

Dietary Habits and Issues of Junior High School Students in a Town in Gunma Prefecture

Ikue Kiryu,¹ Junko Yamada,¹ Tomoko Saito,²
Narumi Ide¹ and Yumi Sato¹

The purpose of this study was to understand the actual conditions of the dietary habits and to examine issues of junior high school students in a town in Gunma, Japan. In 2012, we conducted an anonymous self-reported questionnaire of all 163 students attending the junior high school in that area. Survey contents were as follows: Eating habits (such as taking breakfast and vegetables, food preferences), and food culture (such as awareness of food culture, taking locally produced foods). The survey resulted in a 64.4% response rate. It was shown that 100 students (95.2%) took breakfast almost every day. Only 6 students (5.8%) took five or more servings of vegetables per day. 34 students took breakfast with their family (32.4%) and 86 students took dinner with their family (81.9%). Less than 40% of the students knew about locally produced food (n=37, 35.2%) or took those products often (n=40, 38.1%). With the results of the survey's data, certain issues have been raised, and new procedures have been implemented. Dietary habits and issues are as follows: further promotion regarding taking breakfast, communication with the family while taking meals, promotion of increasing the daily vegetable intake, and understanding of food culture. (Kitakanto Med J 2013 ; 63 : 375~379)

Key words : Nutrition education, Junior high school students, Dietary habits, Food culture

Introduction

With the recent changes in dietary habits and food environment in Japan, the Basic Law on *Shokuiku*¹ (food and nutrition education) was established in 2005 to cultivate a life-long healthy body and mind in citizens and to nurture a rich sense of humanity. The law formally makes *Shokuiku* the foundation for living, and positions it as the base of intellectual (*Chii-ku*), moral (*Tokuiku*) and physical (*Taiiku*) education. The law seeks to promote *Shokuiku* that will raise children who can practice healthy dietary habits, by fostering acquisition of knowledge related to food and nutrition, and the ability to choose food through various experiences. *Shokuiku* is not only relating to meals and food. It also includes learning nutrition, balance, and learning how to choose foods. Environmental factors, such as the dining room, the table, and the tableware, are important as well. Moreover, an emphasis on understanding one's local region through

food, passing down a sense of food culture to future generations, and understanding nature's blessings and the importance of labor is also included. Food and nutrition are essential for human life. They are also the source of life and no one can live without them. With the rapid increase in the elderly population in our country, it is important for them to lead vibrant and healthy lives. It is necessary for people to continue to engage in physical activity and to practice healthy dietary habits from childhood. *Shokuiku* is important for all generations of the Japanese people.

Based on the Basic Law on *Shokuiku*, the Cabinet Office established the Basic Program for *Shokuiku* Promotion in 2006 to promote *Shokuiku* throughout the country. It is important that people participating in the Basic Program for *Shokuiku* Promotion have a common awareness of the region's characteristics and issues. They cooperate with the region's goals, and create a social environment in which each individual can attain and connect with the actual "practice" of

¹ Department of Nursing, Gunma University Graduate School of Health Sciences, 3-39-22 Showa-machi, Maebashi, Gunma 371-8514, Japan ² Department of Nursing, School of Health Sciences Faculty of Medicine, Niigata University, 2-746 Asahimachi-dori, Chuo-ku, Niigata 951-8518, Japan

Received: August 22, 2013

Address: IKUE KIRYU Department of Nursing, Gunma University Graduate School of Health Sciences, 3-39-22 Showa-machi, Maebashi, Gunma 371-8514, Japan

Shokuiku.² Based on the results of *Shokuiku* measures thus far and the issues of current dietary habits, the Cabinet Office established the new Second Basic Program for *Shokuiku* Promotion.³ In conjunction with this, Gunma prefecture established the Second Gunma *Shokuiku* Promotion Plan⁴ in 2011. One of the goals of the Second Gunma *Shokuiku* Promotion Plan is to establish a municipality-based *Shokuiku* Promotion Plan in every municipality in Gunma by 2015. Sixteen (45.7%) of the municipalities in Gunma established their *Shokuiku* Promotion Plan in 2010. Smaller municipalities have yet to establish the *Shokuiku* Promotion Plan. Town A was one of the small municipalities that had not established a *Shokuiku* Promotion Plan, so we supported them in 2011, and finished the plan in 2012.

When municipalities create their *Shokuiku* Promotion Plan, they set up target values for five years from the baseline data, and plans for measures to achieve such targets or goals. Therefore, we needed the baseline data. When we collected data on dietary habits of the residents of Town A, there was little data on junior high school students (though there was a lot of data on infants, elementary school children, high school students, adults, and the elderly). In creating the *Shokuiku* Promotion Plan of Town A, it was necessary for us to understand the actual conditions of the dietary habits of junior high school students.

The purpose of the present survey was to investigate and explore dietary habits in junior high school students living in Town A in Gunma, Japan.

Method

The subject was all 163 students attending the junior high school in Town A. An anonymous self-reported questionnaire survey was conducted in July 2012. We requested the distribution and collection of the questionnaires from homeroom teachers of the junior high school. Homeroom teachers at the junior high school distributed the questionnaires and envelopes to students, then collected them sealed in the envelopes. The survey contents were as follows: school year, sex, eating habits (such as taking breakfast, food preferences, taking vegetables, paying attention to nutrition), food culture (awareness of food culture, taking local cuisines, taking locally produced foods, agricultural experience). Descriptive statistics were calculated for each survey item.

This study was approved by the Gunma University School of Medicine Epidemiological Research Ethical Review Board, and was conducted with the permission of Town A's mayor, the superintendent of the board of education, and the school master. The survey packet included a cover letter that described the

purpose of the study and confidentiality of the participants, a questionnaire, and a return envelope. In the cover letter, we stated that one may opt to participate in the survey or that they could return the questionnaire blank.

[Overview of Town A]

Town A located in a rural area in Gunma, Japan. Town A is a standard town: the total area of Town A is 188.27km², the population 8,434, and the household 3,529 as of October 2012. The workers according to industry are: primary industry, 436 people (10.6%); secondary industry, 1,602 people (39.0%); tertiary industry, 2,066 people (50.3%). Town A produces and sells many products that are both locally produced and grown. The population compositions are: under 15 years of age, 578 people (6.9%); 15-64 years of age, 4,361 people (51.9%); 65 years of age and older, 3,462 people (41.2%). Population of junior high school students is 171 (2.0%). There are three nursery schools, one elementary school, one junior high school, and one high school.

Results

The questionnaire was distributed to all 163 students attending the junior high school in Town A, and responses were obtained from 105 students (Response rate: 64.4%).

1. Characteristics of respondents

The respondents consisted of 52 boys (49.5%) and 52 girls (49.5%; Table 1). Student information by year showed that there were 40 first year students (38.1%), 30 second year students (28.6%) and 35 third year students (33.3%).

Table 1. Characteristics of respondents (n=105)

	Boys	Girls	No response	Total
	n (%)	n (%)	n (%)	n (%)
First year	19 (18.1)	20 (19.0)	1 (1.0)	40 (38.1)
Second year	17 (16.2)	13 (12.4)	0 (0.0)	30 (28.6)
Third year	16 (15.2)	19 (18.1)	0 (0.0)	35 (33.3)
Total	52 (49.5)	52 (49.5)	1 (1.0)	105 (100.0)

2. Breakfast

The survey showed that 100 students (95.2%) took breakfast "almost every day" (Table 2). 5 students (4.8%) those who did not answer they took breakfast "almost every day" gave there is "no time to eat" as their reason.

When asked what is required in order to take breakfast more often than now (or as before), most students answered "go to bed early and sleep well" (n=65, 61.9%), followed by "a family member prepares breakfast for me" (n=56, 53.3%).

Table 2. Breakfast (n=105)

	n (%)
Frequency to take breakfast	
Almost every day	100 (95.2)
4-5 days a week	2 (1.9)
2-3 times a week	1 (1.0)
Very rarely	2 (1.9)
Requirements in order to take breakfast (multiple responses allowed)	
A family member prepares breakfast for me	56 (53.3)
Do not take too much at dinner or take too many evening snacks	26 (24.8)
Go to bed early and sleep well	65 (61.9)
Grab something easy from a convenience store	0 (0.0)
Shortened club activities	9 (8.6)
Nothing in particular	17 (16.2)
I do not know	7 (6.7)
No response	1 (1.0)
Food taken for today's breakfast (multiple responses allowed)	
I did not take breakfast	2 (1.9)
Rice	73 (69.5)
Noodles	4 (3.8)
Bread	25 (23.8)
Prepared breads such as sandwiches	2 (1.9)
Sweet buns such as melon bread	3 (2.9)
Dishes with vegetables	31 (29.5)
Fruit	11 (10.5)
Dishes with meat, fish, eggs, and/or natto	61 (58.1)
Miso soup or soup	36 (34.3)
Pickles	20 (19.0)
Sweets	0 (0.0)
Milk	25 (23.8)
Dairy products	20 (19.0)
Soft drinks	5 (4.8)
Non-sweetened beverages such as tea or water	44 (41.9)
Other	7 (6.7)

When students were asked what they took for breakfast on survey day, they answered "rice" (n=73, 69.5%), "dishes with meat, fish, eggs, or natto" (n=61, 58.1%), and "unsweetened beverages such as tea or water" (n=44, 41.9%) in descending order, and only 31 students (29.5%) answered "vegetables."

3. Taking meals with family

In terms of family members who take breakfast together with the students, 34 students (32.4%) answered "whole family", 27 students (25.7%) answered "adult family member (s)", and 23 students (21.9%) answered "alone" (Table 3).

In terms of family members who take dinner together with the students, 86 students (81.9%) answered "whole family", 12 students (11.4%) answered "adult family member (s)".

Table 3. Taking meals with family (n=105)

	n (%)
Breakfast	
Whole family	34 (32.4)
Adult family member (s)	27 (25.7)
Just children	17 (16.2)
Alone	23 (21.9)
Others	2 (1.9)
No response	2 (1.9)
Dinner	
Whole family	86 (81.9)
Adult family member (s)	12 (11.4)
Just children	3 (2.9)
Alone	1 (1.0)
Others	1 (1.0)
No response	2 (1.9)

4. Food preferences

With regards to food preferences, 38 students (36.2%) answered "I take everything", 53 students (50.5%) answered "I have some food preferences", and 13 students (12.4%) answered "I have a lot of dislikes". For those who answered "I have some food preferences" or "I have lots of dislikes," the most disliked food item was "green and yellow vegetables" (n=40, 59.1%), followed by "light-colored vegetables" (n=29, 43.9%), and "mushrooms" (n=20, 30.3%; Table 4).

For the foods students like, "barbecued meat" (n=86, 81.9%), "sushi" (n=85, 81.0%), and "desserts" (n=83, 79.0%) were extremely preferred in descending order; 59 students (56.2%) answered "salad" and 56 students (53.3%) answered "stir-fried vegetables."

Table 4. Disliked foods (multiple responses allowed) (n=66)

	n (%)
Light-colored vegetables	29 (43.9)
Green and yellow vegetables	40 (59.1)
Milk	5 (7.6)
Dairy products	3 (4.5)
Beans, bean products	14 (21.2)
Mushrooms	20 (30.3)
Seaweed	5 (7.6)
Potatoes	2 (3.0)
Meat	2 (3.0)
Fish	9 (13.6)
Others	13 (19.7)
No response	1 (1.5)

5. Intake of vegetables

Ministry of Health, Labour and Welfare established the target vegetable intake per person per day to be ≥ 350 g, which translates to five or more servings, with one serving being 70g.⁵ When the amount of vegetables consumed per day was assessed by number of servings, "1 serving per day" (n=42, 40.0%) was the most common, followed by "2 servings a day" (n=34,

32.4% ; Table 5). Only 6 students (5.8%) took five or more servings of vegetables a day.

	n (%)
No servings a day	0 (0.0)
1 serving a day	42 (40.0)
2 servings a day	34 (32.4)
3 servings a day	18 (17.1)
4 servings a day	4 (3.8)
≥5 servings a day	6 (5.8)
No response	1 (1.0)

6. Paying attention to nutrition

For issues that students pay attention to nutrition, most students answered “take three meals a day” (n=53, 50.5%), followed by “enjoy eating” and “take lots of grains” (n=33, 31.4%), and “nothing in particular” (n=35, 33.3% ; Table 6).

Table 6. Paying attention to nutrition (multiple responses allowed)(n=105)

	n (%)
Nothing in particular	35 (33.3)
Enjoy eating	33 (31.4)
Eat at the same time every day	30 (28.6)
Take three meals a day	53 (50.5)
Be mindful of a well-balanced meal	19 (18.1)
Take lots of grains	33 (31.4)
Avoid too much sodium	13 (12.4)
Avoid too much fat	13 (12.4)
Avoid too much sugar	15 (14.3)
Do not over-take	20 (19.0)
Take locally produced foods	8 (7.6)
Take meals containing seasonal ingredients	18 (17.1)
Discuss meals with family and friends	9 (8.6)
Discuss dining etiquette	14 (13.3)
Incorporate food items that were introduced as good for you on TV	7 (6.7)
Use dietary supplements	4 (3.8)
Others	2 (1.9)
No response	4 (3.8)

7. Food culture

When asked whether those students thought local cultural cuisine is important, 82 students (78.1%) answered “I think it is important” (Table 7). Local cuisines they take often were “kenchinjiru (vegetable miso soup)” (n=47, 46.5%), “okirikomi (stewed noodles)” (n=38, 37.6%), and “suiton (flour dumplings)” (n=28, 27.7%). Regarding locally produced foods, only 37 students (35.2%) were aware of them. In terms of opportunities to take locally produced foods, 40 students (38.1%) answered “I take them often”. When students were asked whether they have planted or harvested vegetables, 90 students (85.7%) answered “yes”.

Table 7. Food culture (n=105)

	n (%)
Importance of local cultural cuisine	
Important	82 (78.1)
Not important	8 (7.6)
Not sure	13 (12.4)
No response	2 (1.9)
Locally produced foods	
Aware	37 (35.2)
Not aware	67 (63.8)
No response	1 (1.0)
Opportunities to take locally produced foods	
Often	40 (38.1)
Sometimes	50 (47.6)
Rarely	13 (12.4)
Nothing	2 (1.9)
Agricultural experience	
Had	90 (85.7)
Did not have	14 (13.3)
No response	1 (1.0)

Discussion

With the results of the survey’s data on the dietary habits of junior high school students in Town A certain issues have been raised, and new procedures have been implemented.

1. Further promotion regarding taking breakfast

The Second Basic Program for *Shokuiku* Promotion of Cabinet Office³ and the Second Gunma *Shokuiku* Promotion Plan⁴ aims to have 0% of children skip breakfast by fiscal year 2015. In this survey, 100 students (95.2%) took breakfast, which was higher than the breakfast consumption percentages nationwide (84.0%)⁶ and in Gunma (83.9%).⁷ 53 students (50%) answered “taking three meals a day” and they pay attention to take breakfast every day. Children who take breakfast have been reported to have tendencies for higher academic ability and physical fitness,^{6,8} thus taking breakfast is desirable. In this survey, the students who skip breakfast answered “not having enough time” as their reason, and 65 students (60%) answered that going to bed early and sleeping well are necessary in order to take breakfast more often than now (or, as before). According to health reports on schoolchildren,⁹ the reason for children skipping breakfast was reported that changes in lifestyle cause a later wake-up time, leading to not having enough time to take breakfast. Yamada’s research¹⁰ for junior high school students in relation to breakfast intake and lifestyle, reported that students who take breakfast every day both go to bed early and get up early. In addition, Yamada’s research¹⁰ reported that students who take breakfast every day spend fewer hours watching TV and movies, using computers, playing video games, and tend to have good exercise habits. It is

also believed that taking breakfast is an indicator that reflects the student's general life situation. Making a habit of taking breakfast leads to a healthier life and promotes a healthier body and mind.

In order to promote *Shokuiku* to the junior high school students of Town A, we believed that it was necessary to strive for the education of taking breakfast and the understanding of lifestyle for students who skip breakfast.

2. Communication with the family while taking meals

The Second Basic Program for *Shokuiku* Promotion of Cabinet Office³ aims for "the number of times children take meals such as breakfast or dinner with family members" to be ≥ 10 times a week by fiscal year 2015. Additionally, the Second Gunma *Shokuiku* Promotion Plan⁴ aims to have $\geq 80\%$ of residents enjoy eating with family and friends five or more days a week by fiscal year 2015. In this survey, 34 students took breakfast with family (32.4%) and 86 students took dinner with family (81.9%). However, only 33 students (31.4%) answered "enjoy eating." Even if they were taking meals with family, there were only a few students who enjoyed eating. Taking meals with family promotes fundamental food etiquette education and nurtures a feeling of gratitude for food, and communication at the dining table simultaneously forms the basis for people to become rich human beings.

In order to promote *Shokuiku* to the junior high school students of Town A, we believed it was necessary to measure not only the number of times students took meals together with family members, but also the communication that takes place while taking meals.

3. Promotion of increasing the daily vegetable intake

The Second Gunma *Shokuiku* Promotion Plan⁴ aims to increase the vegetable intake per person per day to 350g by fiscal year 2015. In this survey, only 6 students (5.8%) took five or more servings of vegetables per day. 31 students (29.5%) took vegetables at breakfast. Since students lacked vegetables during meals, we believed that the daily intake of vegetables was inadequate. However, approximately 50% of students answered that they like "salad" ($n=59$, 56.2%) and "stir-fried vegetables" ($n=56$, 53.3%).

In order to promote *Shokuiku* to the junior high school students of Town A, we believed it was necessary to increase the daily intake of vegetables, and thought of various ideas to add varieties of vegetables to each meal.

4. Understanding of food culture

Town A produces and sells many products that

are both locally produced and grown. In this survey, 82 students (78.1%) thought that local cultural cuisine is important, and 90 students (85.7%) have planted or harvested vegetables. However, less than 40% of the students knew about locally produced foods ($n=37$, 35.2%) or took those products often ($n=40$, 38.1%). Many students understand food culture and had opportunities to participate in agriculture. However, they are unaware of locally produced products in stores, and do not consume them.

In order to promote *Shokuiku* to the junior high school students of Town A, we believed that it is necessary for students to understand the importance of culture, community, and food through agricultural experiences.

Acknowledgements

We thank Town A's mayor, staff, principal, teachers, and students for their cooperation in participating in this survey.

References

1. Cabinet Office. *Shokuiku Kihon Ho* (Act No.63). (August 2013) <http://www8.cao.go.jp/syokuiku/about/law/law.html>(in Japanese).
2. Cabinet Office. *Shokuiku Hakusho 2013*, 2013 : 23-24 (in Japanese).
3. Cabinet Office. *Dai2ji Shokuiku Suishin Kihon Keikaku*. (August 2013) <http://www8.cao.go.jp/syokuiku/about/plan/pdf/2kihonkeikaku.pdf>(in Japanese).
4. Gunma Healthy Welfare Party Food Safe Office Food Safety Division. *Gunma Shokuiku Kokoro Plan 2011-2015 -Gunma Ken Shokuiku Suishin Kihon Keikaku (Dai2ji)-*, 2011 (in Japanese).
5. Ministry of Health, Labour and Welfare. *Kokumin No Kenko No Zoshin No Sougou Teki Na Suishin O Hakarutame No Kihon Teki Na Hoshin*. (August 2013) <http://www.mhlw.go.jp/bunya/kenkou/dl/kenkounippon21.01.pdf> (in Japanese).
6. Ministry of Education, Culture, Sports, Science and Technology. *2012 Nendo Zenkoku Gakuryoku Gakushu Jokyo Chosa Chugakko*, 2012 (in Japanese).
7. Gunma Prefectural Board of Education. *Gunma Ken Jido Seito No Shokuseikatsu To Jittai Chosa Kekka Hokokusho*, 2009 (in Japanese).
8. Ministry of Education, Culture, Sports, Science and Technology. *2011 Nendo Zenkoku Tairyoku • Undo Noryoku*, 2010 (in Japanese).
9. Japanese Society of School Health. *Jido Seito No Kenko Jotai Surveillance Jigyo Hokokusho : Nihon Gakko Hoken Kai*, 2006 : 53 (in Japanese).
10. Yamada H, Kawata T, Monden S. *Chugakusei no choshoku sesshu to seikatsu shukan ni kansuru kenko ishiki • chishiki • taido kenko jokyo tono kanren* (Awareness, Knowledge, Attitude and Physical Conditions of Junior High School Students in Relation to Breakfast Intake and Lifestyle). *Eiyo gaku Zasshi* (The Japanese Journal of Nutrition and Dietetics) 2009 ; 67(5) : 270-278 (Abstract in English).