


Research Article

Impact of Food Drive and Meal Event to Reduce Food Loss and Waste

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Abstract

Introduction: This study describes a food drive initiative and subsequent meal event using the collected food items, aimed at raising awareness of food waste reduction in the local community.

Methods: A food drive and meal event was organized at X university, where food collected through the food drive was cooked and served, with an informative lecture on current food loss and waste scenario and ways of reducing it. Participants completed a survey to determine their willingness to reduce food waste.

Results: Most participants deepened their understanding and importance of the concept of food wastage and showed increased willingness to act to reduce food waste.

Conclusions: Providing participants with hands-on experience of concrete ways to reduce food waste through meals is an effective means of promoting sustainable consumption behavior. More innovative ways to encourage participation of food drive partners and local residents are needed to expand food loss and waste reduction.

Keywords: Food loss; Food wastage; Food drive; Food bank; Meal event

Introduction

While Japan relies on imports for much of its food and feed, considerable food loss and waste are generated, placing a burden on the environment. In particular, 4.72 million tons of food loss and waste is generated annually (estimated for 2022), and efforts to reduce this are much needed [1]. Reducing food loss and waste is expected to spread awareness of the importance of food and contribute to a reduction in its environmental impact.

According to 2022 estimates, food loss and waste in Japan amounted to 2.36 million tons from businesses and 2.36 million tons from households [1]. Reducing household food loss and waste is particularly challenging, and it is important for citizens to be aware of the current situation and take initiatives to reduce food wastage. The Sustainable Development Goals or the SDGs also advocate, “Ensuring sustainable production and consumption patterns,” aiming to halve food waste at the retail and consumption level by 2030 [2]. Therefore, it is necessary to raise awareness about food loss and waste reduction among people and take concrete action.

Food drives are one such concrete measure for reducing household food loss. Food drives are activities in which surplus food from households is collected and donated to local food banks and other support groups for the needy, including children's cafeterias and welfare facilities, and are held at various locations, such as public facilities, schools, companies, and event

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venues [3]. These initiatives have attracted attention as an effective means of using surplus food at home and promoting the reduction of food loss and waste. Although there are some reports of initiatives to reduce food loss and waste, but only limited reports of student-led activities aimed at local residents to reduce food loss and waste.

As part of the activities of the Mimasaka University Food Loss and Waste Reduction Circle, we have been developing awareness raising and practical activities for food loss and waste reduction in cooperation with the local nonprofit organizations and businesses. This study reports on the implementation and effectiveness of a food drive to reduce food waste and loss via an organized food drive and a subsequent meal party (named ‘Mottainai Marche’) utilizing the food collected in the food drive aimed at increasing people’s willingness to act to reduce food wastage.

Methodology

Study setting and design

Conducting the Food Drive

A food drive was conducted on the campus of Mimasaka University from October 7-11, 2024, to collect unused food items (Figure 1). Apropos this, we created posters to publicize the event, and the event was publicized on the university website [4], social networking services (SNS), and the SNS of the Food Loss and Waste Reduction circle [6].



Figure 1: Foods collected at the food drive.

During the implementation period, university students from the circle stood next to the collection boxes in the food drive in the university during lunch breaks (1200hrs-1230hrs) and after school (1740hrs-1830hrs), and called for cooperation of students and faculties. At other times, food collection boxes were set-up at the university office.

“Mottainai Marche” Implementation Method

Mottainai Marche Participants

The Mottainai Marche project was planned for approximately 30 participants. Initially, we planned to invite

people who had cooperated in the food drive to participate in the Mottainai Marche; however, this alone was not sufficient to ensure an adequate sample size. Therefore, we asked for cooperation from the university’s faculty and staff, and by using methods such as contacting local residents directly, we were able to gather 30 people as planned.

Outline of Mottainai Marche

Three university students from the circle conducted a study on October 14, 2024, on possible dishes that could be served while utilizing food collected through the food drive and keeping additional food purchases to a minimum. On October 20, 2024, the day of the Mottainai Marche, eight university students from the circle were in charge of cooking the dishes decided in advance. In the university, the dishes were prepared in a buffet style so that the participants could see which food items collected through the food drive had been used. Thirty minutes after serving the food, two university students from the circle gave a 10-minute lecture on the current situation of food loss and waste, the significance of food drives and food banks, and ways to reduce food loss and waste. (For details on the implementation of the “Mottainai Marche,” see Mimasaka University [5]).

Pre- and post-questionnaires

Self-administered questionnaires were administered before and after the lecture; questionnaire items were determined based on the “Second Survey on Consumer Awareness in 2024” [6]. The questions in the pre-lecture questionnaire included awareness of food loss and waste, awareness of food loss and waste as a problem, and awareness of food drives and food banks. The awareness of food loss and waste were assessed using 3-point scale “I knew both the name and meaning,” “I knew the name but did not know the meaning,” and “I did not know both the name and meanings.” for the question “Did you know food loss and waste?”. The awareness of food loss and waste as a problem were assessed using 4-point scale ranging from “knew well” to “did not know at all” for the question “Did you know food loss and waste as a problem?” The post-lecture questionnaire asked about the level of understanding of food loss and waste and awareness of these as problem, the level of willingness to take action to reduce food loss and waste, the level of understanding food drives and/or food banks, and the level of impression of the lecture.

Before the pre-questionnaire was administered, the following information was provided: “Food loss and waste refers to food that can still be eaten but is discarded, and an estimated 4.72 million tons of food loss occurs annually in Japan. Food loss is a problem from the perspective of food resource waste and its environmental impact, and its reduction is becoming increasingly important.”

Data analysis

All items in the questionnaires were summarized as descriptive statistics, except impression of the lecture, which was categorized by grouping similar items. The main themes and sub-themes were identified. Categorization was performed by all the authors, and in cases of disagreement, a final decision was made through discussion.

Ethical considerations

The study was approved by the Research Ethics Committee of Mimasaka University (approval no. 2024-7). The methods were conducted in accordance with the

Declaration of Helsinki. Participants were informed of the voluntary nature of participation, privacy protection, and that there would be no disadvantages if they chose to withdraw midway. Participants were instructed to mark a checkbox indicating their consent before answering.

Results

The Mottainai Marche was attended by 3 Mimasaka University students, 10 Mimasaka University faculty members, and 17 other local residents. The pre-survey was completed by 25 participants (collection rate: 83.3%) (Table 1), while the post-survey was completed by 22 participants (collection rate: 73.3%).

Table 1: Results of pre-survey (n=25).

Variables	Participant responses	n	(%)
Awareness of food loss and waste	Knew the words and their meaning	22	88
	Knew the word but did not know its meaning	2	8
	Did not know the word or its meaning	1	4
Awareness of food loss and waste as a problem	Knew well	16	64
	Knew to some extent	9	36
	Did not know much	0	0
	Did not know at all	0	0
Awareness of food drive and food bank	Knew about both activities	17	68
	Knew about food drives but not food banks	3	12
	Knew about food banks but not food drives	0	0
	Did not know about both activities	5	20

In the pre-lecture survey, approximately 90% of the respondents indicated that they were aware of the terms and meanings of food loss and waste. Respondents were either “knew well (n=16; 64%)” or “knew to some extent (n=9; 36%)” with the problem of food loss and waste. Approximately 70% of the respondents knew what food drives and food banks are

In the post lecture survey, all respondents indicated that they understood both the meanings of food loss and waste after the lecture and that they had a good understanding of this problem. In the “Willingness to take action to reduce food loss and waste” (Table 2), the highest percentage of participants chose “When eating out, choose restaurants that serve food in desired portions, such as small portions” (n=13; 59.1%), followed by “Cook meals from leftovers” (n=11; 50.0%), “Buy products in quantities that can be eaten, such as small portions, small packaged products, and products sold in bulk” (n=10; 45.0%), and “Purchase products that are close to the expiration date in line at the front of the product

Table 2: Results of post-questionnaire (willingness to act to reduce food loss) (n=22).

	Already implementing		Want to start today		Do not want to or cannot do it	
	n	(%)	n	(%)	n	(%)
Avoid preparing too much food	13	90.9	6	27.3	3	13.6
Consume all food served	20	36.4	2	9.1	0	0
Cook meals from leftovers	8	86.4	11	50	3	13.6
Freeze food for storage	19	59.1	2	9.1	1	4.5
Constantly check food stock (items and amount) in the refrigerator	13	90.9	9	40.9	0	0
Determine whether food past expiry date is safe to eat, instead of discarding it	20	40.9	2	9.1	0	0
Purchase suitable amounts of food (e.g. individualized/ small packages, products sold loose)	9	40.9	10	45.5	3	13.6
Purchase products that are close to the expiration date in line at the front of the product shelf	9	40.9	10	45.5	3	13.6
Take the initiative in selecting products with discounts and point reductions due to approaching expiration dates.	13	59.1	7	45.5	2	9.1
Not order too much at restaurants	15	68.2	7	31.8	0	0
When eating out, choose restaurants that serve food in quantities that meet your preferences, such as a small-portion.	8	36.4	13	59.1	1	4.5

Table 3: Impressions of the food drive.

Category	Subcategory	Examples
Ease of understanding and comprehension of content	Ease of understanding	It was very easy to understand and informative with content that can be put into practice today.
	Specific examples and presentation devices that helped in understanding	The presentation materials were easy to read and understand for both children and adults.
Knowledge and new discoveries	Acquisition of new knowledge	I learned something new about food loss.
	Realization and awareness of food loss	I learned that one person throws away an amount of food equivalent to one rice ball, and I realized that we should finish what is served.
Willingness to put into practice	Willingness to put into practice	I would like to listen to stories about food loss and think about it with my children when cooking with them in the future.
Ingenuity of the meal party	Interest in cooking and recipes	It was very informative to know that the food donated through the food drive is utilized in this way.
	Appreciation as a parent	The food was so delicious that I couldn't believe it was from the food drive. As a parent, the best thing is to have someone cook for you.

shelf” (n=10; 45.5%). All participants indicated that they understood the meaning of both food drives and food banks after the lecture.

Regarding the impression of the lecture, four major categories and seven subcategories were obtained from the participant responses (Table 3).

In the first category, “knowledge and new findings,” many participants commented that the lecture was “very easy to understand and practical” and “concise, easy to understand, and increased my knowledge,” indicating that they learned a lot about food banks and food loss and waste, as well as specific ways to reduce it. The second category, “ease of understanding and comprehension of the content,” indicated that the presentation materials and explanations were well received and considered easy to understand by both adults and children. In the third category, “ingenuity of the meal party,” some participants expressed interest in the dishes served and wanted to put them into practice in their daily lives, describing it as an opportunity to increase their motivation to work on food loss and waste reduction at home, under the fourth category, “desire to put them into practice.”

Discussion

This study reports on the implementation of a food drive, holding a meal collected through the food drive, and the awareness lecture given at the meal in a university in Japan. The results of the questionnaire conducted after the lecture showed that the participants understood not only the concept of food loss and waste but also the meaning of the food drive and food bank, and expressed positive impressions of the project.

In the “Survey on Consumer Awareness in 2021 [7], many of the participants were already aware of the food drives and food banks, similar to in our study. In a way, this awareness

often motivates people to participate in such drives. However, awareness of these issues needs to permeate further in the community.

Food collected from food drives is usually donated to food banks [3]. However, in this activity, a meal party with a lecture was held to inform people about how to utilize food that could cause food loss and waste, and to educate them about the current situation of food loss and waste. The results of the preliminary questionnaire confirmed that many participants were already aware of the current status of food loss and waste, but their impressions of the lecture in the post-lecture questionnaire suggested that they had gained a new understanding of how to utilize foods that could cause food loss and waste. Currently, the organizations such as the Consumer Affairs Agency, disseminate recipes for food loss and waste reduction. However, serving food in the form of a meal party for the participants may be an effective means of raising awareness about food loss and waste reduction.

At the meal party that utilized the food collected through the food drive, the participation of those who cooperated in the food drive was limited, and there were not enough opportunities to directly inform the food drive cooperators about how to utilize the food provided. In the future, it will be necessary to promote active participation in meal parties by food drive cooperators and to develop practical activities targeting local residents.

Conclusion

In this study, a food drive aimed at reducing food loss and waste and a meal party utilizing the food collected in the food drive were conducted. As a result, many participants were able to enhance their awareness of food loss and waste and understand the significance of food drives and food banks. It was also confirmed that participants were more motivated to take concrete action to reduce food loss and waste after

the lecture and meal event. In future, it will be necessary to explore diverse ways to promote the participation of local residents and develop sustainable activities to this end. In particular, it is important to promote the participation of those who cooperate in food drives at meal meetings and to increase opportunities to directly inform them about how to utilize food products more efficiently. This is expected to raise awareness regarding food loss reduction throughout the community and lead to concrete actions.

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