

Chapter 10

A Sustainable Healthy Diet



Abstract The Sustainable Development Goals (SDGs) under the 17 goals, 169 targets and 232 indicators were set out by the United Nations in 2015. Sustainable development is defined as promoting sustainable, inclusive and equitable economic growth by providing opportunities for all. These are emphasized that in order for everyone to live a healthy and happy life on this planet without being left behind, all areas must be related, coordinated and harmonized in order to solve their respective challenges.

It is widely recognized that malnutrition has a negative impact on hunger, poverty, health, medicine and well-being, and nutrition affects a wide range of other areas, including education, labor economy, gender, discrimination, climate change and the environment. “Nutrition for Growth Summit: Fighting Hunger through Business and Science” held in London in 2013, and the “Tokyo Nutrition Summit 2021” in Tokyo.

In 2000, Dr. Paul Crutzen described the present as the “anthropocene”. This is a new era in which humans are influencing the global environment, ecosystems, and climate, rather than an era in which humans were influenced by nature. And this new era is putting the earth in a critical situation which we are now facing. In 2019, the Lancet shocked the world with its report “Food in the Anthropocene: The EAT Lancet Commission on Healthy Eating through Sustainable Food Systems”. The suggested changes in food intake include reducing the consumption of unhealthy foods, reducing as much as possible the consumption of meat, which has a high environmental impact. The WHO proposed 16 guiding principles for a “sustainable healthy diet”, comprising “health aspects”, “environmental impacts” and “social and cultural aspects”.

Recently, due to the spread of a new coronavirus infection (COVID-19), people were forced to leave their homes as in an evacuation, and faced the same nutritional problems as during disasters. In recent years, many natural disasters such as earthquakes, typhoons, and torrential rains have occurred in Japan, and many people have been affected by these disasters and forced to live in shelters or temporary housing.

Disasters are caused by a combination of hazards and vulnerabilities, so it is necessary to establish a system during normal times to reduce community vulnerability from becoming apparent. The Japan Dietetic Association-Disaster Assistance

Team (JDA-DAT) is a team of experts in the event of a large-scale natural disaster. JDA-DAT set up in the Great East Japan Earthquake occurred on March 11, 2011.

Keywords Sustainable Healthy Diet · Anthropocene · The EAT Lancet Commission on Healthy Eating through Sustainable Food Systems · Zero carbon emissions · The World Food Program (WFP) · Japan Dietetic Assistance-Disaster Assistance Team (JDA-DAT)

10.1 Nutrition Is the Foundation of Well-Being

Nutrition is related not only to the prevention and treatment of diseases, but also to the maintenance of life and health, as well as to a rich and cultured life. This has long been a topic of debate among nutrition experts. However, in the twenty-first century, with the globalization of political, economic, and environmental problems, nutrition has become an inevitable and fundamental theme in solving these problems, and the eradication of malnutrition has been found to be effective in alleviating many other problems.

A prominent example of this was the “Nutrition for Growth Summit: Fighting Hunger through Business and Science” held in London in June 2013, and the International Food Policy Research Institute’s “2014 Global Nutrition Report: GNR” based on the commitments made at the conference.

The report describes several cases of interest. For example, in improving nutrition in the Democratic Republic of Congo, Mali, Nigeria and Togo, direct investments in nutrition policy resulted in an internal rate of return of +13%; in the 2015 Copenhagen Consensus involving 17 European countries, the median estimate for 17 countries was that the lowest benefit relative to the cost of addressing nutrition problems was reported to have a factor of 60. In other words, for every \$1 of nutrition-related investment, there was \$60 of benefit. The African Union Commission and the World Food Program (WFP) reported that in Malawi, undernutrition reduced GDP by 10.3% in the year 2012, while in Brazil, on the contrary, medical costs for obesity were estimated to be about 2% of health and medical service costs, in Europe 2–4%, and in the United States 5–20%.

In other words, undernutrition, as well as overnutrition, increases health and medical costs and has a negative impact on economic activity. In addition, a prospective cohort study of more than 3000 people in an urban area of Brazil, conducted over a period of more than 30 years, found that good nutrition in infancy was associated with increased school attendance and about 30% higher income. Good nutrition has long-term effects on school attendance and earnings.

This report, which was compiled with the aim of eradicating malnutrition in the world, states in its preface as its “philosophy” that good nutrition is the foundation of human life.

Against this backdrop, the United Nations Sustainable Development Summit was held at the United Nations Headquarters in New York in September 2015, with the



Fig. 10.1 Future challenges for the SDGs: Environment and nutrition

participation of more than 150 heads of government, and resulted in the adoption of the 17-point document *Transforming Our World: 2030 Agenda for Sustainable Development Goals (SDGs)*. Under the 17 goals, 169 targets and 232 indicators were set out (Fig. 10.1).

Sustainable development is defined in the document as “promoting sustainable, inclusive and equitable economic growth by providing opportunities for all, eliminating inequalities and raising living standards, promoting equitable social development and inclusion, and facilitating the integrated and sustainable management of natural resources and ecosystems”. The term “inclusion” means [placing an issue within a larger scope, and the](#) SDGs must be achieved by reconciling the three elements of economic growth, social inclusion and environmental protection. The term “social inclusion” is used here to describe the idea that each citizen, including those in vulnerable positions in society, should be protected from exclusion, friction, loneliness and isolation, and should be included and supported as a member of society.

Many countries are now beginning to address the SDGs.

Looking at the 17 goals set out in the SDGs individually, these are issues that have been discussed for a long time and are not particularly new. The SDGs are characterized by the fact that they present issues in multiple domains in a single diagram. In other words, the SDGs communicate that issues in one area affect other areas, and that comprehensive and integrated efforts are necessary to solve each issue. The SDGs emphasize that in order for everyone to live a healthy and happy life on this planet without being left behind, all areas must be related, coordinated and harmonized in order to solve their respective challenges.

10.2 SDGs and Nutrition

It is widely recognized that malnutrition has a negative impact on hunger, poverty, health, medicine and well-being. In particular, in today's discussion of the SDGs, nutrition affects a wide range of other areas, including education, labor economy, gender, discrimination, climate change and the environment, so that improved nutrition is considered essential to achieving the Sustainable Development Goals.

The goals related to nutrition in the SDGs were organized as follows.

10.2.1 *Goal 1: Ending Poverty*

Improving nutrition in any region can help reduce poverty by improving the labor force, increasing incomes and raising wages. On the other hand, poverty alleviation can also improve nutritional status by providing people with a minimum level of food.

10.2.2 *Goal 2: Reducing Hunger to Zero*

Eradication of hunger for any country is a fundamental life-sustaining issue and the most important nutritional problem. The causes of hunger include war, refugees, poverty, ignorance, religion and values. These are not issues that can be solved by nutritionists alone, but require the unstinting efforts of many people. The first thing that nutritionists should do is to investigate and analyze the specific hunger situation, and then to develop solutions based on this information. For example, in times of emergency, such as war or civil unrest, emergency assistance in the form of food and nutrition supplements is necessary, and in times of calm, there is the need to improve agricultural productivity, improve distribution mechanisms, and make effective use of limited food resources, as well as the constant implementation of group feeding and nutrition education. In particular, the promotion of sustainable agriculture will be necessary to put an end to hunger, secure a stable supply of food, and achieve improved nutritional status.

Hunger is a condition of high incidence of energy deficiency, so-called marasmus due to a significant shortage of food and food sources. In particular, nutritional deficiency during the growth and development of the fetus, infant, etc. causes health problems for the mother and fetus. It is important to investigate and analyze the specific features and causes of food shortages, and to develop food policies and nutrition education that are in line with the actual situation. It is also important to dispatch and train nutrition experts who can formulate improvement plans.

On the other hand, improved nutritional status will increase labor productivity and improve the quantity and quality of agricultural and industrial products. The

improved nutritional status of women, in particular, will help reduce underweight newborns and improve breastfeeding, thereby saving children from hunger and malnutrition.

10.2.3 Goal 3: Health and Welfare for All

It is necessary to maintain and improve the health status of all people throughout their lives, regardless of race, sex, age, injury or disability. It is also important to ensure that people always have good nutritional status, whatever their circumstances. For example, 45% of under-five deaths worldwide are related to malnutrition, and stunting in children is associated with the development of non-communicable chronic diseases (lifestyle-related diseases) in later life and reduced labor productivity in adulthood.

The “Nutrition for the first 1000 days” movement, which is becoming increasingly popular around the world, demonstrates the importance of improving nutrition during the 1000 days including fetal life and the first two years. If a pregnant woman is undernourished, her fetus is exposed to low nutrition, which increases the risk of low birth weight, and at the same time, constitutes a precondition for overweight, which contributes to obesity and the development of non-communicable chronic diseases in adulthood. Thus, undernutrition in young girls can have lifelong health consequences for the next generation.

In addition, a reduction in overweight and obesity reduces the prevalence of non-communicable diseases, and under-nutrition is associated with the development of infectious diseases (diarrhoea, malaria, acute respiratory infections, tuberculosis and HIV/AIDS). These infections in turn are associated with the development of nutritional diseases and death.

Nutrition is indirectly related to the following goals.

10.2.4 Goal 4: Quality Education for All

Early childhood nutrition is related to educational development, and improved nutrition leads to improved school enrollment and achievement. If the level of education in a country improves, nutrition education will spread and progress, and the nutritional status will improve. In Japan, the school lunch system introduced in nursery schools, kindergartens, and schools is a part of comprehensive education on nutrition and diet, and has been very effective. This method is attracting attention from around the world as a method of achieving significant results.

10.2.5 Goal 5: Achieving Gender Equality

Improving the nutritional status of young and teenage girls can enhance their ability to learn in school and this can be empowering in the workplace and wider society, helping to improve the social status of women. In agriculture, improving the nutritional status of women can also improve their status.

10.2.6 Goal 8: Job Satisfaction and Economic Growth

Nutrition is related to labor, labor productivity, and even personal income.

10.2.7 Goal 11: Creating an Environment in Which People Can Continue to Live

It is a joy of life to be able to continue living in one's familiar community with a sense of well-being. In order to achieve this, it is necessary to create a society and environment in which people can enjoy locally produced food that changes with the seasons, eat together with their families and neighbors, and have a functioning community. In recent years, there have been calls for the establishment of comprehensive community care systems in response to the aging of society, and the important thing is the revitalization of communities, for which nutrition and diet are important issues.

In addition to these issues, nutrition is indirectly related to "Goal 13: Taking concrete measures against climate change," "Goal 14: Protecting the abundance of the oceans," and "Goal 15: Protecting the abundance of land as well".

As discussed above, nutrition is an important issue that influences each of the SDG goals and underpins the bottom line of sustainable development.

10.3 "Sustainable Healthy Diet"

In 2000, the Dutch scientist Dr. Paul Crutzen, who was awarded the Nobel Prize in Chemistry, described the present as the "anthropocene". This is a new era in which humans are influencing the global environment, ecosystems, and climate, rather than an era in which humans were influenced by nature. And this new era is putting the earth in a critical situation. There have been five mass extinctions of life on Earth in the past, which were caused by natural processes and events such as large-scale tectonic movements, volcanoes, freezing, and meteorites. However, the sixth crisis

which we are now facing, the Anthropocene, is caused by human activities on the earth, and humans themselves are causing the mass extinction of life.

The use of fossil fuels, depletion of the ozone layer, deforestation, and desertification by humans over the past few decades has led to the extinction of 1000 species a year, and it is predicted that 1/4 of all living species will be extinct by the end of this century. In order to overcome this situation, discussions on how to reduce the burden on the environment and create a sustainable society are becoming more and more active.

In January of 2019, the medical journal *The Lancet* shocked the world with its report “Food in the Anthropocene: The EAT Lancet Commission on Healthy Eating through Sustainable Food Systems”. The report set out a picture of a diet that would sustain the health and culture of each region in 2050, when approximately 10 billion humans would be able to eat without excluding anyone. It proposed a food system in which nutrition, diet, health, and the environment are in a win-win relationship. It weighed the “contribution to health” and the “burden on the global environment” that diet brings about, and proposed a system of nutrition and diet that balances the two.

The suggested changes in food intake include reducing the consumption of unhealthy foods like red meat and sugar, reducing as much as possible the consumption of meat, which has a high environmental impact, increasing consumption of fruits, vegetables and pulses, which have a high nutrient content, and a moderate intake of milk and dairy products (Table 10.1). The EAT committee also states that countries around the world will need to work to develop agricultural, cooking, distribution, processing, and menu options that will “reduce water use,” “reduce nitrogen and phosphorus pollution,” “produce zero carbon emissions,” and “reduce methane and nitrous oxide emissions”.

Based on these principles, the “Plenary Healthy Diet” (Healthy Diet for the Planet) was published. It recommends half of the plate being fruits, vegetables, and nuts, and the other half consisting primarily of whole grains, vegetable proteins (beans, lentils, legumes), unsaturated vegetable oils, moderate amounts of meat and dairy products, and additional sugars and starchy vegetables. This diet is similar to vegetarian and vegan diets, but states that personal preferences and local climate and culture should be respected.

The WHO proposed 16 guiding principles for a “sustainable healthy diet”, comprising “health aspects”, “environmental impacts” and “social and cultural aspects” (Table 10.2). The background to this proposal is as follows. The food system, which currently supports a world population of 7.5 billion, is a major cause of poor health and environmental degradation. The current food system makes diet-related non-communicable diseases: NCDs such as obesity, diabetes, and heart disease, the leading causes of death worldwide, while creating a situation of low nutrition for 800 million people, releasing 20–35% of global greenhouse gas (GHG) emissions, and accounting for about 40% of the earth’s ice-free land area. And this system pollutes land, rivers and oceans with excessive fertilizers, making it the largest contributor to biodiversity loss. Without a transformation of the modern food system, sustainability and healthy eating are impossible, the report said.

Table 10.1 Reference values for a sustainable healthy diet (EAT Lancet Committee Proposal) (2500 kcal/day)

Food composition	g /day (acceptable range)	kcal/day
Whole grain		
Rice, wheat, corn, etc.	232 (0–60% energy)	811
Root vegetables, high starch vegetables		
Taro, cassava	50 (0–100)	39
Vegetables		
All vegetables	300 (200–600)	
Green and yellow vegetables	100	23
Red and orange vegetables	100	30
Other vegetables	100	25
Fruit		
	200 (100–300)	126
Dairy foods		
Milk and dairy products	250 (0–500)	153
Protein food		
Cattle· Sheep	7 (0–14)	15
Pork	7 (0–14)	15
Chicken and other poultry	29 (0–58)	62
Egg	13 (0–25)	19
Fish	28 (0–100)	40
Beans		
Dry beans	50 (0–100)	172
Soy products	25 (0–50)	112
Peanuts	25 (0–75)	142
Nuts	25	149
Additive fat		
Palm Oil	6.8 (0–6.8)	60
Unsaturated fats	40 (20–80)	354
Animal fat	0	0
Lard· Beef tallow	5 (0–5)	36
Additional sugar		
All sweets	31 (0–31)	120

As populations grow and become more urbanized, with greater consumer activity, the consumption of more high-impact foods, especially meat, fish, eggs, milk and dairy products, sugar and oil, will increase, placing a greater burden on the planet that produces them. Moreover, the shift to such a diet increases the risk of obesity and NCDs.

Ultimately, it is necessary to establish a relationship whereby a transition to a healthy diet reduces the environmental impact and a diet with a low environmental impact also becomes a healthy diet. For example, as a number of studies have pointed out, reducing meat intake can reduce greenhouse gas emissions and also reduce the risk of atherosclerosis because it reduces the intake of saturated fatty acids.

Table 10.2 WHO guidelines for a sustainable healthy diet (2019)

Health aspects	
1	Breastfeeding should be initiated shortly after birth and continued until the child is 6 months of age, with breastfeeding continuing to 2 years of age and beyond, combined with appropriate complementary feeding.
2	Balance throughout the food groups with a variety of non-processed or minimally processed foods, while limiting highly processed food and beverage products.
3	Including whole grains, legumes, nuts, and an abundance and variety of fruits and vegetables.
4	Including moderate amounts of eggs, milk and dairy products, fish, and red meat.
5	Safe and clean drinking water.
6	Adequate, but not excessive, amounts of energy and nutrients to meet the needs of an active and healthy life for growth and development and for overall lifestyle.
7	It is in line with WHO guidelines to reduce the risk of diet-related non-communicable chronic diseases and ensure the health and well-being of the general population (fat: up to 30–35% of total energy, transition from saturated to unsaturated fats, free sugars: less than 10% of energy, salt: less than 5 g).
8	Minimal levels of pathogens, toxins, and other substances that pose a risk of causing foodborne illness, or if possible their elimination.
Impact on the environment	
9	Greenhouse gases, water and land use, nitrogen and phosphorus use, and chemical pollutants within the target setting.
10	Protecting the biodiversity of crops, livestock, food of forest origin, and aquatic genetic resources. Avoiding overfish of fish and marine animals.
11	Minimizing the use of antibiotics and hormones in food production.
12	Minimizing the use of plastics and their derivatives in food packaging.
Social and cultural aspects	
13	Reducing food loss and waste.
14	Methods of sourcing, producing and consuming food structured in accordance with the values of the Earth's cultures, cooking practices, knowledge and consumption patterns.
15	Easy to access and includes what you want to eat.
16	Ensuring that the allocation of time for the purchase and preparation of food and water, and the acquisition of fuel, is not influenced by gender issues.

10.4 Emergency Nutrition Management

In recent years, many natural disasters such as earthquakes, typhoons, and torrential rains have occurred in Japan, and many people have been affected by these disasters and forced to live in shelters or temporary housing. Recently, due to the spread of a new coronavirus infection (COVID-19), people were forced to leave their homes as in an evacuation, and faced the same nutritional problems as during disasters.

Disasters are caused by a combination of hazards and vulnerabilities, so it is necessary to establish a system during normal times to reduce community vulnerability from becoming apparent. In other words, it is necessary to establish a system to protect people who may require assistance in times of disaster.

The acronym “CHECTP” stands for the following: C:child, H:handicapped, E: elderly people, C:chronically ill, T:tourist (a person who does not understand the language), and P: pregnant. It is important to consider the nutrition and diet of these people in order to maintain a healthy life in the disaster area and to avoid disaster-related deaths (indirect deaths).

(1) Issues and measures for nutrition and diet in times of disaster

When a disaster occurs, food and drink are sent to the affected areas from various regions and countries as relief materials, and various kinds of food and dietary support are provided, and this is reported as a sign of recovery. However, this does not mean that the problems of nutrition and diet can be solved, because the supply of food alone does not guarantee the good health and nutritional status of the victims. For example, if food delivered to evacuation shelters is equally distributed to people of different sexes, ages, sizes, and health conditions according to the principle of equality, meals that meet individual nutritional needs will not be provided, and the response to those in critical need will be incomplete. The health and nutritional status of people with chronic diseases and disabilities deteriorate with prolonged evacuation.

Nutrition and dietary precautions in times of disaster can be outlined.

① Adequate hydration

Generally, evacuation shelters are opened in school gymnasiums or local community halls, and facilities are set up for temporary toilets, but the toilets are often far away, unclean, and unsanitary, and users try to use the toilet less often. Because of the psychological burden of incontinence, many elderly people limit their fluid intake, and many people suffer from fluid deficiency. As a result, they are more likely to develop fever and dehydration, and the combination of aging and stress increases the risk of fatigue, constipation, hypothermia, cardiovascular disease, and deep vein thrombosis/pulmonary embolism (economy class syndrome). It is necessary to educate and instruct people to actively replenish fluids through eating meals and drinking fluids.

② Guidance on nutritionally balanced meals

In general, the amount of food distributed in disaster areas is limited, and some foods can't be eaten because that some food is not delivered in time and people are not familiar with it, resulting in a decrease in overall dietary intake and a tendency to suffer from malnutrition. In terms of nutrients, the intake of protein, fat, vitamins, minerals, and dietary fiber will be insufficient, while the intake of carbohydrates, sugar, and salt will increase. In terms of foods, the intake of processed foods such as sweets and pastries, noodles, instant noodles, retort pouches, and canned foods will increase, while the intake of meat, seafood, milk, dairy products, vegetables, and fruits will decrease.

In addition, elderly people and patients with chronic diseases such as dysphagia, diabetes, kidney disease, hypertension, and dyslipidemia require dietary treatment, but this is difficult to implement in disaster areas.

In order to solve the problem, proper stockpiling and distribution of food at evacuation shelters and disaster areas, as well as the management and operation of school lunches, will be important. In particular, it will be necessary to properly procure, manage, and deliver support supplies such as special[-] purpose foods, thickening agents, and thickened liquid diets to those who require special treatment. In addition, it is important to be able to respond to individual requests by using pack cooking (a vacuum cooking method in which food ingredients and seasoning solution are placed in a high-density polyethylene bag and cooked easily using an electric pot, etc.).

③ Strict adherence to food hygiene

From the viewpoint of preventing food poisoning, hygiene management is important, and it will be necessary to cooperate with administrative agencies in the affected areas to take action. Since temporary kitchens will be set up in local assembly halls and school gymnasiums, and hygiene control will be difficult, sufficient consideration should be given to food hygiene when purchasing, storing, cooking, distributing, and serving food, and washing dishes and cooking equipment.

④ Nutrition and diet to protect against infection

In COVID-19, due to the government's declaration of a state of emergency, leaving one's home was prohibited and socio-economic activities were suspended, and school lunch kitchens, restaurants, cafeterias, and shops reduced service or closed. As a result, food production and distribution declined, consumers bought in bulk, ate unevenly, and the eating of processed foods increased, resulting in unbalanced nutritional intake, weight loss or gain, and malnutrition such as nutrient deficiency or excess.

In order to prevent the onset and aggravation of infectious diseases, it is important to prevent infection by bacteria and viruses, and at the same time, it is necessary to enhance the resistance, or self-defense capability, of the body. The human defense function is influenced by various and complicated activities of the immune system, and different factors, such as malnutrition, extreme stress, fatigue, lack of sleep, lack of exercise, drinking and smoking, and illness, are related to the decline of the function.

(2) The birth and role of the Japan Dietetic Assistance-Disaster Assistance Team (JDA-DAT)

The Japan Dietetic Association-Disaster Assistance Team (JDA-DAT) is a team of experts who, in the event of a large-scale natural disaster (earthquake, typhoon, etc.) in Japan or overseas, quickly provide nutrition and dietary support activities in cooperation with medical, welfare, and governmental nutrition organizations at evacuation shelters, facilities, homes, temporary housing, etc. in the disaster area. When the Great East Japan Earthquake occurred on March 11, 2011, the Japan Dietetic Association set up a task force on March 15, and sent a group of three to four dietitians and nutritionists to Kesenuma City, Ishinomaki City, and Tono City, respectively.

Table 10.3 Improvement in nutrient intake with the support of dietitians and nutritionists

	1st survey (April 1–12)	2nd survey (May 1–20)
Energy	1546 kcal	1842 kcal
Protein	44.9 g	57.1 g
Vitamin B ₁	0.72 mg	0.87 mg
Vitamin B ₂	0.82 mg	0.96 mg
Vitamin C	32 mg	48.4 mg

In order to assess the effect of the dispatch of dietitians, we calculated the nutritional intake in evacuation shelters in Miyagi Prefecture. In the first survey from April 1 to April 12, when the support system was inadequate, the average daily intake was 1546 kcal of energy, 44.9 g protein, 0.72 mg vitamin B₁, 0.82 mg vitamin B₂, and 32 mg vitamin C, whereas in the second survey from May 1 to May 20, when JDA-DAT support was advanced, there was an improvement in energy, protein and many micronutrients (Table 10.3).

In municipalities in Iwate and Miyagi prefectures, rice and miso soup were supplied to evacuation shelters by the Self-Defense Forces. As a result, although energy and carbohydrates were sufficient, there was a marked lack of protein, vitamins, and minerals. The Japan Dietetic Association persuaded the Self-Defense Forces to introduce vitamin-fortified rice to be used as white rice for cooking, and at the same time distributed packs of nutritional supplements for home use. As a result, we were able to distribute vitamin-fortified rice to about 2.7 million people and supplement packs to about 1.34 million people.

JDA-DAT is currently responsible for the following roles.

① Coordination of food aid

In general, food aid to the affected areas is provided without assessing the local needs and nutritional status, so it focuses on carbohydrate foods such as rice, instant noodles, and sweets, and lacks protein foods, vegetables, and fruits. Thus the food supplied is often inadequate and there is a lack of coordination among evacuation shelters.

② Correcting food distribution based on strict equality

Rather than distributing all relief supplies equally, we will distribute food according to the individual circumstances of evacuees, considering their age, nutritional and health status, and eating capacity.

③ Distribution within the best-before date

In order to solve the problems of ①~③, it is necessary to comprehensively understand the delivery, storing, and consumption of foods in evacuation shelters, determine the excess or shortage of various foods, and adjust the food distribution so that it is nutritionally balanced. JDA-DAT will improve the nutritional status of the affected people by coordinating with the government, other organizations, and evacuation shelters to provide comprehensive nutrition and food management.

④ Dealing with high-risk individuals

Some of the affected people are at high risk for nutritional and dietary problems such as dizziness, fatigue, oral ulcers, colds, loss of appetite, nausea, constipation, diarrhea, anemia, bedsores, emaciation, aspiration, chewing problems, dehydration, edema, and tube feeding. JDA-DAT will conduct a detailed nutritional assessment of such subjects and adjust the foods to be provided as well as utilizing special foods as necessary. JDA-DAT receives assistance from the supporting members of the Japan Dietetic Association in the form of supplements and special foods for the sick.

⑤ Support for physical and mental well-being

The key to nutrition and dietary support during emergencies is to be attentive to the physical and mental needs of survivors. JDA-DAT is committed to providing humanitarian, supportive, and practical assistance to people under severe stress, based on Psychological First Aid (PFA).

⑥ Training and Collaboration

In an emergency, training sessions are held to train JDA-DAT leaders from among the JDA-DAT staff of each prefectural association of dietitians so that they can promptly conduct support and relief activities (as of June 30, 2020, 3303 people have been trained; Photo 10.1). In addition, JDA-DAT has deployed seven



Photo 10.1 Training session to develop JDA-DAT leaders



Photo 10.2 Disaster relief vehicle equipped with a kitchen unit

emergency disaster relief vehicles (Photo 10.2), which were donated by individuals and companies. These vehicles will be used during normal times and as needed in emergencies in order to provide mobility. In addition, an “Agreement on Nutrition and Dietary Life Support Activities in Times of Disaster” has been concluded with each local government and prefectural association of dietitians to ensure prompt cooperation in times of disaster. As of June 30, 2020, we have concluded agreements with 15 prefectures and 3 cities.

(3) Activities of JDA-DAT

When an emergency situation occurs, JDA-DAT will go to the affected area within 72 hours after the disaster and work under the direction of the administrative dietitian in the affected area, after receiving a request from the administration and dietitian associations in the affected area and cooperation requests from the Ministry of Health, Labor and Welfare. The main activities are to accompany medical rescue teams to evacuation shelters, provide nutritional counseling, conduct hygiene management, transport relief supplies, set up special nutritional food stations, and, at the request of the Ministry of Defense, provide support to disaster victims using the Hakuo (a hotel-ship), and facilitate collaboration with other societies, NGOs and companies.

Under the JDA-DAT, a “special nutritional food station” has been established to procure, deliver, and distribute special nutritional foods required by people with special needs, such as breast milk substitutes (powdered milk, liquid milk), baby

food, low-protein food, allergen-free food, thick liquid food (including for tube feeding, nursing care food, food for people with swallowing difficulties, and food to be used with thickeners). For example, if there are elderly people in evacuation shelters who are unable to eat, they can be offered a sample of the soft food from a retort pouch. After they taste the food, the possibility of eating, chewing, swallowing, preference, etc. should be confirmed and the food should be provided. In other words, we provide food and guidance according to the needs of the individual.

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