Chapter **3**

Nutrition Management and the Promotion of Healthy Food

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Chapter 3

Nutrition Management and the Promotion of Healthy Food

According to *The State of Food Security and Nutrition in the World* report in 2020, 690 million people worldwide, about 8.9% of the world's population, is hungry currently (FAO et al., 2020). In 2019, Africa represented 40% of all stunted children in the world, whilst Asia comprised 54%. Most regions have made some progress in reducing stunting between 2012 and 2019 (FAO et al., 2020). On the other hand, the issue of obesity in adults is becoming more serious, with 1 in 3 adults said to be either obese or overweight around the world. This trend was previously more apparent in advanced countries, such as North America, but obesity or overweight is becoming more common even in developing countries. The numbers of adults classified as obese or overweight in developing nations increased from 250 million in 1980 to 904 million in 2008 (Wiggins and Keats, 2014). The rise in obesity and overweight amongst developing countries has been attributed to dietary changes with the increase in income. It is also attributed to a decrease in hours of physical labour in daily life, in addition to an increase in the amount of time sitting.

Malnutrition and obesity coexist in many countries, even in the same areas and family. Difficulty in obtaining nutritious food due to increases in costs, stress regarding food insecurity, and physiological adaptation from insufficient food intake have been suggested to result in higher risks of obesity or overweight in families with food insecurity. There has been limited improvement in treating malnutrition, which takes various forms, from growth inhibition in children to obesity in adults, and this has resulted in exposing many people to health risks (Wiggins and Keats, 2014).

Efforts regarding issues of nutrition around the world were initiated by the foundation of Scaling Up Nutrition (SUN) in 2010, which led to international projects on the improvement of nutrition. Following this, the 65th World Health Assembly was held in May 2012, which focused on mothers and children and the improvement of all forms of malnutrition issues, leading to the establishment of the Global Nutrition Target 2025. In the World Summit on Sustainable Development in 2015, the member states of the United Nations adopted the 2030 Agenda for Sustainable Development, including the Sustainable Development Goals (SDGs), which address not only hunger but the extermination of all forms of malnutrition, including obesity and excess or insufficient nutrients. Also, in response to this, the G20 Summit held in the same year emphasised the need for stronger cooperation between the public and private sectors for sustainable development.

For Japan, there have been a number of nutrition-improvement programmes recently in developing countries, involving food-related businesses with the support of JICA and JETRO, etc. The healthcare policy launched by the Government of Japan in 2014 includes the importance of the improvement of nutrition as an example of support via public-

private partnerships.

In light of the fact that Japan and the UK affirmed in a joint statement their intention to strengthen worldwide initiatives to improve nutrition in the lead-up to the 2020 Tokyo Olympics and Paralympics, the government will make use of Japan's outstanding R&D capabilities in the field of fortified foods and promote the overseas expansion of inclusive business via public-private partnerships focused on improving nutrition across the globe, including in emerging and developing countries. (Government of Japan, 2014).

As a response to this initiative, the Nutrition Japan Public-Private Platform was established in 2016, which explores the means of promoting investment from private companies globally in the field of nutrition.

Despite the initiation of many projects worldwide and in Japan since 2010, these have been limited in impact, and there are many challenges yet to be resolved.

This chapter discusses the current circumstances and awareness of dietary habits at research counterpart hospitals in three target countries. The subjects of the study are inpatients whose disorders were caused by lifestyle diseases that are closely associated with dietary habits. In addition, patients' trends in psychological behaviour and backgrounds that attributed to the dietary habits will be analysed to observe the trends. Following this, investigation will be conducted on how the diet-focused health guidance can be applied for similar patients in these countries and the possibility to propose projects for the promotion of healthy diets.

3.1. Awareness survey on the actual conditions of dietary habits and nutrition management

(1) Introduction

Dietary habits are affected not only by the available food and drink but also by the situations in a person's life, as well as personal values and customs. By understanding the dietary habits from various viewpoints, guidance for patients and individuals with a history of poor dietary habits can be properly provided. In this study, tendencies in personal thinking, values, and customs were considered, and the trends and actual conditions in the dietary habits in each country were surveyed.

(2) Subjects

Thirty cases of patients diagnosed with stroke or head injury from amongst outpatients and inpatients in Cambodia (Sunrise Japan Hospital Phnom Penh), Lao PDR (Mittaphab Hospital), and Viet Nam (Viet Duc University Hospital) between August 2018 and December 2019 were targeted. Outpatients were interviewed on their current life conditions, and inpatients were interviewed regarding their life conditions before hospitalisation. Cases where oral intake was difficult at the time of the survey were excluded (Table 3.1).

(3) Survey/Measurement items

A structured questionnaire survey was conducted to collect basic information (gender, name of disease, mRS) and information related to the dietary habits and nutritional management of the participants. The main questions are classified into five categories: (1) daily routines and times, (2) addictive habits, (3) objective measures and health literacy, (4) awareness of a healthy diet, and (5) interest in dietary services. Photos of the meals were taken, and the dishes which appeared in the photos were classified into staple foods, main dishes, and side dishes, in accordance with the Japanese dietary balance guide (Ministry of Agriculture, Forestry and Fisheries of Japan, 2015a; 2015b).

(4) Procedures

Interviews were carried out in line with the interview guide. Informed consent was obtained from the participants or their family members in advance. The necessity of the dietary consultation services for each participant was assessed, taking the results of this study into consideration.

(5) Results

Basic information

	Cambodia	Lao PDR	Viet Nam
Number of participants	15 males 15 females	16 males 14 females	25 males 5 females
Diagnosis	Stroke: 30	Stroke: 30	Stroke: 3 Head injury: 26 Brain tumour: 1 person
Severity (mRS)	mRS2: 3 mRS3: 5 mRS4: 15 mRS5: 6 Unknown: 2	mRS 1: 2 mRS 2: 5 mRS 3: 4 mRS 4: 11 mRS5:8	mRS1:3 mRS2:9 mRS3:6 mRS4:11 mRS5:1

Table 3.1. Basic information

(awareness survey on the actual conditions of dietary habits and nutrition management)

Cambodia

1) **Daily routines and times**

Figure 3.1. Exercise habits [N=30]

Most commonly, the study participants got up at 5am (40%) and went to sleep at 9pm (43%). The average sleeping time was 8.35 hours.

The most common times for meals were 7am (70%) for breakfast, 11am (43%) for lunch, and 6pm (47%) for dinner. Many participants went to sleep approximately 3 hours after dinner.

Of the respondents, 60% had a regular exercise routine, of which 40% exercised every day (Figure 3.1). Meanwhile, 50% of the participants had a snacking habit, and 20.0% of them had snacks every day, whilst 20.0% had them 2–3 times a week 20.0% (Figure 3.2).



Source: Authors.

Figure 3.2. Snacking habits [N=30]

In the photo study, we collected 14 breakfast photos, 20 lunch photos, and 18 dinner photos from seven respondents. For breakfast, 64% were meals with a staple food and main dish only, and 36% were meals with only a staple food. The number of main dishes was usually one, consisting of grilled meat or fish and put over rice (porridge). No respondents had a side dish at breakfast, so this means no vegetables were eaten at breakfast. For lunch, 60% consisted of a staple food, main dish, and side dish, and 30% had a staple food and main dish only. Compared to breakfast, more respondents had side dishes, however, for the number of side dishes, having one dish was the most common. For dinner as well, 60% of the photos showed a combination of a staple food, main dish, and side dish. Most had two or more side dishes. On the other hand, 37% had a staple food and main dish only. At dinner, however, most had a meal that mainly consisted of a combination of rice with stir fried vegetables and meat or fish and soup, so vegetables were included even in the main dishes.

As the main dish, meat was eaten more at breakfast and dinner, whilst fish was eaten more for lunch. Eggs and shrimp were also used. The meal ingredients varied. Most vegetables were eaten in a stir fry or soup. Protein sources in meals in Cambodia were found not only in the main dish but also in soups and stir fries, so there were two types of servings of main dishes: 1) staple food and grilled meat or fish only, or 2) set of staple food and soup with vegetables and meat or fish.

2) Other habits

With regard to smoking, 86.7% of the study participants reported 'never smoke' (Figure 3.3). For alcohol, 80% reported 'do not drink' (Figure 3.4). Therefore, it can be interpreted that smoking and drinking alcohol were not common.

Half of the study participants had the habit of eating snacks. In terms of the frequencies of eating snacks, 20% of the participants who had such a habit ate snacks 2–3 times a week, followed by every day (16.7%) and once a week (13.3%) (Figure 3.5).



Source: Authors.





Source: Authors.

Source: Authors.

3) Objective measures and health literacy

We measured the height and weight of the study participants and computed the body mass index (BMI). The World Health Organization defines 'underweight' and 'overweight' in several ways, but we used the definition based on the crude values of BMI: underweight – BMI is less than 18.5, whilst overweight – BMI is 25 or more (World

Health Organization, 2021). We also asked the participants about their self-assessment of their own body shapes: thin, normal, or fat. Table 3.2 shows the cross-tabulation of the actual BMIs and the self-assessment results. Amongst the 30 participants, the self-assessment results of 21 participants were concordant with the categories of their actual BMIs. The statistical test also shows their self-assessment results are not significantly different from the BMI results (p<0.01, Fisher's exact test).

		Self-assessment		
		Thin	Normal	Fat
BMI	<18.5	1	0	0
(kg/m²)	18.5–25	2	8	4
	25≦	0	3	12

Table 3.2. Body mass index and self-assessment of body shape (Cambodia) [N=30]

Source: Authors.

Figure 3.6 shows the awareness of some key lifestyle diseases: hypertension, hyperlipidaemia, and diabetes. Only 33.3% of the study participants knew the average or ideal blood pressure for their age. About half of them were aware of hyperlipidaemia, whilst 10% knew preventive measures against hyperlipidaemia. Awareness of diabetes was as high as 90%. However, only a half of the study participants were familiar with prevention methods. Some participants reported that the sources of information on diabetes were their family members who had diabetes.

Regarding the payable amount for health, 19 study participants answered that they could spend more than US\$100, followed by US\$50–US\$99 (20%), US\$1–US\$9 (13.3%), and US\$1–US\$49 (3.3%) (Figure 3.7).



Figure 3.6. Awareness of lifestyle diseases and prevention measures (Cambodia) [N=30]

Figure 3.7. Income available for use on healthcare (Cambodia, per month) [N=30]

Figure 3.8. Most important point when selecting food (Cambodia) [N=30]



4) Awareness of healthy diet

To the question 'what is the most important for your meal', 18 in 30 study participants (60%) answered 'hygiene', followed by quality (20%) and taste (10%). No participants answered 'amount' or 'nutrition balance' (Figure 3.8). As for the reasons why 'hygiene' was chosen, they said that diarrhoea and vomiting could be prevented by eating hygienic food and it was good for health.

Of the 30 respondents, 27 reported that they had concerns regarding health. As shown in Figure 3.9, in detail, the most common practice carried out by the study participants to promote health was 'try to participate in sports or physical activities' (77.8 %), followed by 'try to eat more vegetables' (44.4 %) and 'be cautious about having too much sugar' (40.7%). We also asked them about their supplement intake, and one in three study participants reported that they took supplements either 'always' or 'sometimes'.





5) Interest in dietary services

We asked them about the dietary services they hoped to use. As shown in Figure 3.10, the most common items selected were related to obtaining knowledge about nutrition and the latest information of healthy food items (53.3%), followed by a nutritional consultation with professional staff (33.3%).





Source: Authors.

Lao PDR

1) Daily routines and times

The most common wake-up time was 6 a.m. (14 amongst 30 study participants, or 47%) and the most common bedtime was 9 p.m. (13 participants or 43%). The average sleeping time was 8.2 hours. The most common mealtime was 7 a.m. (47%) for breakfast, 11 a.m. (47%) for lunch, and 6 p.m. or 7 p.m. (both were 40%) for dinner.

Half of all respondents reported they exercised routinely. Amongst those who practiced routine exercise, 20% exercised every day (Figure 3.11). Twenty-six study participants had snacking habits, and in terms of the frequency of snacking, 2–3 times a week was the most common (10 participants or 33%) (Figure 3.12).









Source: Authors.

From the photo survey, we collected 45 photos each of breakfast, lunch, and dinner from 15 respondents. Rice was the overwhelmingly dominant staple food and eaten at every mealtime by most of the study participants.

The meal content was almost the same for breakfast, lunch, and dinner. Regardless of which main or side dishes, every meal had vegetables. The number of dishes was not much. The ratio of rice and other food was about half and half, or more rice than other food.

For the main dishes, fish was more served than meat for any meal. Fish was grilled and added to soup with vegetables.

2) Other habits

Most study participants reported that they never smoked (73.3%) (Figure 3.13), whilst about half of them answered that their family members had smoking habits (Figure 3.14). Also, most study participants did not have drinking habits (76.7%) (Figure 3.15).

Regarding the frequency of snacking habits, one third of the study participants answered that they had snacks 2-3 times a week, followed by once a week (26.7%), and none (20.0%) (Figure 3.16). Regarding the frequency of having sweetened drinks, 11 study participants (36.7%) reported that they had them 2–3 times a week (Figure 3.16).



Source: Authors.





Figure 3.16. Frequency of snacks and sweetened drinks [N=30]





Source: Authors.

3) Objective measures and health literacy

We compared their BMIs with their self-assessments of their body shapes (thin, normal, or fat). A statistical test showed that the self-assessment was significantly related with the actual BMIs (p<0.05, Fisher's exact test), but 11 in 16 study participants whose BMIs were categorised as overweight according to WHO's cut-off point assessed themselves as within the normal range rather than 'fat' (Table 3.3).

		Self-assessment		
		Thin	Normal	Fat
BMI	<18.5	1	0	0
(kg/m²)	18.5–25	4	8	1
	25≦	0	11	5

Table 3.3. Body	y mass index and	self-assessment	of body shar	be (Lao PDR) [N=30]
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Source: Authors.

About half of the study participants were aware of the average or ideal blood pressure for their age. Awareness of hyperlipidaemia was low (10.0%), whilst 23 study participants (76.7%) had heard about diabetes. Nevertheless, only six participants (20%) knew about preventive measures against diabetes (Figure 3.17).



Figure 3.17. Awareness of lifestyle diseases and prevention measures (Lao PDR) [N=30]

Source: Authors.

Regarding the payable amount for health, 11 study participants (36.7%) answered they could spend US\$0–US\$49 (36.7%), followed by US\$1–US\$9 (33.3%), and none (16.7%) (Figure 3.18).

Figure 3.18. Income available for use on healthcare (Lao PDR, per month) [N=30]





Source: Authors.

Source: Authors.

4) Awareness of a healthy diet

To the question 'what is the most important point when selecting food?', about half of the study participants (46.6%) answered 'hygiene', followed by 'quality of food item' (30%). No-one answered that 'nutrition balance' or 'price' was the most important (Figure 3.19).

Of the 30 respondents, 19 reported that they were concerned about health. Regarding the practices carried out by the study participants to promote health, the most common answers were 'try to eat more meat and fish' and 'try to drink less alcohol' (36.7%), followed by 'be cautious about having too much sugar' (36.7%). The answer of 'be cautious about having much salt' was one of the least common answers (3.3%) (Figure 3.20). We also asked about supplement intake. Only one study participant answered that they take a supplement regularly, followed by 'sometimes' (43.3%), and 'never' (53.3%).

Figure 3.20. Practices for health promotion (Lao PDR) [N=30, Multiple answers with a maximum selection of three items allowed]



5) Interest in dietary services

For the question about the diet-related services that the study participants hoped to use, the most common answer was 'would like to gain more knowledge about nutrition' (73.3%), followed by 'a nutritional consultation with professional staff' (66.7%), and 'would like to know the ideal recipes for different diseases ' (56.7%) (Figure 3.21).

Figure 3.21. Interest in dietary services (Lao PDR) [N=30, Multiple answers with a maximum selection of three items allowed]



Source: Authors.

Viet Nam

1) Daily routines and times

The most common wake-up time of the study participants was 6am (33%), and the most common bedtime was 10pm (43%). The average sleeping time was 8.48 hours. The most common times for meals were 7am (53%) for breakfast, 11am (67%) for lunch, and 6pm (40%) for dinner. The results suggest that most of the participants would be awake for several hours from dinnertime to bedtime, without going to sleep immediately after dinner. Too short a time from dinner to sleeping is considered to negatively affect health status.

Twenty-six study participants (86.7%) reported they exercised every day, one participant answered 2–3 times a week, whilst 10 participants did not exercise routinely (Figure 3.22). About half of the study participants reported they took snacks every day (53.3%), whilst another half did not have a snacking habit (43.3%) (Figure 3.23).



We collected 12 photos of breakfast, 13 lunch photos, and 13 dinner photos from 14 respondents through a photo survey. Noodles were the most common type of staple food for breakfast, whilst rice was the most common for lunch and dinner. We concluded that 92% of the study participants took only staple foods for their breakfast, but it should be noted that meat and vegetables were often put in the noodle dishes. Particularly, meat was very often found in noodles for breakfast. At lunch and dinner, they mostly had either a main dish or side dish, or both, as well as a staple food. Their lunch and dinner generally had many dishes and were rich in vegetables. It seemed that meat was preferred to fish.

2) Other habits

Nineteen study participants (63.3%) answered they had never smoked, whilst nine participants (30.0%) reported that they had quit smoking for more than 5 years. Only two participants (6.7%) still smoked, of which all of them reported they smoked more than 5 cigarettes per day (Figure 3.24). Regarding smoking within their family members, seven study participants (23.3%) answered that they had family members who smoked (Figure 3.25).

Twenty-six study participants did not have an alcohol-drinking habit (Figure 3.26).

Most participants answered they did not have a snacking habit (80.0%), whilst about half of the participants had the habit of drinking sweetened drinks (Figure 3.27).





Source: Authors.

Source: Authors.

3) Objective measures and health literacy

Table 3.4 is a cross-tabulation of their BMIs and the results of their self-assessment of their body shape: thin, normal, or fat. Self-assessment was significantly related to their actual BMI values (p<0.05, Fisher's exact test), but the participants whose BMIs were within a normal range were likely to assess themselves as having a 'thin' body shape rather than 'normal'.

Table 3.4. Body	mass index and	self-assessment of	f body shape	(Viet Nam)	[N=30]
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		Self-assessment		
		Thin	Normal	Fat
BMI	<18.5	4	2	0
(kg/m²)	18.5–25	8	7	3
	25≦	0	2	4

Awareness of hyperlipidaemia was low. Only 10 study participants (33.3%) were aware of it, whilst they were more aware of diabetes; as many as 23 participants (76.7%) had heard about diabetes (Figure 3.28).



Figure 3.28. Awareness of lifestyle diseases and preventive measures (Viet Nam) [N=30]

Source: Authors.

Regarding the amount of money available to spend on health each month, 12 study participants (40.0%) answered they could spend more than US\$100, followed by US\$10–US\$40 (23.3%) and US\$50–US\$99 (16.7%) (Figure 3.29).



Figure 3.30. Most important point when selecting food (Viet Nam) [N=30]

80%

100%



Source: Authors.

4) Awareness of a healthy diet

To the question about the most important point when selecting food, 12 study participants (40.0%) answered that nutritional balance (40.0%) was the most important, followed by taste (16.7%) and the quality of ingredients (16.7%) (Figure 3.30).

Of the 30 respondents, all study participants reported that they cared about their health. Regarding their practices for promoting their health, the most common answer was 'try to participate in sports or physical activities' (24.0%), followed by 'try to eat more vegetables' (20.0%), and 'try to avoid sweet drinks' (16.0%) (Figure 3.31). Seventeen study participants (56.7%) regularly took supplements, whilst 11 participants (36.7%) took no supplements.





Source: Authors.

5) Interest in dietary services

To the question about the diet-related services that the study participants wanted to use, the most common answer was 'would like to gain more knowledge about nutrition' (73.3%), followed by 'would like to know more healthy food items or the latest meal/food information' (46.7%) and 'would like to know more about supplements' (36.7%) (Figure 3.32).

Figure 3.32. Interest in diet-related services (Viet Nam) [N=30, Multiple answers with a maximum selection of three items allowed]



Source: Authors.

(6) Summary and discussion

The results of this study should be interpreted carefully. First, the sample size is very small. The sample does not represent the whole population of each country because the participants of this study were selected from the patients suffering from stroke (all participants in Cambodia and Lao PDR) or head injury (most participants in Viet Nam). The socio-economic background of the sample also does not represent each study country as the study in Cambodia was conducted in a private hospital, whilst in the Lao PDR and Viet Nam, the study was done in national hospitals.

Even if such limitations of this study are taken into consideration, some common trends could be found in all three countries. Awareness of lifestyle-related diseases was not high, particularly for hyperlipidaemia and its preventive measures. It seems salt intake was not seriously considered as a factor affecting their health. Considering the widely approved evidence that the incidence of stroke is closely related to hyperlipidaemia and/or salt intake and that most participants of this study were stroke patients, raising the awareness of lifestyle-related diseases and the harm of a high salt intake may have the potential to improve the health outcomes in these three countries. Luckily, the study participants of all three countries commonly showed keen interest in nutrition. Programmes to promote the modification of their eating habits are encouraged to prevent lifestyle-related diseases, considering each country's food-related culture.

3.2. Nutritional support at hospitals in Cambodia, the Lao PDR, and Viet Nam

Malnutrition in hospitalised patients is a common problem worldwide. Southeast Asia is not an exception. A survey in Ho Chi Minh City estimated the prevalence of hospital malnutrition amongst adults to be 34.1% (Tran, Banks, Hannan-Jones, et al., 2018), whilst in Lao PDR, it was 47% (Wilson et al., 2020). Because malnutrition considerably affects patients' recovery, hospital meals are provided as part of standard care in most high-income countries, but in other settings, hospital meals are not necessarily covered within

the standard package of hospital care. For example, in Viet Nam, hospital meals are not covered by public medical insurance (Tran, Banks, Do, et al., 2018). In response to such critical importance of nutrition in hospital care, nutrition support programmes, in some cases called 'nutrition therapy', have been provided in hospitals since the late 20th century, but few reports on such programmes could be found for Cambodia, the Lao PDR, or Viet Nam. The only one was a short report from Cambodia about the activities of the National Paediatric Hospital of Cambodia, which was carried out in collaboration with a Japanese foundation (Ly, Saito, and Kusama, 2015). In this section, the results of our surveys will be shown for the systems of nutrition management of selected hospitals in Cambodia, the Lao PDR, and Viet Nam as well as the available human resources for nutrition management in those hospitals. A capacity building programme for nutrition management that we conducted under this project is also reported.

(1) Nutrition guidelines

<u>Cambodia</u>

In 2017, a book titled 'Recommended Dietary Allowance and Food-Based Dietary Guidelines for School-Age Children' was published by the Ministry of Health and the Foundation for International Development/Relief (FIDR), a Japanese organisation (FIDR, Khim, and Kusama, 2017). The book can be used even for hospital settings but was designed to provide guidelines for the energy and nutrient intake only for school-aged children. As far as we searched, no guidelines on hospital diet designed for adults could be found.

<u>Lao PDR</u>

At any national hospital in the Lao PDR, the department of nutrition is organised and some physicians and nurses are affiliated with it, but hospital meals are not provided. Only nutritional guidance is provided to inpatients and outpatients. There are no government guidelines on nutrition yet.

<u>Viet Nam</u>

Several guidelines on nutrition management in hospitals have already been issued by the Ministry of Health. In a circular note issued by the Ministry of Health in 2011, hospitals of Level III and above, including special public hospitals, were directed to establish a department of nutrition and a clinical nutrition centre, whilst other hospitals were directed to establish a department or team of nutrition. The details of setting up the nutritional department or team are also described in the circular note (Ministry of Health of Viet Nam, 2011). Regarding hospital meals, the Minister's Decision on the 'Guideline of Hospital Diet' was issued in 2006. Hospitals are required to provide meals in line with this guideline. Many types of hospital meals that are suitable for different conditions of patients are provided in this guideline, with details of the standard amount of intake for energy, protein, fat, carbohydrates, micronutrients, and liquids, etc. in accordance with the patient's conditions, such as renal failure (acute, chronic, etc.), diabetes, cardiovascular diseases, gastrointestinal diseases, etc. (Ministry of Health of Viet Nam, 2006).

(2) Hospitals visited in Cambodia

a. National Paediatric Hospital

This hospital has about 300 patient beds. Three physicians are appointed as members of the nutrition department.

i. <u>Practice of nutrition management</u>

After screening children for malnutrition by physical measurement at the outpatient hospital ward, the physician prepares a nutrition care plan for children deemed undernourished and for patients who need nutritional counselling. The content of the dietary counselling and the food provided at the hospital can be modified to each child in accordance with the result of the nutritional assessment.

In this hospital, if a patient is detected as undernourished according to body weight and height either as an outpatient or inpatient, the information on the patient is shared with the nutrition department. Also, if physicians or nurses find any patients who need nutritional intervention, they notify the department of nutrition.

Nutrition management during hospitalisation is free. Nutrition counselling for outpatients takes 20–30 minutes per visit and is charged at US\$10 per visit. In September 2019, they provided nutrition counselling services for 74 outpatient cases (average two cases per day).

ii. <u>Hospital meal services</u>

This hospital provides hospital meals, about 200 to 300 meals per day in total. No additional payment is required for patients who are 6 months old or older.

The hospital provides several kinds of therapeutic diet besides a regular diet, such as a soft diet, full liquid diet, complementary feeding diet (CFD), high energy high protein diet (HEHP), and low salt diet.

The food menu used to be prepared in accordance with the common practice of other ASEAN Member States. Since the Cambodia's own guideline for nutrition intake was published and certified by the Ministry of Health of Cambodia in November 2017, a menu is being prepared in accordance with the new Cambodian guideline (Foundation for International Development/Relief, 2019).

Patients can learn how each type of therapeutic diet is prepared including nutritional composition at notice boards with photos.

Hospital meals were not provided before the support of the FIDR started in 2006. A meal ordering system was introduced with the support of the FIDR, which enables the ordering of hospital meals for individual patients by calculating the nutrient composition.

Posters on the walls of the kitchen show the amount of food for each type of diet using pictures of spoons and dishes so that everyone can understand the designated amounts.

b. Sunrise Japan Hospital Phnom Penh

This is a hospital with 50 patient beds. The hospital does not have a special department in charge of nutrition management, but a Japanese registered dietitian based in Japan is involved with the management of hospital meals.

i. <u>Practice of nutrition management</u>

No screening of nutrition is carried out by doctors and nurses, but nurses are trying to develop a screening system in response to local needs.

For inpatients, nutrition counselling services are provided by nurses to the patients who are assumed to be in need, but systematic nutrition counselling services have not been developed.

For outpatients, a Japanese nurse who has received training from a nationally registered dietitian in Japan shares how to provide nutritional counselling services with Cambodian nurses. This service is included in the comprehensive package of health check-ups of this hospital. Before the counselling, patients are asked about their food habits and daily living habits, including exercise. If an imbalance is observed in their food habits, recommendations are provided to them on how their nutritional balance can be improved for health promotion, particularly for reducing sugar volume.

ii. Hospital meal services

This hospital has been providing hospital meals since its establishment in 2016, about 15 meals per mealtime, with the belief that food is a part of treatment. The fee is included in the hospitalisation fee package.

The hospital provides 16 types of diet. The menu is jointly prepared by a local chef and a Japanese registered dietitian. The dietitian is based in Japan but remotely plans the menus based on the calculation of the nutritional composition that is required for a standard diet and each type of therapeutic diet. Meals are served to each patient in accordance with the clinical conditions of the patients. Food forms can be modified, such as chopped or in a paste, etc. For lunch, the patient can choose their meals from two options, Khmer or Japanese. A special meal is provided on the occasion of an event once a month.

Kitchen staff visit the hospital wards during lunchtime and listen to the opinions and impressions of patients on the food. This is reflected in the menu.

For patients who need tube feeding, meals are prepared at each ward.

Hygiene education by an external company is carried out for kitchen employees once a year.

(3) Hospital visited in the Lao PDR

Mahosot Hospital

One of the major national hospitals located in Vientiane. The hospital has a nutrition department. Several physicians and nurses are assigned at the department. Their tasks are the following.

- Meeting with patients to understand their treatment and condition
- Counselling for inpatients and outpatients
- Evaluation of the nutritional condition of the inpatients and outpatients
- Diet recommendations according to the condition of the inpatients and outpatients
- Activities to raise the awareness of nutrition management
- i. <u>Practice of nutrition management</u>

Anthropometric measurements and blood tests are carried out upon hospital admission to detect patients who need nutritional counselling.

Nutritional counselling services are provided for patients with lifestyle-related diseases, particularly diabetes, who are undernourished and who need tube feeding. The daily number of nutritional counselling cases is approximately 30–50 per day. The time for one session is 1 hour. They provide more than 5,000 sessions a year. Of the total clients, 25% are children. Follow-ups are regularly carried out when patients visit as outpatients.

For patients with lifestyle-related diseases, recommended intake amounts according to their disease conditions are shared using diagrams and photos with the amount of salt and sugar contained in the foods.

For undernourished patients, a nutrition composition chart is shown to let them know what kinds of foods contain ideal nutrition with proper balance.

The nutrition department has a meeting to discuss the treatment and nutritional condition of the patients every morning.

ii. Hospital meal services

Hospital meals are not provided. The hospital does not have a kitchen. Meals are brought to the patients by their families.

(4) Hospitals visited in Viet Nam

a. Viet Duc University Hospital

A public hospital which has the largest surgical centre in Viet Nam. The hospital has more than 1,500 patient beds. The nutrition department was established in 2018 and 10 physicians, five nurses, and two dietitians are assigned. The department consists of a nutritional management section and kitchen section. Both sections have a morning meeting at 7:00–8:00 am every morning and visit each ward from 8:00 for half an hour.

The job descriptions of the nutritional management section are the following.

- Counselling for inpatients and outpatients
- Diet recommendations according to the condition of the inpatients
- Preparation of the menu
- Activities to raise the awareness of nutrition management

i. <u>Practice of nutrition management</u>

The nutritional assessment of inpatients is carried out within 24 hours after hospital admission by physicians or nurses using a guideline. The information on the cases requiring nutritional intervention is shared with the department of nutrition. In addition, the staff of the nutrition department visit the ward and collect the patients' information from ward nurses. Nurses from the nutrition department are stationed in the wards of digestive surgery, neurosurgery, and cardiac surgery,

The nutritional status of all patients is recorded using an assessment form, but it is not fully utilised because many patients leave the hospital before the forms are brought to the nutrition department.

For the patients who need tube feeding, physicians provide nutritional prescriptions and nurses prepare and provide meals. The staff of the nutrition department provide advice to physicians when physicians choose a product for tube feeding and determine the amount of feeding. Besides the patients who need tube feeding, the nutrition department also provides advice regarding nutrition management for some other patients in the ward.

Nutritional counselling services can be provided upon the order of physicians or the request of the patients. The hospital provides two types of nutritional counselling sessions: a group session and an individual session. Group counselling is given mainly to neurosurgery patients. One session accommodates about 60 people in the case of neurosurgery patients and about 20 people for other patients. Individual counselling is offered to the patients of cardiovascular surgery, liver or gastrointestinal surgery, and urology. Patients are not required to make any additional payment for nutritional counselling services. Nutritional counselling is not provided to outpatients, even for those who left the hospital.

The hospital has not developed a surveying system to assess the effect of the nutritional counselling service. Efforts to improve the quality of this service are encouraged as well as discussions on whether the free counselling service can be sustainable or not if the quality of the counselling service is to be improved.

ii. <u>Hospital meal services</u>

This hospital has 27 types of hospital meals, including therapeutic diet meals, and serves 300–400 meals per mealtime. Patients are provided with the opportunity to select a meal type from two options if they are regular meal eaters. The menu is prepared by the staff of the nutrition department every week.

Meals are not covered by insurance, so the cost is billed to the patient.

The price varies by meal type, and the price is determined by negotiations between the hospital and the company consigned for providing hospital meals.

b. Bach Mai Hospital

One of the largest hospitals in Viet Nam in terms of the number of patient beds (1,900 beds according to the website), and it is the leading referral general hospital in Ha Noi. The department of nutrition was established in the late 1990s. Twenty-three staff members are assigned, including physicians and registered dietitians. Some staff in the department have the PhD degrees in nutritional science.

The nutrition department is part of the clinical nutrition centre, which consists of four sections: administration, food safety, nutrition consultant, and nutrition support team (NST). Several NSTs are organised, and one NST is responsible for two or three wards (200 to 300 patients). NSTs are also in charge of the training of the students learning nutritional management as well as the suggestion of new menus based on their surveys. The department holds daily morning meetings to share important information with the entire staff of the department. They have also created a social media group to share the information with not only the staff of the nutrition department but also physicians, nurses, pharmacists, rehabilitation staff, etc. so that they can share the patients' information.

i. <u>Practice of nutrition management</u>

The nutritional condition of all patients is assessed within 24–36 hours after hospital admission by a physician or nurse. The information on the cases requiring nutritional intervention is shared with the supervising staff of the department of nutrition. Nurses are supposed to monitor the condition of food intake of the patients. They review the nutritional status and food intake of patients every other week. In case they find any problems, the information is notified to the nutrition department. The hospital still uses paper-based medical charts, so the staff of the nutrition department need to visit the wards to check the status of the patients as well as the results of laboratory tests. The hospital does not provide any specific interventional approach to patients who depend on tube feeding.

Nutritional counselling services are provided. The hospital has three types of services: lectures or seminars, group counselling sessions, and individual counselling sessions.

Lectures and seminars are held upon request by each department on an ad hoc basis. Group sessions are provided to patients of diabetes, chronic renal failure, and cardiovascular diseases, mainly. Individual sessions are for patients of the rehabilitation department, neurosurgery, ICU, emergency, traditional medicine, cardiovascular diseases, and infectious diseases. Requests for nutritional counselling are made by physicians or patients themselves.

No additional payment for nutritional counselling for inpatients is required. For outpatients, D70,000 is charged for one house session.

The demand for the nutritional counselling for dysphagic patients is growing because of population ageing. For dysphagic patients, the department provides advice on points to be kept in mind at the time of swallowing and cooking. The severity of dysphagia is assessed using grading scales.

The staff of the nutrition department recognise the importance of nutrition management for contributing to health promotion and hope to improve the quality of their activities and expand the services, but because of the shortage of staff, it is not possible. The low service fee for nutritional counselling, i.e. D70,000 at this hospital, might be one of the reasons for the shortage of human resources.

ii. Hospital meal services

This hospital has the capacity to provide about 300 types of hospital meals, including therapeutic diet meals, and serves about 1,400–1,500 meals a day. Amongst them, about one-fifth is for tube feeding. Physicians are supposed to determine the appropriate meal type for each patient, but they sometimes consult other staff on this to serve the most appropriate food in accordance with the condition of a patient. The hospital is trying to increase the number of meal types in response to requests from the patients.

Meals are not covered by insurance, so the actual cost is billed to patients; about D2,000–D3,000 depending on the meal type.

For tube feeding, both commercial products and food prepared at the hospital are used. Physicians decide which is provided to patients.

The hospital tries to serve hospital meals to all the inpatients, but currently it is about 70%.

Two staff members of the nutrition department are sent to the kitchen to supervise the kitchen staff for correct preparation and hygienic control.

c. Hospital K (Vietnam National Cancer Hospital) – Campus 3

Viet Nam's leading cancer hospital located in Ha Noi. The hospital has three campuses within Ha Noi city. We visited Campus 3 of Hospital K.

The nutrition management department is called the 'nutrition centre'. About 10 staff members are assigned to the department, including nutrition doctors. Amongst the three campuses of Hospital K, only Campus 3 has a nutrition management department.

i. <u>Practice of nutrition management</u>

Nutritional assessment for inpatients is performed by physicians or nurses within 24–36 hours after admission. The result of the assessment is graded depending on the expected risk of malnutrition, and information on patients at a high risk is shared with the nutrition centre.

ii. <u>Hospital meals service</u>

Campus 3 provides about 250 hospital meals per mealtime. For tube feeding, both commercial products and meals prepared at the hospital are used.

d. Hospital for Tropical Diseases

A major referral hospital for tropical diseases located in Ho Chi Minh City. The nutrition department of this hospital has one physician, one nurse, and two nutrition experts. The physician had received training of nutrition management for 6 months at Ho Chi Minh Medicine and Pharmacy University.

i. <u>Practice of nutrition management</u>

Assessment is carried out for all patients using a special form for the assessment of nutritional status. Nutritional counselling services are provided to patients who have diabetes and/or high blood pressure. Additional payment for nutritional counselling is not charged.

ii. <u>Hospital meal service</u>

Hospital meals, two types of rice porridge, and smoothies only, are prepared in the kitchen of the nutrition department but provided only to the patients in a serious condition. About 40 meals are served per mealtime, six times a day. The daily fee for a hospital meal is D300,000. About half of the patients have food that is brought from outside the hospital, whilst 35% of the patients eat at the restaurant in the hospital, and the rest are served hospital meals. Most patients are discharged within 3–4 days after admission.

(5) Results of questionnaire survey on hospital nutritional management in Viet Nam

We co-hosted a workshop on 21 March 2019 in Ha Noi, with the title, 'Nutrition Workshop: Meal Intervention from Multiple Viewpoints' together with Viet Duc University Hospital. The objective of the workshop was to share the practice and lessons of nutritional management in hospitals and to discuss how to improve nutritional management. The workshop was attended by 276 participants from both Japan and Viet Nam. The participants were the staff of the nutrition department and rehabilitation department, nurses, and physicians, etc. About 10% of the participants were from Japanese organisations. Presentations were given by physical therapists, speech therapists, and dietitians to share the practices of nutritional management in both countries.

On this occasion, we conducted a questionnaire survey regarding the department of nutrition and meal provision at each hospital. A questionnaire was distributed to the Vietnamese participants, and 24 of them answered. The respondents were from 3 national hospitals, 12 regional hospitals, 5 rehabilitation hospitals, and 1 geriatric facility. The affiliations of some respondents were undefined. Each respondent was affiliated with a different hospital or facility.

Out of the 24 respondents that participated in the survey, 20 respondents answered that their hospitals had already established department of nutrition and had dedicated staff for nutritional management. Half of the respondents reported that their facilities had 4–9 staff assigned at a nutrition department (50.0%), followed by 10 persons or more (20.8%) (Figure 3.33).

As for the number of the staff who were employed exclusively for the work of the nutrition department, the most common answer was 1–3 staff (50%), followed by 4–9 (12.5%) (Figure 3.34).



We asked the respondents whether their facilities provided nutritional counselling services to patients of with following seven conditions (percentage of the respondents who answered 'yes'): internal medicine (75.0%), digestive diseases (75.0%), neurosurgery (62.5%), respiratory diseases (66.7%), metabolic diseases (66.7%), cardiovascular diseases (70.8%), orthopaedics (37.5%) (Figure 3.35). Eleven hospitals (45.8%) reported that they provided such services for the patients of other diseases.



Figure 3.35. Target patients for nutritional counselling [N=24, multiple answers were allowed]

Eighteen out of 24 respondents reported that their facilities provided hospital meals within their facilities (Figure 3.36).



Sixteen respondents reported that their facilities routinely performed an assessment of the swallowing function of patients (Figure 3.37).

Regarding the services provided to encourage the adequate food intake by the patients, 19 respondents answered that their facilities provided nutritional counselling services, 16 offered swallowing support, for example training of ideal posture to prevent misswallowing, and 17 provided services of cooking instructions for food that is ideal for patients with swallowing disorders.

Source: Authors.

As open comments, three respondents reported that their facilities did not practice any programme of nutrition management for patients. A comment which mentioned insufficient rehabilitation services for swallowing disorders in the country was also found.

3.3. Capacity building of human resources for nutritional management

(1) Cambodia

As of 2019, Cambodia does not have a training institution for dietitians nor a national certification system of dietitians. National Paediatric Hospital is the only national hospital that provides hospital meals in the country. The hospital has three physicians in charge of nutritional management. They were trained for 2 months in Japan with support from a Japanese NGO, FIDR, which provided support for the establishment of a nutritional management system, including the serving system of hospital meals.

During the project period of FIDR, a Japanese registered dietitian was assigned at the hospital to establish a nutritional management system as well as a hospital-meal providing system and to introduce an on-the-job training system for nutritional counselling.

(2) Lao PDR

As of 2019, the Lao PDR does not have a national certification system for dietitians nor an established job category for dietitians. The Lao PDR is, however, still affected by high levels of stunting and wasting and other forms of undernutrition (Chaparro, Oor, and Sethuraman, 2014), so the Nutrition Center was established under the Ministry of Health in 2012 and a four-month course to develop the human resources of nutritional management began with support from the United States. This course focuses on clinical nutritional management and accepts only physicians and nurses working at a hospital.

For each course, two staff are selected from each of the seven hospitals in Vientiane, including major hospitals and district hospitals, to attend the course. So far, 28 physicians and nurses have undertaken the course. The curriculum of this course is divided into public health nutrition (2 units), applied nutrition (21 units), and clinical nutrition (17 units).

Amongst the hospitals sending their staff to this course, only Mahosot Hospital has established a department of nutrition, and the staff who completed this course are assigned to the nutrition department. In other hospitals where a nutrition department has not yet been established, staff who complete this course are assigned to places where their knowledge can be well utilised. For example, in Mittaphab Hospital, such nurses are assigned to the 'Food and Medical Team' in the ICU. In 2019, the fourth-round course began in July. Besides the four-month course, a three-day course is also regularly held. This course is also for physicians and nurses and includes lectures on basic nutritional science.

(3) Viet Nam

The Ministry of Health of Viet Nam promulgated a decision dated 20 July 2010 to regulate the training programmes of nurses specialised in nutritional management. This decision provides the required components and time in detail, including the requirements for educational facilities and the assessment of the participants for programme completion (Ministry of Health of Viet Nam, 2010).

In October 2015, the Ministry of Health and the Ministry of Home Affairs issued a joint circular note that provided the official code and standards for the profession of 'nutrition'. It can be interpreted that the profession of 'nutrition' was officially recognised in Viet Nam (Ministry of Health and Ministry of Home Affairs of Viet Nam, 2015). Viet Nam has several training courses to create nutrition management professionals. The following are some examples.

a. Hanoi Medical University Nutrition Bachelor Course

In 2012, the Ministry of Education and Training issued a decision No.5158 to allow Hanoi Medical University to provide university-level education for nutritional science. In the following year, the Bachelor of Nutrition programme opened in Hanoi Medical University (Hanoi Medical University, n.d.). This programme is fully supported by a joint project between Viet Nam and Japan, i.e. the Vietnam Nutritional System Establishment Project (VINEP). This project was initiated with a joint study between the National Institute of Nutrition of Viet Nam and Ajinomoto Foundation, and later some other universities in Japan also joined in. The joint circular note of the Ministry of Health and Home affairs to recognise the profession of 'nutrition' is also a part of the achievement of this project (JICA and Ajinomoto Co., Inc., 2016).

In 2017, Hanoi Medical University produced 43 'dietitians' for the first time in Viet Nam. Of the graduates, 40% found jobs at hospitals, 20% work as assistants at research institutions like universities, and 30% at food companies.

Key components of the curriculum are anatomy and physiology in the first year; food chemistry, basic nutrition, and public health nutrition in the second year; and clinical nutrition in the third and fourth years.

Students are required to undergo practical training, such as cooking, nutritional counselling, and menu planning. Field practice of clinical nutritional management in a hospital is also required and it takes from 8 to 10 weeks. The curriculum was developed in collaboration with several Japanese universities, the Japan Dietetic Association, and Ajinomoto Vietnam Co., Inc. Some lectures are also delivered by Japanese experts affiliated with the universities that are involved with the development of the curriculum (Ajinomoto Co., Inc., 2017). The programme was also supported by the Abbot Fund Institute for Nutrition Science (Abbott, 2013). The graduates are encouraged to participate in academic conferences and workshops held in Hanoi Medical University to keep their knowledge updated.

b. Hanoi Medical University Short Course

Hanoi Medical University also provides a short course for nutritional management. These courses are designed to create physicians and nurses who have expert knowledge of nutritional management so that they can be assigned to a department of nutrition at hospitals after the completion of the courses.

Even after the completion of nutrition courses, since physicians are studying nutrition, both surgeons and physicians have knowledge of patient nutrition management. In fact, surgeons who have completed the nutrition courses are bringing improvements in nutritional management, such as the prescription of intravenous drips and information sharing with patients on nutritional conditions, etc. because of their expert knowledge of metabolism.

Hanoi Medical University accepts Japan's nationally registered dietitians as JICA's senior volunteers. They visit the university twice a year, observe each ward visited, and provide suggestions for the improvement of nutritional management.

c. Bach Mai Hospital

One-month, three-month, and six-month courses are provided for physicians and nurses from northern to central Viet Nam. The cost is D4,000,000–D4,500,000 per month. Courses are held year-round, and one class has 10–20 participants.

d. National Institute of Nutrition in Viet Nam

The National Institute of Nutrition in Viet Nam regularly organises training courses on clinical nutrition. The content of the courses varies from year to year. In 2021, for example, the official announcement mentions three courses will he held, and the content will be basic nutrition, nutritional interventions, nutritional counselling, etc. One-month, three-month, and six-month courses will be provided, but the six-month course can accept only professionals who have a strong background in nutritional management: dietitians with a bachelor's degree or other healthcare professionals who have already completed three-year courses. The cost will be D7,500,000 for the one-month course and D23,000,000 for the six-month course (National Institute of Nutrition, 2020).

3.4. Other activities to promote nutrition management and healthy food

(1) Cambodia

Japan Heart Children's Medical Center

'A volunteer-based international healthcare organisation', Japan Heart, established Japan Heart Children's Medical Center in 2016. The hospital acts as a referral hospital in the region and provides advanced medical services to patients, including those who require cancer treatment and/or paediatric surgery. The nutritional status of patients is regularly assessed because they are sure that the diet is closely related to health outcomes. The hospital meals are individually tailored, and the food centre works together with nurses

to make sure that diets are properly provided to optimise the outcomes of the treatment of each patient. The nutrition team also promotes hygienic management because it is still challenging to maintain food hygiene in Cambodia. They check the water chlorine level every morning and encourage patients to clean their hands before every meal (Japan Heart Children's Medical Center, n.d.).

(2) Lao PDR

a. National Nutrition Strategy to 2025 and Plan of Action 2016-20

The Lao PDR has one of the highest rates of malnutrition in Southeast Asia. The 2015 Lao PDR Child Anthropometry Assessment Survey (LCAAS) revealed half of all children in rural areas without public access were stunted (lower height for age below 2 standard deviations), whilst 23% of urban children were stunted. The same survey found that 6%-10% of children suffered from wasting (lower weight for height below 2 standard deviations) (World Food Programme and Ministry of Health Lao PDR, 2017). In response to this problem, the Government of the Lao PDR approved the first National Nutrition Strategy (NNS) in 2008 and set up the National Nutrition Center under the Ministry of Health in 2012, followed by National Nutrition Committee in 2013. The current NNS to 2025 and accompanying Plan of Action emphasise multi-sectoral unity and highlight the contribution of good nutrition to economic development. This NNS has four strategic directions and 11 strategic objectives (SOs): SO1 - improve nutrient intake; SO2 - prevent foodborne and waterborne infectious diseases under SD1 (immediate causes); SO3 produce food for consumption; SO4 – improve access to nutritious food; SO5 – improve mother and child health practices; SO6 – improve clean water access, sanitation, and environment; SO7 – improve access to health and nutrition services under SD2 (underlying causes); SO8 – improve institutions and coordination; SO9 – develop human resources; SO10 – increase the quantity and quality of information; and SO11 – increase investments in nutrition interventions under SD3 (basic causes): SD4 on the linkage of relevant policies and strategies. This NNS was approved by all the relevant ministries, such as the Ministry of Health, the Ministry of Agriculture and Forestry, the Ministry of Education and Sport, and the Ministry of Planning and Investment, etc. (Government of the Lao PDR, 2015).

b. Micronutrient deficiency and insect farming

A Japan-based non-profit organisation, International Support and Partnership for Health (ISAPH), started their activities to improve the nutritional status of children in the Lao PDR in 2005. One of their most remarkable achievements is the reduction of infant mortalities. In their project area in Khammouane province, they found that the high infant mortality rate was caused by a thiamine deficiency and resulting infantile beriberi. After their interventional activities to improve the nutrition intake, not only the distribution of thiamine supplements but also the raising of awareness of the importance of balanced nutrition intake, the health status of the children of the project area was drastically improved (ISAPH, 2020a).

They have another project for nutritional improvement in the Lao PDR to promote insect farming. Some insects are nutrition-rich, so some insects can contribute to the improvement of the nutritional status of the people. This programme is supported by Ajinomoto Foundation as well as JICA (ISAPH, 2020b).

c. One thousand day programme

The programme is implemented in collaboration with the United Nations Children's Fund (UNICEF) Lao PDR, the Ministry of Health, and the Lao PDR Women's Union, aiming for the improvement of the nutritional status of infants and young children through the critical first 1,000 days of their lives. Stunted growth during this critical period can significantly affect the underdevelopment and the survival rate of children. This programme takes a broad approach to promoting care practices, such as exclusive breastfeeding until six months, ensuring children eat a diverse range of nutritious food beyond six months, handwashing, and hygiene practices. Micronutrient powder is also supplied, and the members of Women's Union give a cooking demonstration, showing how micronutrient powder can be added to different types of local food for best effect (UNICEF Lao PDR, 2017).

d. School feeding programme

Since 2006, the school feeding programme in the Lao PDR has been sponsored by the government of the United States. The programme provided hot lunches to 140,000 Lao PDR school children and succeeded in the increase of school enrolment, the improvement of nutrition, and even support for learning. It also helped strengthen the government's school meals programme. In 2018, using funds from the US government, a new school feeding programme was launched by the US government and the United Nations World Food Programme. During the new five-year activity, it is expected that the school meals project will provide opportunities for smallholder farmers, particularly women, to increase their production and sell produce directly to schools, which can diversify the children's meals (United States Embassy in the Lao PDR, 2018).

(3) Viet Nam

a. School meal project

This is a project launched by Ajinomoto Vietnam Co., Inc. in collaboration with the Ministry of Education and Training, the Ministry of Health, and local authorities. Viet Nam has a double burden of malnutrition, with stunting mainly in rural areas and overweight and obesity mainly in urban areas. The objectives of this project are to provide nutritionally balanced school meals nationwide and to develop dietary-education materials and kitchen models for the improvement of school-meal operations and hygiene management. The project has also developed an app for designing appropriate lunch menus, which can be easily used even by school staff who do not have expert knowledge of nutrition (Ajinomoto Co., Ltd., 2017).

b. Child nutrition improvement project in hill villages

The project was commenced by a Japanese NGO, FIDR, in 2012, which supported the nutritional management at Cambodia's National Paediatric Hospital as well. Their project site in Viet Nam was the hill villages of central Viet Nam, where undernourishment amongst children was still rampant. With the objective of improving the local people's knowledge of nutrition and hygiene, the project organised the 'Health Network Members', consisting of mothers and local health officers. They encouraged the people to grow high-nutrient local vegetables and held cooking classes for mothers and fathers. The project also focused on the improvement of the environment of 'mothers' places', such as the kitchen and bathroom. Such activities contributed to the improvement of hygienic conditions in houses and the prevention of diarrhoeal diseases (Foundation for International Development/Relief, n.d.).

3.5. Discussion

Discussions on nutritional management and the promotion of healthy food in Cambodia, the Lao PDR, and Viet Nam encompass a wide range of topics, such as how to improve food for undernourished children, food hygiene to prevent foodborne infectious diseases, and nutrition-balanced food to prevent non-communicable diseases. Stunting, wasting, and the high mortality of children caused by undernutrition is still common in these countries, particularly in rural areas and amongst ethnic minorities. The programmes to improve the nutritional status of children are actively being conducted in cooperation with international organisations as well as civil organisations. These countries, however, have a double burden. As a result of the social change coupled with economic development, their eating habits are drastically changing, particularly in urban areas. Overweight, obesity, and the resulting non-communicable diseases have been recognised as one of the new challenges for healthcare systems. The promotion of a nutrientbalanced food intake should be strengthened, but the human resources to take on this work are still developing. Improving on the availability of nutritional management and counselling professionals in hospitals to provide ideal meals for the quick recovery of patients are also needed. Even amongst healthcare professionals, such as physicians and nurses, the importance of nutritional management has not been familiarised enough.

Considering the great impact of malnutrition on both children and older people, an urgent response to the nutrition-related challenges would be required in Cambodia, the Lao PDR, and Viet Nam. This chapter showed several practical programmes for nutritional management and the promotion of healthy food. As shown in most of these examples, nutritional management is linked to various aspects from medicine to education, culture, and social issues, etc. A multi-disciplinary and cross-sectoral approach would be encouraged to achieve a better nutritional status for the improvement of children's health and for the prevention of non-communicable diseases and the resulting disabilities of the older population.

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