

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

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

Keywords: Shokuiku, Nutrition education, nutrition teacher

INTRODUCTION

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

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

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

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

MATERIALS AND METHODS**Subjects and Survey Period**

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

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

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

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Table 1 List of questions

Items	Variables
I. Basic attributes	1. Area
	2. Job title
	3. Place of work
	4. Main place of work
	5. The number of coworkers who are dietitians and nutritionists in the workplace
	6. Having schools other than the home school and the number of schools other than the home school
	7. The number of schools and students per survey participants in charge
	8. The number of visits to schools per year
	9. Years of experience
II. About nutrition education during school lunch period before the Corona epidemic	10. Whether visiting school lunch period
	11. The number of visits and staying time per visit
	12. Things observed during visits
	13. The number of classes when visited
14. Whether or not all classes could be visited during the school year	
III. About the nutrition education	15. The degree of focus on nutrition education at the schools
	16. The opportunities for their activities and the degree of involvement
IV. About the activities related to nutrition education in 2021	17. The number of schools in which on nutrition education classes were given during class lesson,
	18. The number of lessons times on nutrition education was given during class lessons,
	19. The number of lessons times on nutrition education was given during out-of-class lessons,
	20. The number of classes given,
	21. The prioritization of the six objectives in nutrition education,
	22. The number of subject classes in which survey participants were given nutrition education,
	23. The involvement during nutrition education,
	24. The background of how survey participants accepted the request for nutrition education,
	25. The evaluation methods after nutrition education,
	26. Whether sufficient opportunities for nutrition education,
	27. Whether survey participants want to increase time on nutrition education should give
V. Free description	28. In an open-ended question, we asked the survey participants what they thought were the challenges to “teaching about nutrition education”

Method of analysis

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

Ethical considerations

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

RESULTS

I. Basic attributes

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

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

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

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

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

Data are shown in n (%)

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

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

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

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

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

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

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

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

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

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

Data are shown in n (%)

III. About the nutrition education

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

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

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

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

Data are shown in n (%)

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

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

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

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

Data are shown in n (%)

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

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

Data are shown in n (%)

IV.About the activities related to nutrition education in 2021

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

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

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

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

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

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

Data are shown in n (%)

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

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

Data are shown in n (%)

V. Free description

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

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

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

DISCUSSION

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

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

Second, about 70% of teachers at their home

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

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

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

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

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