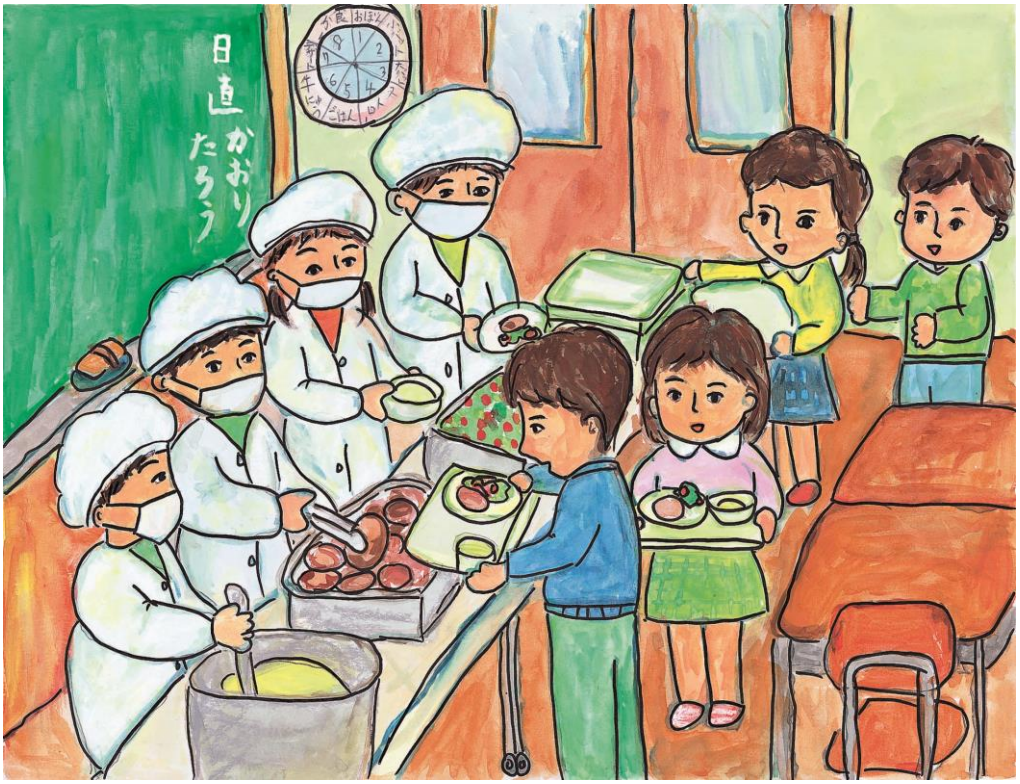
The Japan That Japanese Don't Know:

The School Lunch Program

日本人の知らない日本：学校給食



Edited by
Andrew R. Durkin, Emily A. Callahan,
Masayo Kaneda and Shigeru Yamamoto

Published by
Asian Nutrition and Food Culture Research Center,
Jumonji University

Cover Page Drawing by H. Echigo　(表紙　第 4 回　優秀賞　越後日向子　宮城県；小 3)

Drawing by S. Sakane (第 4 回　優秀賞　坂根彩妃（東京都；小 4)

Drawing by M. Takaki　(第 3 回優秀賞高木真希（静岡県小 4)

Information provided by Public Interest Incorporated Foundation Japan Association for Improving School Lunch　（資料提供：公益財団法人学校給食研究改善協会）

JAPANESE SCHOOL LUNCHES

Public Interest Incorporated Foundation
Japan Association for Improving School Lunch
3-12, Yotsuya, Shinjuku-ku, Tokyo 160-0004 Japan
Phone: +81-3-3357-6755 Fax: +81-3-3357-6756
URL: http://www.gakkyu.or.jp
Published in February 2015

[Carrying and serving food together]
Pupils on school lunch duty carry food to their classroom to serve it. Photo: Kodaira 6th Elementary School, Kodaira, Tokyo

Japanese school lunches

School lunches serve as a source of learning for Japanese children. The daily meals at school provide them with opportunities to learn about nutrition, hygiene, culinary culture, local produce, food distribution, as well as the importance of good manners, sharing food fairly with their classmates, making sound judgment about diet, and being grateful for food.
School lunches made significant contributions toward the improvement of Japanese's nutrition intake and physical development and strength.

Japanese school lunches are legislated

The School Lunch Program Act sets objectives of school lunches in light of *Shokuiku* (education on food and dietary practices).

The gist of aims of the Japanese school lunch program

1. To maintain and enhance the wellbeing of schoolchildren through appropriate nutrition intake.
2. To provide schoolchildren with opportunities to learn appropriate diets, develop the ability to make sound judgment about a healthy diet, and adopt desirable dietary habits.
3. To foster sociability and cooperative spirits in children.
4. To facilitate the understanding of the natural providence, thereby fostering a respect for life and nature and a positive attitude toward environmental conservation.
5. To facilitate the understanding that a dietary practice is supported by many people engaging in food production, thereby fostering a sense of appreciation for their labor.
6. To facilitate deep understanding of varied culinary cultures.
7. To facilitate appropriate understanding about production, distribution, and consumption of food.

School lunch program participation rate

Almost 100 percent of elementary schools and about 80 percent of junior high schools participate in the school lunch program.

School lunch fees

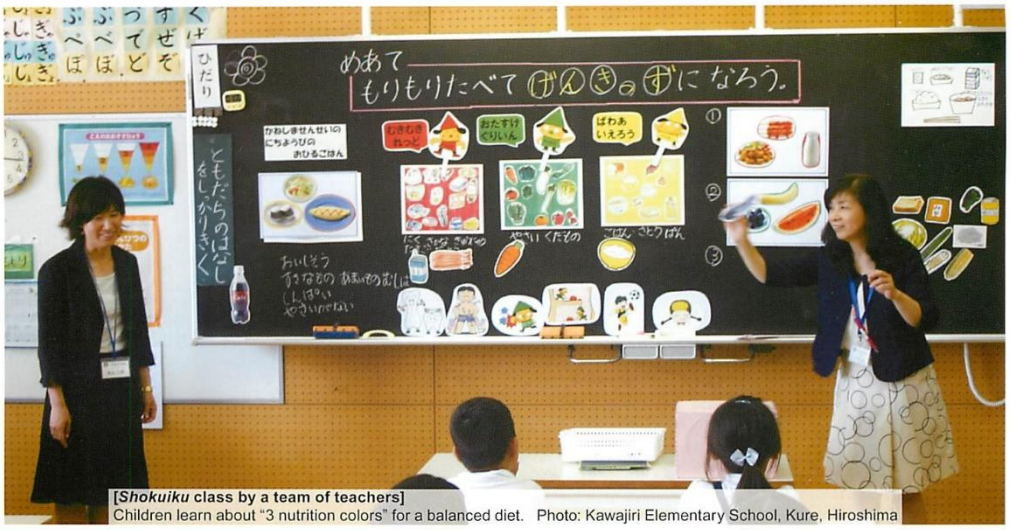
Local governments cover personnel expenses, and children's guardians pay for food.
Costs of food: About ¥250 ($2.2) per elementary school lunch, and about ¥300 ($2.6) per junior high school lunch.

Standards of intake through school lunches

The program has nutritional standards for necessary intake.

[Thanks for the meal !]
Children express gratitude for food before and after the school lunch.

[A day's lunch]
Rice, milk, teriyaki salmon, miso soup (tofu, *komatsuna* (Japanese mustard spinach), scallions), boiled spinach and turnip, mandarin orange
Photo: Kodaira 6th Elementary School, Kodaira, Tokyo



[*Shokuiku* class by a team of teachers]
Children learn about "3 nutrition colors" for a balanced diet. Photo: Kawajiri Elementary School, Kure, Hiroshima

Diet and nutrition teacher system

Diet and nutrition teachers promote *Shokuiku* at school by providing "dietary guidance through the school lunch program."
Fixed numbers of school nutritionists are allocated to public schools, and 42 percent of these nutritionists are assigned as diet and nutrition teachers at the discretion of the municipality or supervisors. Employing diet and nutrition teachers is not mandatory.

Diet and nutrition teachers' functions

Provide dietary guidance as part of daily school lunch management.

1. Work with classroom teachers to provide dietary guidance.
2. Provide pupils with individualized guidance on how to prevent or overcome obesity, unbalanced dietary habits, and food allergies.
3. Work with other teachers, pupils' families, and the local community to coordinate efforts toward enhanced dietary guidance.
4. Conduct nutrition, hygiene, and supply management.

*** School nutritionists also perform these functions.**

[Individual guidance for children and their parents]

Source: "Promotion of *Shokuiku* through School Lunches," DVD teaching material, the Ministry of Education, Culture, Sports, Science and Technology

[Growing vegetables]
She has grown and harvested tomatoes. She did not like tomatoes before, but now she does.
Photo: Akiyoshi Elementary School, Mine, Yamaguchi

[Rice reaping]
Children grow and harvest rice, which has been important to the Japanese people from time immemorial. Hands-on farming in an agricultural village
Photo: Toho-mura, Asakura District, Fukuoka

Hygiene control

School lunches are prepared in accordance with strict hygiene control standards to ensure food safety.

[Vegetables are prepared in the dry system]

[Temperatures are strictly controlled]
The school cook measures center temperatures of broiled fish.

[Hygiene control for school cooks]
School cooks dress themselves in cooking attire and conduct a health check every morning. They have their stools tested twice a month.

Photos of on-site hygiene control have been provided by the Fukuroi Chubu School Lunch Center

2

Source: **Public Interest Incorporated Foundation Japan Association for Improving School Lunch** （資料提供：**公益財団法人学校給食研究改善協会**）

EDITORS

Andrew R. Durkin, MS, Ph.D.

Professor Emeritus of Russian Literature, Indiana University, Bloomington, Indiana. MA and PhD, Columbia University. He is the author of numerous studies of Russian and Slavic literatures and culture.

Advisor, Asian Nutrition and Food Culture Research Center

Emily A. Callahan, MPH, RD

She is the Owner of EAC Health and Nutrition, LLC. Previously, she held responsibility at National Program Lead for the American Heart Association's Sodium Reduction Initiative and Program Officer for the Food and Nutrition Board of the Institute of Medicine.

Advisor, Asian Nutrition and Food Culture Research Center

Masayo Kaneda, RD

She has been a professor at Kagawa Women's College, Tokyo, Japan for the last 10 years. She has contributed to the present school lunch system as a leader in the establishment both of the sanitary system and of nutrition teachers as promoters of food education. She has received awards from the Japanese Ministry of Education and Orders of the Sacred Treasure for her work. She was a school dietitian for 30 years and a senior specialist in the School Lunch Department of the Japanese Ministry of Education Culture, Sports, Science and Technology for 10 years. Advisor, Asian Nutrition and Food Culture Research Center

Shigeru Yamamoto, RD, Ph.D.

He is the director of the Asian Nutrition and Food Culture Research Center, professor emeritus of Tokushima University and of Ochanomizu University and an honorary professor of Hanoi Medical University. During his approximately 40-year academic career, he taught more than 200 graduate students and has received awards from the Japanese Ministry of Education, the Vietnam Ministry of Health, the Japanese Society of Food and Nutrition, and the Japanese Society of Nutrition and Dietetics.

AUTHORS

Yuriko Ichimura	**Asian Nutrition and Food Culture Research Center**
Noriko Sumida	**Nutrition Teacher, Tokushima City**
Indri Kartiko Sari	**Asian Nutrition and Food Culture Research Center**
Saiko Shikanai	**Asian Nutrition and Food Culture Research Center**
Miho Nunokawa	**Asian Nutrition and Food Culture Research Center**
Volker Peinelt	**Hochschule Niederrhein, Germany**
Kae Yanagisawa	**Asian Nutrition and Food Culture Research Center**
Sumiko Kamoshita	**Asian Nutrition and Food Culture Research Center**
Kaori Nagao	**Nutrition Teacher, Tokushima City**
Nobuko Sarukura	**Asian Nutrition and Food Culture Research Center**
Ayami Sano	**Asian Nutrition and Food Culture Research Center**
Miho Kogirima	**Asian Nutrition and Food Culture Research Center**
Sayako Aoki	**Asian Nutrition and Food Culture Research Center**
Eiko Murai	**Nutrition teacher, Kagawa Prefecture**
Noriko Wakikawa	**Nutrition teacher, Osaka Prefecture**
Naomi Sakuma	**Nutrition teacher , Yokohama City**
Lin Pei-ying	**Asian Nutrition and Food Culture Research Center**
Lin Fang-Yu	**Asian Nutrition and Food Culture Research Center**
Chen ting chun	**Asian Nutrition and Food Culture Research Center**
Misako Hirota	**Nutrition Teacher of Shiga Prefecture**
Chieko tooyama	**Nutrition teacher of Gifu Prefecture**
Yoko Ichikawa	**Shizuoka Prefecture University**
Sumie Shinjo	**University of Ryukyus**
Fadzlina Hamid	**Universiti Sains Malaysia**
Rohana Abudabi Jail	**Universiti Sains Malaysia**
Le Duc Son	**Asian Nutrition and Food Culture Research Center**
Vu Thi Hien	**Vietnam National Institute of Nutrition**
Bu Thi Nhung	**Vietnam National Institute of Nutrition**
Tran Thi Minh Hanh	**Ho Chi Minh City Nutrition Center**
Nguyen Thi Thuan	**Asian Nutrition and Food Culture Research Center**
Lukkamol Prapkree	**Mahidol University, Thailand**
Por Narisa	**Mahidol University, Thailand**
Chanida Parhotikarn	**President of Thai Dietetic Association**
Sunard Taechangam	**Former President, Asian Federation of Dietetic Associations**
Vu Thuy Linh	**Asian Nutrition and Food Culture Research Center**
Nguyen Thi Lieu	**Asian Nutrition and Food Culture Research Center**
Nguyen Thi Thao	**Asian Nutrition and Food Culture Research Center**
Sophia Wong	ChungShan Medical University, Taiwan
Ming Fu Wong	**Providence University, Taiwan**
Leh-chii Chwang	**President, Asian Federation of Dietetic Associations**

FOREWORD

The current Japanese life-style is not ideal. Parents work long hours and children study at cram schools until late at night. Under such social conditions, people often eat take-out/ready-made foods from shops, for which one cannot blame them. What we can perhaps hope for is 'correct food choices'. The knowledge and habits formed by the school lunch program can play an important role in this. The nation-wide school lunch program in Japan is noteworthy not only for its nutritional accomplishments, but also for its educational, social, and cultural aspects. Since an early version of the program was first introduced in the post-World War Ⅱ era and almost all public schools in the country are currently included in it, Japanese people themselves often take the program as a given and are unaware both of its unique features and of how remarkable it is in the context of world-wide attempts to provide food and nutrition education for children in their formal educational environment.

The most significant feature of the Japanese school lunch program is not only its concern with the management and nutritional aspects of the food served in schools but also its integration of the school meal into children's educational, social, and cultural experience. This integration is facilitated in a number of ways. Meals are served by children themselves in the setting of the classroom, making lunch part of the educational continuum of the day. More importantly, aspects of the meal are incorporated into instruction, for instance by having students investigate the origins, sources, and traditions of the food they are eating. Children are introduced directly or indirectly to the producers and preparers of their food, making them aware of the agricultural, economic, and social connections of their lunch. The links of their food with cultural traditions are also presented, with attention to distinctive Japanese foods and methods of preparation, regional and seasonal specialties, as well as the role food plays in festivals, traditional holidays and so on.

Central to the Japanese school lunch is the role of the licensed school dietitian/nutrition teacher, a specialized profession that has developed in Japan. The nutritionist/nutrition teacher is concerned not only with the planning, procurement, and preparation of nutritionally adequate food for the children in a school but also with raising children's awareness of the nutritional aspects of their meal and of its social and cultural interconnections.

The purpose of this collection of articles and essays is to increase the Japanese public's recognition of the value and significance of the program that they themselves have developed as a society for their children and to make nutrition experts, education professionals, policymakers, and others around the world aware of the special qualities of the Japanese school lunch program that they may wish to emulate. It is hoped that by highlighting the features of the Japanese school lunch program, this volume will lead to the strengthening of the program in its home country and to the consideration of culturally and socially oriented school meal programs around the world.

CONTENTS

Reference

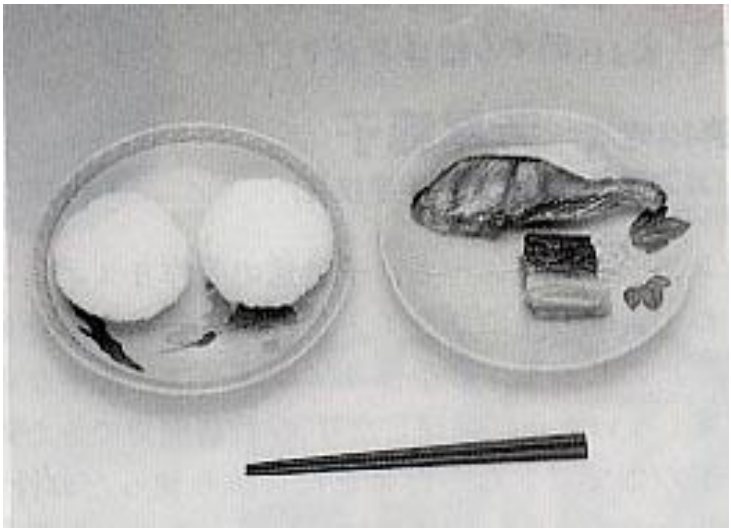
Please try to access the following article; Kaneda, Masayo and Yamamoto, Shigeru The Japanese School Lunch and Its Contribution to Health Nutrition Today: November/December 2015 - Volume 50 - Issue 6 - p 268–272

Chapter 1 HISTORY

The modern Japanese school lunch program traces its origins to support in 1945 from the USA, UNICEF and other organizations in 1945 to save children from hunger after the Second World War. In 1951, a school meal law was established under the Ministry of Education. It has been understood to encompass not only meals but also an extension of education. The program has been developing gradually from one focusing on energy requirements, to energy and other nutrients, then to food culture and has at present led to nutrition education. Nutrition education is provided by professionals (licensed school dietitian/nutrition teacher) as well as by the teachers of other subjects. They try to teach dietary habits, gratitude for food, its producers and people who involved in providing food, School lunch also serves as the topic for instruction in science, social studies, geography etc.. In this chapter, we would like to present a brief history of the Japanese school lunch program.

1) Initiation of school lunch in Japan

Providing lunch at schools began in Japan in 1889. Lunches were provided by a Buddhist confederation for poverty-stricken children in an elementary school in a city located in northern Japan. The simple lunches that were offered consisted of "onigiri" (rice balls), grilled fish, and pickled vegetables. A School lunch encouraged poorer children come to school. Other children brought lunch boxes (bento) with food from home.



Photograph 1-1 The first school lunch consisted of rice ball, salted salmon, and pickles. First served to children in 1889 (Source: Independent Administrative Institution Japan Sport Council)

After World War I (1918), because of an economic depression more than a million children were suffering from malnutrition. Because of the issue of children's health, the importance of school lunch was recognized and lunch was expanded to certain extent but the majority of school lunches were limited to impoverished children and had the purpose of encouraging them to attend school. During World War II (1939-45), healthy and strong young people were necessary for the war effort and school lunch was maintained until the final stages of the war in 1944.

2) After the World War II

After the loss in the Second World War (1945), the Japanese were suffering from severe hunger. The nutritional situation of Japanese children was deplorable. It is estimated that sixth grade students at the time had body equivalent to those of fourth grade students today due to stunted growth. The General Headquarters (GHQ) of the US occupying forces conducted a nutrition survey in Tokyo to estimate food needs and to arrange possible donations of food and suggested starting a school lunch program to the Japanese government in October 1945. GHQ and Licensed Agencies for Relief in Asia (LARA: U.S. non-governmental organization) actively provided food supplies for this purpose. Their assistance consisted mainly of canned foods (meat, fish, and vegetables), powdered skim milk, sugar, salt, raisins, wheat flour, soybean flour, soybean oil, and fish meal.

Photographs1-2 Continuation of School Lunch. In 1946, after World War II, the Ministry of Education, Health, and Agriculture recommended school lunch which was supported by LARA (Licensed Agency for Relief in Asia) (Source: Independent Administrative Institution Japan Sport Council)

In 1946 this support was limited to the Tokyo metropolitan area, but the following year the effort was expanded to reach children throughout the country. In 1949, skimmed milk began to be supplied by UNICEF and it was called UNICEF Milk. A clear effect on height was observed. This milk was very effective in improving the health of children.

At that time there were no school dietitians or cooks; therefore, students' parents came to school to prepare lunch. The government paid for the costs of personnel and facilities. Local governments also tried to cover other expenses for the improvement of meal quality.

Photographs 1-3 Beginning of Full School Lunch. In 1950, it was served when wheat flour from USA was supplied (Source: Independent Administrative Institution Japan Sport Council)

Photographs 1-4 Continuation of School Lunch. In 1949, UNICEF began supplying milk to children in school (Source: Independent Administrative Institution Japan Sport Council)

3) Establishment of school lunch law

Japan regained full independence through the San Francisco Peace Treaty in 1951, but this brought about the first crisis in school lunch services because Japan no longer received Government Appropriation for Relief in Occupied Areas (GARIOA) funding, which had financially supported school lunches but ended in1952. The following year, support from LARA was also stopped. The cost of school lunch rose for families and it became difficult for many schools to provide meals.

The government argued for the termination of school lunch. However, Parent and Teacher Associations nation-wide had initiated a broad movement demanding that the government support meals in schools and opposition political parties jointly proposed legislation for school lunches and the **School Meal Law** was established in 1954. Under this law, Japanese school lunch has developed impressively. Initially, the law was only aimed at primary schools. However, beginning in 1953 several major natural calamities (typhoons and floods) struck Japan and malnutrition increased among children in the affected areas. Because of such problems the law was expanded in 1956 to cover all school providing compulsory education as well as part-time high-school level night courses (1956) and special-needs pre-primary and upper secondary schools (1957). School lunch was recognized as a part of education, teach knowledge about nutrition, how foods are produced, how many people are involved by the time food is eaten, traditional foods and

customs. Fresh cow's milk replaced powdered milk. Various breads such as rolls, fried bread and other forms of baked bread began to be used. Soft noodles also became a popular staple food.

Photographs 1-5 School Meal Law Demands. In 1954, School Meal Law was established by the demands from schools and parents due to the financial burdens caused by the end of Government Appropriation for Relief in Occupied Area funds.

(Source: Independent Administrative Institution Japan Sport Council)

4) School dietitian

Before 1964, the position of dietitian did not exist and appropriate job titles were not used. In this situation the main activity was cooking; schools struggled to satisfy dietary recommendations. Staff mainly cooked, and planning and preparation of nutrition education were done during the staff's free time. In 1964, the Ministry of Education started partial support for salaries at kitchens covering several schools in a given area.

In 1974, the Ministry of Education defined the title of school dietitian and the role of the dietitian and decided on the legally required number of dietitians working in kitchens at public schools and kitchens covering several public schools and their salaries (paid half by the local government and half by the central government). This was gradually expanded to place at least one nutrition teacher or school dietitian in each school kitchen or satellite kitchen, which prepares meals for several schools in the same area (Details in Chapter 3. Nutrition Teacher/School Dietitian).

5) Establishment of Nutrition Teacher and the Shokuiku Basic Act

Since the 1990s, the social environment, including the family, has changed considerably and nutrition-related health problems have become more prevalent. In this situation, nutrition education has become important at school, too. To meet this need, the school dietitian was required to have mastered highly specialized knowledge and education techniques and a License of Nutrition Teacher was established in 2005. In 2014 there were 12,143 school dietitians and among them 5,021 were diet and nutrition teachers (2014). (See more details in Chapter 3. Nutrition Teacher and School Dietitian)

Shokuiku is a Japanese word meaning food and nutrition education. The "**Shokuiku Basic Act"** was adopted in 2005, In the act, school lunch plays an important role. In 2008, curriculum guidelines were revised and provisions relating to "the promotion of Shokuiku" were included. From the standpoint of Shokuiku, the school meal law, school lunch dietary reference intakes were revised and additional school lunch safety regulations were added. The guidelines clearly indicate that school lunch should provide a good model of a daily meal. By eating school lunch frequently, children establish desirable food habits and develop practical skills in choosing appropriate foods. Article 10 indicates clearly that the diet and nutrition teacher is to give practical guidance regarding the school lunch. (Details are provided in Chapter 4. Shokuiku Basic Act)

Chapter 2　MENUS

Photographs 2.1　by S. Yamamoto　Lunch time in class room

Photographs 2.2　Vegetables used in today's lunch displayed where it is easy for students to see them..

Photographs 2.3 by Nguyen Thi Thuan School lunches of a school

Photographs 2.4　by S. Yamamoto　School lunch at a school

Daily school lunch menus, totaling about 200 a year, are drawn up by the diet and nutrition teacher/school dietitians in the kitchen of each school or the area kitchen covering several schools in a given area.　Menu charts are also delivered to every student's family a month in advance so that family members know what their children are eating.　It is also recommended that the menu chart, along with the food items and their weights, be posted in the home so that everyone in the family can easily refer to it. Knowing the menus is useful so that parents can avoid serving the same items for lunch and dinner.　The menus are also useful in preventing food allergy problems.　Many schools also post the lunch of the day on line on the internet together with comments about it by children. The fact that everyone knows what the menus are means that parents can ask and find out whether children enjoyed lunch or not.　It is also an interesting and common topic for family conversation at home.

Table 2.1 Menus in Feb at a public school (source: N. Sumida)

6月学校給食献立予定表

今月の目標　せいけつにしよう

平成 27 年度　　かわじまちりつがっこうきゅうしょくセンター　川島町学校給食センター

日	曜	こんだてめい（しゅしょくのみもの）	こんだてめい（おかず）	おもなしょくひんめい（からだをつくるもの）	おもなしょくひんめい（ねつやちからになるもの）	おもなしょくひんめい（からだのちょうしをととのえるもの）	えいようりょう エネルギー kcal	えいようりょう たんぱく質 g
1	月	ごはん（セルフチキンライス） 牛乳	キャベツのクリームスープ チキンライスのぐ ミニトマト（小②中②）	ぎゅうにゅう ベーコン　チーズ スキムミルク　なまクリーム とりにく　ぶたにく	**ごはん** バター　あぶら とりにく　ぶたにく ごめこ	キャベツ　にんにく　にんじん コーン　ピーマン　エリンギ ミニトマト **たまねぎ**	小学生 670 中学生 850	小学生 26.4 中学生 32.7
2	火	じこなうどん 牛乳	カレーなんばん（しる） さかなナゲット（小1～③　小4～中②） もやしのサラダ	ぎゅうにゅう ぶたにく　あぶらあげ さかなナゲット	じこなうどん あぶら　でんぷん　カレールー ごま　ごまあぶら　さとう	にんじん　ねぎ こまつな　もやし　コーン **たまねぎ**	602 780	24.2 31.8
3	水	むぎごはん 牛乳	わかめスープ チンジャオロースー コーンのサラダ・ごまドレッシング レモンのムース	ぎゅうにゅう なると　わかめ　ぶたにく とうふ	むぎ**ごはん** ごま　あぶら　さとう　でんぷん ラーゆ　ドレッシング レモンのムース	もやし　ねぎ　にんにく しょうが　たけのこ　ピーマン キャベツ　コーン　にんじん	618 784	21.2 25.9
4	木	バターロール 牛乳	ミネストローネ タンドリーチキン アスパラサラダ・マヨネーズ	ぎゅうにゅう ベーコン　とりにく ヨーグルト	バターロール オリーブオイル　さとう じゃがいも　マカロニ あぶら　マヨネーズ	にんにく　たまねぎ　セロリ にんじん　カットトマト キャベツ　アスパラガス　コーン **たまねぎ**	634 808	26.2 32.7
5	金	ごはん 牛乳	じゃがいものなんばんに かみかみだいず みそきゅうり・かわじまみそ	ぎゅうにゅう とりにく　だいず **みそ**	**ごはん** じゃがいも　さとう　でんぷん あぶら	こまつな　にんじん　こんにゃく **ぎゅうにゅう**	643 808	23.3 28.1
8	月	ごはん 牛乳	かきたまじる ビビンバ いかのしょうがやき	ぎゅうにゅう ぶたにく　とうふ　たまご いか	**ごはん** さとう　ごま　ラーゆ でんぷん　あぶら　ごまあぶら	しょうが　にんにく にんじん　だいずもやし　こまつな しょうが　ねぎ	634 792	31.9 37.6
9	火	ホットちゅうかめん 牛乳	タンメン（しる） てづくりアメリカンドック かいそうサラダ・ドレッシング	ぎゅうにゅう ぶたにく　フランクフルト かいそう	ホットちゅうかめん あぶら　でんぷん　ごまあぶら こむぎこ ドレッシング	にんにく　たけのこ　きくらげ キャベツ　もやし　こまつな にんじん　だいこん **ぎゅうにゅう**	681 868	25.4 31.7
10	水	ごはん 牛乳	キャベツとにくだんごのスープ やさいしゅうまい（小1～4①　小5～中②） きりぼしだいこんとぶたにくの カレーきんぴら	ぎゅうにゅう にくだんご　ぶたにく やさいしゅうまい	**ごはん** はるさめ　あぶら　ごまあぶら さとう	にんじん　キャベツ　チンゲンサイ ねぎ　にんにく　きりぼしだいこん こんにゃく	604 786	20.0 25.2
11	木	こどもパン 牛乳 （中250cc）	スパゲティミートソース オムレツ フルーツミックス	ぎゅうにゅう ぶたにく　チーズ オムレツ	こどもパン スパゲティ　オリーブオイル あぶら　さとう　バター ナタデココ　ぐらにゅーとう	にんにく　にんじん　カットトマト セロリ　エリンギ　（四しめじ　レモンゆじゅう） パセリ　レモンゼリー　パインかん みかんかん　りんごかん　**たまねぎ**	679 932	24.3 33.1
12	金	ごはん 牛乳	にくじゃが あじのしおこうじやき ごまぴたし・しそドレッシング	ぎゅうにゅう ぶたにく あじしおこうじづけ	**ごはん** あぶら　じゃがいも　さとう ごま　ドレッシング	にんじん　たけのこ ぼしいたけ　しらたき　もやし えだまめ **ぎゅうにゅう**　**たまねぎ**	627 799	26.6 33.8
15	月	ごはん 牛乳	マーボーとうふ とりにくのスタミナやき ごぼうサラダ・かわじまごまドレッシング	ぎゅうにゅう ぶたにく　とりにく とうふ **みそ**	**ごはん** あぶら　でんぷん　さとう ドレッシング	しょうが　にんにく　ねぎ にんじん　たけのこ　にら ごぼう　コーン **ぎゅうにゅう**　**たまねぎ**	690 871	30.5 37.5
16	火	じこなうどん 牛乳	なすのかけ汁 こえびのからあげ キャベツのしおこんぶあえ	ぎゅうにゅう ぶたにく　あぶらあげ こえびのからあげ しおこんぶ	じこなうどん あぶら　さとう	なす　ねぎ　こまつな ぼしいたけ　キャベツ	606 769	26.2 32.6
17	水	ごはん 牛乳	はっぽうさい にくだんごのあまずあんかけ （小② 中③） れいとうみかん	ぎゅうにゅう ぶたにく　うずらたまご いか　にくだんご	**ごはん** でんぷん　ごまあぶら あぶら　さとう	しょうが　にんにく　きくらげ にんじん　たけのこ　キャベツ みかん **たまねぎ**	691 881	26.0 32.8
18	木	コッペパン（スライス） 牛乳 （中250cc）	こめこのコーンスープ チリドッグ こうきいも スライスチーズ	ぎゅうにゅう スキムミルク　チーズ なまクリーム　フランクフルト ぶたにく　ベーコン	コッペパン こめこ　あぶら　さとう パンこ　じゃがいも　バター	コーン　にんじん パセリ **たまねぎ**	697 903	29.4 37.5
19	金	まつぼかんまいわしごはん 牛乳	わかめととうふのみそしる いわしのうめに きゅうりとおまめのサラダ ・たまねぎドレッシング	ぎゅうにゅう わかめ　とうふ　こんぶ いわし　だいず **みそ**	はつがげんまいいり**ごはん** さんおんとう ドレッシング	にんじん　えのきだけ　しょうが うめぼし　レモンかじゅう えだまめ　コーン **ぎゅうにゅう**	650 798	32.4 36.5
22	月	ごはん（セルフチャーハン） 牛乳	キムチスープ チャーハンのぐ きびなごのしろごまフライ （小② 中③）	ぎゅうにゅう とりにく　やきぶた　とうふ きびなごしろごまフライ **みそ**	**ごはん** あぶら　ごまあぶら	ぼしいたけ　はくさい　キムチづけ キャベツ　ねぎ　にんにく にんじん　たけのこ　グリンピース コーン	607 774	22.8 29.0
23	火	ホットちゅうかめん 牛乳	みそラーメン（しる） やきぎょうざ（小1～4①　小5～中②） ナムル	ぎゅうにゅう ぶたにく ひじきぎょうざ **みそ**	ホットちゅうかめん あぶら　さとう　ごま　ごまあぶら ラーゆ	にんにく　しょうが　ねぎ にんじん　キャベツ　コーン だいずもやし　こまつな	596 784	24.1 31.1
24	水	ごはん 牛乳	すましじる ごまつくね（小1～4①　小5～中②） とりくとたけのこのうまに アーモンドミニフィッシュ	ぎゅうにゅう とうふ　かまぼこ　わかめ ごまつくね　とりにく **みそ**　かたくちわし	**ごはん** あぶら　さとう アーモンド	えのきだけ　にんじん　こまつな ねぎ　こんにゃく　たけのこ さやえんどう　ぼしいたけ	605 764	25.6 32.0
25	木	ツイストパン 牛乳 （中250cc）	オニオンスープ レバーのバーベキューソース マカロニサラダ・マヨネーズ ひとくちチーズ（中）	ぎゅうにゅう とりにく　ぶたレバー チーズ（中）	ツイストパン ごまあぶら　さとう　あぶら マカロニ マヨネーズ	にんじん　パセリ　オニオンソテー コーン **ぎゅうにゅう**　**たまねぎ**	684 904	27.7 36.2
26	金	ごはん 牛乳	てづくりカレー コールスロー ふくじんづけ ヨーグルト	ぎゅうにゅう ぶたにく　チーズ ヨーグルト	**ごはん** あぶら　じゃがいも　さとう こむぎこ　バター　くろざとう ココア　オリーブオイル	にんにく　しょうが　キャベツ にんじん　オニオンソテー カットトマト　すりおろしりんご ふくじんづけ　**たまねぎ**	717 932	21.8 28.3
29	月	ごはん 牛乳	はるさめスープ ハンバーグのおろしソース ひじきのしっとりふりかけ	ぎゅうにゅう ぶたにく　ベーコン ハンバーグ　ちりめんじゃこ ひじき　かつおぶし	**ごはん** はるさめ　さとう　ごま さんおんとう　あぶら	キャベツ　にんじん　もやし こまつな　だいこん	664 847	26.6 33.2
30	火	じこなうどん 牛乳	きつねうどん ささかまのパセリあげ きりぼしだいこんのサラダ	ぎゅうにゅう ぶたにく　あぶらあげ こんぶ　ささかまぼこ	じこなうどん さとう　あぶら　こむぎこ	だいこん　ぼししいたけ ねぎ　パセリ　にんじん きりぼしだいこん　もやし こまつな	664 843	26.6 33.1
22回		※材料などの都合で献立が変更になる場合があります。ご了承下さい。 ※毎月19日は食育の日です。家庭でも「食」についてはなしてみませんか。 **6月は　～『食育月間』『彩の国ふるさと学校給食月間』～**		※**太字**の食品は、川島町産の食材を使っています。		今月の平均栄養摂取量	650 833	26.1 32.7
						学校給食摂取基準	640 820	24（18～32） 30（25～40）

★食材の使用予定産地・給食の写真をホームページに掲載しています。
ホームページアドレス　http://www.town.kawajima.saitama.jp/

Table 2.2 Menus in Feb at a public school (source: N. Sumida)

Date	Menus
1Feb	Small rice-flour bread with pumpkin filling, Milk, Gomoku Udon, Tempura of small sardines, Ponkan, Setsubun beans
4 Feb	Rice flour bread, Reduced sugar jam , Milk , Pork and beans , Boiled vegetables , Mayonnaise
5 Feb	Bibimbap, Milk, Wakame soup
6 Feb	Rice, Milk, Braised Meat, vegetable , vegetable with sesame sauce , small piece of cheese
7 Feb	Rice, Milk, deep frying of the tofu, ketchup, clear soup, seasoned powder for sprinkling over rice
8 Feb	Small apple bread rice flour filled, Milk, Mushroom spaghetti, Seaweed salad, Sesame dressing
12 Feb	Rice, Milk, Sauteed pork and burdock, Thick vegetable omelet , Yukari pickles, Mixed nuts
13 Feb	Rice, Milk, Simmered lemon chicken, Satsuma soup
14 Feb	Curry and rice, Milk, Almond jelly, Fukujinzuke
15 Feb	Shell fish sandwich, Milk, Shrimp and mizuna soup
18 Feb	Rice flour-filled fried bread sprinkled with roasted soybean flour, Milk, Pumpkin [Kabocha] potage , Omelette , Ketchup
19 Feb	Rice , Milk , mackerel simmered with miso, braised dry radish, Hijiki seaweed
20 Feb	Rice, Milk, Simmered Chinese-style tofu, Bangbang chicken with dressing, Creamy cheese
21 Feb	Rice, Milk, Hoki with miso, Fushimen soup
22 Feb	Rice flour filled, Chocolate bread, Milk, Borscht, Japanese style salad, Japanese-style dressing
25 Feb	Rice , Milk , Grilled Spanish mackerel, Chinese cabbage garnish, Ponzu soy sauce, braised lotus root
26 Feb	Rice, Milk , Two-color fried chikuwa, Miso soup, Bonito flakes
27 Feb	Rice, Milk , simmered deep-fried tofu Vinegared cucumber and wakame
28 Feb	Kimchi Donburi, Milk, Lotus root-filled dumplings, Boiled broccoli, Mayonnaise

The cost of the school lunch is also reflected in menu planning. The diet and nutrition teacher/school dietitian makes menus that take into consideration the recommended school lunch allowances and costs. The cost that parents/guardians pay is only the cost of food materials, with no labor costs. According to a nation-wide survey of children by the Ministry of Education, Culture, Sports, Science and Technology in 2013, the average cost of each meal was about 240 yen (about $2) and about 280 yen (about $2.50) for elementary and junior high school students, respectively.

Chapter 3 SCHOOL DIETITIAN/NUTRITION TEACHER

Japan places a high value on food and nutrition education in schools, and correspondingly so on the professionals who provide this teaching to students. There is at least one nutrition teacher or school dietitian in each school kitchen or satellite kitchen, which prepares meals for several schools in the same area (7,8). These individuals are professionals with dietitian licenses. As stated in Chapter 1, each of them creates about 200 menus per year which must satisfy the dietary reference intakes, students` taste, local food culture and traditions (7,9). Nutrition teachers and school dietitians are the key in promoting good nutrition among school children, which may contribute to their good health, especially compared to similar-aged children in other developed countries.

Legally required number of dietitians

School (students over 6 years old)

- *Schools serving lunch to more than 550 students have to have a school dietitian/nutrition teacher.*
- *Schools with fewer than 549 children: There must be a school dietitian/nutrition teacher covering 4 schools.*
- *Satellite kitchens serving lunch to more than 1500 children must have a nutrition teacher; 1501 to 6000, two nutrition teachers; and more than 6000, 3 nutrition teachers.*

Kindergarten (children 3-6 years old): *1 dietitian/RD is recommended if the kindergarten serves 100 meals a day on a regular basis.*

Nursery school s(0-6 years old):*. 1 dietitian/RD is recommended if they serve 100 meals a day on a regular basis.*

Education of Japanese dietitians :

A Dietitian is a food and nutrition professional. In Japan, there are two types of dietitians and registered dietitian (RD).

Dietitian Dietitians are licensed by prefectural governments. Their work is nutrition education as a dietitian.

Registered Dietitian Registered Dietitians are licensed by the Ministry of Health, Welfare and Labor. RD is a term that originated in the United States and now used commonly world-wide. Official name of Japan is a kanri-eiyoosi (management level dietitian). The Japan Dietetic Association introduced the term.

. Registered Dietitian established by the Ministry of Welfare and Labor. The duties

involve nutrition education relating to medical treatment for sick and injured persons, nutrition education to maintain and promote health that require a high level of professional knowledge and technique appropriate to patient's physical and nutritional condition, food service management.

The licensing process for dietitian and registered dietitian (RD)

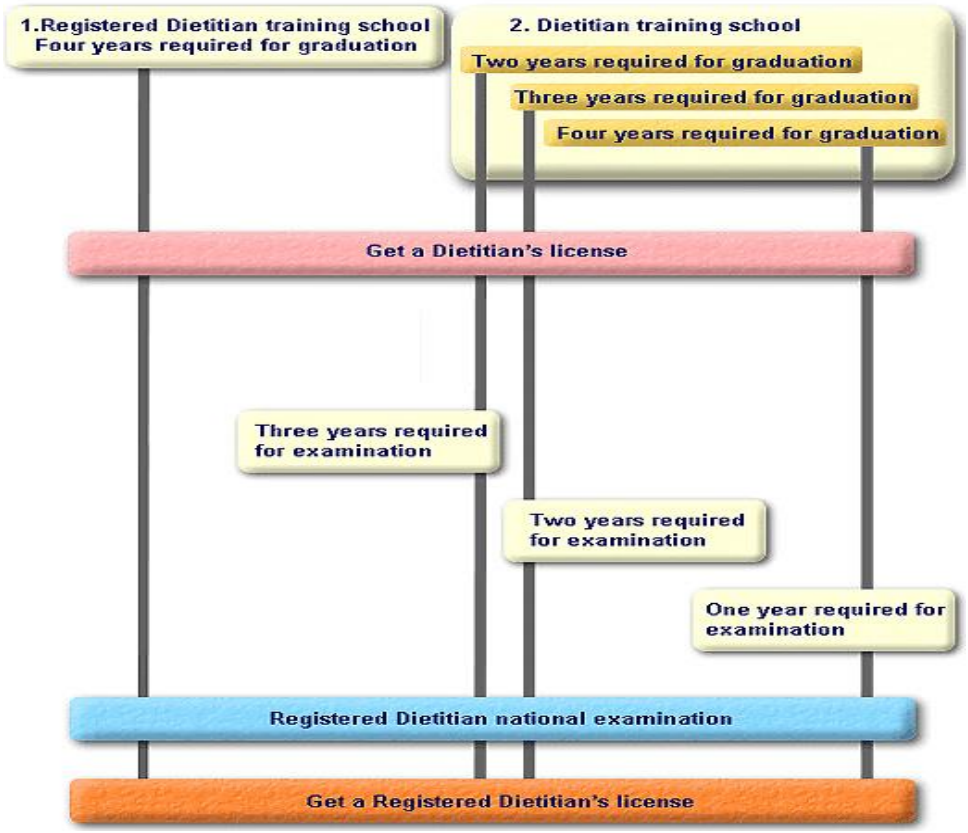


Fig 3.1 Japan Dietetic Association Home Page

The system of training for diet and nutrition teachers and school dietitians dates back about half a century. Before 1964, there were no job titles for the positions of dietitian and appropriate job titles were not used. At that time, the main activity of personnel involved in school lunches was food preparation. Staff mainly did cooking and planning and implementing nutrition education were done only during the staff's free time. In 1964, the Ministry of Education introduced partial support for salaries of school dietitians at kitchens covering several schools in a given area (19). This was gradually expanded and eventually dietitians were placed in each school or cluster of schools.

Since the 1990s, the social environment, including the family structure, has changed considerably and nutrition-related health problems have become even more prevalent. The current Japanese

life-style is not ideal for promoting health. Parents work long hours and children study at cram schools until late at night. Under such social conditions, one cannot blame them for eating take-out/ready-made foods from shops. What we can perhaps hope for is that children will make better food choices by following the example of the more appropriate items offered in the school lunch. Hopefully, it will foster better food choices by the example of the school lunch with more appropriate food choices. The knowledge and habits formed by the school lunch program can play an important role in this.

To meet this need, the school dietitian is now required to have mastered highly specialized knowledge and educational methods. A Nutrition Teacher License was established in 2005. The license is similar to that required for teachers of other subjects. There are 3 levels of personnel depending upon their academic background: graduation from a junior college, from a regular college or university, or from graduate school. A registered dietitian or dietitian can obtain the license after 3 years' experience working in a school and 8-10 lecture credits. In 2014 there were 12,143 school dietitians and among them 4,703 were nutrition teachers.

Photographs 3.1 M. Kaneda

The school meal teaches children how to make healthy food choices and embeds food and nutrition education (including agricultural practices, food production and distribution, and cultural traditions) in other academic subjects. For example, in a social studies class, students may calculate the distance that various foods in a school lunch on a given day have traveled from their production area to the school. Students also calculate the necessary fuel and discuss its effects on the earth's ecology. In a physical education class, students record their own changes in height and weight and

learn about the nutritional contributors to their growth. In English class, English relating to the menu of the day is taught, such as the names of foods, cooking methods, table manners, nutrients, etc. This broad perspective on food and nutrition helps instill in children a sense of gratitude for the food they are eating and an appreciation for and interest in its origins. In addition, it is likely responsible for the remarkably low levels of food waste reported by many schools.

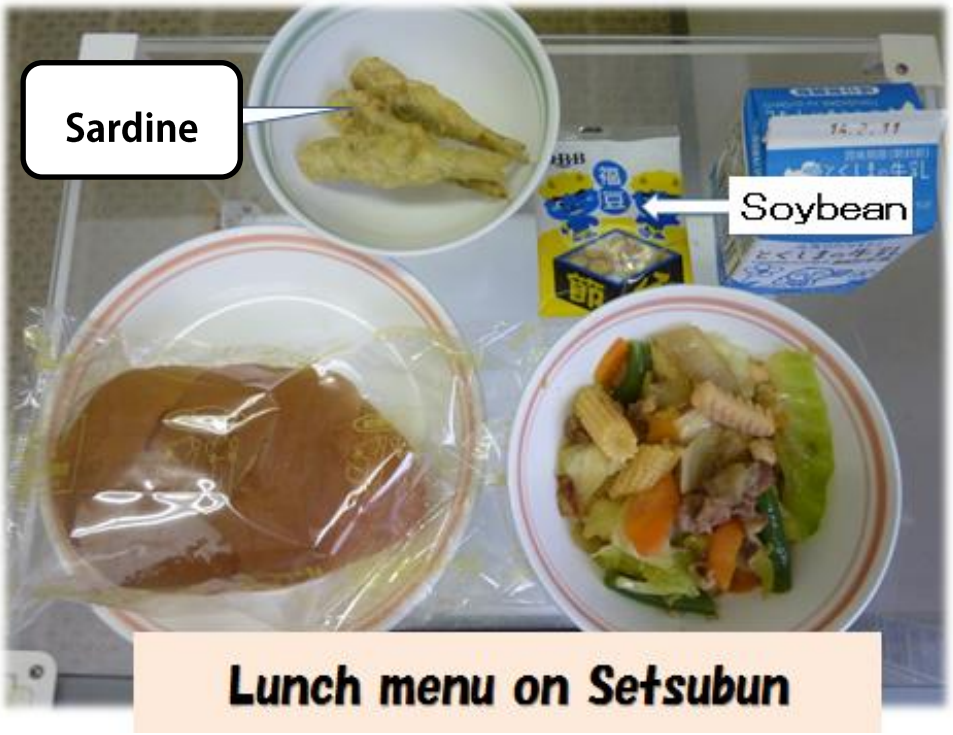
Education about food and health is provided in connection with the school lunch by diet and nutrition teachers/school dietitians working in tandem with teachers of other subjects. For example, in a social studies class, students may calculate the distance that various foods in a school lunch on a given day have traveled from their production area to the school. Students also calculate the necessary fuel and discuss its effects on the earth's ecology. In a physical education class, students record their own changes in height and weight and learn the nutritional reasons for their growth. In English class, English relating to the menu of the day is taught, such as the names of foods, cooking methods, table manners, nutrients, etc. Partly through classes like these, food waste is reduced to almost zero

Setsubun

As an example of a shokuiku activity, Ms Sumida, , a nutrition teacher in a city in the western part of Japan, used the school lunch for the study of the Japanese traditional observance of Setsubun, Midwinter Day. She developed menus and the kitchen staff prepared appropriate meals. She explained the cultural history of Setsubun through the cartoons shown below.

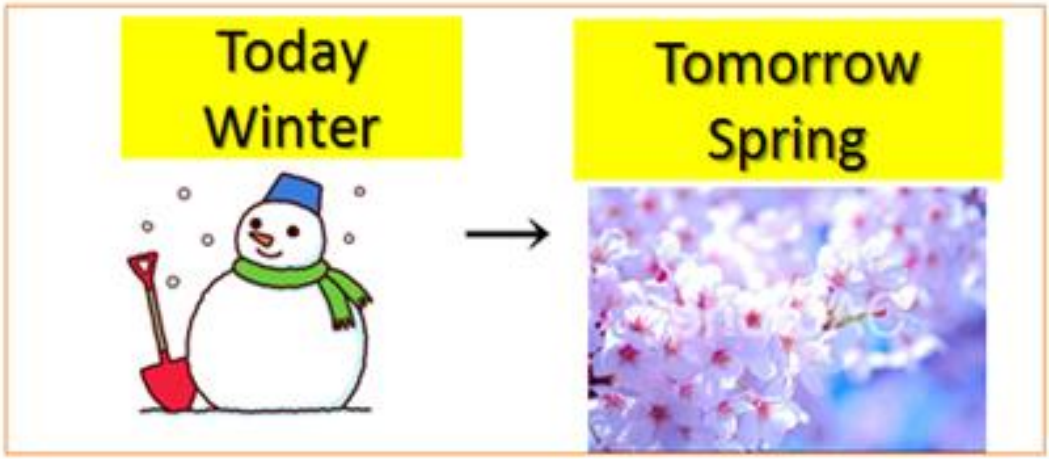
"As a society with long traditions, Japan enjoys many traditional festivals and observations in the course of the year. As in other countries, these days are marked by the preparation of special foods and the school lunch program often incorporates these dishes into its menus on these days, both for their traditional cultural significance and to acquaint students with foods that they might not otherwise eat often" is this a quotation from Ms. Sumida.

Setsubun is the day before the beginning of spring in Japan. It is also New Year's Eve by the lunar calendar, which begins the year with the first day of spring. This is according to Chinese custom, which was introduced to Japan in the 18th Century. On this day, the Japanese perform a ritual to cleanse away all the evil of the previous year and drive it away.



Photographs 3.2 Lunch on Setsubun at Ms. Sumida's school.

Teacher: Today is February 3. Do you know what day that is?
Students: It is Setsubun.
Teacher: Yes, it is the New Year's Eve Festival by our old calendar.
So do you know why we throw soybeans at demons on this day?



Students: ???
Teacher: Demons are evil.
Students: Yes, but why are they evil?
Teacher: In the old days, people believed that all sorts of bad things, such as sickness, storms etc. were caused by demons.

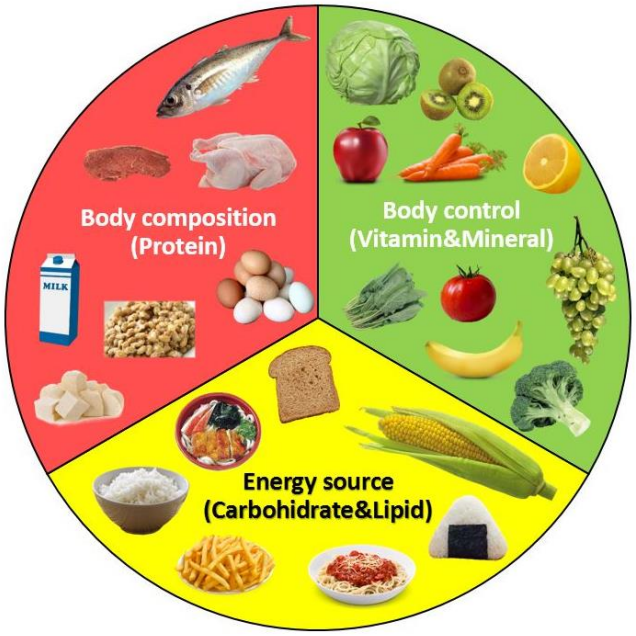
Students: Why do we throw soybeans at demons and why we put the heads of sardines and holly at the front door?
Teacher: Demons dislike the strong smell of grilled sardines. People believed that good spirits dwelt in soybeans and demons are afraid of them.

Drawing 3-1 Drawings by K Nagao and N Sumida. Holly and sardine heads

Ms. Yamaguchi, a nutrition teacher at an elementary school north of Tokyo, has also tried various methods of nutrition education. When a certain lunch menu proves to be very popular with children, she prepares a note on the recipes used and has children bring it home to their families so they can prepare it together. She has another interesting teaching method. During winter vacation, she assigns an at-home project to sixth graders (the highest grade of elementary school, with children usually 11 years old). The assignment is to make meals at home by themselves and to photograph the food they have prepared.

Table 3.1 A recipe sheet (mark one of 3 food groups of rice and curry)

	Materials	Gram	Yellow	Red	Green
rice	rice	100	○		
curry	potato	50	○		
	chicken	20		○	
	onion	30			○
	carrot	27			○
soup	miso	17			
	egg	50		○	
	cabbage	10			○
	Kabocha	20			○



Drawing 3.1 Designed by I. Kartiko Sari. Three food groups taught at elementary school

On a recipe sheet, children write down the ingredients and amounts and mark which of three food groups.. In Japanese schools, children are taught about three food groups. Yellow indicates main energy sources such as cereals, oils etc.; red indicates major protein sources such as meat, fish, soybeans, etc.; and green is used for vegetables, fruits, sea weeds etc. They learn that ‘yellow’ foods produce power and maintain body temperature, ‘red’ foods are growth and ‘green’ foods maintain physical condition. By this method, children learn which foods belong in which group. The recipes prepared by the children are evaluated by the nutrition teacher, cooking staff and teachers and the best one is made and served to all the children. The Japanese school year ends in March and the experience becomes a good opportunity to learn about nutrition as well as a good memory.

Chapter 4 *SHOKUIKU,* FOOD AND NUTRITION EDUCATION

Legal developments involving the promotion of nutrition education, or what is called Shokuiku in Japan, may also be positive forces in instilling healthy food habits during childhood. The Japanese national Shokuiku Basic Act became law in 2005. Shokuiku is a Japanese word meaning food and nutrition education. In the “Shokuiku Basic Act”, school lunch plays an important role in implementation of the Shokuiku Basic Act.. In 2008, school curriculum guidelines were revised and provisions relating to "the promotion of Shokuiku" were included. Shokuiku also led to revisions in the school meal law, school lunch dietary reference intakes, and school lunch safety regulations. The guidelines clearly indicate that school lunch should provide a good model of a healthy daily meal. It is believed that by eating school lunch frequently, children will acquire desirable food habits and develop practical skills in choosing appropriate foods. Article 10 of the Act states that the school dietitians and nutrition teacher is to give children practical guidance regarding the school lunch.

Shokuiku (Food and Nutrition Education) is very active at schools in Japan. It contributes substantially to children are being imbued with a sense of gratitude for the food they are eating and how it is produced and who produces it. As discussed in Chapter 1, Nutrition teachers and school dietitians use safe and fresh, locally available foods from known producers as much as possible For example, vegetables harvested the same day are used; therefore, they are tasty and there is only a small percentage of waste. Farmers are happy to know that students like their products and are thus encouraged to produce better foods. Schools display photographs of food producers when students are eating lunch and sometimes invite producers to visit the school and talk about food production; students also visit food producers and become familiar with how their food is produced. Such activities establish strong connections between students and food producers, including people working in agriculture, fishery, meat and other industries; students respect their food and waste is reduced to a very low percent.

School lunch influences agriculture and other food industries. Fresh local vegetables are used for school lunch. Farmers harvest vegetables very early in the morning and bring them to school. Of course it is tasty and children are happy and send massages of appreciation to food producers. Food producers are encouraged and try to supply better products. By these efforts, good relation is established between food producers and children.

Photograph 4.1 by M. Kaneda

Farmers are introduced in the "School Lunch Newsletter"

Photograph 4.1 by M. Kaneda

Children make fertilizer from their waste of school lunch. The fertilizer is given to the farmers free. Children see the growth and harvesting of foods.

http://www.city.kochi.kochi.jp/2005/kyushoku/index_1.html

Fig 4.3 Children make compost from school lunch scraps.
The compost is given free to the farmers.

The school nutrition teacher receives information on what is available from the local agricultural association, makes a selection, and places an order. The association then contacts member-farmers who are best able to fulfill various parts of the order. But the relationship between the school and the farmers is not merely one of buyer/producer.

As an example, if Ms. Y. Ichimura, a nutrition teacher, wants to have corn, she will ask the farmer who will be providing the corn to come to the school and explain to a group of students how corn is planted in April, grown, and then harvested in July. The farmer may bring an entire corn plant and also ears of ripe corn that the children can husk as a hands-on learning experience. He may also explain how each thread of corn silk is attached to a separate kernel of corn on the cob and have children trace strands of silk to their kernels. He also tells them how rain and other environmental factors affect the corn and other crops and how he gets up early to pick corn and deliver it to the school early in the morning so that it can be as fresh and tasty as possible when it becomes part of the children's lunch. The farmer may talk about how fresh corn looks, feels, and smells so that children have some idea of the qualities of fresh produce. The children are encouraged to participate and to ask the farmer questions about his work, the other things that he grows, and so on. Later on the children may write to the farmer and tell him how the corn tasted, thank him for bringing it, etc. The children learn the farmer's name and the location of his farm and thus gain a

sense of local geography and agriculture. In turn, the producer sees his customers/consumers and is thus encouraged to improve his corn in the following year.

In terms of preparation, the husked corn is boiled in a large pot. The children bring the husked corn to the cooks, who tell them that the corn will be part of their lunch. At lunch time, all the students are told that 'today's meal includes corn that was grown by Mr. A., who picked it this morning and brought to school, and it was husked by the second graders, so please enjoy it." This way all the students know where their lunch came from and who grew it, they can enjoy eating corn on the cob. The cooks are also happy because the children tend to eat everything and there is little waste.

Photographs 4.4 by Y. Ichimura: Children peel of corn with farmers

Photographs 4.5 by Y. Ichimura: Children peel of corn with farmers

Here is another example of a nutrition teacher's Shokuiku activity. In the area where of Ms Sumida is living, Shiitake mushroom is important food product. However, children often dislike shiitake, so she developed a project to make students more familiar with shiitake cultivation and to encourage them to consume more of them. In the project, the nutrition teacher asked 5th and 6th grade students how shiitake were produced. The students didn't know, some suggesting that shiitake grow in sand. So the teacher brought a log that had been donated by a farmer who grew shiitake and she and the children inoculated it with shiitake. Producers of shiitake who use the traditional method of inoculating logs are concerned about the increasing use of other growth mediums to produce shiitake in inside environments; the traditional growers feel that shiitake produced by these methods, although cheaper to produce, are inferior in taste and nutritional value.

Photograph 4-6 by N. Sumida Shitake mushroom cultivation

Shitake cultivation: A length of beech or sawtooth oak log (approx. 1 meter) is left for a year or so till it becomes liable to decay. Small holes are drilled in the log and plugs from an old log that has been used to grow shiitake are inserted into the holes. The log is sprinkled with water and is kept damp so that hyphae will grow and eventually produce mushrooms.

Traditional growers would like consumers to be aware of the superior taste of their product and so are interested in promoting awareness of their methods. The children selected a name for their group and attached a name tag to the log. The nutrition teacher kept the log at school in a damp, dark spot and kept it moist. The children watered the log every day and eventually small mushrooms began to

emerge on its surface. The children watched as the mushrooms grew to usable size, about one month after they first emerged.

Shiitake, which are high in Vitamin D, are seldom used fresh in Japan and are usually dried. So the teacher cut the mushrooms and hung them to dry just outside the classroom window. The children continued to be interested in the process. The drying also took about a week. The nutrition teacher drew up menus using dry mushrooms for mushroom broth (dashi) for soup that was served as part of the students' lunch. (Shiitake are one of the primary sources of dashi, the others being kelp [kombu] and bonito; all three are high in the flavor element that has come to be known as umami from its name in Japanese.) The teacher explained to the children how the mushrooms were used to make the dashi for their miso soup. The children realized that they had observed and participated in the process of growing, harvesting, and drying the shiitake and thus took a special interest in trying the soup. As a result, waste was reduced to a minimum.

Before the start of the shiitake project, the nutrition teacher asked students whether they liked shiitake, and some 60% said that they disliked them. After six months, the teacher asked the children (in a questionnaire) how they liked shiitake, and only 10% responded that they disliked them. They also were still interested in how shiitake are produced. The children also told their parents about the project with shiitake and their parents tended to use them more. By the continuation of these activities, waste was reduced. The teacher believes that through understanding how shiitake are produced and participating in the process, children felt greater respect for their food and appreciated the processes of production and preparation more. Children are psychologically sensitive and responsive with regard to food and their experience with the shiitake led them to understand how food is produced and to realize that their food is connected to the natural and social environment.

Chapter 5. SANITATION

Sanitation is a major priority in Japan. There are 33,000 school lunch kitchens and each serves about 200 meals a year. From 1985 to 1996, fewer than 20 food poisoning incidents per year occurred, except in 1988 (33 incidents). In 1996, an outbreak of food-borne *Escherichia coli* O157:H7 infection in school lunch kitchens affected 11,651 and 5 people died across the nation. After this tragedy, the Japanese Ministry of Education, which oversees the school lunch program, conducted various surveys to identify risk factors for E. coli contamination and to find effective methods to prevent it. They created Committee for School Lunch Sanitation. Since then, starting in 2000, fewer than 5 incidents and 6,000 cases have been identified, indicating a dramatic decrease. (Fig 5-1).

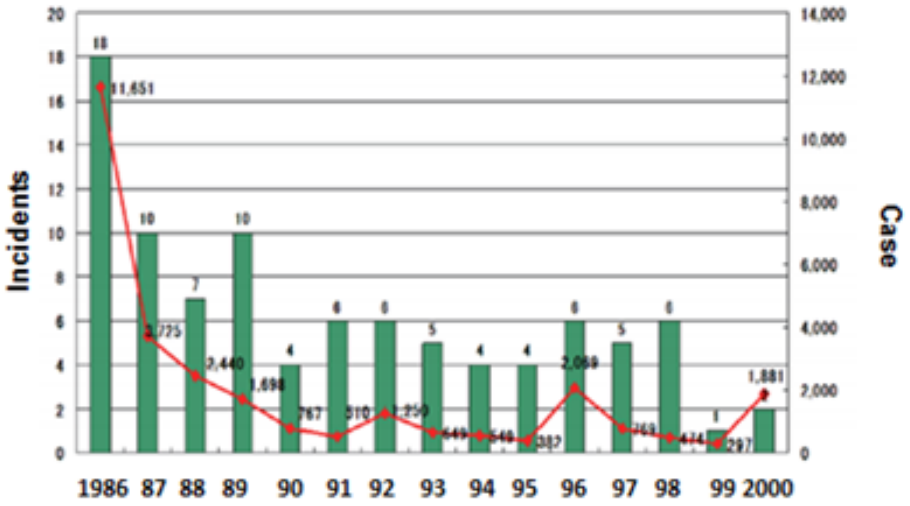


Fig. 5-1 Number of incidents and case from 1996 to 2000 nation-wide (Source: Ministry of Education, Sports and Science)

These numbers are decreasing due to the hard work by the government committee, which are doing careful sanitary inspection. Inspection of sanitary conditions in kitchens has been conducted since 1986. These inspection data were recorded in written reports which served as the basis for DVDs and manuals to be used for food safety education. By use of these manuals, issues regarding infectious diseases from food decreased dramatically. Since 2011, all Japanese school kitchens have been managed using Japan HACCP, Hazard Analysis and Critical Control Point. Commercial products are also required to meet HACCP specifications. For these, producers are selected carefully by school lunch associations in each area.

The committee has introduced measures to enhance sanitary inspections. They required a daily written health checklist for school kitchen staff and the staff are required to undergo a health examination at least twice a month. The committee teaches the staff several aspects of sanitary inspection sanitary inspection such as how to check food materials and how to cook to prevent food poisoning by using the guide book provided by the committee.

To prevent germs transmission, school kitchen areas are separated into two parts; a contaminated area and a non-contaminated area. The food materials come to the contaminated area and all the foods are inspected by the school kitchen staff. Then, the kitchen staff wash off any soil and remove any spoiled parts in called pre cleaning.

The persons who deliver the food materials to the school kitchen are not exempt from sanitary procedures. The school kitchen staff will note their names and check their health daily, since the food materials are brought by these people. Once they have been delivered, all the food materials and the quantities are checked. When the fresh food materials like vegetables have been exposed to high temperature, it is possible that molds have formed. In such cases, the staff will keep some part of the food for reference in the event of later problems.

The major innovation was the school kitchen cleaning process, which was changed from a wet floor system to a dry floor system. A wet floor system, in which the kitchen is cleaned with hot water, causes high humidity which can contribute to bacterial growth; in addition, water used in cleaning can be splashed on cooking utensils. The school dietitian became the manager responsible for sanitation, the health of the school kitchen staff, the work process, and the working line flow.

Photographs 5.1 by G Thi Thoan: Wet floor kitchen (left) and dry floor kitchen (right)

The investigation of the 1986 outbreak was conducted by Japanese Ministry of Health. They

tried to find the cause of the outbreak, which involved some kind of transmitted contaminants. The entire school meal production process was checked, including food processing, the kitchen cleaning, food delivery, and the school meals distribution process. Not only that, they also checked all people who participated in the various stages of the process. From this investigation, the risk factors involved in the outbreak became clear. About 48% were caused by transmitted infections, 26% were improper cooking methods which contributed to uncooked meals from an insufficient heating process, and 24% were caused by food sitting for a long period after being cooked. Japanese children have a low resistance to transmitted bacteria such as *Shigella*、*Salmonella enterica* , *Salmonella*、*Escherichia coli O157:H7, Typhoid bacteria*、*serovar Paratyphi A* etc. Health examination of the kitchen staff is required and is conducted at least twice a month.

Photographs 5.2 Two sink system (left) and 3 think system (right)
Source:http://www.mext.go.jp/component/a_menu/education/detail/

Three sinks are now required for proper cleaning of vegetables; this has dramatically decreased problems with bacteria. As shown in (Photographs 5-2), when the vegetables are washed in the first sink, the total bacteria are $1.0x10^3$ with Entero pathogenic bacteria were 300>. When it reached second and third sink, the numbers of total bacteria are dramatically decreasing until only 300>, even the Entero pathogenic bacteria is undetectable anymore. (source: M. Kaneda)

As the result *E. coli* O157:H7 has been virtually eliminated from school meals; the incidence of food poisoning from school meals was effectively reduced. Since then, approximately 40% viruses and 50% bacteria were detected in school meals facilities. However, the most common disease agent was norovirus with 41 incidents, about 48% of the total, which may occur with a small amount of disease agent. Thus, it is important to take action to prevent contamination from cooking utensils or form the school kitchen staff

Photograph 5.3 by N Sumida. Measuement of cooked foods

Chapter 6. CONTRIBUTION TO HEALTH

The Japanese school lunch program is offered in more than 98% of elementary schools (6-12 years old, 20,920 schools) , 78% of junior high schools (13-15 years old, 9,083 schools) about 89% of child welfare facilities (934 schools) and 80% of night high schools (482 schools). The program began in a city in the northern part of Japan but only for children from poor families. The origin of the present school lunch program came about with the support of the US government after the Second World War.

Sugar intake

The formation of favorable dietary habits can be seen with sugar intake in school lunch. While sugar intake is associated with obesity, diabetes and dental caries, sugars are also important energy sources, especially for rapidly growing children. Children like sugar-rich sweet foods. We have studied sugar intake from snacks and beverages consumed by Japanese school children and found it to be about 25 g a day. The World Health Organization (WHO) suggests that a reduction to below 5 % of total energy intake per day would have additional benefits, even though they have also recommended that sugar intake stay at below 10 % of total energy intake per day. This (25g a day) consumed by Japanese children is within the guidelines that WHO recommends. On the other hand, children in the USA and Holland consume more than 100 g a day. In the USA, the calories provided by high sugar intake is recognized as a major factor of obesity; in our study no relationship was found in Japanese children.

In December 2013, the Washington Post reported success in obesity control in Japan and that this is due to the school lunch program. The definition of over-weight in Japan is a weight higher than 120 % of standard body weight for a given height. For example, the percentage of 11-year-old boys who were overweight was about 7% in 1977 and had increased to about 12% by 2006 but since then it has decreased to about 10%. The tendency is the same for the girls, about 6% in 1977, 10% in 2006 and 8% in 2014. Changes in adult over-weight ratios in the last 40 years went from 16% to 33% in the USA, and from 7% to 25% in England, while they went from 2% to 3.5% in Japan. From these facts, we can say that body weight control in Japan has been relatively successful.

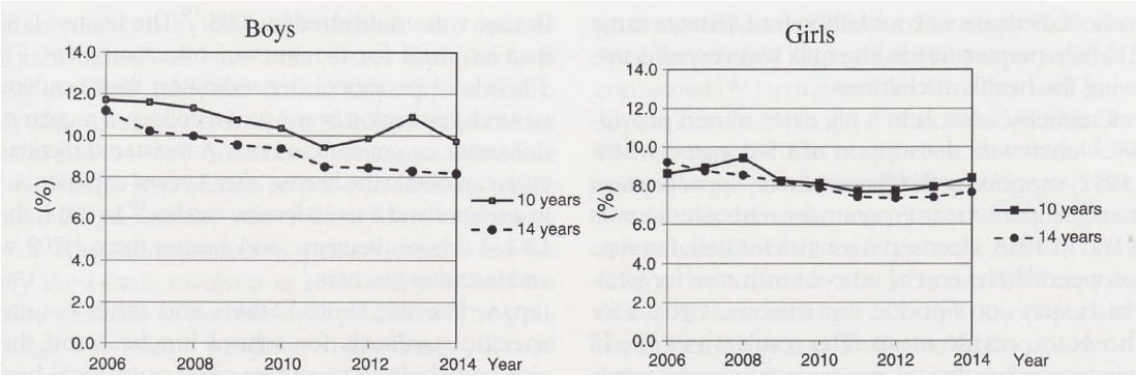


Fig. 6-1 Secular changes in Japanese child obesity (Source: Japanese school statistics)

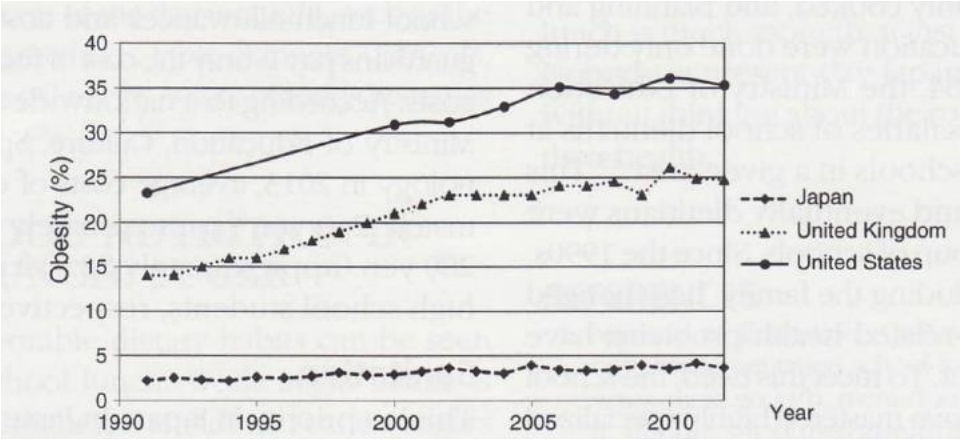


Fig 6-2 Secular changes in adult obesity in USA, England and Japan (BMI>30, source: 0ECD Fact book 2010,obesity)

How can school lunch, one of three daily meals, contribute to weight control? There are some possible factors. First, there is at least one diet and nutrition teacher/dietitian at each school kitchen or kitchen which serves several schools in the same area. Most of these nutrition teachers are professionals with a license as a registered dietitian/dietitian. Each one creates about 200 different menus/year which must satisfy the dietary reference intakes. These menus also take into consideration not only nutrition and taste but also local and national food traditions and culture.

Chapter 7　COMMENTS FROM THE WORLD

1) Visit to a Japanese School Lunch: Perspectives from a U.S. Registered Dietitian

USA: Emily A. Callahan, MPH, RD (Owner EAC Health and Nutrition, LLC. Previously held roles in the National Program Lead for the American Heart Association's Sodium Reduction Initiative and Program Officer for the Food and Nutrition Board of the Institute of Medicine)

Brief Background on the Japanese School Lunch Program

The present Japanese school lunch program originated following World War II with support from the U.S. government. Within a decade after the end of the war, Japan had established a national school meal law. Since then, the school lunch program has developed impressively and has become noteworthy for its putative role in promoting health and helping to maintain the relatively low and even recently declining obesity prevalence among Japanese youth. Municipalities cover labor costs of the meal, and parents/guardians pay the cost of food materials, an average of close to $3.

As a Registered Dietitian recently relocated from Washington, DC to Japan, I was excited to have an opportunity to visit a Japanese elementary school and experience its lunch program. My visit was made possible through a connection with Dr. Shigeru Yamamoto, a fellow Registered Dietitian and Director of the Asian Nutrition and Food Culture Research Center at Jumonji University, northwest of Tokyo. Dr. Yamamoto is also a Professor of International Nutrition at the university. He has had an impressive academic career of more than 40 years and is currently highly involved with promotion of the Japanese school lunch program.

Perhaps the most significant feature of the Japanese school lunch program is that its purview goes beyond the management and nutritional aspects of the food served and also encompasses (and even emphasizes) integration of the school meal into children's educational, social, and cultural experience. The purpose of this write-up is to share my observations of this integration and inspire colleagues in the U.S. to consider how aspects of this program may be emulated in order to improve the health and the food and nutrition literacy of American children and youth.

The visit on December 9, 2015 was hosted by Nobitome Elementary School in the city of Niiza, northwest of Tokyo. Three of Dr. Yamamoto's graduate students in nutrition, two from Taiwan and one from Vietnam, also joined the visit. Arriving at the school of 650 students, we were greeted with signs welcoming us in English, Vietnamese, and Chinese, as well as origami art featuring each of our native flags.

[1] In addition to the author's observations, this piece includes factual information about the Japanese school lunch program. The source of the latter is Kaneda, M. and Yamamoto, S. 2015. The Japanese School Lunch and Its Contribution to Health. *Nutrition Today* 50(6).

Our guide for the afternoon was Ms. Yamaguchi, the school dietitian and nutrition teacher. In Japan there is a law with a provision stating that a dietetics and nutrition teacher is to give children practical guidance regarding the school lunch. Every school in Japan employs a school dietitian/nutrition teacher. School dietitians may hold a Nutrition Teacher License, which requires similar training as teachers of other subjects. A dietitian can obtain the license after accumulating 3 years of experience working in a school and 8-10 lecture credits. In 2014 there were more than 12,000 school dietitians, about 4,700 of those were also nutrition teachers.

Here I am (second from right) with the graduate students and Ms. Yamaguchi:

Before entering the school, we changed out of our shoes into slippers. In Japan, shoes are not worn inside the home nor in some restaurants and other public buildings.

Our first stop was a peek into the kitchen to see the staff preparing homemade *dashi* (broth) in large cauldrons, using local vegetables and dried anchovies. Off to the side, racks of eating dishes decorated with small pictures of fruits and vegetables were piled into carts.

After the glimpse into the kitchen, Ms. Yamaguchi led us into the library to explain some of her teaching practices and show us her materials while we sipped green tea. As the only other English speaker, Dr. Yamamoto kindly interpreted most of the conversation and the content themes of the materials we were reviewing.

Shokuiku: A positive force in instilling healthy food habits in Japanese school children

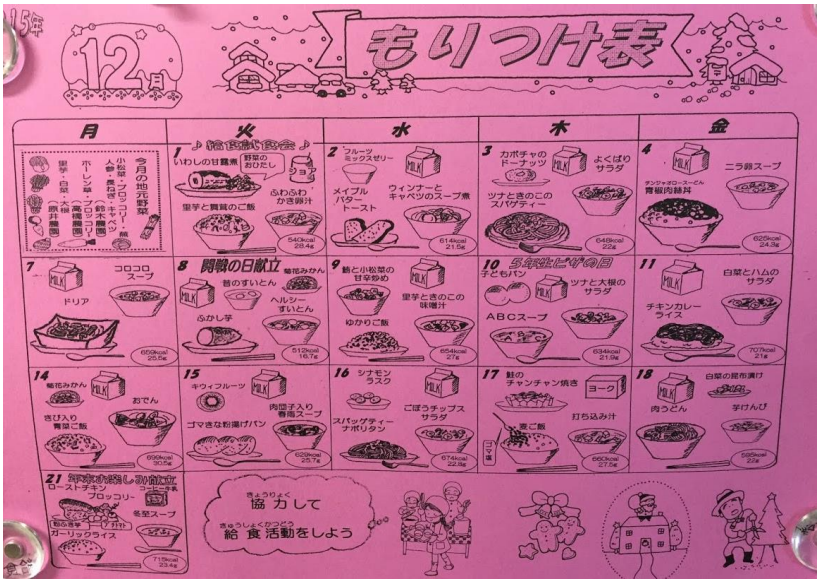
The emphasis on integrating the school meal into children's formal educational environment is expressed in the concept of *shokuiku* (pronounced "show-coo-ee-coo"), a Japanese word meaning food and nutrition education. The Japanese national Shokuiku Basic Act became law in 2005 and in 2008 school curriculum guidelines were revised to include provisions related to the promotion of shokuiku.

Ms. Yamaguchi explained that the school meal teaches children how to make healthy food choices and embeds food and nutrition education - including agricultural practices, food production and distribution, cultural traditions, and more - in other academic subjects (see box on *Shokuiku*).

For example:

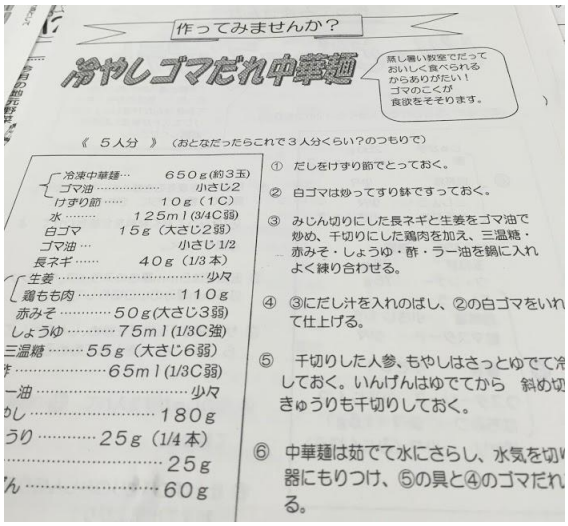
- Social studies: students may calculate the distance that the meal's ingredients traveled to reach their plates, as well as the amount of fuel used and its effects on the earth's ecology.
- Physical education: students chart their height and weight and learn about the nutritional contributors to their growth.
- English: students learn the English relating to the daily menu, such as the names of foods, cooking methods, table manners, nutrients, etc.

One of Ms. Yamaguchi's responsibilities is to develop the 200-plus menus for the school year. The menus must satisfy not only nutritional requirements but also student tastes and local and national food traditions and culture. The nutrition standards were established based on Japanese national nutrition surveys and recommended dietary reference intakes. A school lunch must provide one-third of daily nutrient needs, except for some nutrients for which it's more difficult to achieve daily requirements (such as fiber) and are therefore provided in larger amounts. Here is the December 2015 meal calendar for Nobitome Elementary School. The calorie and protein content for each meal are listed at the bottom right of each box:



Here's a closer look at the menu for the day of our visit, December 9:

Menu calendars are delivered to each student's family a month in advance so that family members know what the children are eating. This provides an interesting and common topic for family conversation. Many schools also post the lunch of the day on the school's website, along with children's comments about the meal. When a certain lunch menu proves to be very popular, Ms. Yamaguchi prepares a note on the recipes used and sends it home with each student. Here is an example of one of her recipe notes:


作ってみませんか？

冷やしゴマだれ中華麺

蒸し暑い教室でだっておいしく食べられるからありがたい！ゴマのこくが食欲をそそります。

《 5人分 》（おとなだったらこれで3人分くらい？のつもりで）

冷凍中華麺… 650g(約3玉)
ゴマ油 …… 小さじ2
けずり節 …… 10g（1C）
水 …… 125ml(3/4C弱)
白ゴマ 15g（大さじ2弱）
ゴマ油 … 小さじ1/2
長ネギ …… 40g（1/3本）
生姜 …… 少々
鶏もも肉 …… 110g
赤みそ …… 50g(大さじ3弱)
しょうゆ …… 75ml(1/3C強)
三温糖 …… 55g（大さじ6弱）
…… 65ml(1/3C弱)
ー油 …… 少々
ゆし …… 180g
うり …… 25g（1/4本）
…… 25g
ん …… 60g

① だしをけずり節でとっておく。
② 白ゴマは炒ってすり鉢ですっておく。
③ みじん切りにした長ネギと生姜をゴマ油で炒め、千切りにした鶏肉を加え、三温糖・赤みそ・しょうゆ・酢・ラー油を鍋に入れよく練り合わせる。
④ ③にだし汁を入れのばし、②の白ゴマをいれて仕上げる。
⑤ 千切りした人参、もやしはさっとゆでて冷してお く。いんげんはゆでてから 斜め切きゅうりも千切りしておく。
⑥ 中華麺は茹でて水にさらし、水気を切り器にもりつけ、⑤の具と④のゴマだれる。

Menus incorporate seasonal foods from local producers as much as possible, and packaged and processed foods are not common. Sometimes meals incorporate vegetables harvested earlier that day. Ms. Yamaguchi assembles a display of the ingredients used in the day's lunch, labeled with the name and locations of the producers who supplied them. Here is the display for our visit day, which even included the seasonings.

Local food producers are invited to visit the school and explain their trade to the students. Students also visit food producers and become familiar with how their food is produced. This broad

perspective on food and nutrition and connection with food producers helps instill in children a sense of gratitude and respect for the food they are eating as well as an appreciation for and interest in its origins. It may also be a contributor to the remarkably low levels of food waste reported by many schools. After our discussion, it was time to join a fourth-grade class for lunch. The students were excited to have visitors, and had prepared a colorful welcome for us in their classroom. After introducing ourselves to the students and hearing about their favorite foods, it was time for lunch.

My childhood experience with school lunch had formed my expectation that we would be eating in a cafeteria, so I was surprised as the classroom quickly transformed into a convivial setting for the meal. After a quick trip to the hallway sinks to wash our hands, desks were quickly re-arranged, colorful napkin cloths were spread out across each desk, and music was cued.
The fruit and vegetable dishes I'd seen earlier were rolled into the classroom alongside serving trays holding delicious-smelling food, and a subset of students quickly donned blue sanitary smocks, hair caps, and cloth face masks as they took their places to dish up the meal for their classmates:

As is typical throughout Japan, children do not bring lunches from home before high school. All of the students are served the same meal, and à la carte options and vending machines are not usually available.
The students waited until everyone had been served before they began eating. When everyone's meals had been placed at their desks, one student went to the front of the room and with clasped hands and a slight bow led everyone in a chorus of *Itadakimasu!*, a common Japanese phrase spoken at the start of a meal. This can be compared to saying "let's dig in" or "bon appétit," but it also conveys an offering of thanks to the chef and to those who produced the ingredients, as well as an expression of gratitude for the food itself. The essence of the word is related to the Buddhist principle of respect for all living things; Buddhism is a prevalent religion in Japan.
The meal included milk, rice with light seasoning, miso soup with mixed seasonal vegetables, and

maguro (a type of tuna) in a light breading and sauce with vegetables. It was all delicious, but the tuna was my favorite.

Here I am with Dr. Yamamoto and some of the students:

The clean-up was executed as quickly as the set-up, with all of the students helping to stack the dishes and flatten their milk cartons. All around the room, I heard students saying *gochiso sama deshita*, a Japanese expression of thanks for a good meal (literally, "it was a feast"). Before we left, the students serenaded us with "The 12 Days of Christmas" in English and their school anthem, then we posed for a group photo:

As we prepared to leave the classroom, dozens of origami figures appeared from inside the desks and were pressed into our hands as parting gifts. While walking to the principal's office, our last stop at the school, Ms. Yamaguchi stopped in the corridor of the hallway where the carts of dirty serving dishes were waiting to be rolled back to the kitchen for cleaning. As she pulled the lid off each one,

I was stunned to see how little food waste remained in all of the dishes:

Ms. Yamaguchi explained that for the entire school (approximately 650 students), food waste averages around two cups.

In the principal's office, we were served another round of green tea as we discussed our observations and current events influencing the school lunch. One of the discussion topics was related to the fact that the funding for the 2020 Olympics (which will be hosted in Tokyo) and the school lunch program is housed in the same department of the Ministry of Education. Hosting the Olympics will be costly, and it is possible that the school lunch program funding will be reduced as a result. As part of the effort to prevent this negative consequence, Dr. Yamamoto's research center is publishing a collection of short articles and essays on the Asian Nutrition and Food Culture Website in hopes of increasing the Japanese public's and policymaker's recognition of the value and significance of the program. Positive comments from foreigners will help their efforts even more compelling.

The visit made clear to me that the Japanese school lunch program is to be commended, both for the quality of the food and the integration of the meal into the broader educational milieu. It is truly outstanding in the context of global attempts to structure school settings and meals so that they cultivate food and nutrition knowledge and interest, improve and enhance health, foster lifelong healthful eating habits.

2) ***Kann Deutschland von der Schulverpflegung in Japan lernen? Englische Fassung***

Germany: Prof. Dr Volker Peinelt

School catering (SC) is gaining more and more importance throughout Germany, due to the increased number of full-time schools. Until now the government has failed to establish adequate preconditions for an healthy and well-balanced SC and therefore the current quality is not satisfying. Therefore the current quality is not satisfying. Opinions about the right way to deal with this situation differ vastly in Germany and this was the main reason for getting to know the Japanese school catering system, which has been known for its high quality for a long time.

Several talks and interviews with qualified employees, working at six schools in the area of Tokyo, provided a clearer insight. In addition I was able to discuss the SC system with politicians, members of the committee of nutrition and the competent authorities. A few of the covered topics were the recently used catering system, the responsible employees and the way the students receive their meals. With the help of another Japanese nutrition scientist I was able to find out further details.

It turned out that all tasks in the kitchen are executed in a professional manner and the SC processes are perfectly coordinated. The food is prepared freshly and shows a lot of production-depth. Subsequently the students themselves carry out the meals to their classmates, who eat in their classrooms. Due to a few modifications the meals can be received in the classrooms without additional waiting times. Therefore the food can be categorized as "Cook and Serve"-quality. After lunch the students are responsible for any kind of clean up. The empty bowls indicate the popularity of the school lunches, even though it is lacking choice of food. In Japan lunch is understood as an additional subject and therefore every student has to attend.

Several reasons can be held responsible for this excellent result. First of all it is the high valuation of food. Due to this valuation basic preconditions are easier to establish, e.g. the national SC act, qualified personnel and a sufficient number of employees. Other necessities like financial support or spatial and equipment needs are provided. Quality always comes first in Japan and the prices are subordinated. Unfortunately it does not seem possible to transfer the Japanese standards regarding SC to Germany. The poor preconditions and lack of motivation to invest into such a long-term project in a sustainable way are to blame. The staff capacities are also not able to hold up to the demand. The fact that decisions are made by local governments prevents a nationwide SC-revolution. Hence it becomes obvious that Germany has to deal with

the problem differently.

The first step should be switiching from relying onto the help of parents, teachers or janitors to professional personnel. Next on the list is the usage of temperature-decoupled systems which provide a high quality for low prices and actually possess an easy to handle user interface.

Last but not least it is important to introduce a certification system to make sure the highest quality is achieved in all areas of SC. Even though the presented ideas are not of hard to finance, it is still obligatory to implement a new source of funding. This could easily be done by federal funds.

3) Benchmarking Model of School Nutrition

Chwang Leh-chii, DrPH, RD (President, Asian Federation of Dietetic Associations and Chinese Dietetic Society Taipei, Taiwan)

I learned about Japan School Lunch Program through literature that Japan School Lunch Law was enacted early in 1954 and school lunch was provided nationwide since then.

Seeing is believing. As arranged by the Japan Dietetic Association, I had a wonderful experience to witness how school lunch was actually implemented in an elementary school and produced in a central food service facility at the suburb of Nagoya back in 1995. The vivid impression is still in my mind, although it was 2 decades ago.

First impression was automation of food production. Soup was cooked in a huge tank and stirred by mechanical ladles, and food containers were delivered around the kitchen by conveyors. Minimizing kitchen staff and maximizing workload are especially important today, as population is approaching super-aged society.

Another impression was meal pattern. The lunch consisted of rice as staple, sliced chicken with fresh vegetables and sweat potato as main and side dish, miso soup, tangerine as fruit, and a bottle of milk as beverage. We joined students and enjoyed the well-balanced meal of low fat and no added sugar.

The most impressive was dietitian as nutrition educator: After finishing the meal, students helped cleaning the classroom, then a school dietitian came in and taught nutrition in the class. In other words, dietitian's roles include not only conducting food service management, but also guiding dietary and nutrition knowledge. The dietitian used pictorial teaching materials and motivated students to integrate nutrition knowledge into daily meals.

In contrast, most dietitians in Taiwan at that time worked in hospitals, only a few worked in lunch program schools. Being then the President of Taiwan Dietitian Association, I had

been engaged in lobbying the requirement of dietitians in school lunch program for decades. This field trip strengthened my thought on further striving for legislation. The Taiwan School Health Act was finally passed in 2002, and it proclaimed that lunch program schools with 40 classes must hire dietitians to perform the duties of supervising food service and conducting nutrition education.

Along with the changing social and dietary trends, the newly revised Japan School Law in 2009 added Shokuiku 食育-Food and Nutrition Education. The objectives were to foster healthy dietary habits, to appreciate local tradition cuisine, to acknowledge the efforts of agricultural and food industry, and to support environmental conservation.

It is a great challenge and opportunity for school nutrition dietitians. Wish Japan dietitians continued success in moving on to a new stage; also wish the successful experience in Japan school lunch program to serve as a benchmarking model for dietitians in other countries.

4) A Visit to Japanese School Lunch: Malaysian Perspective

Malaysia: Noor Fadzlina Hamid (Msc Candidate, Food Technology Officer in Nutrition and Dietetic Programme, School of Health Sciences, Universiti Sains Malaysia)

School lunches are a common topic when the Japanese recall about their school life. In Japan, school lunches mean a regular meal. The Japanese, take seriously both its food and its health and as a result, its school lunches are implementing. As other countries, struggle to design meals taken during school that are healthy, tasty and affordable, Japan has well established their meals nationwide long time ago and improve its value by time to fulfill demand.

In spring 2016, during my attachment to Asian Nutrition & Food Research Center, Jumonji University, on the research Project of Sugar Analysis and Composition for Asian Database: Malaysian Perspective, I had the opportunity to visit a Japanese School Lunch at Elementary School in Niiza, Saitama prefecture.

During my visit, I was accompanied by Professor Shigeru Yamamoto and his two graduate students from Vietnam; Miss Vu Thuy Linh and Miss Thanh Thao. Firstly, I was brought to the preparation kitchen. Even though, I was only allowed to observe the preparation processes of meal from outside. I saw the effort that the entire team of cooks made to ensure the food that they served was a representation of the menu prepared by the Nutritionist Teacher.

As the visit continued, I was accompanied for a walk around the school compound. I noticed that at every level of floor, there were poster and articles about the school lunches. This made me, to

understand more and appreciate the Japanese School Lunches program. All the materials pasted on the wall were very simple, knowledgeable and useful.

I would like to give my greatest appreciation to friend, Miss Vu Thuy Linh who becomes my translator during this visit. It made me understand easily and enjoyed my learning about school lunches. Seeing the children serves food to their friends and teacher, made me realize how mature they were, even at a young age. So, as the school lunch program continues, children would be able to learn more about "*from farm to the table*" and how their meals were prepared. They would appreciate their food more during meal times. This informal education in school is the best tools for children to learn. Personally, I really admire the Japanese school lunch program and hope this school lunches will continue and become a reference to others country in developing their own school lunches. Maybe, in future one day Malaysia can also develop its own school lunches as in Japanese.

5) Hidden jewel of Japanese inside school lunch

Indonesia: Indri Kartiko Sari (Visiting student from University of Indonesia)

I was given the chance to visit one elementary school in North Tokyo area in 2014 with two students from Thailand and Professor Shigeru Yamamoto who supervised and guided us. We were invited to do light conversation inside the principal room. She gave two sheets of the next month menus to us. All menus were prepared by the school dietitian. The menus were available in table and literally consisted of the name of the dishes, the ingredients, and the calories counts. She explained that the menu sheets would be given to the student`s guardians before the implementation.

It was carefully conducted due to the possibility of children's allergy problems that interacted with some ingredients for the menus. The guardians would make sure that the children

would get the safe ingredients and reported it to the school. Thus, the responsibility to allergy occurrence cases would become the guardians` responsibility not the school. After the reports, the guardians would held the responsibility to prepare meal on the day where the school served possible allergy ingredients.

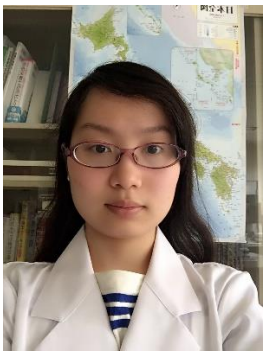
After that, we went to see the school kitchen from outside. We were refrained to go inside due to possible contamination that we might bring with us. Such careful action was really considered in school lunch production. Then, we passed by a table and small school bulletin board about the menu ingredients for that day. They wrote about the farmer who produced the vegetables and how he produced it. They also put food models of the ingredients on the table so the students could get the information what they would eat on lunch time. No processed foods were available. The school dietitians only prepared fresh ingredients from food producers.

It was almost lunch time. Students who were on duties to prepare and serve the classroom`s lunches wore fully white coat with hair cap and mask. One by one, they finished served lunches for their classmate. They took off their duty uniforms and lead the students to begin eating. I could see the careful choice of ingredients and nutrition content inside the students` school lunch. What amazed me the most was about the food waste which was almost no food waste! I kept it my mind that the school lunch meal was that tasty so the student didn't waste any and relatively very low.

The very low food waste and the tastiness of the meal definitely had contribution to the students` health. They ate it all, so the richness nutrient from the ingredients were completely absorb by their body especially when there were no processed foods. The intake of fast foods can be reduced hugely and would have impact to the students` BMI, which the Japanese children obesity prevalence is relatively low. Such jewel was hidden inside Japanese school lunch and this beauty should be recognized globally.

6) School Lunch – Not Only Food

Vietnam: Vu Thuy Linh (Visiting student from Vietnam)



Japanese School Lunch program has about 140 year old history. It was started from the year 1889, and had become the most successful mode of school lunch program. I was really amazed by how great this elementary student`s school lunch program was when I had chance to visit and see with my own eyes.

Firstly, the food preparing process is strictly controlled. For example, safe vegetable is harvested during the early morning. Then in a special room (admission strictly to the staff only), the material is then cooked freshly and safely. School lunch is transported to each floor on specific pathway. That means children`s food is the most "umai" (tasty).

Usually schools in Asian country do not employ their own dietitian or have a school lunch center. They often use these school lunch centers as a place to not only serving food but also fit nutrition with variety of menu. From my observation, students in Japanese Lunch programs seem to be happy when they are eating lunch at their own schools.

After the lunch, I was invited by the children to go out to the farms and they taught us some of the names of vegetable and other material used in the kitchen. In my country Vietnam,

most children are not able to do this. Why? I think that the Japan school lunch program is not only to feed lunch, it is also a really interesting food education program as the children can enjoy and remember the names of product from their farm.

In my opinion, if a child is taught from childhood about food education habit. It will remain a good habit and make the Japanese educated about their food habits. The school lunch plays a great part in obtaining good informing about the food habit.

It was surprising to notice the small amount of wasted food after a Japanese school lunch. In my country children usually do not like vegetable thus, much vegetables are discarded after their lunch. Japanese School lunch programs, teach how hard to grow and cook vegetable. As such during meal time each child eats with gratitude and they will eat all their part.

In this way, Japan has taught their children "MOTTAINAI CULTRUE". Someday I hope, we will make a new food culture with School lunch in our own countries…….. Why not!!!

REFERENCE

Please try to contact the following article

Kaneda, Masayo and Yamamoto, Shigeru **The Japanese School Lunch and Its Contribution to Health** Nutrition Today: November/December 2015 - Volume 50 - Issue 6 - p 268–272