1 ± 28.8	21.4 ± 30.5

Data are presented as mean ± SD or %

Table 4 shows the average amount of Ca excreted in feces of subjects in stage 1 is 309.7 ± 95.2 mg/day and stage 2 and 498.2 ± 193.6 mg/day. Meanwhile, the amount excreted in urine is less, in stage 1 is 150.3 ± 36.4 mg/day and stage 2 and 146.0 ± 53.7 mg/day. Ca

absorption rate in stage 1 (6.1%) is lower than stage 2 (21.4%). There is a remarkable point that, Ca metabolic balance in both stages has negative values (-130.0 ± 101.6 mg/day in stage 1 and -10.1 ± 203.6 in stage 2).

The results of linear regression analysis are illustrated in Fig 2, according to which the Ca metabolic balance is 0 when the Ca diet reaches 625mg/day. Therefore, the subject's Ca requirement is estimated to be 625mg/day. From that result, the RDA

of Ca for postmenopausal women aged 55-65 years in rural areas was estimated according to the method of K. Uenishi et al (4, 14) are as follow: $625 \times 1.2 = 750$ mg/ day.

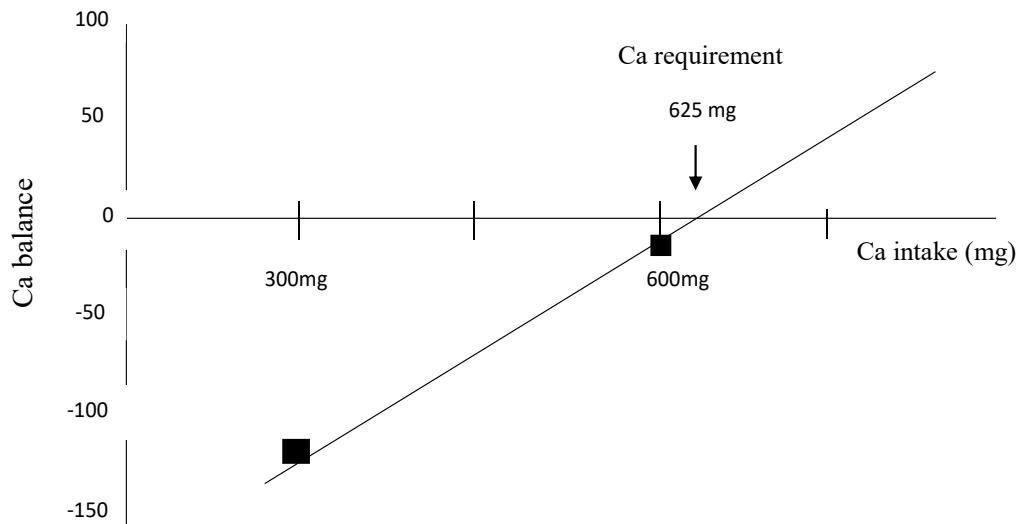


Fig 2. Linear relationship between Ca intake and Ca metabolic balance to estimate the subject's Ca requirement

Body weight changes:

The average body weight of the subject increased from 47.1 kg (before intervention) to 47.5 kg (after stage 1) and 47.8 kg (after stage 2). The change in body weight of subjects from before the study to the end of the study was not statistically significant.

DISCUSSION

The balance method (determination of requirements via the metabolic balance in the body) has proven to be very accurate and practicable in studies on nutrient requirements (4). Ideally, 3 points are used to determine nutrient requirements, which correspond to 3 nutritional levels (Figure 1). In Ca requirement studies, the method of using 2 points corresponding to 2 intakes is still scientific if the point corresponding to a high intake is close to the estimated intake, as Ca balance is linearly related to Ca intake (13). The 2-point method has also been used in many previous studies and has been shown to be reliable (4,13). In this study, we used two Ca intakes: 300 mg/day and 600 mg/day. The results show that the estimated Ca requirement is 625 mg/day, which corresponds to a close point of 600 mg/day (Figure 1). Therefore, we believe that the estimated results of the study are relatively close to reality.

Compared to women of the same age in other countries, the Ca requirement of the subjects in this study was lower. Using the same method of utilisation,

the Ca requirement of women in some white communities is 900 mg/day, while that of Japanese women is 788 mg/day, while that of Vietnamese women is 625 mg/day (4, 15). This finding is consistent with the conclusion of previous studies that Ca requirements vary by race (8).

The results regarding the amount of Ca absorbed by the body are almost identical to the study by K. Uenishi et al. on Japanese women of the same age (4). K. Uenishi used 2 levels of Ca intake (250 mg/day and 850 mg/day) to determine the Ca requirement. The results show that the amount of Ca ingested at low Ca intake of Vietnamese people (20.2 mg/day) is similar to that of Japanese women (21 mg/day), but at high Ca intake, the Ca requirement of Vietnamese women (136.1 mg/day) is much higher than that of Japanese women (113 mg/day). This indicates that the Ca requirement of Vietnamese is lower than that of Japanese because the Ca saturation point is lower.

“Recommended dietary allowance (RDA)” is a different term than “requirements”. While the requirements of a nutrient for the body is estimated based on the individual, the RDA is used to make recommendations for the whole community. Therefore, the RDA is usually estimated at 1.2 times the requirement (14). The recommended Ca requirement for some white communities are 1000-1500 mg/day for elderly women. The requirement for Japanese people of the same age is 650 mg/day (15),

while Vietnamese people are 750 mg/day. If computed the requirements by weight, with the average weight of the subjects in this study being 47.1 kg, the Ca requirements is 15.9 mg/kg body weight. This weight-based requirement also remains lower than that of white women (18.5 mg/kg) and Japanese women (18.1 mg/kg) (4, 16, 17, 18). Compared to the recommended dietary allowance in the book "Recommended nutritional dietary allowance for Vietnamese people" published in 2007, our estimated results are lower. Therefore, required studies to confirm the results of this study. Our research results show that, subjects gained weight after 45 days of joining in the study, although this weight gain was not statistically significant. This may be because the study was conducted at a time when farmers were leisured, and the diet provided, although having total energy, carbohydrates, proteins and lipids, was nearly equivalent to the regular diet, the completeness was related to Dietary restrictions that have led to weight gain. However, the menu computed in this study closely follows the recommended dietary allowance for energy-generating substances, so the estimated Ca requirement is applicable.

CONCLUSION

The Ca requirement of women aged 55 to 65 years was estimated at 625 mg/day in this study.

The Ca requirements dietary allowance of women aged 55 to 65 years was estimated at 750 mg/day in this study.

RECOMMENDATION

There is a need to research Ca requirements for different age groups to enrich scientific knowledge and develop a Dietary Reference Intake (DRI) for the Vietnamese population.

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Original**Lessons from a meal service training at a nursing home in Japan under post-disaster utility disruption scenarios**Tamaki Takeda¹, Noriko Sudo^{2*}, Reika Mizuno¹, and Eisuke Ikuta³¹ *Department of Food and Nutritional Science, Graduate School of Humanities and Sciences, Ochanomizu University, Tokyo, Japan*² *Natural Science Division, Faculty of Core Research, Ochanomizu University, Tokyo, Japan*³ *Institute of Advanced Sciences, Osaka Metropolitan University, Osaka, Japan*

ABSTRACT *Background and purpose.* Elderly people, especially long-term care facility residents, are vulnerable to disasters. Although meal provision is crucial during disasters, few Japanese nursing homes have provided meal service training. To identify disaster preparedness issues related to meal service we conducted a meal service training course at an elderly nursing home in Osaka Prefecture, Japan, on August 23, 2022. *Methods.* The training course included the transportation of stockpiled supplies, meal preparation, and meal services, assuming disruptions in electricity, tap water, and gas supplies. We analyzed 15 post-training questionnaires completed by the trainees and observers (response rate: 93.8%). Using the KJ method, we summarized one opinion on each card and categorized it with cards with similar opinions. *Results.* Of the 31 cards regarding transportation of stockpiled supplies, 17 were included in the main category of “transportation should be done in daylight hours or with lights.” The top two main categories related to meal preparation (67 cards) were “cooking processes need improvement” (26 cards), “hygiene must be taken into consideration” (14 cards). Of the 31 cards on meal service, 22 concerned “there were problems with eating,” with specific comments such as “porridge jelly was hard and caused a lot of choking.” *Conclusion.* The training revealed issues regarding lighting, cooking processes, hygiene management, and the food served. Particularly, inadequate sanitation and foods that are unsuitable for impaired chewing and swallowing can threaten residents’ health and increase the risk of aspiration pneumonia. Furthermore, it is important to assess the suitability of the stockpiled food for cooking and feeding.

Key words: Disaster preparedness, Food service, Nursing home, Natural disaster, Training

INTRODUCTION

Japan is an aging society, with the proportion of the population aged 65 years and over at 29.0% in 2021 [1]. Indeed, global aging trends project an increase in the elderly population worldwide from 2022 to 2050 [2]. During this period, the world is likely to experience the increasing impacts of climate change; indeed, it has increased the scale and frequency of natural disasters [3]. Elderly people are particularly vulnerable to disasters, with people over 60 years accounting for over half the fatalities from the Great Hanshin-Awaji Earthquake and Great East Japan Earthquake [4]. Notably, individuals over 66 years accounted for 88.6% of earthquake-related deaths from the Great East Japan Earthquake [5]. Such disasters can particularly disrupt elderly care facilities. As long-term care facility (LTCF) residents depend heavily on these facilities for their daily lives and healthcare, difficulties in providing services to residents during a disaster can directly affect their lives, health, and well-being [6]. Given that elderly

care facilities constitute an essential social infrastructure, promoting disaster preparedness is crucial for building a resilient society.

Malnutrition affects the immunocompetence of the elderly [7]. Therefore, meal provision must continue even during disasters [6]. In Japan, all caregiving service providers will be required to establish a Business Continuity Plan (BCP) and conduct training sessions and drills beginning FY2024 [8]. However, even among nursing homes in disaster-prone areas in Japan, only a minority (36.6%) have conducted meal service trainings [9].

Studies of meal preparation and eating in disaster-like situations have shown that people recognize the need to improve the quality of their stockpiles and the importance of lifelines, such as lighting and water [10-12]. However, these studies focused on young and working-age adults. To the best of our knowledge, no study has examined meal service drills in nursing homes, where dietary considerations are important. This study used meal service training to identify disaster preparedness issues related to meal services in an elderly nursing home. Our findings provide

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valuable insights into disaster preparedness for meal provision in long-term care facilities.

MATERIALS AND METHODS

On August 23, 2022, meal service training was conducted at the Special Elderly Nursing Home A (hereafter, Nursing Home A) in Osaka Prefecture. Free descriptions in the post-questionnaire were analyzed using the KJ method to determine the feasibility and validity of the facility’s BCP.

2.1 Training outline

The training comprised four components: BCP initial response training (hereafter, BCP training), meal preparation training, meal service training, and

reflection session. The following reports particularly focused on meal preparation and meal service training. Table 1 shows the training outline and the participants. Fig 1 presents the overall flow and preparation methods for each menu item during training sessions. During these sessions, the trainees prepared dinner, whereas electricity, gas, and tap water were unavailable in the post-earthquake scenario. Cassette stoves could be used for cooking because the facility stockpiled them. In the reflection session, trainees and observers gave their impressions of the training. The second and fourth authors mentioned both the positive aspects and challenges observed during training (Table 2).

Table 1. Course outline and participants in each training session^a

		Meal preparation training	Meal service training
Time		16:00–17:40	17:40–18:30
Content		Gathering materials from storage Preparing stockpiled foods Setting out dishes Table setting	Thicken the water and miso soup Meal assistance
Participants	Trainees	(n = 4) Care staff (manager), care staff (head of a unit), general care staff, and maintenance staff	(n = 8) Director, assistant director, registered dietitian, care staff member, two managerial staff members from Corporation B, and two crisis management committee members from Corporation B
	Observers	(n = 7) Care staff (manager), care staff (head of a unit), and five general care staff members	(n = 7) Director, assistant director, registered dietitian, a care staff member, managerial staff member from Corporation B, and two crisis management committee members from Corporation B

^a Training sessions were conducted on August 23, 2022. The BCP initial response training was conducted prior to the meal preparation training (14:00–15:30). Reflection was also held after the meal service training (19:00–20:00).

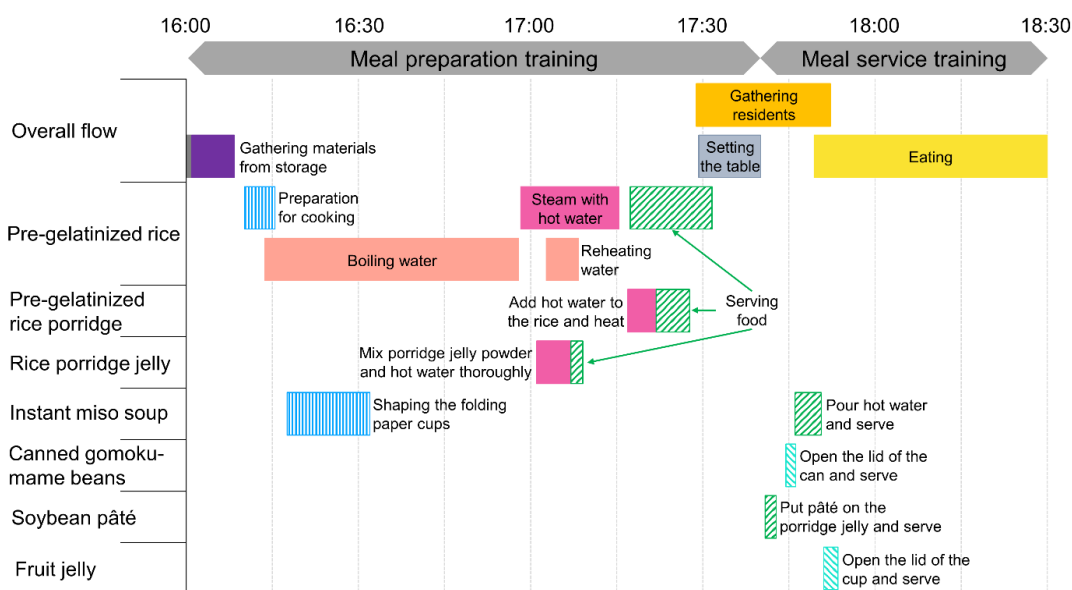


Fig 1. Overall flow and the preparation methods of each menu in meal preparation and meal service training.

Table 2. Comments by the authors regarding meal preparation and meal service during the reflection session.

Contents	Comments by the authors
Preparing stockpiled foods	[Hygiene]
	<ul style="list-style-type: none"> • Trainees should have sanitized the worktable using alcohol and wet tissues before cooking. • Cardboard is unclean; therefore, it is better to avoid placing it on the worktable. • Glove usage lacked hygiene. • Several operations were done without gloves. Gloves should be changed every time the process changes. • Miso soup and pre-gelatinized rice were uncovered until water was added. They should have been wrapped to prevent dust.
	[Cooking process]
	<ul style="list-style-type: none"> • The boiling pot lacked lids. They would save fuel and prevent temperature rise.
	[Safety]
Setting out dishes	<ul style="list-style-type: none"> • Pay attention to fire when using cassette stoves. Alcohol disinfectant was sprayed near the fire, and the hem of the bib was about to touch the stove. • A cassette stove was on a caster-equipped stand, which was dangerous because of the possibility of hot water spilling.
	[Garbage]
Meal assistance	<ul style="list-style-type: none"> • Waste was not disposed separately.
Meal assistance	<ul style="list-style-type: none"> • The containers of pre-gelatinized rice had lids; hence, they could be stacked and carried efficiently.
Meal assistance	<ul style="list-style-type: none"> • Residents were familiar with miso soup cups.

^a Reflection session was held after the training sessions (19:00–20:00). Thirteen people participated: the director, assistant director, registered dietitian, trainee of BCP initial response training, two trainees of meal preparation training and meal service training, two managerial staff members from Corporation B (to which the target facility belonged), two crisis management committee members from Corporation B, and three authors. Other content of the reflection included BCP initial response training (home oxygen therapy, sputum suction, and emergency toilet installation), gathering materials from storage, impressions of the meals provided, oral care, and comments from observers.

Table 3. Menus and corresponding cooking methods during the training

Food	Meal type	Cooking methods during the training
Pre-gelatinized rice	Normal Porridge	1. Sprinkled dried ingredients for gomoku gohan (mixed vegetable rice) on top of pre-gelatinized rice.
		2. Poured 8 L of hot water and steamed for 15 minutes.
		3. For making porridge, took some of the rice, added the hot water, and heated.
Instant miso soup	Normal Porridge	1. Shaping the folding paper cups and added powdered miso inside.
		2. Poured 150 mL of boiling water into the cup and mixed well.
Canned gomoku-mame beans (Simmered soybeans with vegetables)	Normal Porridge	Opened the lid of the can and served.
Rice porridge jelly	Paste	1. Added 30 g of porridge jelly powder and 180 mL of hot water in a bowl.
		2. Mixed thoroughly using a whisk until the mixture was uniform.
Soybean pâté	Paste	Served on top of rice porridge jelly.
Fruit jelly	Normal Porridge	Opened the lid of the cup and served.
	Paste	

In the meal preparation training, three care staff members (two male and one female) transported stockpiled supplies from the third floor to the kitchen on the second floor using stairs, as the elevators were assumed to be inaccessible because of a power outage.

At Nursing Home A, a two-day supply of long-shelf-life food and disposable tableware was stored on the third floor, while seasonings and cooking utensils used daily were stored in the kitchen on the second floor. Subsequently, the trainees prepared menus of

stockpiled foods with long shelf lives that the facility had already planned to serve after the disaster. Table 3 lists the foods served, meal types, and cooking methods used during the training. A total of 41 meals (31 residents and 10 staff) of three meal types (normal, porridge, and paste) were prepared.

During meal service training, one lantern was placed on each table, where five or six residents were seated. The trainees thickened the water and miso soup for residents with difficulty swallowing. The residents ate either with assistance from staff or by themselves using disposable plastic spoons. Fig 2 shows the meals served and the eating scene during the training.

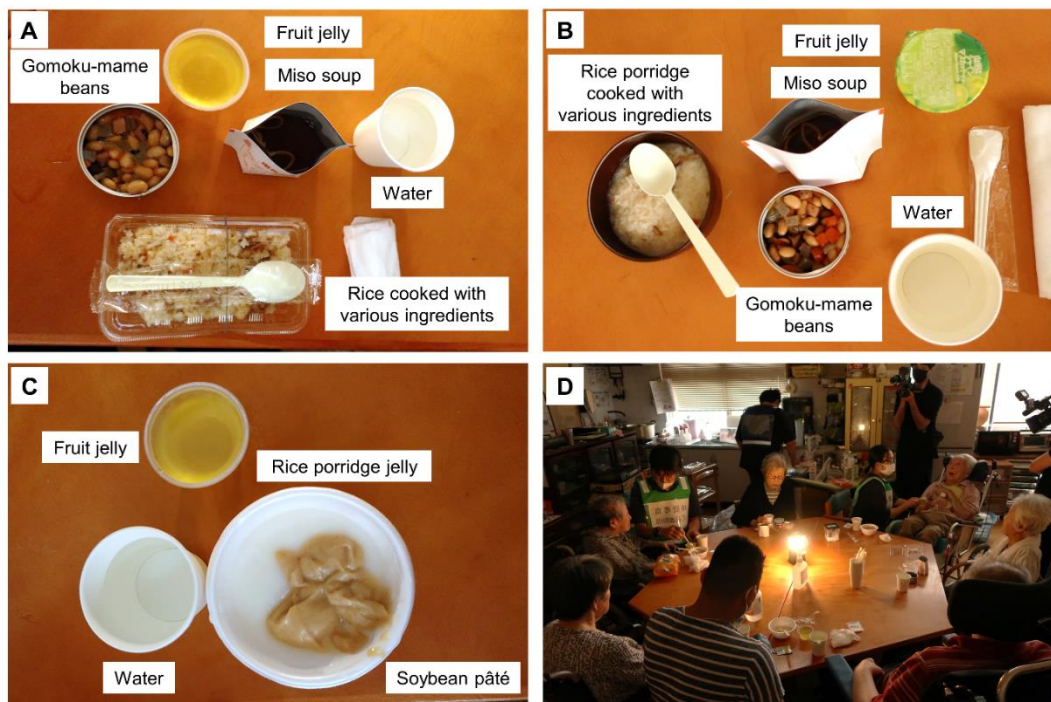


Fig 2. Served meals and eating scene during training. (A) Normal meal. (B) Porridge meal. (C) Paste meal. (D) Eating scene.

2.2 Setting and Participants

2.2.1 Setting

The training course was conducted in Nursing Home A. The facility has a capacity for 35 residents, including 5 short-stay users with an average age of 85 years. Residents' living spaces were divided into three units, and meals were prepared and served per unit.

Special elderly nursing homes in Japan provide general nursing care services for the elderly who require 24-hour care and are difficult to care for at home [13]. In Japan, elderly individuals in need of nursing care are classified into five levels (care needs levels 1–5) based on their health condition and the time required for nursing care [14]. Each level corresponds to the degree of care needed, with higher levels indicating greater care requirements. To make services more focused and efficient, users of special elderly nursing homes are restricted to seniors whose care needs are level 3 or higher [15]. Since elderly people with level 3 care needs require assistance in their daily lives, the disaster response strategies of special elderly nursing homes directly impact the residents' quality of meals and their overall well-being.

Regarding disaster preparedness, Nursing Home A established a BCP and manual for meal services during emergencies in January 2022 and conducted BCP simulation drills while serving pregelatinized rice in March 2022. However, the staff members never prepared or served the entire disaster menu.

2.2.2 Participants

The total number of participants was 16, of whom 12 attended meal preparation training, 14 attended meal service training, and 10 attended both. Participants were divided into trainees and observers; all trainees were Nursing Home A employees. In the meal preparation training, four trainees prepared meals: a care staff member (manager) in their 40s, another care staff member (head of a unit) in their 40s, a general care staff member in their 20s, and a maintenance staff member in their 70s, all of whom routinely prepare meals for residents. In meal service training, seven care staff members were trainees (three were also trainees in meal preparation training). All of them assisted residents with their meals.

The observers were the director, assistant director, dietitian, and nursing staff of Nursing Home A as well

as administrators and disaster prevention staff from other facilities of Social Welfare Corporation B to which Nursing Home A belonged.

2.3 Data collection

On the day of the training session, questionnaires were distributed to all the participants ($n = 16$), and 15 days after the training date (September 7, 2022), 15 questionnaires were returned (response rate: 93.8%). In instances where the responses were unclear, follow-up emails were sent to the participants and their responses were received on September 28. The questionnaire comprised 38 questions categorized into five sections: toilet training (a part of BCP training), meal preparation training, meal service training, reflection, and an overall assessment of the training program. In this study, responses to five open-ended questions regarding (1) transportation of stockpiled supplies, (2) meal preparation, and (3) meal service were analyzed.

(1) Transportation of stockpiles

- Please write your thoughts and insights regarding retrieval of stockpiled supplies from storage.

- Please write your thoughts and insights regarding the transportation of supplies using the stairs.

(2) Meal preparation

- Please write your observations and impressions of cooking stockpiled foods.

- How did you feel about preparing meals when the water supply was not available?

(3) Meal service

- Please write your thoughts and insights on meal assistance.

2.4 Data analysis

Responses from the trainees and observers were collected for these five questions. The “KJ method,” a bottom-up qualitative method developed by Japanese ethnologist Jiro Kawakita [16], was employed to analyze the descriptions. The first author carefully reviewed the descriptions and summarized them into approximately 40 characters on one card per opinion. Subcategories were created by gathering cards with similar content, and sentences were posted to express the content of each subcategory. Finally, the main categories were developed from these subcategories and a sentence was posted to express the content of each main category. Categorizations were checked by the first, second, and third authors and discussed until a consensus was reached. The analysis was performed using KJ method software (Chohassoho Ultra Presen (ITEC, Minato, Tokyo, Japan)).

2.5 Ethical considerations

This study was approved by the Humanities and Social Sciences Research Ethics Committee of Ochanomizu University (Notification No. 2021-56). Prior to the training, we explained its contents and how the data would be handled to the facility manager. Subsequently, we requested the manager to communicate this information to the nursing staff and residents. Consent was obtained from the facility through a consent form signed by the president of Corporation B.

RESULTS

3.1 Transportation of stockpiled supplies

Table 4 lists the results of transportation of stockpiled supplies. A total of 31 cards from eight respondents were divided into four main categories (numbers in parentheses are the number of cards for each category): “transports should be done in daylight hours or with lights” (17 cards), “carrying went smoothly during the training” (9), “transportation during a disaster would be more difficult” (3), and “worried about carrying supplies” (2). Notably, problems with lighting during transportation were mentioned frequently, as highlighted by “difficult to carry supplies in the dark” (8) and “lights are a must when transporting safely” (5). Furthermore, regarding smooth transportation, “male staff can carry supplies smoothly” (4) and “organization helps smooth retrieval” (4) were mentioned.

3.2 Meal preparation

Table 5 lists the results for meal preparation. A total of 67 cards from 11 respondents were divided into the following seven main categories: “cooking processes need improvement” (26 cards), “hygiene must be taken into consideration” (14), “water is important” (11), “need to actually cook and know the cooking process” (4), “presence of residents makes the tasks more challenging” (3), “good communication among staff” (2), and “others” (7). Further categorization within the “cooking process challenges” revealed “caution is required for the installation and handling of the cassette stoves” (10) as the most frequent, followed by “poor arrangement for boiling water” (5) and “miso soup should be made in batches” (3). All comments categorized under “hygiene must be taken into consideration” were mentioned by observers. Comments about cooking without tap water emphasized the importance of water, with some cards such as “need to reduce water use” (5) and “inconvenient when water is not available” (4).

Table 4. Thoughts and insights regarding transportation of stockpiled supplies^a

Main category	Subcategory	Examples of cards
Transports should be done during daylight hours or with lights (17)^b	Difficult to carry supplies in the dark (8)	<ul style="list-style-type: none"> • <u>It is difficult to smoothly carry supplies in the darkness without light [2].^c</u> • <u>It is difficult to see your feet in the dark, which may lead to accidents, etc.</u> • Finding supplies in the dark is challenging. • I am not confident in accurately and quickly retrieving necessary items during hours of darkness. • Going up and down stairs during a blackout is dangerous.
	Lights are a must for transporting safely (5)	<ul style="list-style-type: none"> • <u>It would be safer if one person carried supplies while another lit the way.</u> • It is possible to take out the items with a flashlight or lantern. • Headlights allowed the trainees to use both hands while carrying the items.
	It was bright during the training (3)	<ul style="list-style-type: none"> • <u>During the training, surroundings were visible due to sunlight.</u>
	Supplies should be transported in daylight (1)	<ul style="list-style-type: none"> • <u>It is better to take one day's worth of supplies during daylight.</u>
Carrying went smoothly during the training (9)	Male staff can carry supplies smoothly (4)	<ul style="list-style-type: none"> • <u>It was easy to carry out because there were no heavy items.</u> • It went smoothly with male staff. • It would require more effort and time with only female or elderly employees [2].
	Organization helps smooth retrieval (4)	<ul style="list-style-type: none"> • Supplies stored with a clear sign on cardboard were easy to take out. • With a post-disaster menu set in advance, the trainees took out the supplies without confusion.
	It went smoothly (1)	<ul style="list-style-type: none"> • It went smoothly. • It would take more time [2]. • There would be various obstacles such as falling objects in an actual disaster.
Transportation during a disaster would be more difficult (3)		<ul style="list-style-type: none"> • Transporting stored water is difficult. • I am not sure if I can safely go up and down the stairs while carrying supplies.
Worried about carrying supplies (2)		

^a The responses to the following two questions were analyzed using the KJ method: 'Please write your thoughts and insights regarding retrieval of stockpiled supplies from storage,' and 'Please write your thoughts and insights regarding the transportation of supplies using the stairs.' Eight respondents (two trainees and six observers) answered and 31 cards were used. The opinions of the trainees are underlined.

^b Number of cards in each category.

^c Number of specific examples of cards with similar content.

Table 5. Thoughts and insights regarding meal preparation^a

Main category	Subcategory	Examples of cards
Cooking processes need improvement (26)^b	Caution is required in the installation and handling of the cassette stoves (10)	<ul style="list-style-type: none"> • It made me think about how to set up the cassette stove, considering both staff workflow and safety. • It would be better to put the cassette stoves in one place. • Placing cassette stoves in various locations may pose fire or injury risks. • Putting all the cassette stoves in one place can help people recognize it as a "fire zone" and cook with care. • Inadequate installation and handling of cassette stoves could result in fires and injuries. • Spraying alcohol disinfectant near the fire was concerning.
	Poor arrangement for boiling water (5)	<ul style="list-style-type: none"> • I noticed that boiling a substantial amount of water took significantly longer than expected. • I could not figure out why they used a pot without a lid. • Maintaining the warmth of hot water resulted in unnecessary gas consumption.
	Kettles are suitable for heating water (3)	<ul style="list-style-type: none"> • Using a kettle saves time and gas. • Kettle usage minimizes scalding risk when pouring hot water.
	Miso soup should be made in batches (3)	<ul style="list-style-type: none"> • Preparing miso soup packets individually was time-consuming.

		<ul style="list-style-type: none"> Implementing batch preparation of miso soup in a pot seemed beneficial. Making miso soup one by one is time-consuming.
	Need to think about the workflow before starting work (3)	<ul style="list-style-type: none"> They seemed a bit confused overall because they started the task without reading the manual.
	Need to be creative in workspace layout (2)	<ul style="list-style-type: none"> Streamlining and simplifying the workflow can lead to more efficient cooking processes. Distinct areas for cooking, serving, and dining could have been delineated to enhance efficiency.
Hygiene must be considered (14)	Hygiene is an issue (8)	<ul style="list-style-type: none"> Trainees touched the food with their hands that had touched cardboard. One trainee took off her mask to taste the food and continued cooking while talking. I was uncomfortable with the trainees stacking and putting down packaged food items.
	During water shortages, consideration for hygiene is necessary (3)	<ul style="list-style-type: none"> Since hands and utensils cannot be washed, special attention must be paid to hygiene. It is important to consider hygiene. To what extent can hygiene be maintained?
	Alcohol disinfection is essential during water disruption (3)	<ul style="list-style-type: none"> We have to do the best we can with alcohol. Alcohol disinfection is essential due to the inability to wash with water.
Water is important (11)	Need to reduce water use (5)	<ul style="list-style-type: none"> <u>Need to prepare meals with as few utensils as possible.</u> <u>Reducing the amount of dishwashing is important.</u>
	Inconvenient when water is not available (4)	<ul style="list-style-type: none"> <u>It is inconvenient because we cannot wash dishes dropped on the floor.</u> I thought it was hard that we were not able to wash hands and cooking utensils.
	Need much water for cooking (2)	<ul style="list-style-type: none"> I realized that we needed to stockpile more water for cooking than we had expected. I have learned that cooking requires a significant amount of water.
Need to actually cook and know the cooking process (4)		<ul style="list-style-type: none"> <u>Cooking stockpiled food was time-consuming due to unfamiliarity.</u> It was difficult to understand the setup without actually having cooked.
The presence of residents makes the tasks more challenging (3)		<ul style="list-style-type: none"> Enough cooking space was available because there were no residents nearby. It would be more difficult to secure space if there were residents. When there are residents, more things need attention.
Good communication among staff (2)		<ul style="list-style-type: none"> Communication among staff was good. A generous attitude is required in times of disaster, when people tend to be tense.
Others (7)		<ul style="list-style-type: none"> Due to the inability to wash, there were many more disposable containers and much other waste than expected. I felt the necessity of considering the placement of garbage disposal areas. I found it easy to prepare. Roles need to be shared to prevent food poisoning. Need someone who can give directions. It was uncomfortable to work in the absence of sounds that are usually taken for granted (e.g., the sound of the TV). I thought that in times of disaster, just having a radio or other sound would be calming.

^a Responses to the following two questions were analyzed using the KJ method: ‘Please write your observations and impressions of cooking stockpiled foods’ and ‘How did you feel about preparing meals when water was not available?’ There were 11 respondents (3 trainees and 8 observers), and 67 cards were extracted. The opinions of the trainees are underlined.

^b The number of cards in each category.

3.3 Meal service

Table 6 lists the results for meal service. A total of 31 cards from 14 respondents were divided into three main categories: “there were problems with eating” (22 cards), “there were no problems with eating” (6),

and “others” (3). The subcategory “served meals were difficult to eat” received the most responses (12), with comments such as “porridge jelly was hard and caused a lot of choking” and “powdered miso was not dissolved perfectly.” Challenges also included

unfamiliar tableware usage and low lighting, such as “residents seemed to struggle to use disposable tableware,” “it was hard to see whether there was water in the paper cups,” and “meals eaten in the dark were less tasty.” However, a few comments indicated no problems with eating. Suggestions for improvement included “more lanterns should be used” and “miso soup should be served in usual paper cups.”

DISCUSSION

This study identified disaster preparedness issues related to meal service in elderly care facilities through practical training conducted in a special elderly nursing home. This is the first study to report findings on meal service training in an elderly care facility. Various challenges related to darkness, cooking processes, hygiene management, and menu composition were identified.

4.1 Dealing with the electricity outage

Our findings highlight the significance of adequate lighting for the smooth transportation of supplies and well-lit conditions for assisting with eating and fully appreciating the taste of meals. These findings are consistent with those of Tachibana and Sudo [12], who emphasized the necessity of lightning for hazard prevention, seasoning, and food hygiene. They noted that insufficient lighting could diminish the appeal of the food and hinder stain detection when cleaning utensils and tables. To address issues during electricity outages, lighting sources such as headlights and lanterns should be stored and emergency supplies should be placed in rooms with daylight for easy retrieval [17]. Furthermore, supply transportation and meal consumption should be planned during daylight hours.

Table 6. Comments on meal service^a

Main category	Subcategory	Examples of cards
There were problems with eating (22)^b	Served meals were difficult to eat (12)	<ul style="list-style-type: none"> • <u>Porridge jelly was hard [3].^c</u> • <u>Porridge jelly was hard and caused a lot of choking.</u> • <u>The porridge jelly was not suitable for those with difficulty chewing or swallowing.</u> • <u>Porridge jelly provision was called off.</u> • <u>The canned beans looked hard.</u> • Adjusting the hardness of the porridge jelly seemed challenging. • Powdered miso was not dissolved completely.
	Supplied disposable tableware was hard to use (6)	<ul style="list-style-type: none"> • <u>It was difficult to scoop the miso soup from the bottom of the supplied cup when thickening.</u> • When residents ate by themselves, they seemed to struggle to use tableware. • Due to the miso soup cup’s tendency to become flexible, residents seemed to struggle with handling it [2].
	Difficult to eat because of darkness (4)	<ul style="list-style-type: none"> • <u>For visually impaired residents, I believe eating was particularly difficult.</u> • <u>I thought it was hard to perceive taste when eating in the dark.</u> • It was hard to see whether there was water in the paper cups. • It seemed difficult to see foods and residents’ mouth.
There were no problems with eating (6)	Residents seemed to eat well (2)	<ul style="list-style-type: none"> • I was surprised at the feedback regarding the taste. • It was reassuring to see residents eating well.
	Eating was as usual (2)	<ul style="list-style-type: none"> • There appeared to be minimal differences from the usual.
	Residents used disposable tableware well (2)	<ul style="list-style-type: none"> • Initially, residents looked curiously at their meals and tableware, but gradually became accustomed to them. • Residents used disposable tableware well.
Others (3)	<ul style="list-style-type: none"> • More lanterns should be placed. • Paste meals were prepared smoothly since they usually make them. 	

^a The responses to ‘please write your thoughts and insights of meal assistance’ were analyzed using the KJ method. There were 14 respondents (7 trainees and 7 observers), and 31 cards were extracted. The opinions of the trainees are underlined.

^b Number of cards in each category.

^c Number of specific examples of cards with similar content.

4.2 Improvement of the cooking process

Regarding meal preparation, the most frequent comment ($n = 26$, 39%) was that cooking processes need improvement, with specific concerns about the installation and handling of cassette stoves and the poor arrangement of boiling water (Table 5). Adequate spacing is required when setting up multiple cassette stoves to prevent fires [17]. However, even national guidelines that present cassette stoves as alternative heat sources [6, 18] do not describe safety precautions for their use. The participants' awareness of the importance of careful handling of cassette stoves was a valuable training outcome. Furthermore, judicious gas use is paramount because it is essential for improving meal quality [19] and for heating foods such as cold rice and bread [18]. Selecting appropriately sized pots [17] and using lidded pots is recommended.

Observers also mentioned that preparing individually packaged miso soup was time-consuming and labor-intensive (Table 5). While individual packaging simplifies distribution [20], during our training, miso soup was prepared for all residents in the kitchen, resulting in an increased workload, such as opening the bag and adding miso powder. For mass food preparation, individual packaging may not always be convenient. Hence, it is essential to use the items and assess the effort and time required to cook before selecting stockpiles.

4.3 Hygienic cooking during water interruption

The second most common comment regarding meal preparation was related to hygiene ($n = 14$, 21%). The participants found it difficult to maintain hygiene during water supply interruptions. Tokuda et al. also reported difficulties in maintaining the hygiene of food and hands of cooks at evacuation centers without a water supply [21]. Because older adults have reduced infection resistance capabilities [7], particular attention to hygiene management is required in long-term care facilities. Therefore, stockpiles of alcohol sanitizers, wet tissue, and disposable gloves are required to ensure hygienic cooking and eating even when the water supply is cut off [17].

Interestingly, all comments on hygiene were made by the observers. Previous research have noted that food handlers tend to overestimate their food safety practices [22, 23]. Observers may be more likely than trainees to notice hygiene problems during cooking. Hence, feedback from observers and objective reviews of video recordings of training sessions can be effective in enhancing hygiene practices.

4.4 Menu improvement

During training, rice porridge jelly was not offered because of its hardness, which poses a risk of choking (Table 6). This underscores the importance of

verifying the suitability of the stockpiled food for residents through training. Yamazoe and Naito reported a real-life case in which an elderly woman with poor masticatory function choked on a rice ball, nearly resulting in fatality [24]. Although access to appropriate forms of food was essential for protecting the lives of the elderly, in earthquake-affected areas, adjusting the form of the food was difficult because machines were unusable owing to power outages. Consequently, there was a greater need for appropriate food for people who have difficulties in swallowing and chewing [25]. However, large quantities of special dietary foods are difficult to obtain after a disaster because they are made-to-order and manufacturers typically do not maintain stock [26]. Therefore, it is essential to select food items that match residents' chewing and swallowing abilities and stockpile a two-week supply in advance.

4.5 Considering the storage space for the garbage

Through training, the participants realized the importance of waste storage and the unexpectedly high volume of waste (Table 5). This is consistent with the findings of previous training on preparing and eating emergency food [10]. Waste accumulation has been a persistent issue during past disasters. For example, after Typhoon Haiyan, waste remained uncollected in evacuation centers even two weeks after the disaster, leading to health concerns [27]. Moreover, the quantity of garbage in disaster-affected areas and fly density were positively related, which can be attributed to the accumulation of organic waste and large-scale food supply [28]. Indeed, some guidelines have emphasized the necessity of securing waste storage spaces and implementing pest control measures [6, 17]. However, only a quarter of the nursing homes in disaster-prone areas of Japan have such plans [9]. Disseminating case studies of training exercises, such as in this research, is crucial for promoting awareness of the importance of considering waste storage.

4.6 Limitations

The findings have limited generalizability as this study reported a single training session at a single facility. Because BCPs should be tailored to the situation of each facility [6], the suggested improvements may not necessarily apply to other facilities. However, because many facilities experienced water, electricity, or gas supply interruptions after the Great East Japan Earthquake [29], the difficulties caused by their unavailability, as considered in this study, may also apply to other facilities.

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Original**Current Status of Nutrition Education by Nutrition Teachers in A Prefecture in Japan**Mina Misawa¹, Saiko Shikanai¹, Masako Sato²¹ Faculty of Health Sciences, Aomori University of Health and Welfare, Aomori 030-8505, Japan² Executive Officer, Aomori School Lunch Association, Aomori 030-0132, Japan

ABSTRACT *Background and purpose.* Shokuiku (Japanese diet and nutrition education) in schools is given by nutrition teachers has been expanded nationwide. Reports and information from nutrition teachers in A Prefecture are limited. *Methods* In this study, we conducted a self-administered questionnaire to nutrition teachers to ask about the current status of nutrition education. *Results.* Forty-seven subjects responded (a response rate of 47.5%). Of these, 39.5% were managing school lunch and nutrition education independently, and 79.1% were in charge of multiple schools. Regarding the amount of time secured for nutrition education, 67.4% in the home school and 44.2% in the receiving school had enough time to achieve their nutrition education goals. However, 60.5% of teachers wanted to have more time for nutrition education. *Conclusion.* The results of this survey suggest that nutrition teachers do not have sufficient time to give classes about nutrition education and to give activities related to it. It seemed that there were three reasons. First, most of the teachers manage school lunch independently, or two teachers are in charge of multiple schools. Second, there is a possibility that nutrition teachers are not able to secure enough time for nutrition education in the receiving schools. Third, we found that many nutrition teachers wanted to implement more nutrition education.

Keywords: Shokuiku, Nutrition education, nutrition teacher

INTRODUCTION

Until the late 1960s, shokuiku in Japan focused on improving the nutritional standards of the population and improvements in nutritional status and dietary habits were achieved. Currently, the focus has shifted to preventing lifestyle-related diseases and improving the quality of life, which requires ongoing shokuiku focusing on the characteristics of each life stage, social background, actual nutrition and dietary habits. And nutrition teachers played this role in school.

In Japan, the School Lunch Program Act included educational elements to cultivate desirable dietary habits in 2005 (1). At the same time, diet and nutrition teacher position was established to promote nutrition education in schools. There are currently two types of nutrition teachers. One is called diet and nutrition teachers who are responsible for school lunch management and teach nutrition education by themselves. The other is called school dietitians who are mainly responsible for the school lunch management.

According to a survey conducted by the Ministry of Internal Affairs and Communications on the promotion of shokuiku, "The number of nutrition teachers is small, and the teachers are often overburdened. Our school nutrition teachers go to

multiple schools to provide nutrition education. They are also busy managing and operating school lunch centers: the facilities that prepare school lunches and deliver them to multiple schools. We would like to see more nutrition teachers hired (3)". From that survey, the same reason and the same factors might be explained why the class of nutrition education by nutrition teachers has not been given in all schools in A Prefecture. In addition, since reports and information from nutrition teachers in A Prefecture are limited and almost non-existent, we decided to conduct this survey to determine the current status of nutrition education in elementary and junior high schools.

MATERIALS AND METHODS**Subjects and Survey Period**

The subjects of this survey were nutrition teachers at elementary and junior high schools in A Prefecture who consented to participate in the study. A self-administered questionnaire on "School lunch and nutrition education" was sent by mail in January and February of 2022. Forty-seven subjects completed the questionnaire, resulting in a response rate of 47.5%.

The self-administered questionnaire on "School lunch and nutrition education"

The questionnaire was divided into five items (Table 1). Some of the questions were modified based on a previous study by Yokoyama et al. (4)

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Table 1 List of questions

Items	Variables
I. Basic attributes	1. Area
	2. Job title
	3. Place of work
	4. Main place of work
	5. The number of coworkers who are dietitians and nutritionists in the workplace
	6. Having schools other than the home school and the number of schools other than the home school
	7. The number of schools and students per survey participants in charge
	8. The number of visits to schools per year
	9. Years of experience
II. About nutrition education during school lunch period before the Corona epidemic	10. Whether visiting school lunch period
	11. The number of visits and staying time per visit
	12. Things observed during visits
	13. The number of classes when visited
III. About the nutrition education	15. The degree of focus on nutrition education at the schools
	16. The opportunities for their activities and the degree of involvement
IV. About the activities related to nutrition education in 2021	17. The number of schools in which on nutrition education classes were given during class lesson,
	18. The number of lessons times on nutrition education was given during class lessons,
	19. The number of lessons times on nutrition education was given during out-of-class lessons,
	20. The number of classes given,
	21. The prioritization of the six objectives in nutrition education,
	22. The number of subject classes in which survey participants were given nutrition education,
	23. The involvement during nutrition education,
	24. The background of how survey participants accepted the request for nutrition education,
	25. The evaluation methods after nutrition education,
	26. Whether sufficient opportunities for nutrition education,
	27. Whether survey participants want to increase time on nutrition education should give
V. Free description	28. In an open-ended question, we asked the survey participants what they thought were the challenges to “teaching about nutrition education”

Method of analysis

We analyzed 43 survey participants (91.5% valid response rate) who were in charge of nutrition education. The statistical analysis package IBM SPSS ver. 29 for Windows (IBM Corporation) was used.

Ethical considerations

This study was conducted with the approval of the Research Ethics Committee of Aomori University of Health and Welfare (approval number 21086).

RESULTS

I. Basic attributes

The survey participants in this study were from the following areas of Aomori Prefecture: To-sei (11), Kami-Kita (10), Sanpachi (8), Sei-Hoku (7), Chu-nan (6), and Shimo-Kita (1). The job titles were 23 diet and nutrition teachers and 20 school dietitians.

The place of work was 27 (62.8%) at school lunch

centers, 9 (20.9%) at elementary schools, 4 (9.3%) at junior high schools, and 3 (7.0%) at special education schools. The main place of work was 35(81.4%) at school lunch centers, 3(7.0%) at junior high schools, and 2 (4.7%) at elementary or special support schools. Those who didn't have coworkers were 17 (39.5%). And 34 (29.1%) were in charge of multiple schools. Basic attributes are summarized in Table 2.

Table 2. I. Basic attributes (n=43)

Variables		Variables	
1.Area		4.Main place of work	
To-sei	11 (25.6)	Elementary school	2 (4.7)
Chu-Nan	6 (14.0)	Junior High School	3 (7.0)
Sei-Hoku	7 (15.9)	School lunch centers	35 (81.4)
Kami-Kita	10 (22.7)	Special education schools	2 (4.7)
Sanpachi	8 (18.2)	No answer	1 (2.3)
Shimo-Kita	1 (2.3)	5.The number of coworkers who are dietitians and nutritionists in the workplace (Including Survey Participants)	
2.Job title		Alone	17 (39.5)
Diet and nutrition teachers	23 (53.5)	Two	9 (20.9)
School dietitian	20 (46.5)	Three	6 (14.0)
3.Place of work		Four	5 (11.6)
Elementary school	9 (20.9)	Five	2 (4.7)
Junior High School	4 (9.3)	Six	3 (7.0)
School lunch centers	27 (62.8)	No answer	1 (2.3)
Special education schools	3 (7.0)	6.Having schools other than the home school	
		Yes	34 (79.1)
		No	7 (16.3)
		No answer	2 (4.7)

Data are shown in n (%)

The number of schools and students per survey participants in charge were summarized by elementary schools, junior high schools, and a total number of schools. The average number of schools per survey participants in charge were elementary schools as 9.0 ± 10.6 schools, junior high schools as 4.3 ± 5.1 schools, and total number of schools as 13.1 ± 12.3 schools. The average number of students per survey participants in charge were elementary schools as 2242.3 ± 3327.2 students, junior high schools as 964.4 ± 1631.4 students, and a total number of students as 3182.6 ± 3676.8 students.

The majority of nutrition teachers work in multiple locations: they manage and supervise school lunch at the school lunch center, have a "home school" where they work primarily as a nutrition teacher, and also

provide nutrition education at a "receiving schools" that receive school lunches from the school lunch center. The number of visits per year to the home school was 64.8 ± 76.5 times and to the receiving schools was 13.1 ± 13.4 times.

The mean number of years of experience was 19.2 ± 12.2 years.

II. About nutrition education during school lunch period before the Corona epidemic

The question is about nutrition education during the school lunch period. We asked about the status before the Corona epidemic, because after the Corona epidemic started there were times when school lunch was not provided due to school closures, and direct visits to schools and classrooms were limited.

The survey participants who visited during the school lunch period were 38 (88.4%). The average number of visits per year, the staying time per visit, and the number of classes when visited were 65.8±75.9 times/year, 1.7±15.1 minutes/visit, and 5.1±4.8 classes/visit in the home schools. In the receiving schools, number of visits was 7.1±10.1 times/year, the staying time per visit was 15.0±15.5 minutes/visit, and the number of classes when visited

were 3.6±3.8 classes/visit. Regarding whether survey participants visited all the classes during the school year, 81.6% in the home school and 28.9% in the receiving schools. The number of visits per year was given as 36 visits/year for those who answered "once a week" and 180 visits/year for those who answered "every day". We excluded those who answered "all classes" without a specific number because the specific number was unknown (Table 3).

Table 3. II. About nutrition education during school lunch period before the Corona epidemic (n=43)

10. Whether visiting school lunch period			
Yes	38	(88.4)	
No	4	(9.3)	
No answer	1	(2.3)	
14. Whether or not all classes could be visited during the school year			
	Home Schools		Receiving Schools
Can visit all classes	31 (81.6)	11	(28.9)
Cannot visit all classes	7 (18.4)	16	(42.1)
Can visit all classes in part of school	- (-)	6	(15.8)
No Answer	- (-)	5	(13.2)

Data are shown in n (%)

III. About the nutrition education

We asked about the current status of nutrition education. Schools that were "very" or "fairly" focused on nutrition education accounted for 86.0% of schools

(Table 4). Those who were responsible for more than one school were asked to select the situation that applied most often to their school.

Table.4 III.-15. The degree of focus on nutrition education at the schools (n=43)

Very focused	8	(18.6)
Fairly focused	29	(67.4)
Not focused	5	(11.6)
Not working	1	(2.3)

Data are shown in n (%)

The opportunities for their activities and the degree of involvement were asked in 10 categories. In their home schools, more than half of the survey participants were mainly involved in preparing overall plans for nutrition education (60.5%), preparing lesson plans (62.8%), teaching in subject classes (55.8%), teaching at lunch period (60.5%), and publishing newsletters (76.7%). Many of the other survey participants only provided materials and information, and fewer than 5.0% of the survey participants responded that they were not involved (table 5). More than half of the survey participants in the receiving

schools were mainly involved in preparing lesson plans (55.8%), teaching in subject classes (51.2%), and publishing newsletters (51.2%). Many of the other survey participants only provided materials and information, and fewer than 3.0% of the survey participants said they were not involved (Table 6). Other activities in both the home schools and the receiving schools included committee activities, morning meetings, school lunch tastings, and unique nutrition education activities (elementary and middle school collaborations).

Table 5. III.-16. The opportunities for their activities and the degree of involvement in the home schools (n=43)

	The opportunities for their activities		The degree of involvement				
	Involved in activities	Mainly involved	Provided materials and information	Not involved	No answer		
Preparing overall plans of nutrition education	29 (67.0)	26 (60.5)	3 (7.0)	0 0.0	- (-)		
Preparing lesson plans	29 (67.4)	27 (62.8)	1 (2.3)	1 (2.3)	- (-)		
Teaching in subject	30 (69.8)	24 (55.8)	4 (9.3)	2 (4.7)	- (-)		
Teaching at lunch period	35 (81.4)	26 (60.5)	7 (16.3)	1 (2.3)	1 (2.3)		
School event	11 (25.6)	4 (9.3)	5 (11.6)	1 (2.3)	1 (2.3)		
Parent-teacher meeting	4 (9.3)	1 (2.3)	3 (7.0)	- (-)	- (-)		
Publishing newsletters	35 (81.4)	33 (76.7)	1 (2.3)	1 (2.3)	- (-)		
Homepage and E-mail	5 (11.6)	- (-)	2 (4.7)	- (-)	3 (7.0)		
Individual counseling	10 (23.3)	6 (14.0)	4 (9.3)	- (-)	- (-)		
Other	9 (21.0)	6 (14.0)	1 (2.3)	- (-)	2 (4.7)		

Data are shown in n (%)

Table 6. III.-16. The opportunities for their activities and the degree of involvement in the receiving schools (n=43)

	The opportunities for their activities		The degree of Involvement				
	Involved in activities	Mainly involved	Provided materials and information	Not involved	No answer		
Preparing overall plans of nutrition education	9 (20.9)	4 (9.3)	5 (11.6)	- (-)	- (-)		
Preparing lesson plans	28 (65.1)	24 (55.8)	2 (4.7)	1 (2.3)	1 (2.3)		
Teaching in subject	27 (62.8)	22 (51.2)	3 (7.0)	1 (2.3)	1 (2.3)		
Teaching at lunch period	18 (41.9)	12 (27.9)	5 (11.6)	1 (2.3)	- (-)		
School event	6 (14.0)	3 (7.0)	3 (7.0)	- (-)	- (-)		
Parent-teacher meeting	6 (14.0)	3 (7.0)	3 (7.0)	- (-)	- (-)		
Publishing newsletters	29 (67.4)	22 (51.2)	5 (11.6)	1 (2.3)	1 (2.3)		
Homepage and E-mail	3 (7.0)	- (-)	3 (7.0)	- (-)	- (-)		
Individual counseling	7 (16.3)	5 (11.6)	2 (4.7)	- (-)	- (-)		
Other	4 (9.3)	2 (4.7)	2 (4.7)	- (-)	- (-)		

Data are shown in n (%)

IV.About the activities related to nutrition education in 2021

The average number of schools for which survey participants were given nutrition education was 5.8±4.5 for elementary schools and 2.0±2.1 for junior high schools. The average number of lesson times on nutrition education during classes were 5.0±8.7 at the home school, 14.4±9.4 at the receiving elementary school, and 3.4±3.6 at the receiving junior high schools. The average number of lesson times on nutrition education during out-of-class lessons were 7.8±30.2 times at the home school, 2.1±6.3 times at the receiving elementary schools, and 0.46±1.2 times

at receiving junior high schools. The average number of classes taught were 4.3±3.4 at the home school, 17.3±12.7 at the receiving elementary schools, and 4.6±4.8 at the receiving junior high schools.

When survey participants were asked 26. Whether sufficient opportunities for nutrition education, 67.4% in their home schools and 44.2% in their receiving schools responded that they had enough time to achieve their nutrition education goals (Table 7).

When asked 27. Whether survey participants want to increase the time on nutrition education, 60.5% of the survey participants responded that they would like to do so (Table 8).

Table 7. IV.-26. Whether sufficient opportunities for nutrition education-(n=43)

	Home Schools		Receiving Schools	
Most of schools are sufficient	29	(67.4)	19	(44.2)
Most of schools are not sufficient	7	(16.3)	7	(16.3)
Some schools are getting sufficient and some are not sufficient	1	(2.3)	11	(25.6)
No answer	6	(14.0)	6	(14.0)

Data are shown in n (%)

Table 8. IV.-27. Whether survey participants want to increase the time on nutrition education (n=43)

Yes	26	(60.5)
No	13	(30.2)
No answer	4	(9.3)

Data are shown in n (%)

V. Free description

Survey participants were asked to write freely about issues related to the context of nutrition education, which can be divided into seven main categories.

- (1) Difficulty in balancing school lunch service management and nutrition education due to insufficient staff and heavy workload
- (2) Difficulties in collaborating with other teachers on nutrition education
- (3) Difficulties due to physical distance from the school
- (4) Insufficient response from children and families
- (5) Difficulty securing classroom time
- (6) Need for opportunities to study teaching methods and ICT environment
- (7) Other

The above categories indicate the difficulties that nutrition teachers face in their work, as well as the possibility of expanding their activities in the future.

DISCUSSION

The results of this survey suggest that nutrition teachers do not have sufficient time to give classes about nutrition education and to give activities related to it. It seemed that there were three reasons.

The first is that most of the teachers manage school lunch and nutrition education independently or two nutrition teachers. And about 80% of the nutrition teachers are in charge of multiple schools (Table 2). School lunch must be provided almost every day that school is in session, leaving little time for nutrition education. In addition, many teachers work primarily at school lunch centers and are required to move to their home school or receiving school to give nutrition education. This would be easier if the school lunch center and school were next-door, but most schools require more than 30 minutes' drive. It makes difficult to give nutrition education and related activities.

Second, about 70% of teachers at their home

school and about 40% at their receiving school answered that they had enough time to achieve their nutrition education goals. Therefore, there is a possibility that the receiving schools are not able to secure enough time for nutrition education. This was also reflected in the numerical values, with differences observed in the amount and content of activities (Tables 3, 5, and 6). In particular in terms of activity content, the involvement of nutrition teachers in the creation of overall plans remains at 20% in receiving schools. This suggests that nutrition teachers do not play a central role in the receiving schools.

Third, about 60% of teachers wanted to have more time for nutrition education than they currently have (Table 9). In addition, some teachers answered “no” in the open-ended question, because it would be difficult for them to devote more time to teaching. As a result, we found that many nutrition teachers wanted to implement more nutrition education.

These results were also stated in the report by the Ministry of Internal Affairs and Communications (MIC) (3). In other words, it was seen that even in A Prefecture. Nutrition education by nutrition teachers, which has been cited as a nationwide issue, was not sufficiently obtained. This may be due to the fact that there are few nutrition teachers, and each nutrition teacher is responsible for a large number of tasks and the number of schools they are in charge of. However, we have heard many requests from schools that have given nutrition education and want nutrition teachers to give a class. This is because teachers in the home school and receiving school are convinced that the nutrition education will be more impressive if the class is taught by the teacher who prepares the school lunches.

In the future, we will continue to investigate what nutrition teachers can do to secure time for nutrition education.

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Original**Effectiveness of peptide based oral nutrition supplement to improve gastrointestinal intolerance among patients in Hospital Kuala Lumpur: The E-PEG Study**Jayvikramjit Singh MS¹, Basmawati Baharom¹, Zamtira Seman², Leow Chooi Wah¹, Norsuhaila Sha'ari¹¹ *Department of Dietetics and Food Service, Hospital Kuala Lumpur, Malaysia*² *National Institutes of Health, Selangor, Malaysia*

ABSTRACT *Background and purpose.* Gastrointestinal intolerance (GI) remains a challenge in delivering optimum nutrition support for patients receiving enteral nutrition. Role of peptide-based products (PBP) has shown clinical benefits in improving intolerance. The objective of this study was to determine whether a novel peptide based oral nutrition supplement will help to reduce the gastrointestinal intolerance among hospitalized patients at Hospital Kuala Lumpur. *Methods.* This retrospective study used data of patients seen by Dietitians in 2022. Descriptive analysis was used to describe patient characteristics, prevalence of GI intolerance and reduction of GI intolerance after PBP usage. The changes of GI intolerance score between baseline and after were assessed using the Wilcoxon Signed Rank Test stratified by PBP group. A *p*-value of < 0.05 was set as the cut-off for statistical significance. *Results:* A total of 132 patients were recruited for this study; only 80 patients (60.6%), remained on PBP until end of study. Indications for PBP usage was mainly for GI Intolerance 58 (60.4%) and unspecified indication 21 (60%). Significant association was between calorie intake (*p*=0.047), % of PBP energy consumed from total requirement (*p*= 0.044), reduced frequency of diarrhoea (*p*= 0.018) and lower gastric residual volume (*p*< 0.000). There was significant association (*p*<0.001) between resolved GI Intolerance and usage of PBP till end of study. *Conclusion.* This study describes that PBP is significantly effective in helping patients achieve their energy requirements and reduction in frequency of GI intolerance. However, larger clinical studies are required to yield better in the future.

Keywords: Peptide based product, gastrointestinal intolerance, enteral nutrition, diarrhoea, gastric residual volume

INTRODUCTION

Gastrointestinal (GI) intolerance has always remained a challenge to patients, caregivers, and nutrition care providers causing a less than optimal nutrition therapy (1). There are many studies to date that supports the role of peptide-based products (PBP) in managing GI intolerance with studies producing significant reduction in symptoms of intolerance among patients (2). Additionally, it was shown that prevention and/or management of GI intolerance with the use of PBP can also be cost-effective as it has resulted in minimizing healthcare utilization and cost (3).

GI intolerance can happen in patients with conditions such as celiac disease, chronic diarrhea, cystic fibrosis, early enteral feeding, inflammatory bowel disease (e.g., Crohn's Disease and ulcerative colitis), malnutrition, pancreatic disorders (e.g., pancreatitis), pre/post-operative feeding, and short-bowel syndrome (e.g.,

surgical removal of a portion of the GI tract). Patients with impaired GI function have reduced ability to digest and absorb nutrients and need appropriate nutritional support (4-6).

Patients with GI intolerance are usually unable to tolerate oral nutritional supplements (ONS) containing whole protein or long chain triglycerides and require a product containing hydrolyzed protein and medium chain triglycerides. These products reduce the need for hydrolysis of protein by the brush border peptidases in the intestinal lumen and are more easily absorbed (7-9).

Peptide-based products contain protein that is hydrolyzed or pre-digested into peptides of different size and lengths. Peptide based formulas are commonly high in protein. These products are easier to digest as protein is hydrolyzed into small chain peptides. Hydrolyzed or peptide-based protein systems help improve absorption and tolerance compared to protein systems composed entirely of free amino acids or intact protein (8).

Oral nutritional supplements (ONS) have been shown to be clinically effective in the management of GI

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diseases. Specially formulated ONS for GI intolerance utilize ingredients that may be beneficial in patients with malabsorption or significant GI intolerance (9). Special formulas, including peptide-based protein products that are quickly and efficiently absorbed compared with intact protein, may help minimize the symptoms of GI intolerance (10). Additionally, products containing medium-chain triacylglycerol (MCTs) may provide a more easily absorbable lipid source compared with long chain triacylglycerol for patients with GI disorders, including fat malabsorption (11- 13).

Local data from Malaysia research showed that prevalence of GI intolerance was high gastric residual volume (GRV) (38%), diarrhea (8.4%), and vomiting (2.9%) among hospitalized patients (14-15). Meanwhile, the information on usage of peptide-based products among Malaysian hospitalized patients are scarce with this type of enteral nutrition. Based on this context, this study was conducted to determine whether this type of product will help to reduce the GI intolerance among hospitalized patients at Hospital Kuala Lumpur.

The objective of this study was to evaluate the effectiveness of peptide-based product in treating patients having gastrointestinal intolerance (GI). The specific objective was to investigate whether the improvement and changes of GI intolerance were associated with usage of PBP. Methodology

MATERIALS AND METHODS

Study Type and Design

This retrospective cohort study used Malaysian

Dietetic Care Notes (DCN) KKM/JDS/DC/004/2019 which is the standard documentation form used by dietitians in Malaysia for documenting their nutrition findings and medical records from the Medical Record Department. This study used a universal sampling method that refers to all eligible patients referred and seen by Dietitian that used PBP during 1-year data collection period (1st January 2022 until 31st December 2022). Malaysian DCN consists of complete documented nutrition care process of screening, assessing, planning nutrition intervention and monitoring for patients referred to dietitians. Variables of concern analyzed includes nutritional status, sociodemographic, blood and clinical investigations, GI intolerance (diarrhea; defined as loose stool of ≥ 4 times in a day, abdominal pain/cramping, gas/bloating, constipation and high gastric residual volume; which is defined as residual of more than 500 ml).

Dietary intake of patients on PBP or polymeric/disease specific product were obtained from medical records charted by nurses. Height and weight were used in calculation for body mass index (BMI). A minimum of 5 days follow up of PBP usage by patients was required in order to get adequate data for analysis and results in improvements of GI intolerance as according to Dietitian Key Performance Index (KPI) criteria on tube feeding patients follow up. For patients who were transitioned from polymeric or standard products to PBP, the first day of starting PBP will be considered as Day 1 on product usage and will be followed up for at least once in 5 days.

Table 1. Energy and concentrations of protein, carbohydrate and lipid in oral nutritional supplement (/100g)

	Per 100g
Energy	468 kcal
N sources	
Hydrolyzed Whey Protein*	21g
Carbohydrate	
Maltodextrin	60g
Lipid	
Medium Chain Triglycerides Oil	9.6g
Omega 3	1.8g
Omega 6	0.9g
Evening Primrose Oil	3.7g

* The % of hydrolyzed whey protein used

- Large Peptide (7 amino acid residues) 8.61g/100g (41%)
- Medium Peptide (4 – 6 amino acid residues) 9.28g/100g (44.18%)
- Di and Tri Peptides (2 – 3 amino acid residues) 1.36g/100g (6.46%)
- Free Amino Acids 1.73g/100g (8.22%)

Study Tool

Oral nutritional supplement which was used in this study is a nutritionally complete, well tolerated and easily absorbed peptide based formula for patients experiencing GI intolerance or malabsorption. This product contains 100% hydrolyzed whey protein. The fat blend contains 60% medium chain triglycerides (MCT), an easily digested and well absorbed fat source. The % of MCTs is 60% out of the total fat content 9.60g/100g. Patients that were recruited in this study were those patients that were prescribed with PBP. Benefits of PBP was reported based on improvement or reduction of GI intolerance among patients after using PBP.

Study Population & Sampling Method

All adult patients seen by dietitians using peptide based products in Hospital Kuala Lumpur during the period of 1st January 2022 until 31st December 2022.

Inclusion Criteria

- All patients referred to dietitian by physicians
- Aged 18 years and received at least 75% of their requirement from PBP.
- Tube feeding patients.
- Minimum of at least 5 days on PBP

Exclusion Criteria

- Patients who transitioned back to polymeric or disease specific formula
- Death of patient.
- Medications that cause or induce GI intolerance
- Any malignant disease, psychiatric disorder or obstruction of GI tract
- Patients consuming a non-UNIMED / British Biological PBP or existing PBP product.
- Addition of probiotic/prebiotic or any fiber supplementation

Withdrawal Criteria

Not applicable

Sample Size

We used G*Power version 3.1.9.4 to determine the required sample size for detecting an improvement in GI intolerance with a medium effect size of 0.5, a significance level of 5%, and a power of 80%. As no information on effect size was available for this particular factor, we chose to use Cohen's guidelines for effect size interpretation to determine the target effect size. The sample size calculation showed that a total sample size of 34 participants is required to achieve the desired level of power

Study Visits and Procedures

The data of concern involved patients seen by Dietitian from 1st of January 2022 until 31st December 2022. These data were retrieved from copies of Dietetic Care Notes (DCN) which was stored at Dietetic Clinical Store Office. These data of patients that were followed up by dietitians from the day of referral up to minimum of 5 days of follow up in

Hospital Kuala Lumpur wards. The days of referral and follow ups were within the stipulated time of 1st January 2022 until 31st December 2022. Dietitians of Hospital Kuala Lumpur retrieved the data from the Dietetic Clinical Store Office and entered the variables of concern into SPSS for further analysis. These data collection period commenced from 1st August 2023 until 31st September 2023.

Statistical Analysis Plan

All data was analyzed using Statistical Package for the Social Sciences (SPSS, IBM, Chicago, IL) version 28 Descriptive analysis was used to describe patient characteristics, prevalence of GI intolerance and reduction of GI intolerance after PBP usage. The changes of GI intolerance score between baseline and after were assessed using the Wilcoxon Signed Rank Test stratified by PBP group. Fisher exact test was applied to determine the association between resolved status of GI Intolerance and remained on PBP. A *p*-value of < 0.05 was set as the cutoff for statistical significance.

Risk and benefit to study participants

There is no risk and benefit to the participant as this is a retrospective study which does not involve direct contact with any patient.

Risk Benefit Assessment

This study can help to determine valuable insights into association between PBP and GI intolerance. Treatment using PBP should be considered to treat intolerance towards polymeric or disease specific products which might lead to significant improvement in relation to GI intolerance. Any significant reduction of findings will help in health care utilization related to nutrition therapy. As stated above, there is minimal risk from the investigated product and study procedures. Study findings shall potentially greatly improve treatment outcomes. The expected benefit outweighs the minimal risk to subjects and thus this study should be supported. If any injuries do occur as a direct result of participating in the study, treatment for such injuries shall be provided or paid for by the sponsor

Ethics of Study

Ethical approval was approved from the Medical Research and Ethics Committee, Ministry of Health Malaysia. This research was registered with National Medical Research Register (NMRR) Malaysia bearing the registration number of NMRR ID-23-02521-U1K. The study was performed in compliance with the principles of the Declaration of Helsinki, in accordance with the International Conference of Harmonization Guideline for Good Clinical Practice, and in accordance with applicable regulatory requirements.

Informed Consent/Assent Process

Waiver of consent was granted by MREC in view of retrospective study and no patient / participant contacts.

Privacy and Confidentiality

Subject's names were kept on a password-protected database and was linked only with a study identification number for this research. The identification number instead of patient identifiers was used on subject data sheets. All data will be entered into a computer that is password protected. On completion of study, data in the computer was copied to thumb drives and the data in the computer erased. Thumb drives and any hardcopy data was

stored in a locked office of the investigators and maintained for a minimum of three years after the completion of the study. The thumb drives and data will be destroyed after that period of storage. The data will be kept as confidential and monitored by principle investigator. All data will be disposed/destroyed three (3) years upon publishing this study. Study data will not be shared with any third party.

RESULTS**Table 2. Description of sociodemographic characteristics (N= 132)**

Variable	Remained on PBP until end of study		Total
	Yes, n (%)	No, n (%)	
Gender			
Male	46 (63.9)	26 (36.1)	72
Female	34 (56.7)	26 (43.3)	60
Age	62.0 (22.5)	67.0 (18.5)	132
Ethnicity			
Malay	50 (66.7)	25 (33.3)	75
Chinese	16 (50.0)	16 (50.0)	32
Indian	13 (59.1)	9 (40.9)	22
Others	1 (33.3)	2 (66.7)	3
BMI Classification			
Underweight	0 (0)	1 (100)	1
Normal	21 (75.0)	7 (25.0)	28
Overweight	5 (45.5)	6 (54.5)	11
Obese	2 (40.0)	3 (60.0)	5
Diabetes Mellitus			
No	56 (64.4)	31 (35.6)	87
Yes	24 (53.3)	21 (46.7)	45
Hypertension			
No	52 (64.2)	29 (35.8)	81
Yes	28 (54.9)	23 (45.1)	51
Dyslipidaemia			
No	73 (62.4)	44 (37.6)	117
Yes	7 (46.7)	8 (53.3)	15
Heart Disease			
No	70 (60.3)	46 (39.7)	116
Yes	10 (62.5)	6 (37.5)	16
Indication of PBP Usage			
Intolerance	58 (60.4)	38 (39.6)	96
Unspecified	21 (60.0)	14 (40.0)	35
Pancreatic Insufficiency	1 (100)	0 (0)	1
Duration on PBP	7.0 (5.0)	1 (0)	8
Reason for drop out			
Lost follow-up	0 (0)	48 (100)	48
Change product	0 (0)	2 (100)	2
Death	0 (0)	1 (100)	1
Discharged	0 (0)	1 (100)	1
Status of GI tolerance on PBP			
Resolved	40 (100)	0 (0)	40
Not resolved	5 (83.3)	1 (16.7)	6
Improved	18 (100)	0 (0)	18
Incomplete	0 (0)	35 (100)	35
Not Available	17 (51.5)	16 (48.5)	33

- PBP = Peptide Based Product

A total of 132 patients were recruited for this study; only 80 patients (60.6%) remained on PBP until end of study. Among these 80 patients, 46 (39%) were male while 34 (56.7%) were female. Reasons for dropouts were mainly due to loss of follow ups

(36.3%), change of products (1.5%), death (0.8%), and discharge (0.8%). Indications for PBP usage was mainly for gastrointestinal intolerance 58 (60.4%) and unspecified indication 21 (60%).

Table 3: Description of association between resolved status of GI Intolerance and remained on PBP till end

		Remained on PBP until end of study				Chi-square	p-value
		YES		NO			
		n	%	n	%		
Status of tolerance on PBP	Resolved	40	50.0	0	0	93.99	<0.001
	Not resolved	5	6.3	1	1.9		
	Improved	18	22.5	0	0		
	Incomplete	0	0	35	67.3		
	N/A	17	21.3	16	30.8		
Total		80	100	52	100		

N/A= Not Available

In terms of status of GI intolerance in patients who were on PBP, resolved GI intolerance cases such as diarrhoea and high aspiration were 40 (50%), while improved status was 18 (22.5%). Only 5 (6.25%) patients on PBP GI intolerance remained unresolved throughout the study period (Table 2). Results from Table 2 also showed that there was significant

association ($p < 0.001$) between resolved GI Intolerance and usage of PBP till end of study.

Results from Table 3 showed significant associations were noted between PBP consumption with calorie intake ($p = 0.047$), % of PBP energy consumed from total requirement ($p = 0.044$), reduced frequency of diarrhoea ($p = 0.018$) and lower gastric residual volume ($p < 0.001$).

Table 4. Description of median difference of parameter stratified for those remained on PBP until end of study.

Variable	Remained on PBP until end of study					
	Yes			No		
	Before	After	p-value	Before	After	p-value
Haemoglobin	9.25 (2.33)	9.45 (2.25)	0.419	8.80 (1.65)	8.80 (1.45)	0.3173
Total Protein	61.50 (12.25)	61.50 (11.75)	0.294	60.00 (8.50)	60.00 (8.50)	0.3173
Albumin	18.00 (7.75)	16.50 (6.75)	0.579	19.00 (6.00)	19.00 (6.00)	>0.999
Urea	8.60 (16.88)	8.60 (10.28)	0.038	6.90 (30.20)	6.90 (28.30)	0.3173
Creatinine	68.00 (41.50)	59.50 (84.25)	0.089	82.00 (54.00)	82.00 (54.00)	0.3173
Sodium	139.50 (7.75)	141.50 (9.25)	0.651	138.00 (13.00)	138.00 (13.00)	>0.999
Potassium	3.55 (1.03)	3.20 (0.45)	0.862	3.80 (0.55)	3.80 (0.55)	0.3173
Calcium	2.12 (0.25)	2.20 (0.29)	0.280	2.40 (0.75)	2.40 (0.75)	0.3173
Magnesium	0.88 (0.14)	0.90 (0.12)	0.046	0.83 (0.17)	0.83 (0.17)	>0.999
Phosphate	0.81 (0.65)	0.66 (0.64)	0.850	0.77 (0.81)	0.77 (0.81)	0.3173
Fasting Blood Serum	7.60 (2.83)	7.50 (3.15)	0.444	7.20 (6.10)	7.20 (6.10)	>0.999
Calorie Intake	1494.00 (646.50)	1551.00 (288.00)	0.047	1464.00 (879.00)	1464.00 (879.00)	0.3173
Protein Intake	70.80 (32.75)	71.00 (23.35)	0.123	60.50 (59.85)	60.50 (59.85)	>0.999
% PBP Consumed from total requirement	91.00 (39.00)	93.00 (18.00)	0.044	94.00 (51.00)	94.00 (51.00)	>0.999
Frequency of diarrhoea	3.00 (2.00)	2.00 (1.50)	0.018	3.00 (2.00)	3.00 (2.00)	>0.999
Gastric Residual Volume	160.00 (111.50)	90.00 (123.50)	<0.001	110.00 (113.50)	110.00 (113.50)	>0.999

Results represented for Median (IQR), $p < 0.05$ was considered significant association

DISCUSSION

Our study demonstrated that more calories were tolerated with PBP compared to other ONS products. This may be due to the fact that this study product contains higher energy than other standard product. This study reported a significant association between PBP consumption with increased calorie intake ($p=0.047$). It correlates with previous study conducted which showed that patients using PBP consumed more calories compared to other standard products (22). According to the same study, tolerance of gradual increment of calorie and protein was better in patients who received PBP compared with standard product, allowing for higher percent of increase in calorie and protein provided between days 3 and 7 after tube feeding initiation (22).

However, no significant improvement in protein consumption was found in this study. Our study showed significant association of reduced diarrhoea ($p<0.014$) and reduced gastric residual volume ($p<0.001$) after transition of product from standard to peptide-based product.

These results were further supported by studies done by Wang et al, 2022 and Liu et al, 2016 (23, 4). Literature reviews support the evidence that peptide-based products, such as the study product is effective in patients having GI intolerance such as diarrhoea and high aspiration (6, 7, 24-26). Nearly 73% of patients on PBP showed improvement while using the product.

Possible cause of improved tolerance to PBP is mainly attributed to the physiological properties of PBP as a semi elemental formula. PBP contain larger quantity of MCT oil which does not influence the release of cholecystokinin; therefore, reducing secretion of pancreatic enzymes and gallbladder emptying. It also contains hydrolysed whey protein, which may lead to better protein absorption (24). PBP typically contains a significant amount of medium-chain triglycerides (MCTs) in comparison with standard products whose lipid component typically contain more long chain triglycerides (LCTs). These types of fat requires less lipolysis thus ensuring better absorption and less intolerance (27). Hydrolysed proteins and more easily digestible fats including medium-chain triglycerides tend to supply protein and fats to the best suitability of patients with impaired gastrointestinal function (27).

Limitations of our study was that it has a small sample size and it was a single centre study. A prospective intervention study with larger sample size would yield stronger clinical results. The main strength of our study was that the results were similar and consistent with other studies that indicates the effectiveness of PBP in improving GI intolerance among hospitalised patients (2, 10, 20).

To the best of our knowledge, this is also the first study that has been done in Malaysia involving

peptide based product among GI intolerance hospitalised patients. Clinical implications of our findings is that transition to peptide based diet from a polymeric or disease specific formula among GI intolerant patients is a beneficial intervention towards achieving nutrition therapy goals by improving GI intolerance among patients with diarrhoea, abdominal pain/cramping, gas/bloating, constipation and high gastric residual volume.

CONCLUSION

This study describes that PBP is significantly effective in helping patients achieve their energy requirements and had a significant reduction in frequency of GI intolerance. Further study with large coverage may give a concrete or better results in future

CONFLICT OF INTEREST

Authors wish to declare there are no conflict of interest in this study.

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Special Report: Asian Young Dietitian Network

1. Purpose of the Asian Young Dietitian Network

*Organizer: Asian Nutrition and Food Culture Research Center, Jumonji University,
Ajinomoto Global Communication Department*

The Asian Young Dietitian Network (AYDN) was established with the idea of continuing the workshop "Let's Talk about the Future of Young Dietitians in Asia" at the Asian Congress of Dietetics (August 19–21, 2022) (photo). The central issue was whether the social evaluation of dietitians was appropriate and, if not, how to improve it. Simply put, the questions are as follows: Are dietitians' salaries high enough compared to those of other medical professionals? Is the dietitian the central figure in providing dietetic guidance to patients? Are school lunch teachers in Japan evaluated enough as teachers? Most of the answers are negative, and there is a need to consider improvement measures.

One of the reasons why dietitians are not evaluated sufficiently is probably their low research and information dissemination abilities. To become a university teacher, research and papers are generally required. The fact that there are few faculty members with RD qualifications at universities that train dietitians is due to a lack of research ability. The future of young dietitians is

also uncertain due to the lack of sufficient education for students who will become RDs in the future.

The reason there are few studies and papers on dietetics is probably because people do not realize that dietetics is a challenging subject. Many people think that dietetics is a simple science that involves just preparing meals and that there is little need for research. Is that idea correct? The core research in the field of dietetics is not just knowledge of dietetics and cooking but a wide range of fields such as medicine, food science, biochemistry, statistics, psychology, sociology, economics, and philosophy. Dietetics for the elderly is an easy-to-understand example. Providing delicious food alone is not enough to increase the appetite of elderly people who have a decreased appetite; it also involves the difficult task of motivating them to eat. Do we dietitians have the knowledge and skills to conduct such research? Unfortunately, No. AYDN was created to address these issues.



Fig 1. Photo of young dietitian workshop at the 8th Asian Congress of Dietetics 2020

2. The birth of the Asian Young Dietitian Network

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² *Ajinomoto Co., Inc (Global Communication Department, Japan)*

In recent years, many Asian countries have faced common nutritional issues such as “double burden” and “triple burden” malnutrition. These issues are significantly impacting the health and well-being of our populations. One of the factors for these two burdens is food habits. Dietitians have the capacity and the skill to educate the population to eat healthily. However, the recognition of the dietitians’ role in society varies among Asian countries, some of them working in national nutritional programs, and in other countries, dietitians have less participation in the Government or Universities. Furthermore, the sharing of knowledge and nutritional application of own countries with other dietitians from Asian countries are limited. To change these scenarios, it was essential to create opportunities for young dietitians to share knowledge, engage in discussions, and generate new ideas. These steps are vital in addressing nutritional issues in the Asian region. Therefore, we would like to announce to the readers of the *Asian Journal of*

Dietetics that in Asia a new young dietitian network was formally established on December 1, 2023. The kick-off of the network was conducted with the participation of twelve countries in Tokyo, Japan. The objective of this network is to enhance communication among dietitians of Asia to improve the nutritional status of this region and improve dietitians’ reputations¹.

To reach the objective of the network, it will focus on the following three main activities (Figure 1): 1) Sharing information and experiences about participants’ country nutritional issues and experiences they have which could contribute to other participants, 2) Conducting researches and publish them to an academic journal (*Asian Journal of Dietetics*) to increase skills in investigation and research to find the problems and solutions in a logical thinking. 3) Carry out webinars and workshops to increase scientific and non-scientific knowledge.

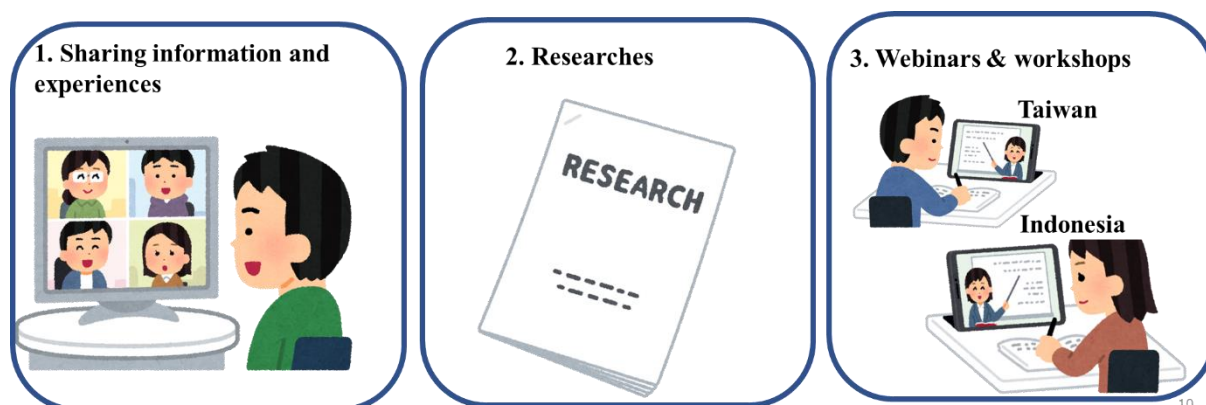


Fig 1. Future activities of Asia Young Dietitian Network

Some of the activities were started in November 2023, in Tokyo, such as visiting a hospital and an elementary school to explore the school lunch. These activities were done to understand the work of dietitians in Japan and to know the infrastructures of each organization to prepare menus for patients or children.

Visit to Japanese Hospital (Nerima Hikarigaoka Hospital)

The visit was organized by Prof Yamamoto

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Shigeru, RD., Ph.D. from Jumonji University. Young Asian dietitians from the network toured the Nerima Hikarigaoka Hospital, guided by Japanese counterparts. They observed the hospital's food operations, from arrival to patient service, including unique technologies like the meal tray retherm system and various cooking appliances. They had a comprehensive discussion on the Nutrition Care Process and nutrition management processes providing insights into the hospital's strategic approach to addressing patients' nutritional needs. These discussions could be beneficial for dietitians in the network participants' respective countries.



Fig 2. Entrance of the hospital Nerima Hikarigaoka Hospital



Fig 3. Meal serving method for patients.



Fig 4. Thermograph measuring food temperature before serving.

Visit to elementary school for school lunch (Funabori Elementary School)

The visit to the elementary school was organized by Prof. Yamamoto Shigeru, RD., Ph.D. Network participants toured a Japanese school's kitchen and meal service, even sampling the children's meals.

School dietitians shared their roles in monitoring children's health, educating them on healthy eating, using seasonal foods, and incorporating sustainability concepts like SDGs. The cleanliness of the cooking area, akin to a hospital's, is not typically seen in Asian countries.



Fig 5. School lunch: rice, stir-fried vegetables with shrimp, sweet potato with sautéed liver, apple, milk.



Fig 6. The trolley with the leftover food after lunch was almost none.

Kick-off meeting of AYDN

It was conducted at the headquarters of Ajinomoto Co., Inc. building. There was a greeting from

Ajinomoto Co., Inc. (Ms. Yoko Ogiwara), Jumonji University (Prof. Yamamoto), and a representative of the network (Ms. Nguyen Thu Trang).



Fig 7. Ajinomoto Co., Inc. (Ms. Yoko Ogiwara), Jumonji University (Prof. Yamamoto), and representative of the network (Ms. Nguyen Thu Trang) (From left to right)

The representative person of each country introduced the food culture, common ingredients, and nutritional situation in their countries, as well as how to become dietitians and workplace. Finally, they

shared their expectation in the network. From the representative countries, Bhutan representatives could not come to Japan and, therefore, attended online.

Table 1. Representative of each country

Bangladesh Sumaya Islam	Bhutan (ONLINE) Chimi Wangmo	Cambodia Ry Manydine	India Naaznin Husein	Indonesia Wita Rizki Amelia	Japan Risako Okuyama
Malaysia Georgen Thye	Philippines Marita De Guzman	Sri Lanka Amal Zaffroon Firouaw	Taiwan Chu Tzu Yun	Thailand Samitti Chotsriluecha	Vietnam Nguyen Thu Trang



Fig 8. Picture during the Kick-off meeting. Ms. Sumaya Islam introduced the situation in Bangladesh

Table 2: Summary of the nutritional issues in each country

Country	Bangladesh	Bhutan	Cambodia	India	Indonesia	Japan
Nutritional issues	<ul style="list-style-type: none"> Anemia 6-59 months old Anemia (women 15-49 y-old) Food insecurity Diabetes (DBT) 	<ul style="list-style-type: none"> Undernutrition (child) NCDs Anemia (child, women) Vitamin A ↓ Fruit & Veg ↓ Salt intake ↑ 	<ul style="list-style-type: none"> Malnutrition (maternal, children, elderly) Non-communicable diseases (NCDs) 	<ul style="list-style-type: none"> Malnutrition Anemia Obesity Diabetes Cardiovascular diseases and hypertension (HT) 	<ul style="list-style-type: none"> Chronic Energy Deficiency in Women Malnutrition in the elderly and under 5 y-old Obesity (adult) Anemia (adult) 	<ul style="list-style-type: none"> NCDs (cancer & heart diseases) Obesity (child) Malnutrition (elderly) Vegetable intake ↓ Salt intake ↑
Country	Malaysia	Philippines	Sri Lanka	Taiwan	Thailand	Vietnam
Nutritional issues	<ul style="list-style-type: none"> Overweight & obesity Malnutrition (child) NCDs (DBT, HT, hypercholesterolemia) Physical act ↓ Fruits & Vegetable intake ↓ 	<ul style="list-style-type: none"> Stunting Overweight & obesity Anemia High fasting blood sugar Physical inactivity 	<ul style="list-style-type: none"> Diabetes Obesity Anemia (women 15 – 49 y-old) Low Birth Weight Malnutrition (child) Food insecurity 	<ul style="list-style-type: none"> Overweight & obesity Malnutrition (child) NCDs Physical act ↓ Fruits & Vegetable and milk intake ↓ 	<ul style="list-style-type: none"> Overweight and obesity Metabolic syndrome (adult) Sarcopenia (elderly) Malnutrition (hospitalized) Post-Covid DBT 	<ul style="list-style-type: none"> Childhood overweight and obesity Malnutrition (child, elderly) Metabolic syndrome

*Red colored letters: issues that the representative of each country considers as the most important, currently.

From Table 2, we can clearly see the most pressing issues in each country are quite similar to each other with overweight, obesity, and malnutrition with anemia as the center. Most East and Southeast Asia countries like Malaysia and Philippines focused on overweight and obesity while South Asian countries like Bangladesh and Sri Lanka were more heaved on malnutrition in children. This elucidated the current “double burden” situation in Asia which requires dietitians in every country to work together to

overcome these unbalances.

The network participants, brimming with proactivity and enthusiasm, are eager to collaboratively enhance their home countries' nutritional conditions and elevate the status of dietitians across Asia. While the journey towards our network's objectives may be long, it is not impossible. As the authors of this letter, we look forward to seeing how this network grows and evolves in the near future.

3. Bangladesh's Report

Sumaya Islam¹⁺

¹ *Health and Hope Hospital, Dhaka, Bangladesh*

Visit to Japanese Hospital (Nerima Hikarigaoka Hospital)

Among the several places we visited according to the Asian Young Dietitian Network (AYDN) program schedule, the first was Nerima Hikarigaoka Hospital. Upon entering the hospital, I felt very inspired by the dedication of the staff and their use of innovative technology. I realized that it is a place where health and well-being are not just aspirations but a reality enjoyed by all.

The doctor-dietitian-staff coordination, teamwork, and understanding were praiseworthy. The insightful presentation on elderly nutrition and care for aspiration pneumonia was very helpful. The practical strategies shared were invaluable. We are eager to absorb and utilize this knowledge in our own country. The personalized, balanced, and varied meal support with calorie and nutrient information shows patient-centric care. The vegetables grown in the nutrition room were also very inspiring. These practices encourage healthy eating habits and ensure everyone receives the necessary nourishment.

We carry the knowledge and inspiration gained at Nerima Hikarigaoka Hospital with us and are committed to applying and sharing this in our own country.



Fig 1. The vegetables are grown in the nutrition room

Visit to elementary school for school lunch (Funabori Elementary School)

Funabori Elementary School lunch program combines responsibility, sustainability, and healthy eating habits. The balanced, nutritious (which also provides a portion of RDA), delicious, free-of-cost,

varied meals are praiseworthy. Their emphasis on fresh, local food ingredients and some school-grown vegetables is notable. The target for preventing food waste is a sign of meticulous planning and portion control. The student volunteers serving their peers fostered a sense of community and teamwork. The dietitian's engagement in cooking and nutrition education classes empowered children to make healthy choices beyond the lunchroom, shaping positive habits for life.

In Bangladesh, since 2010 Government with WFP has been investing in the National School Feeding program in Government primary schools. By 2022, more than 3 million children in 104 sub-districts had been reached with fortified biscuits and in the same location hot meals. The Government is planning to include seasonal fruits, eggs, bun, and milk to increase diversity. Bangladesh Government is a member of the Global School Meals Coalition.

Finally, as a young dietitian, I left Funabori school with a heart full of inspiration and actionable ideas which I will share and try to establish in my country.

Kick-off meeting of AYDN

Bangladesh emerged as an independent and sovereign country on 16th December 1971. According to the 2022 Bangladeshi census, its population size is 169,828,921. The age structure of Bangladesh is 0-14 yrs: 26.45%, 15-64 yrs: 67.72%, >64 yrs: 5.83%.

Bangladeshi food is a celebration of deliciousness, diversity, and spice. Influenced by the country's geography and religion, it revolves around the iconic saying, "Fish and Rice make a Bengali." It has 260 freshwater and 475 marine fish species alongside a year-round bounty of fruits and vegetables. Winter adds another layer of delight with its array of delicious sweet cakes (pitha). Its everyday ingredients are- rice, fish, pulses, vegetables - and its magic-making seasonings like salt, turmeric, chili, garlic, ginger, hot spices (gorom moshla), and the unique five-spice blend (panch phoron). There are many traditional dishes in Bangladesh. Among them, the two mentioned dishes, Panta Ilish and Soft Khichuri/Vuna Khichuri capture the essence of Bangladeshi cuisine. Panta –Ilish: Soaked rice forms the base, infused with the delicate Hilsha fish fry and mashed vegetables. A touch of salt, onion, green chili, and fried red chili adds a vibrant spark, making every bite delightful. This dish has its roots in tradition. Bengalis celebrate the first day of their calendar with this dish.

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Fig 2. Bangladesh's traditional dish: Panta Ilish

Soft Khichuri/Vuna Khichuri: Beyond its role as complementary feeding for babies, this Khichuri is a popular choice for rainy days or a special occasional meal. Rice and pulses are cooked together with vegetables, while egg, meat, fish, or organ meat like liver can add depth and protein. The taste is enhanced by the flavors of salt, chili powder, turmeric, cumin, coriander, and a blend of hot spices, ensuring a warm and satisfying experience. While Bangladeshi cuisine has incredible flavor and diversity, it's crucial to acknowledge the underlying nutritional challenges faced by the country. These challenges are often most acute among women of reproductive age and young children.

Alarming Rates of Nutritional Issues:

- Anemia: 37% of women aged 15-49 suffer from anemia (1), this translates to immense health risks for both them and their children.
- Food Insecurity: 24% experienced food insecurity on average in August 2023 (2).
- Childhood Anemia: The situation is concerning for younger children, with 43% of those aged 6-59 months experiencing anemia (1).
- Diet-Related Non-Communicable Diseases: Bangladesh had 13.14 million diabetes cases in 2021 (3).

Government Initiatives:

The government of Bangladesh is actively addressing these challenges through policies and programs like:

- National Strategy on Prevention and Control of Micronutrient Deficiencies (2015-2024): This strategy focuses on improving access to diverse and micronutrient-rich foods.
- National Nutrition Policy and National Nutrition Services

Across various Asian countries, food habits are intricately woven with culture, history, geography, weather, and religion. Rice, noodles, bread, fish, meat, and vegetables are the main food items. Countries geographically close to each other often share a love for similar spices and seasonings. However, there lies a complex picture of malnutrition: under-nutrition, over-nutrition, and micronutrient deficiencies. The prevalence of diet-related non-communicable diseases is also increasing in this region. The types of malnutrition and their prevalence differ significantly across and within countries. Socio-economic conditions, lifestyle choices, and dietary habits are potential causes behind this scenario. While shared food habits paint a unifying picture, the region's battle against malnutrition demands an understanding of its diverse forms and underlying causes.

AYDN envisions a future where young dietitians from across Asia are not only connected but also empowered to make a difference in the field of Dietetics and Nutrition. AYDN will foster friendship and knowledge exchange through conferences, workshops, and online platforms creating a supportive network for young professionals. AYDN will participate in collaborative research to address regional challenges and contribute to global knowledge.

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4. Bhutan's Report

Chimi Wangmo

Bhutanese dietitians perceive the Asian Young Dietitian Network (AYDN) as a networking platform tailored for young dietitians, offering crucial support, providing resources, and presenting opportunities - all geared towards fostering professional development for dietitians from various countries. AYDN is exclusively designed for young professionals in the field. Networks of this nature play a vital role in delivering essential support, resources, and networking opportunities to facilitate professional growth. The benefits associated with such networks are diverse, encompassing information sharing, career guidance, improved job opportunities, and the overall enhancement of professional skills.

We think AYDN can play a crucial role in shaping the future of nutrition in several ways:

1. **Innovation and Adaptation:** AYDN members bring fresh ideas, innovation, new perspectives, and a willingness to adapt to emerging trends in nutrition. These networks serve as platforms for discussing and implementing new ideas.
2. **Collaboration and Networking:** Networking within AYDN can lead to partnerships, joint projects, and the sharing of diverse experiences and insights.
3. **Professional Development:** AYDN is instrumental in supporting ongoing professional development, ensuring that young dietitians stay informed and updated about the latest research. This contributes to the continuous improvement of nutritional practices.
4. **Mentorship Programs:** Establishing mentorship programs within these networks can help bridge the gap between experienced professionals and those starting their careers. This fosters knowledge transfers and skill development.
5. **Global Collaboration:** AYDN can facilitate global exchanges of knowledge, best practices, and cultural perspectives on nutrition.

Therefore, we think that our country should join this network. It will facilitate the exchange of invaluable knowledge and expertise among emerging dietitians. Through participation, our country can gain access to a diverse pool of professionals who can share insights, best practices, and innovative approaches to nutrition and dietary challenges. Secondly, it opens collaborative opportunities on both national and international levels. Moreover, the network serves as a platform for continuous professional development. We can benefit from workshops, conferences, and training programs tailored to the latest advancements in the

field. This not only enhances the skills of individual dietitians but also contributes to the overall improvement of nutritional practices within the country.

Kick-off meeting of AYDN

Unfortunately, this time kick-off meeting program, none of the Bhutanese members were able to attend physically, however, while participating virtually in the meeting, we gained valuable insights by attentively listening to our fellows' presentations. The shared information was impressive, especially the discussion on the diverse food cultures they possess—highlighting a stark contrast to our main challenge of limited food diversification. Furthermore, these countries exhibit well-updated data on nutritional issues, demonstrating a more advanced understanding of nutrition and research, even in the face of larger challenges and issues.

We also had the opportunity to share our country's presentation online. In the initial segment, we provided an overview of Bhutan—a landlocked country nestled in the Eastern Himalayas, recognized for its distinctive development and governance approach. With a population surpassing 700,000, Bhutan boasts an estimated life expectancy of around 72 years, with Buddhism being the predominant religion.

Moving beyond the overview, the presentation delved into Bhutanese food culture—a unique cuisine shaped by geography, climate, and Buddhist traditions. Characterized by simplicity, reliance on local ingredients, and distinct regional flavors, the cultural significance of food is evident in shared and celebrated meals, reflecting Bhutan's rich heritage.

Bhutanese cuisine highlights staples like red rice and buckwheat, particularly common in the central and eastern regions. The national dish, Ema Datshi, is a spicy chili and cheese delight. The culinary landscape further includes dairy products, momos (dumplings), and traditional beverages like Suja (butter tea). Additionally, fermented foods such as sikam, ezay, and pickles enjoy popularity.

While Bhutan has made strides in healthcare and nutrition, it grapples with ongoing nutritional challenges. Issues include iron deficiency anemia, micronutrient deficiencies, and undernutrition in the population. The double and triple burden of malnutrition remains a concern, alongside challenges related to limited dietary diversity, changing dietary patterns, rural-urban disparities, and food security in vulnerable communities.

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Fig 1. Bhutan's food culture

In conclusion, we outlined the steps and requisites for individuals aspiring to become Dietitians in Bhutan. This involves obtaining a relevant educational background, gaining practical experience through training and internships, and registering for preliminary and main examinations. Successful candidates can pursue roles in hospitals, ministries, and other sectors. The presentation also touched upon continuing education and licensing or accreditation

opportunities.

Expectations from the network may vary, but we believe this network will significantly contribute to professional development. It will offer opportunities for professional growth, skill enhancement, and access to the latest advancements in the field of nutrition. Additionally, there will be valuable networking opportunities where members can build a strong professional network, connect with experienced professionals, and engage with colleagues from different countries. There is an expectation for mentorship programs to guide and support young dietitians in their career paths. Members can anticipate access to educational materials, workshops, and seminars to stay updated on nutritional trends, research, and best practices. The network is expected to provide various career opportunities, foster collaboration and teamwork, and advocate for representation within the profession. Furthermore, attending events and conferences organized by the network will be a valuable aspect of membership. Overall, being with AYDN, learning new insights and ideas regarding the knowledge and understanding of nutrition and dietetics, we will collaborate on all the positive activities and adopt them if feasible for our country's future endeavors.

5. Cambodia's report

Ry Manydine¹

¹ Phnom Penh, Cambodia

Visit to Japanese Hospital (Nerima Hikarigaoka Hospital)

It was such a great experience to be able to visit the Nerima Hikarigaoka Hospital. I received such great hospitality from the staff and Dietitians there. We started the day by listening to the presentation relating to diseases and Nutritional solutions, hence there were also a lot of questioning and answering sessions among all the other members from individual representative countries. As for my impression, I think that the hospital had such an incredible working system in nutrition care. Everything is so well

organized, and every staff member is well aware of their own responsibility. Moreover, we also had a kitchen tour inside the hospital. I would say that the hospital has one of the most functional kitchens that I have been to before. From the equipment to menu planning, everything was done so heartedly. I was mostly impressed by the modern rice cooker that pipes the cooked rice straight up to the meal preparation station. I believe that Japan's dietitian system is a great example for Cambodia to follow. With this type of efficient system, it will be so much better for the development of public health issues.



Fig 1. Modern rice cooker

Visit to elementary school for school lunch (Funabori Elementary School)

My impression of visiting Funabori Elementary School, I can feel that the dietitians there handle the food for every child with love and care. The Dietitian did a great job in planning all the children's meals, varying from normal healthy kids to kids with allergies. Also, to get the children more to international cultures, meals from different countries are also given out to them. Moreover, the kitchen was very nice and clean. Visitors or children can see the cooking from the outside glass, which I believe can deepen and widen our understanding of what school lunch is. I have learned that being a dietitian at school is not an easy job. Many kids that are still growing come to school every day to learn so for us as dietitians, it is our job to make sure that they receive a good amount of nutrients that they need to grow. I want

to also use the Japanese school lunch system to apply in Cambodia. I am concerned that a lot of kids in Cambodia are malnourished due to the lack of a school lunch system.



Fig 2. School lunch meal

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Kick-off meeting of AYDN

For my presentation on the Kick-off meeting day, I was slightly introduced to Cambodian food culture, eating habits, and seasoning ingredients. More importantly, I also talked about the most important Nutrition problem right now in Cambodia which is “Children Malnutrition”. After listening to other countries' repetitive members' presentations, I understand that a lot of countries in Asia have some of the most common Nutrition problems. With this factor,

I believe that working together as a community will help solve some of the problems. Since the number of Cambodian dietitians is comparatively very low, I hope that more Cambodians will be interested in learning and understanding more about Dietetics. Also, I hope that all the country members can still work together as an “ASIAN YOUNG DIETITIANS NETWORK” for a very long time and see each other success as an achievement.

6. India's Report

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This report delves into the accomplishments and impact of the Asian Young Dietitian Network, an initiative led by Professor Shigeru Yamamoto, Chief Editor of the Asian Journal of Dietetics. Established to foster collaboration, knowledge-sharing, and friendship among dietitians across Asian nations, the initiative has proven to be a valuable platform for academic, scientific, and cultural growth. This article provides a comprehensive overview of the forum's objectives, execution, and the significant contributions it can make to dietetics.

Introduction:

The Asian Young Dietitian Network is an exemplary concept, conceived by Professor Shigeru Yamamoto from Jumonji University, seeking to establish a collaborative network for dietitians across Asian countries. The forum's inception gained momentum through online meetings, creating a foundation for camaraderie among participants.

Objectives:

The primary objectives of the forum include:

- a. **Networking and Collaboration:** Facilitating collaborative efforts among member nations to enhance the growth and support of dietitians.
- b. **Knowledge Exchange:** Providing a platform for young researchers to publish work, participate in conferences, and share insights.
- c. **Cultural Understanding:** Utilizing country presentations to explore both similarities and diversities of food culture, dietary habits, and health challenges, fostering a comprehensive understanding of each member nation.

Initiative Execution:

The meticulously planned visit to Japan, supported by Ajinomoto, included a stay in Tokyo. The pre-kickoff experience showcased Japan's technological advancements and the locals' helpfulness. Academic endeavors during the initiative involved country presentations, delving into food culture, dietary habits, and common health problems. In-depth discussions on dietetic systems, ethics, and legalities were evident in well-crafted presentations and collaborative learning experiences.

Welcomed by the President of Jumonji University

The meeting was very engaging as the President genuinely took time to understand the program. He encouraged the Network and was proud of Professor Yamamoto's initiative of fostering the Asian Young Dietitian Network.

The visit to the university was beautiful as it had Mount Fuji in the background. The university grounds were beautifully covered with trees full of autumn orange and red trees. The vibe at the university was very positive and interaction with all dietetic students of Masters and Post Graduate programs and Ph.D. Programs were interesting.



Fig 1. The picture was taken on the rooftop of Jumonji University

Visit to Japanese Hospital (Nerima Hikarigaoka Hospital)

A hospital visit, graciously facilitated by Ms. Trang and Professor Yamamoto, allowed an immersive experience in understanding feeding practices, meal distributions enteral and parental feedings, nutritional assessments, and patient care. The chief dietitian, a very empowered and central to the dietetic department introduced the activities they do throughout the day. The president also walked us through detailed presentations on the presence of Malnutrition in three out of 4 patients in the hospital and rehabilitation centers. This was due to high numbers of the aging population. Other concepts of Iatrogenic Sarcopenia, Aspirational Pneumonia, Nutrition Care Process (NCP), and nutrition management process were deeply discussed. The president also spoke on the new Rehabilitation Nutrition care process. It was very insightful to see extreme detailing on proper positions - bed whilst feeding

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Pneumonia patients. Any occupation can evaluate swallowing and eating without equipment was a very interesting learning in early detection. The cooking and plating of these meals a previous day for breakfast so that the staff doesn't have to rush from home at 2 am was a great learning curve. State-of-the-art equipment at the hospital including cooking utensils, gas ranges, ovens, and the unique rice suction machine which reduces manual labor -an innovation of the chief dietitian was well worthy of praise. The dietetic department stood robust, bringing in steady income for the hospital, and played a pivotal role in hospital administration and leadership.



Fig 2. Proper positioning to feed patients with dysphasia.

Visit to elementary school for school lunch (Funabori Elementary School)

A highlight of the initiative was the school lunch program, emphasizing the role of dietitians in planning and executing menus. Students actively participated, incorporating sustainability, and achieving UN Sustainable Development Goals. explores the unique and innovative aspects of the Japanese school lunch program, focusing on a practical learning experience hosted by the Dietitian of Funabori Elementary School. The central role of the dietitian is planning and executing menus, addressing allergy and cultural dietary requirements, and fostering a holistic learning environment. Students actively participate in food-related activities, including kitchen gardening and vegetable peeling sessions, promoting sustainability and nutritional awareness. The article underscores the achievement of UN Sustainable Development Goals, specifically in reducing food wastage and ensuring nutrition security for children. The school lunch costs

290 yen to be paid by parents. Rest all infrastructure cost, Salaries of Food and beverage staff and Dietitian was paid by Government. Some schools even provided lunch at no extra cost to parents. Insights into the program's cost structure and government subsidies provide valuable information for educators and policymakers.

Kick-off meeting of AYDN

The Kick-off meeting was attended by Global Communication (Ajinomoto Co., Inc.), Professor Yamamoto, and Press and media persons. The meeting began with a welcome by the President of Ajinomoto. That was followed by Professor Yamamoto's Vision and purpose of the Network. Ms. Trang gave a detailed presentation of the Vision, Mission, and Next steps for the Network.

This was followed by the country presentation by each member country elucidating their cultural cuisines, and ingredients which were mainly used as a part of their cuisine. The health challenges faced by every country, the dietetic systems, and the Legalities of dietetic practice were covered.

The meeting was concluded by a vote of thanks by Ms. Andrea -Dietitian of Ajinomoto.

Conclusion

Under the guidance of Professor Yamamoto, the Asian Young Dietitian Network has successfully achieved its objectives, fostering international collaboration, cultural exchange, and academic growth. It emphasizes the forum's contributions to the field of dietetics and its role in strengthening bonds among dietitians across Asia.

a. Continued Collaboration: Sustain and expand the network for ongoing collaboration and knowledge exchange.

b. Regular Conferences: Host periodic conferences to facilitate academic discussions and updates.

c. Dietitian network Programs: Encourage practicing dietitians and dietetic students to share clinical practices, case studies, and research for scientific academic growth.

Future Prospects:

The Asian Young Dietitian Network has laid a robust foundation for continued collaboration and growth. The lessons learned and relationships formed will undoubtedly contribute to the advancement of dietetics in the Asian region. This explores the forum's relevance, particularly in the context of India hosting the ACD 2026 conference.

7. Indonesia's Report

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At the Asian Congress of Dietetics (ACD) 2022, we declared the importance of nutrition and the urgency to fight malnutrition for the well-being of all people (1). Furthermore, international cooperation and collaboration are needed to achieve the objectives mentioned in the Yokohama Declaration of the ACD 2022, including malnutrition issues, especially in Asian countries. We believe that the Asian Young Dietitian Network (AYDN) is one of the fruits of the ACD 2022, as some initial members have been working together for the ACD 2022. We are honored to represent Indonesia in the AYDN and participate in the kick-off meeting held in Tokyo, Japan.

Visit to Japanese Hospital (Nerima Hikarigaoka Hospital)

We visited Nerima Hikarigaoka Hospital on November 29th (Fig. 1-2). Upon arrival at the hospital, we were warmly welcomed and given a well-organized tour. It appears this hospital is concerned about the security of personnel and patients from the front door. The hospital has more than 30 medical departments with 457 beds. The hospital has comprehensive emergency, children's, and adult, including maternal healthcare. Not only does Nerima Hikarigaoka Hospital provide healthcare services independently, but it also strives to cooperate with the residents and the surrounding healthcare facilities.

Nutrition and dietetic services have been integrated with a computerized system. Even since dietitians record nutritional care in the system, dietary changes are integrated with the food service system. Thus, changes in the diet of patients in the inpatient ward can be directly connected to the preparation of processing until the serving of the patient's individualized diet. Every new patient admitted to the hospital has been screened for malnutrition risk using Malnutrition Universal Screening Tool (MUST), which was reported in the health electronic record. Furthermore, the dietitians visit the new patients at risk of malnutrition by conducting a comprehensive nutritional assessment, diagnosing the nutrition problem, and planning the nutritional intervention individually.

According to the discussions with the senior

dietitian, Ms. Keiko, conducting a comprehensive nutritional assessment is difficult. Every nutritional assessment is not only obtained from the results of each patient's health record, but direct assessments, including anthropometric measurements and physical/clinical examinations, are also necessary. Moreover, reviewing the dietary pattern and the ability of each patient to consume hospital food, as well as observing medical problems through discussion with the nutrition support team in some cases, to determine nutritional interventions, are essential. Patients suspected of sarcopenia have been further assessed following Asian Working Group for Sarcopenia (AWGS) guidelines (3), and it is proven that quite a lot of people experience sarcopenia after undergoing treatment in a hospital. When patients with decreased nutritional status are discharged from the hospital, they receive nutritional support through oral nutrition support (ONS) or enteral nutrition (EN). Besides providing nutritious food, the dietitian mainly conducts bedside counseling for every inpatient, even though the room for counseling is available.

The visit revealed that the Nerima Hikarigaoka Hospital had the latest innovations. The hospital has benefitted from its latest technology related to dietetic services, which differs from hospitals in Indonesia. First, the hospital has an integrated medical record information system. Second, the hospital provides an automated vacuum machine to carry the desired amount of rice directly to the huge rice cooker; it could help minimize human labor empowerment and can be done on a scheduled basis according to food processing planning. Third, the cooling and warming system for cooked food using a tray makes it easier to prepare each meal. The foods can be produced as early as one day before the food is served. Fourth, the management of quality control of the diet was handled by catering nutritionists so that the quality of food safety is guaranteed. Fifth, the fee for every counseling session provided by a registered dietitian, around 2,000 JPY, was regulated by government law so that it may increase the hospital's income. Sixth, each meal was served on a special food-grade plate with a cover, so it may reduce the cost better than using disposable meal covers (for example, plastic wrap).

The latest technology, especially the integrated computerized healthcare system, might be the greatest achievement in Indonesian hospitals for the next 10-

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15 years. It is beneficial for hospitals in terms of effectiveness and cost efficiency, and it may also help health workers to provide the best services for patients. Despite the shortage of human resources, technology might be the best solution to achieve better coordination in managing health service

Visit to elementary school for school lunch (Funabori Elementary School)

We visited Funabori Primary School on November 30th, when the school had a marathon festival for the younger students (Fig. 3-4). The school had a modern, well-furnished building, including the school kitchen and the classrooms where the children had lunch. Directed by a dietitian, around ten cooks prepared the meal every school day for about 800 students. Commonly, the parents need to pay for the food cost of the meal, but the authority of Edogawa Ward, where the school is located, has started to fund the school lunch program in their area so that the parents do not have to pay for the meals (4, 5). They provide a unique meal for each day of the year, carefully deal with children with food allergies, and educate the students on the importance of food daily. On the day of our visit, the dietitian adjusted a school lunch menu fitted for the school sports occasion. Indonesia does not have a nationwide school meal program now. Learning from Japan, we hope to establish a school meal program for Indonesian schoolchildren in the future.



Fig 1. AYDN visit to Funabori Primary School

Kick-off meeting of AYDN

We had the AYDN kick-off meeting on December 1st at Ajinomoto Headquarters in Tokyo (Fig. 5-6). Representing Indonesia, we presented an overview of the country, food culture, nutrition issues, regulations

regarding dietitians, and how we feel as dietitians in Indonesia.

Indonesia has a rich culture due to its location, climate, and history. For decades, the influences of surrounding countries have generated an indigenous Indonesian food culture. The rich food culture and the development to access foods, among many factors, might have contributed to increased obesity prevalence among adults in the past decades. Parallely, stunting and wasting among children persist, especially in the impoverished areas of the country, with a lack of access to resources, including food and beverages. The government has been implementing intervention programs to fight these issues. Dietitians of Indonesia have a vital role to play in the intervention programs. The regulations regarding the dietitian professions and roles are on their development to achieve better performances and outcomes for the sake of society's health.

During the kick-off meeting, we recognized that the AYDN member countries have similar malnutrition problems in their countries. We have faced some improvements and a lot of setbacks in our efforts to eliminate malnutrition so far. We believe that AYDN is a good community where passionate young dietitians from Asia might share their insights and work together to help many people achieve better, sustainable nutrition and health.

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8. Japan's Report

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Visit to Japanese Hospital (Nerima Hikarigaoka Hospital)

I visited Nerima Hikarigaoka Hospital on Nov 29. The hospital is located in Nerima Ward, Tokyo, Japan, and it was reformed in 2022. I felt that the equipment in the hospital was very new, and the kitchen where meals were prepared was fully equipped. At that hospital, I learned about the compassion of dietitians who put patients first.

The first thing that I learned is that dietitians are careful about the position when patients are eating on the bed and the environment. In terms of nutritional management, it did not come to my attention to the position that patients eat, but after the visit, I realized its importance. I learned that I must be careful that patients do not press her/his stomach with her/his legs when is sit on the bed. Regarding the environment, I learned that patients eating with other people in the cafeteria would lead to the enjoyment of their meals. The second thing that I learned was that the appearance of food is important for patients as it is one of the factors that greatly influences appetite. In particular, in a dysphasia diet, if the food is put in a blender, various ingredients are mixed, and the color will be bad. At this hospital, I felt that it looked good because it was well-colored and kept in shape. The third thing that I learned was that some of the vegetables grown indoors which were grown by dietitians are used to prepare the patient's lunch. I thought it was a very good idea and I thought that patients were happy to be able to eat fresh vegetables, even though the amount was limited. In this way, I felt that this hospital not only manages the nutrition of patients but also provides care considering how to make patients happy.



Fig 1. Vegetables grown in the dietitian's room.

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Visit to primary school for school lunch (Funabori Primary School)

There were two things that impressed me the most when I saw the school lunch program. The first was to create a menu without using ready-to-use products. The second thing is that there was very little leftover food. I provide school lunches at a special needs school, and I often use ready-to-use products. This is because the use of these products reduces the burden of cooking work and is less time-consuming, otherwise, we won't be able to finish making school lunches on time. Moreover, they even made their own desserts such as melon bread using Komatsuna, a local vegetable. In addition, there was a wide variety of menus, and dishes from various countries were incorporated into the menu. I felt that incorporating a variety of menus into school lunches would help children accept and understand diverse cultures. In order to provide such a wide variety of menus prepared by hand, I feel that the cooperation of the cooks and kitchen staff is indispensable. I could imagine the dietitian actively communicating with the cooks daily by explaining the purpose of that day's meal and asking for their cooperation. In Japan, school lunches are called "living teaching materials". This is because, through the actual school lunches provided, children can learn such as appropriate meal intake, food culture, and manners during the meal. I felt that the school lunch of Funabori Elementary School reaches the standards of "living teaching materials". In addition to food culture, they provide school lunches related to seasons, as well as incorporate the SDGs, which is a hot topic at present. In addition, I felt that the Principal of the school and other teachers understand the intentions of the dietitian and are reflected in the education of children. In this way, I felt that the cooperation with other teachers on school lunches led to the low of leftovers among children.



Fig 2. Amount of leftover food for one class

Kick-off meeting of AYDN

At this meeting, information was shared and discussed on the food culture of the twelve countries that participated, major nutritional issues, and the situation of dietitians. The most interesting topic for me was whether dietitians are respected or not in their countries. When I work as a dietitian in Japan, I sometimes feel a lack of respect. Therefore, I was very interested in the situation of dietitians in other Asian countries. When asked about the opinions of other countries, some of them felt respected. For this reason, I thought that dietitians in Japan were necessary to

make more appeal. As the discussion during the meeting suggested, dietitians need to write and publish more papers. Dietitians in Japan conduct research and make presentations. However, I feel that there are many cases where the presentations are made only in the local area or inside Japan without spreading the outcome of the research abroad. I think that dietitians in Japan need to look more abroad and actively disseminate information. I hope that through this network, countries will be able to work together to find a way to solve their nutrition challenges and to give back what they have learned to their own countries.

9. Malaysia's Report

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The Asian Young Dietitian Network (AYDN) held its inaugural kick-off meeting in Japan from 28/11/23 to 3/12/2023, bringing together dietitians from diverse Asian countries in Tokyo. This significant initiative, generously sponsored by Ajinomoto Co., Inc., aimed to foster collaboration and knowledge exchange among dietitians across the region. As part of the program, participants had the opportunity to visit various institutions, including the Nerima Hikarigaoka Hospital, Jumonji University, Funabori Primary School for School Lunch, and the kick-off meeting at Ajinomoto Co., Inc. head quarter (HQ).

Visit to Japanese Hospital (Nerima Hikarigaoka Hospital) (29/11/2023)

The visit to Nerima Hikarigaoka Hospital left a lasting impression on me. From the outset, the warm reception by the head dietitian set a positive tone. Her friendly and bubbly personality created an inviting atmosphere, complemented by the backdrop of ginkgo trees with leaves turning a vibrant yellow. A group photo beneath these trees marked a symbolic start to our insightful visit.

Upon entering the hospital, the cleanliness and organization were immediately evident. The group was ushered into a meeting room, where a medical doctor and the head dietitian presented on the nutrition support team and its initiatives. Subsequently, a comprehensive tour exposed us to various facets of the hospital, including the dietetics department, food service kitchen (Fig 1), and a hospital ward.

The presentations and tour provided valuable insights into the work of dietitians at Nerima Hikarigaoka Hospital. It became evident that dietitians play a crucial role in the multidisciplinary approach to patient care. Every admitted patient undergoes screening and intervention by a dietitian, emphasizing the significance of nutritional support during hospitalization. Notably, dietitian consultations are covered by insurance in Japan, underscoring the recognition and importance of their role.

The integration of technology in food services showcased Japan's innovative practices. From ordering systems to food preparation and quality monitoring, technology-enhanced efficiency, resource management, and ultimately improved patient care. The automatic rice cooking system served as a notable example of creative and effective technology use. The meticulous attention to detail in creating an optimal

dining environment was particularly impressive. The emphasis on proper feeding positions and environmental considerations highlighted a holistic approach to patient nutrition — a facet often overlooked in other settings.

In comparison to my experience in Malaysia, where dietitian consultations are not covered by insurance, the Japanese model stands out as a potential avenue for improvement. Addressing this disparity could enhance accessibility to dietitian services and improve patient outcomes. The successful implementation of technology in various aspects of healthcare, particularly in the nutrition care process and food service ordering system, serves as a model for future endeavors in my home country. Learning from Japan's experience, we can strive for the effective integration of technology to streamline processes and ensure patient safety.

Looking ahead, Malaysia has significant opportunities for advancement over the next 10-15 years. Advocating for insurance coverage of dietitian consultations is crucial to enhancing public health by increasing access to nutritional expertise. Additionally, incorporating technology into our work processes, such as online nutrition care documentation and advanced food service ordering systems, holds promise for enhancing efficiency and patient care. Continued collaboration and knowledge-sharing with Japanese institutions, like Nerima Hikarigaoka Hospital, are essential for ongoing learning and improvement. Strengthening relationships within the Asian Young Dietitian Network and fostering ties with institutions like Ajinomoto will be crucial in implementing positive changes in our home countries.



Fig 1. Photos of AYDN at the Nerima Hikarigaoka Hospital

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Visit to primary school for school lunch (Funabori Primary School) (1/12/2023)

Our visit to Funabori Primary School coincided with their sports day, and the lively scene of kids running around with parents and teachers cheering set a cheerful tone. Welcomed by the schoolteacher and dietitian, we changed into indoor slippers and went to a bright meeting room that doubled as a dining area. The school's neat, organized, and sunny environment left a strong impression, especially considering its 100-year history.

After a quick briefing, we got a peek into the kitchen through large windows (Fig 2). The kitchen staff, wearing protective gowns, showcased impressive cleanliness. The corridor walls featured educational posters on food and nutrition, serving as handy learning tools (Fig 3). After that, we returned to the meeting room for a presentation by the school dietitian about her role, and routines, and a Q&A session. The visit wrapped up with a chance to enjoy the tasty school lunch.

The visit highlighted the deep importance of the school lunch programme in Japan. It is not just about feeding students but creating a positive relationship

with food and nutrition from a young age. This foundational habit-building contributes to the development of a healthy and productive nation as these practices persist into adulthood. The involvement of students in distributing food to their peers emerged as a valuable opportunity for fostering accountability and independence—essential life skills that echo beyond the school years.

In Malaysia, the absence of a structured school lunch system stands in contrast to the Japanese model. Students have the freedom to purchase food from school canteens based on personal preferences and use their funds. Notably, government schools in Malaysia lack dedicated school dietitians, a role more commonly found in international schools. Considering the Japanese model, there's a case for Malaysia to think about having a school lunch system. Advocating for its importance could create job opportunities for dietitians. Introducing a school lunch system might also help with early nutrition education, addressing the high prevalence of Non-Communicable Diseases (NCDs) in the country. Funabori Primary School's experience is a valuable reference for imagining a healthier future for Malaysian schoolchildren.



Fig 2-3. AYDN visited the Funabori Elementary School lunch

Kick-off meeting of AYDN (1/12/2023)

The Kick-off meeting, hosted at the prestigious Ajinomoto HQ, commenced with a warm welcome from Prof Shigeru Yamamoto (Jumonji University) and senior management from Ajinomoto Co., Inc. (Global Communication Department). Subsequently, each participating dietitian from various Asian countries delivered a concise 10-minute presentation, setting the stage for collaborative discussions and insights.

In my presentation, I provided an overview of Malaysia, touching on its capital, Kuala Lumpur, population, and the rich cultural tapestry formed by its diverse races (Fig 4). I delved into Malaysia's food culture, illustrating how it is shaped by the influences of various ethnicities. Two iconic Malaysian dishes, Nasi Lemak and Asam Laksa, were highlighted, along

with staple ingredients in Malaysian cooking. Shifting focus, I addressed nutritional challenges in Malaysia, emphasizing the high prevalence of overweight in both adults and children, as well as the alarming rates of diabetes issues exacerbated by changing eating habits and insufficient exercise (1). I discussed government initiatives like the KOSPEN program (2) and the Malaysian Dietitians' Association's strategies to enhance dietitians' visibility through annual Nutrition Month and Dietitians' Day celebrations. Concluding my presentation, I shared my vision for AYDN, aiming to foster collaboration among Asian countries, enabling the exchange of knowledge, experiences, and funding support for regional nutrition initiatives.

The presentations from fellow dietitians left a lasting impression, showcasing their deep understanding of their own country's food culture,

nutritional challenges, and visionary approaches for improvement. The passion for dietetics resonated in each presentation. A common thread emerged—the shared challenges faced by our countries, such as the rising prevalence of Non-Communicable Diseases (NCDs), the double burden of childhood malnutrition, and the potential for enhancing the role of dietitians. This collective insight highlighted the abundant opportunities for collaboration to address these shared concerns.

My expectation from AYDN is to strengthen the bonds and friendships established through various activities and initiatives. Proposed initiatives include small-scale research projects, such as dietitian surveys, to understand the challenges faced by young dietitians in our respective countries. With this data, AYDN can strategically plan activities to support the growth and success of young dietitians. Additionally, envisioned activities include webinars, monthly virtual meetings, and annual physical meetings, providing diverse platforms for ongoing collaboration and learning.

In conclusion, the Kick-off Meeting of the Asian Young Dietitian Network (AYDN) has successfully ignited collaboration and knowledge exchange among dietitians across Asia. From insightful visits to institutions in Japan to presentations highlighting common challenges, the meeting emphasized shared dedication to addressing health issues. AYDN's commitment to ongoing collaboration, research projects, and supportive initiatives for young dietitians bodes well for the network's role in advancing nutrition and healthcare throughout Asia. The meeting stands as a pivotal moment, laying the groundwork for a healthier, more connected future.

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Fig 4. Presentation at the AYDN Kick-off meeting

10. Philippines's report

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Being a part of the Asia Young Dietitian Network (AYDN) is both a privilege and an opportunity. Privilege because we got to meet and interact with other Asian dietitians and Opportunity because we got to learn and observe how Dietitians work in their countries. From November 28th to December 1st, Asian Dietitians were invited to Tokyo Japan for the Kick-off meeting of the Asian Young Dietitian Network. Alongside this, we were able to visit Nerima Hikarigaoka Hospital and Funabori Primary School.

Visit to Japanese Hospital (Nerima Hikarigaoka Hospital)

For a Dietitian like me who is not exposed to hospital work, I am impressed with the cleanliness and orderliness of the hospital. The visit is only short but I am amazed by the innovative and advanced technologies that they use in their kitchen. I also observed the vegetables that are grown in the nutrition room which I think is a good practice for every hospital to serve fresh vegetables to the patients. Ordering and preparing meals are different in our country since we do not have freezers and food heaters to hold meals, we prepare food on the same day. Meal supplements are prepared by the dietitian in our country while here they serve ready-to-eat/drink meal supplements. If there is anything that I would like to learn more about and apply in my country is their nutrition care system and data system. I think Asian Dietitians need to understand and teach each other hospital best practices to be able to apply them in their country in that way, we can uplift the respect of other professionals.



Fig 1. Meal dividing room in the hospital

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Visit to elementary school for school lunch (Funabori Elementary School)

Visiting Funabori Elementary School for me is the most memorable one. I know how disciplined the students are in Japan but it was my first time witnessing it. Since our country does not have that many school dietitian and my knowledge of their duties and responsibilities is limited, this is my first time to learn all of it. School dietitian work is not easy because she deals with children and I respect the way she and the school teach the students about nutrition. She assesses, monitors, and keeps all data of all students to see their progress when it comes to their health. Meal planning is also a difficult task for her especially if it needs to cater to a range of dietary requirements and food allergies. Aside from this, I also learned that students are not allowed to bring snacks or lunch. In our country, students either bring their snacks and lunch or buy in school canteens. If our country is open to applying this practice, it means more demand for school dietitians and fewer malnourished children in schools.



Fig 2. Cooking process at the school lunch

Kick-off meeting of AYDN

It was a great honor to represent my country Philippines at the kick-off meeting of the Asian Young Dietitian Network.

The Philippines is an archipelago in Southeast Asia where food culture and cuisine are a fusion of more than a hundred distinct ethnolinguistic groups. These groups' cuisines evolved over the centuries with all nearby countries with varied influences from Chinese, Spanish, and American cuisines that melded to meet local preferences. Rice and root crops are our staple foods. The typical Filipino meal is composed of vegetables, seafood, dairy, meat (pork, poultry, beef),

and rice. The blend of flavors is a combination of sweet, sour, and salty taste. Vinegar and soy sauce are some of the common ingredients in dishes like Adobo and tamarind in Sinigang. Filipino cuisine even though it continues to evolve as new techniques, styles of cooking, and ingredients find their way into the country. The Philippines is suffering from a triple burden of malnutrition including stunting and wasting, micronutrient deficiencies, and overweight and obesity (1). The Department of Health (DOH), National Nutrition Council (NNC), FAO, WHO, and UNICEF jointly call upon the Public, civil society organizations, academe, and the private sector to take action to prevent and manage childhood overweight and obesity (1). That being said, overweight and obese children are more likely to stay obese into adulthood and to develop noncommunicable diseases (NCDs) like diabetes and cardiovascular diseases at a younger age (1-2). Factors contributing to the increasing problem of overweight and obesity include poor diets, inadequate nutrition, failing food systems, and limited physical activity (1-2). Prevention is the most feasible option for curbing childhood obesity. Several programs and policies were made and implemented to address overweight and obesity. Nutrition interventions are a key part of obesity management and this is led by dietitians. To become a Registered Nutritionist-Dietitian in the Philippines, one should finish a 4-year Bachelor course in Nutrition and Dietetics with 1200 hours of on-the-job training/internship in hospitals, food service companies, and community health facilities. After which, he/she can take the licensure examination with a 75% passing rate (3). Dietitians in the Philippines can pursue graduate studies and doctorate studies. Renewal of license is every 3 years and to be able to renew, he/she may earn 45 CPD units from webinars or annual conferences and secure a Certificate of Good Standing from AIPO. Filipino RNDS have the privilege to work in the US by taking the Registered Dietitian exam; this is because of the Mutual Reciprocity of 1993 (3). Being a Dietitian is a flexible profession, it can develop a career in various fields,

hospitals, academe, public health, corporate, private practice, etc. It is a fun learning profession even though it carries credibility and responsibility. But not all people are aware of the gravity of our career that we are either not recognized or constantly being compared as less important to other medical professionals. In a way, I still feel respected but still need to think about how to uplift the profession.

Listening to other countries' reports, I learned that when it comes to food culture and cuisines, we have similarities and differences, especially in the taste and presentation of the food. Some of us share the same nutrition issues and learning about their programs and interventions made me think of the possibilities that can be implemented in our country. Being a dietitian is very different in each country and I find Indonesia and Japan a little bit complicated to become a Dietitian but when it comes to on-the-job training both Japan and the Philippines have almost the same hours to complete. I think for advantages and challenges of being a dietitian are almost the same for all of us. We share the same sentiments when it comes to recognition and low salaries from other professionals.

My expectations from the network include connection, opportunities, and collaboration. Somehow Asian Young Dietitians are now connected and building a good relationship would be an opportunity for us to learn more by sharing, exchanging knowledge, and learning success stories from each country's nutrition programs for future collaboration. I am looking forward to AYDN's activities and making Asian Dietitians stronger and well-respected.

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11. Sri Lanka's Report

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The Asian Young Dietitians Network (AYDN) convened its inaugural meeting from 28th November to 1st December 2023 in Japan, featuring representatives from Bangladesh, Bhutan, Cambodia, India, Indonesia, Malaysia, Philippines, Sri Lanka, Taiwan, Thailand, Japan, and Vietnam. Hosted by the Asian Nutrition and Food Culture Research Center at Jumonji University and Ajinomoto Co., Inc. Global Communication, Japan, the event provided dietitians with insights into Japan's dietetic management system in hospitals and school meal programs. Participants engaged in a fruitful exchange of ideas, focusing on the unique aspects of each country's food culture, nutrition practices, and health management strategies at the kick-off meeting. The discussions also delved into the future activities and collaborative initiatives envisioned by AYDN.

Visit to Japanese Hospital (Nerima Hikarigaoka Hospital) on 29th of November 2023

Nerima Hikarigaoka (NH) Hospital, a 400-bed facility in Japan, is committed to delivering comprehensive, multidisciplinary care. NH Hospital's Dietetic Department stands out as an excellent example of nutrition management by using advanced technology, standardized protocols, and a commitment to collaborative care. The Dietetic Department manages the nutritional needs of both inpatients and outpatients, providing personalized and evidence-based nutritional support. Dietitians collaborate closely with the food and beverage department to create well-balanced menus adhering to ensure standard therapeutic diets, adhering to HACCP protocols in food and nutrition services reflects NH Hospital's commitment to patient safety. Dietitians at NH Hospital work as integral members of a multidisciplinary team. Inspired by the advanced healthcare practices at NH Hospital. My vision is to implement an electronic patient medical record system, integrating it seamlessly with the existing meal ordering system. By modernizing the documentation process, we aim to elevate the standard of nutrition care in Sri Lanka without compromising on efficiency and accuracy.

Visit to elementary school for school lunch (Funabori Elementary School) on 1st of December 2023

A visit to Funabori Primary School (FPS) revealed

a well-structured lunch program with a diverse menu, offering 25 dishes monthly from South Asian, European, and North American cuisines. This diversity enriches students' culinary experiences and promotes cultural understanding. A dedicated professional dietitian oversees the program, carefully planning nutritionally balanced meals and providing the nutrition education program for children, contributing to overall health and academic excellence. FPS prioritizes organic farming & food safety, implementing stringent measures to ensure safe and healthy meals. The school accommodates students with food sensitivities and allergies. Government support enables the school to provide meals for free. The school minimizes edible food waste through careful planning, setting an example for sustainable living. Learning from successful models in Japan, implementing a sustainable school meal program in Sri Lanka addresses immediate and long-term nutritional needs, with a key focus on reducing food waste. Also, it guarantees the nutritional adequacy of the school meals, and a team of professional dietitians should be engaged.



Fig 1. AYDN joined the school lunch

Kick-off Meeting on 2nd of December 2023

Ms.F.A, Z.Firouse, a Dietitian represented Sri Lanka. Sri Lanka's food culture, shaped by its Silk Route location and colonial history, reflects a diverse tapestry, the cuisine centers around the classic rice and curry dish. Rice, a staple, is paired with various curries, emphasizing protein sources of fish, chicken, and eggs, with vegetables creatively integrated into dishes.

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Coconut milk or oil is a key cooking component, providing significant fat. With around 20 spices and herbs like turmeric, pepper, chili, cumin, cinnamon, etc. In Sri Lanka, the field of dietetic and nutrition care in the healthcare system established over the past 25 years. The regulatory body of dietitians is the Sri Lanka Medical Council, while the Dietitians' Association of Sri Lanka serves as the professional

body. To qualify as a registered dietitian in Sri Lanka, individuals must attain a minimum education level of a four-year degree in Food Science and Nutrition. Alternatively, an MSc or PhD in Dietetics, and Human Nutrition is also accepted. A crucial component is a mandatory one-year internship under the guidance of a registered dietitian.



Fig 2. Sri Lanka presentation at the AYDN Kick-off meeting

Sri Lanka faces a mounting health challenge with the increasing prevalence of non-communicable diseases. However, the nation's major nutritional issue lies in the triple burden of malnutrition, particularly affecting children under the age of 5. A national program called "Thripasha" plays a pivotal role in addressing this issue. Additionally, Sri Lanka has undertaken significant efforts in the revision of its national nutrition policy and the development of updated food-based dietary guidelines.

The participant Asian dietitians remain resilient, collectively contributing to the upliftment of nutrition standards and the advancement of their profession in their respective nations. Despite facing challenges such as low wages and unethical nutrition practices, intrusions into the dietetic field. To build relationships, exchange information, and work together to address common challenges in the field, the AYDN need aims to provide a collaborative platform for young dietitians

throughout Asia. As involved members of AYDN, dietitians from Sri Lanka are keen to take a role in advancing the dietetic field in the region. To ensure the interchange of knowledge and the growth of nutrition practices throughout the continent

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12. Taiwan's Report

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Asian dietitians commonly face issues such as their profession being undervalued, inadequate exposure and publication of academic papers, lack of respect from other professionals, and low salaries. To address these challenges, the Asian Young Dietitian Network (AYDN) was formed at ACD 2022, providing a very valuable communication pathway and experience for young dietitians in Asia. I am very happy to have the opportunity to participate again in the kick-off meeting

held by AYDN in Tokyo. This kick-off meeting was mainly divided into three parts. The first part involved understanding the work and environment of clinical dietitians in Japan by visiting Nerima Hikarigaoka Hospital. The second part focused on understanding the work of dietitians in Japanese school lunch programs through a visit to Funabori Elementary School. Finally, the meeting concluded with discussions on the future plans and goals of AYDN.



Fig 1. ACD, 2022



Fig 2. AYDN, 2023

Visit to Japanese Hospital (Nerima Hikarigaoka Hospital)

Nerima Hikarigaoka Hospital is a comprehensive hospital with 457 beds, which is different from the large hospitals commonly seen in Taiwan. In Japan, the medical hierarchy and levels of specialization are more finely divided than in Taiwan, allowing each hospital to focus more on development in their specific fields.

Here are a few points that left a deep impression on me during the visit to Nerima Hikarigaoka Hospital:

Labor Shortage Solution: Taiwan has been facing a severe labor shortage in recent years, especially in the catering industry. Hospital kitchens, which need to work with shift schedules, are particularly impacted. Nerima Hikarigaoka Hospital uses a system called "Meal Shuttle" which allows for the preparation of the next day's breakfast in the afternoon of the previous day. This reduces the number of chefs required to come in at 4 a.m. to cook breakfast, thus lowering staffing needs and costs.



Fig 3. Meal Shuttle at the hospital

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Automated Rice Cooking System: The hospital has a fully automated rice cooking system that can complete the process from washing rice to cooking with the press of a button. This also helps to mitigate the burden of staff shortages.

Comprehensive Electronic Medical Record System: This system facilitates clinical dietitians in writing nutrition care records, reducing the workload in clinical settings.

Lower Dietitian-Patient Ratio: The ratio of clinical dietitians to patients in Japan (1:40-50) is much lower compared to Taiwan (1:200-300). This allows clinical dietitians to provide more comprehensive care to patients.

The aforementioned points are areas where Taiwan can learn and emulate in the future. However, aspects that involve changes in national laws and policies will require collective efforts and advocacy from the entire dietitian community in Taiwan.

Visit to elementary school for school lunch (Funabori Elementary school)

Japan's school lunch program is considered a model for the world. Beyond providing nutritionally balanced meals, the most prominent and globally relevant aspect of their approach is "Food and Agriculture Education." This comprehensive approach not only focuses on the nutritional value of the meals but also educates students about food sources,

agriculture, and the importance of a balanced diet. This holistic perspective helps to instill healthy eating habits and a deeper understanding of food and nutrition from a young age, which is an aspect that many countries could benefit from adopting. What struck me the most is that the effective implementation of Food and Agriculture Education has achieved the goal of zero waste.

Taiwan's school nutrition lunch policy faces several challenges:

Limited Variety of Dishes: The government mandates that meals be served in a format of four dishes and one soup, which hampers the diversity of meals.

Low Meal Costs: The fees collected from students' parents range between 1 to 2 US dollars. This amount covers all costs including ingredients, manpower, facility equipment, and utilities like water and gas. In Japan, although a similar fee of around 2 US dollars is charged, it is only used to cover the cost of ingredients, with the government subsidizing the other expenses.

Incomplete Implementation of Food and Agriculture Education: Taiwan has not yet fully implemented and practiced Food and Agriculture Education. However, there is good news: in 2023, related legislation was passed, raising hopes that Taiwan can advance towards adopting a Food and Agriculture Education system similar to Japan's in the future.



Fig 4. Zero Waste at school lunch

Kick-off meeting of AYDN

During the kick-off meeting, I shared with other countries the various nutritional challenges Taiwan is currently facing, with obesity being the most pressing issue. As of 2023, over 50% of adults in Taiwan are overweight or obese. This issue of obesity is also a common problem across many Asian countries. Therefore, AYDN can play a crucial role in the future by facilitating ongoing exchanges and collaborations. Through these efforts, member countries can jointly research and find solutions to effectively address the obesity epidemic in Asia. This collective approach can leverage shared experiences and strategies, potentially leading to more effective and culturally sensitive

solutions to combat obesity in the region.

What impressed me during the discussions was the severe issue of female anemia faced by many countries, such as India, Indonesia, and Bangladesh, which is more pronounced compared to Taiwan. Through these exchanges, Taiwan could potentially offer strategies to collectively address this problem. Moreover, concerning the issue of obesity, Thailand's experience with implementing a sugar tax (being the first country in Asia to do so) could serve as a valuable reference for Taiwan in formulating future policies to tackle obesity. Learning from Thailand's outcomes and the effectiveness of the sugar tax could provide insights into potential approaches for reducing sugar

consumption and addressing obesity-related health issues in Taiwan.

After the kick-off meeting, I shared my experiences and learnings with my colleagues and supervisors at the hospital, as well as with other dietitians through my social media networks. There was considerable interest in the future development of AYDN, and the initiative received high praise for its

progress. Many young dietitians in Taiwan are also keen to become part of AYDN, showing a growing enthusiasm for international collaboration and exchange in the field of nutrition. This interest highlights the recognition of the importance of global networking and knowledge sharing in addressing nutrition-related challenges.



Fig 5. Kick-off Meeting

13. Thailand's Report

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Visit to Japanese Hospital (Nerima Hikarigaoka Hospital)

With the glad welcome from Ms. Keiko Hirose (registered dietitian, RD), Dr. Matsumoto (Medical Physician), and her team, we were so impressed with the organization and workflow of dietitians in Nerima Hikarigaoka Hospital. RD has a crucial role in nutrition support and nutrition management. Dietitians not only have the potential for nutrition therapy and counseling but also have proven to be valued of cost-benefit.

From the point of view of the dietitian's role in the hospital, we appreciate the integration of IDDSI into the hospital diet. In Thailand, during the development of IDDSI into hospital food standards, we already launched IDDSI in the Thai language and IDDSI Menu which was led by Varanya Techasukthavorn.

Visit to elementary school for school lunch (Funabori Elementary School)

Health and nutrition awareness can be started at school, Funabori Elementary School showed me that point. Without a doubt, while the Japanese school lunch program was very strong and effective, dietitians took an important part in creating menu plans and activities to enhance nutrition awareness in young children. From farm to table can be adapted into school, plantation activities are a great activity for children to grow fruit and vegetables, and after that, your love and care for food be a part of your dish. The children can manipulate lunch food hygiene by helping together food-serving, which represents that the food that you ladle is the food your friends eat, food is the way to hold us together. I, myself never had appreciated these little, tiny things like this before

Kick-off meeting of AYDN

First, we shared sharing own country's food culture, food diversity, and nutrition problems, which let us have insight into various information about local country food and nutrition-related problems. In Thailand, rice was a staple food with a side dish, in which the main ingredients were meat, poultry, fish, seafood, and vegetables. Thai spices are highly varied

and diverse, which contributes to the complex of taste and flavor. According to the plenty and complexity of food and ingredients, dietitians should have knowledge based on regional and local food specifications.

Second, Thailand has country-specific nutrition problems such as metabolic syndrome in public health, an increasing number of geriatric populations, and malnutrition in hospitalized patients, which turn to complicated nutrition issues in Thailand. In order to handle these nutrition problems, the government and medical organizations also working to collaborate to drive Thailand's nutrition status better. We endorsed a diabetic remission program to help type 2 diabetes mellitus with obesity can be remission from the disease. We promote healthy organization programs, healthy food, active physical activity, balanced working, and a better workplace, to help working adults have better health and mental. Thai Dietetic Association in cooperation with leaders in IDDSI programs launched the IDDSI Framework and Descriptors in Thai Language, and 46 menu dysphagia diets according to IDDSI to prevent and treat malnutrition elderly. We support the nutrition program for the nutrition support team in collaboration with the Thai Society of Parenteral and Enteral Nutrition, to motivate the nutrition care process in the hospital.

From the third point of view, the kick-off meeting gives us a chance to share and learn from other countries, we can see some countries that have further development of nutrition programs in many aspects such as public health, public policy, school programs, and hospital programs. These are great and valuable experiences that we will treasure when we get back to our country. Finally, the conclusion of the kick-off meeting brought us to consider how to make our people have better nutrition and a better life. We should investigate the specific plans and expand the collaboration, with the programs to enhance nutrition by knowledge webinars, workshops, and research. Moreover, a network of Asian dietitians keeps us more collaborative and friendly, which further persuades us to make better nutrition in Asia.

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14. Vietnam's Report

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Vietnam is one of Asia's fastest-developing countries, and with it comes an industrialized food culture and several nutrition challenges. The Vietnamese dietetics system, on the other hand, is still in its early stages, with the first bachelor course in nutrition only recently celebrating its 10th anniversary. There has been a shortage of human resources in several nutrition disciplines; as of 2023, Vietnam has just 785 dietitians across the country. When compared to other Asian nations, Vietnam's dietetics still faces multiple problems, such as underdeveloped legal frameworks, a lack of expertise in hospital systems, and school nutrition. As a result, as some of Vietnam's first dietitians, we are overjoyed to be a part of the Asian Young Dietitian Network (AYDN). We believe that by joining this network, we will be able to learn a lot from our colleagues from similar cultures and share our shared concerns, allowing us all to grow as dietitians. We have already received a lot of valuable lessons and information from the members and professors in Japan after joining the kick-off meeting program from November 28th to December 1st, 2023, in Tokyo, Japan. We would like to share some of our experiences and opinions from the kick-off meeting program in this report.

Visit to Japanese Hospital (Nerima Hikarigaoka Hospital)

We were welcomed by friendly and generous Japanese registered dietitians (RD). From the meeting and lectures of the hospital's head of the nutrition department, Ms. Keiko Hirose, RD, and Dr. Matsumoto, we were impressed with how well-organized the management is, the flow of the nutrition care plan is a corporation of nurses, and attending doctors to the RD. Their attention to minute details is worth admiration, from the RD's dedication to making 80 menus with various adjustments to the texture according to the Japanese IDDSI classification to the instructions on how to assist patients in taking their meals. Moreover, we came to understand the importance of the RD to the finances of the hospital, as they can bring a lot of profit by providing nutrition counseling. In Vietnam, most hospitals offer free nutrition counseling, however in Japan, the first 30-minute appointment costs around \$20

USD and the second session costs about \$15 USD, with health insurance covering 70% of the cost.

The most remarkable aspect to us was the range of textures on the menu while still ensuring that the food looked appetizing; in Vietnam, the IDDSI categorization is poorly implemented, and even if it is, the dishes are quite monotonous or not up to grade. Meanwhile, in Nerima Hikarigaoka Hospital, the staple food (rice) alone has many variations from normal rice, soft rice, and porridge (whole porridge, 50% porridge...) to thickening porridge, liquidized, and jelly type. Furthermore, the texture-modified dishes are shaped to look like normal dishes so the patients can find them appealing. We hope that we can acquire more knowledge on these texture-modified dishes not only from Japan but also from our fellows in the network and apply it to Vietnamese hospitals in the near future so that Vietnamese patients with dysphagia or chewing problems can also enjoy scrumptious meals other than the options of ONS or enteral feeding/parental feeding.



Fig 1. Japanese hospital meal – soft diet

Visit to elementary school for school lunch (Funabori Elementary School)

One of the very meaningful activities that we participated in was visiting and observing the school lunch meal at Funabori Elementary School. Unlike many other countries, Japan has a remarkable system where over 30,000 dietitians are dedicated to ensuring the nutritional quality and safety of school meals for children. This demonstrates the high regard that the Japanese government and society have for children's nutrition. In addition, one extremely impressive thing is

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that lunch is completely free for the children at this school.

During the visit, I also had the opportunity to observe the kitchen staff through a system of glass windows. The kitchen design is equipped with glass windows so students can observe the process of cooking staff preparing their meals. The dietitian here said it is also a way to educate children about nutrition, teaching them gratitude to those who make their meals.

Japanese school dietitians are in charge of planning menus (about 290 menus for a school year), calculating costs, ordering food, managing food hygiene, and corresponding with food allergies, nutrition education,...I was deeply moved when the principal said that thanks to the dietitian students can have delicious and safe school meals and praised the dietitian at this elementary school as the best in Japan. This shows the high regard for the role and status of school dietitians in Japan.

There are many other useful things that I and other young dietitians learned during the visit to Funabori Elementary School. I hope that the Japanese school lunch system and school dietitian job positions will soon spread to other Asian countries and around the world.

Kick-off meeting of AYDN

At the kick-off meeting, we had a chance to present about the food culture, the nutritional problem, and the dietetic system of our country. Vietnamese food culture is rich and diverse, with a unique blend of flavors, a renowned street food culture, and regional varieties. Our main ingredients are rice and rice products, meat, poultry, freshwater fish, and vegetables and the main seasonings are fish sauces, Fish/shrimp/crab paste, and natural spices. When it comes to traditional Vietnamese food, it is impossible not to mention pho and banh mi - two dishes that have gained international popularity and have become iconic representations of Vietnamese cuisine. In terms of nutritional problems, Vietnam faces challenges such as childhood overweight and obesity, child malnutrition, elderly malnutrition, and metabolic syndrome. Childhood overweight and obesity have seen a rapid increase, from 8.5% and 2.5% in 2010 to 19% and 8.1% in 2020 for overweight and obesity in children 5-19 years old, respectively. High consumption of sugar-sweetened beverages/snacks, fast food, and low levels of physical activity have been identified as contributing

factors to this issue. However, specific policies or programs targeting overweight and obesity have yet to be implemented. Regarding the dietetic system in Vietnam, there are two pathways to becoming a dietitian. One can complete a 4-year Bachelor of Nutrition course at a university. Alternatively, one can pursue a 6-year general doctor program followed by a nutrition residency. Dietitians in Vietnam can work in various settings such as hospitals, institutes/universities, and companies but not as school dietitians or in their clinics. While there are legal protections for dietitians in place, the strength of these protections is not considered sufficient.

During the meeting, we also had the opportunity to learn about the status of the other 11 Asian countries. The presentations from the member countries highlighted the incredible diversity and tantalizing nature of Asian food culture. However, it may be necessary for us to reevaluate our dietary patterns due to the prevalent issue of overweight and obesity across the countries. While some nations have implemented national intervention programs, no country has achieved significant success in addressing this problem. In terms of the dietetic system, most countries have their training systems and protective laws for dietitians. Notably, Japan, Taiwan, and the Philippines have specific dietitian laws that focus on dietitians, rather than being merely a section of broader health laws. Conversely, Bangladesh currently lacks a dedicated law for nutrition. In terms of working opportunities for dietitians, many places are available however, for schools, Japan stands out as they have dietitians in all schools, while other countries may only have them in private schools or not at all.

Overall, participating in the AYDN provides an opportunity for countries like Vietnam and others to work together to enhance the status of dietitians. We expect that by fostering strong friendships and relationships among participating countries, we can create opportunities to share knowledge through collaborative research, webinars, and workshops. Through these interactions, we can collectively propose programs and initiatives aimed at addressing and improving the nutritional problems specific to each country. The ultimate goal is to work together towards a healthier future for all.

Special Report: The Cambodian Food Culture

The Introduction of “The Palm Sugar” No. 2 in a Series

Ry Manydine

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Talking about sugar you may have thought that it is just one of the basic ingredients that is used to enhance the sweetness in meals or desserts. White sugar or brown sugar are very commonly used all over the world, however in Cambodia there is a different type of sugar that can be seen used along with other types of sugar. It is known as the “Palm Sugar”. What makes palm sugar different from the other is very fascinating. To slightly introduce Cambodian palm sugar, you have to know that palm trees only grow in a tropical country with slightly hot weather. The type of palm tree that is used to extract palm oil is a different type of palm tree, the one that is used to make palm sugar is often confused as a coconut tree. The palm tree that is used to make the palm sugar is very tall, it can reach up to 30 meters with a fan-shaped leaf up to 3 meters. It is also known as “Cambodia’s National tree”.

In this study, I went to interview a local palm sugar maker in Banteay Srey village, Siem Reap, Cambodia. The village is known as the palm sugar village, many families in that area rely on making the sugar and sell it to the tourist, in order to make a living. It was very fascinating to interview and learn about how sugar is made. Many desserts and dishes can be made by using palm sugar as the main ingredient.

How to extract Palm juice:

The tall palm tree, may looked like no one can climbed up to the top but, in Cambodia a lot of villagers climb up until the top to extract the juice, As you claimed to the top of the tree, you can see there are two types of palm fruit known as the “Male palm” and the “Female palm”. Both types contain juices that are known to make the sugar



Fig 1. Palm tree



Fig 2. Palm sugar village shop



Fig 3. Male palm (left) and female palm (right)

How to make Palm sugar:

The extracted juice is directly poured into a big pot, with low heat wood fire, it's required to keep stirring until the juice thickens and becomes a palm sugar. Some are air dry to make it into a solid form, and some are stored in an airtight container to keep as a paste form. 40

liters of juice resulted in 4 kilograms of sugar. This process showed the dedication and requirements in order to make palm sugar that is served in Cambodian dishes and dessert. The process might not be complicated but the labor is very much needed in order to successfully make the palm sugar.



Fig 4. Making palm sugar

Recommend Recipes

Kor sach Jruk (Caramelized pork stew)

Ingredients: Pork belly, boiled egg, palm sugar, garlic, fish sauce, soy sauce, salt, black pepper

How to make: In a separate bowl mix seasoning together (Garlic, fish sauce, soy sauce, salt and black pepper). In a hot pan put in the palm sugar until it melted and give the aroma of sweetness then pour in the mixed seasoning, mixed it well and put in the pork belly and boiled egg. Close the pot lid, and simmer it until the pork is well cooked. Constantly pour in some water, to avoid burning. This dish is such a comfort food to many Cambodians, it is easy to make and delicious, also its one of the dishes that popularized the used of palm sugar in Cambodia.

In conclusion, I hope that this articles could reach many audiences and spread more about Cambodian food culture. Our food are our pride, so Palm sugar is

the delicacy that Cambodian people loved, with this articles. I hope that many people will start to acknowledge more of our food culture and become more recognizable to other nation.



Fig 5. Kor sach Jruk (Caramelized pork stew)