

Implementing Early Nutrition Education to Mitigate Childhood Obesity in Japan

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Abstract

This review examines food and nutrition education, so-called *Shokuiku*, conducted in preschools and childcare all over Japan. Four topics are covered in this review as follows: *Shokuiku* practice methods, the number of the *Shokuiku* reports, the childhood obesity rate transition in 5-year-olds, and the placement of dietitians in preschool and childcare. *Shokuiku* practice reports and treatises were searched through a database, called CiNii and NC State university library [1,2]. Cultivation experience, dining environment, cooking experience, knowledge of food, and local cuisine were reviewed as a *Shokuiku* program. There were four reports on *Shokuiku* practice before 2005; however, 35 articles have been found since 2006. This indicates that *Shokuiku* has become more popular due to the enforcement of the *Shokuiku* Basic Law [3]. The obesity rate among young children kept increasing until 2006; however, the rate has not increased since [4]. This is because the number of *Shokuiku* for preschoolers has increased and it has been effective in reducing childhood obesity. The number of dietitians assigned to preschools and childcare has also increased since 2005. It is possible that increased efforts to actively implement *Shokuiku* directly resulted in an increase in the recruitment of dietitians.

Keywords: *Shokuiku*; Preschool; Childcare

Introduction

Ichijyu-Sansai is a Japanese style diet that traditionally consists of a bowl of rice, a cup of miso soup, and two to three side dishes. The typical ingredients for three side dishes are many kinds of root vegetables, tofu, fish, seaweed, soybeans, which were considered a whole-food diet. This traditional diet fluctuated after World War II, when economic growth led to abundant food and increased intake of livestock products. Consequently, the nutritional balance became disordered due to excessive fat intake, and since the 1970s, childhood obesity has dramatically increased due to these changes in diet and lifestyle. Due to growing concern around this issue, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) established the *Shokuiku* Basic Law [3,7]. *Shokuiku* is the Japanese term for “food education” [7]. During the early childhood period, *Shokuiku* is important to develop a healthy relationship with food, which includes enjoyment of eating and interest in food. *Shokuiku* in preschools and childcare aims to acquire the basis of healthy living, according to the Childcare Guidelines [8]. The research on *Shokuiku* practice at preschool and childcare in the U.S. has been currently limited.

Methods

Shokuiku practice reports and treatises published after 2015 were searched through Cinii and NC State University Library with three keywords: Preschool, Childcare, and *Shokuiku*.

Furthermore, these scholarly articles were carefully checked and those that discussed *Shokuiku* practices in preschool or childcare and targeted children aged 3 to 5 years were extracted. Thirteen articles remained which reviewed: *Shokuiku* practice method, which consists of 1) cultivation experience, 2) dining environment, 3) cooking experience, 4) knowledge of foods, 5) local cuisine. The following three points were examined by the reports and treaties regardless of the year of publications: 1) the number of the *Shokuiku* report, 2) obesity rate transition in 5-year-old children, and 3) the placement of dietitians in preschool and childcare.

Results

Thirteen scholarly articles on *Shokuiku* practice have been published since 2015.

Of these, eleven articles were treatises and two were reports. Seven of them had preschool participants, two had childcare, and four targeted both preschool and childcare.

Shokuiku practice method

Information on the thirteen scholarly articles that reviewed *Shokuiku* practice was roughly divided into five separate themes: Cultivation of vegetables, dining environment, cooking experience, knowledge of food, and local cuisine.

Cultivation experience

There were five reports of cultivation experience - the most popular *Shokuiku* activity. This may be due to fact that no special skills/tools are required for the cultivation experience. The first report focused on red perilla (Shiso Japanese herb) that was cultivated in its own garden and incorporated into the lunch program [9]. There were two reports involving sweet potatoes that were cultivated, harvested, and incorporated into the lunch program [10,11]. There was another report of cultivating onions, carrots, and potatoes in their own garden and eating them as curry dishes [12]. In the ranch experience, the children went to the ranch, drank freshly squeezed milk, and made butter using the milk [13]. In all five reports, the children were interested in the food they raised or made.

Dining environment

There were three reports of dining experience. The first article was a part of the class for local junior high school students, who ate lunch with preschool children [14]. Junior high school students gave a *Shokuiku* quiz to the preschoolers then ate lunch with them. This showed that there were positive effects on them when they were taught how to eat school lunches [14]. In another report, junior high school students also visited a preschool and had lunch together [15]. Parents were asked in advance to pack lunch boxes with things that their children did not like eating. After the *Shokuiku* quiz by junior high school students, the children and the junior high school students ate lunch together. By eating with junior high school students, many children completed their meals, including foods they dislike. Some children were even trying to meet the expectations of junior high school students [15]. The third report was on how a child progressively got better at eating his own meals by himself as he grew, which can be reference material for meal assistants in the future [16].

Cooking experience

Two reports with cooking experience involved making sweets with preschoolers and their parents. The first report was a rice dumpling made from tofu and rice powder [17]. This cooking operation included kneading and rolling with fewer tools, and it was thought that even children could work on it as an extension of play. The second report's menu was steamed pudding, plain cookies, carrot rice balls and vegetable soup [18]. The method of making cookie dough involved Ziploc, which made it easy for children to be involved in the process [18]. In both reports, this experience triggered parents and children to make more snacks at home.

Knowledge of food

One of the two reports was a lecture on salt reduction [19]. Five-year-old children saw a panel theater about salt reduction. After the children were quantitatively checked on how much they learned about salt reduction [19]. From the children’s conversations, words such as low salt and salty were mentioned, indicating that these lessons were memorable and could help children make better food choices with regards to salt [19]. The second report featured a preschool that was affiliated with organic farmers and received a lecture on organic vegetables from the farmer [20].

Local cuisine

Local Cuisine was provided at preschools and childcare centers in Kyoto Prefecture after a lecture about local *Akamoku* seaweed. Menus incorporating *Akamoku* were distributed to households [21]. It has been reported that children had an opportunity to learn about local specialties *Akamoku*, and by distributing menus, *Akamoku* menus were served at home.

The number of the *Shokuiku* reports

There were only four reports on *Shokuiku* practice prior to 2005; however, 35 reports were found after 2006. It has not been quite essential to assign dietitians to preschool and childcare. However, this result indicated that *Shokuiku* has become more active due to the enforcement of the *Shokuiku* Basic Law [3].

The obesity rate transition in 5-year aged children

The obesity rate among young children kept increasing until 2006; however, it has not been increased [4]. The obesity rate at 5 years old was 2.77% in 2019. Figure 1 and table 1 indicates that the increased *Shokuiku* practices were effective for preschoolers.

Year	5 y/o %	6 y/o %	Year	5 y/o %	6 y/o %	Year	5 y/o %	6 y/o %
1977	N	2.62	1984	N	3.86	1991	N	4.63
1978	N	2.69	1985	N	4.15	1992	N	4.18
1979	N	2.81	1986	N	3.87	1993	N	4.25
1980	N	2.68	1987	N	4.18	1994	N	4.27
1981	N	2.65	1988	N	4.25	1995	N	4.45
1982	N	3.33	1989	N	4.27	1996	N	4.63
1983	N	3.65	1990	N	4.45	1997	N	4.81

Year	5 y/o %	6 y/o %	Year	5 y/o %	6 y/o %	Year	5 y/o %	6 y/o %
1998	N	4.84	2005	2.72	4.68	2012	2.39	4.22
1999	N	4.74	2006	2.78	4.76	2013	2.43	4.05
2000	N	4.81	2007	2.87	4.75	2014	2.62	4.25
2001	N	4.75	2008	2.82	4.55	2015	2.29	3.84
2002	N	4.72	2009	2.7	4.36	2016	2.56	4.3
2003	N	4.64	2010	2.81	4.34	2017	2.73	4.4
2004	N	4.48	2011	2.27	3.84	2018	2.64	4.49
						2019	2.77	4.51

Table 1: Transition of obese child incidence.

$$\text{Obesity rate} = (\text{Weight} - \text{Average Weight}) / \text{Average Weight} \times 100.$$

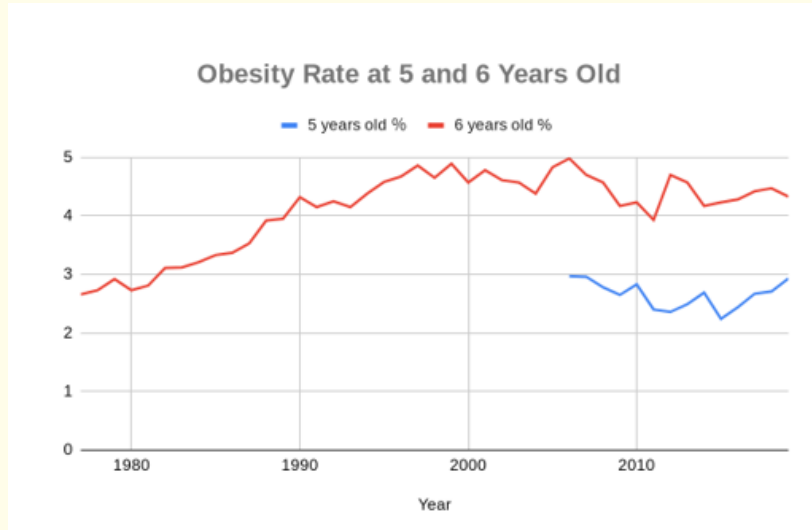


Figure 1: Obesity rate at 5 and 6 years old.

The placement of dietitians in preschool and childcare

The number of dietitians assigned to preschools and childcare centers increased from 40% in 2008, which was shortly after the enactment of the *Shokuiku* Basic Law, to 80% in 2016 [5,6]. Although it is not essential to assign dietitians to preschools and childcare facilities, it is possible that each facility made efforts to actively implement *Shokuiku*, which resulted in increased recruitment of dietitians.

Discussion

Regarding the contents of *Shokuiku*, 13 articles from 2015 to 2021 were summarized. Concerning *Shokuiku* practices, it was confirmed that there were many cases of cultivation experience in which children can participate safely with interest without the need for special skills and tools. Childhood obesity had been on the rise, but it has been declining and leveling off since 2006. It is considered that *Shokuiku* is helping to curve the emergence of obese children. The dietitian placement rate has increased since 2005 and it was shown that many preschools and childcare centers feel the importance of *Shokuiku* practice in their curriculum. According to these results, it was found that *Shokuiku* helps maintain the health of children. There may be some possible limitations in this study. For example, there is no review article of preschoolers in the U.S. to compare findings with. It would be ideal if nutrition education in these two countries were constructed and observed for their effectiveness in near future.

Conclusion

This review examined the education of food and nutrition - *Shokuiku* - conducted in preschools and childcare all over Japan. *Shokuiku* practice reports and treatises were searched through a database, called CiNii and NC State University library. Four topics were then covered as follows: *Shokuiku* practice methods, the number of the *Shokuiku* reports, the childhood obesity rate transition in 5-year-olds, and the placement of dietitians in preschool and childcare centers. Specifically, cultivation experience, dining environment, cooking experience, knowledge of food, and local cuisine were reviewed as *Shokuiku* practice methods. There were four reports on *Shokuiku* practice prior to 2006, and since then 35 articles have been found. This indicates that *Shokuiku* has become more popular due to the enforcement of the *Shokuiku* Basic Law. The obesity rate among young children increased until 2006; however, the rate has not been increased. The

number of *Shokuiku* conduction in preschoolers has been increased and it has contributed to reduce childhood obesity. After the enforcement of the *Shokuiku* Basic Law in 2005, the number of dietitians assigned to preschools and childcare has been increased. It is possible that *Shokuiku* program enabled the recruitment of dietitians. The implementation of this *Shokuiku* program has increased children's interests in food and improved dietary attitude and has reduced the childhood obesity rate that led to maintain personal health.

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