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Assessment of knowledge of ICDS supervisors and workers towards food safety and hygiene

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Abstract

The Integrated Child Development Services (ICDS) is one of the flagship program of Department of Women and Child Development started in 1975 with an aim to enhance nutrition and well-being of children. The scheme laid foundation for integration of health services to children. The present study was undertaken to verify the food safety and hygiene knowledge of Anganwadi supervisors and workers of Delhi. The study was conducted for six months from October 2019 to March 2020 in North-East and North anganwadis of Delhi. 30 anganwadi workers and 40 anganwadi supervisors were selected by simple random sampling method. The research instrument used is a checklist to assess the knowledge level of Anganwadi supervisors and workers with regard to food safety. The component wise knowledge level of AW workers and supervisors showed that the extent of knowledge of the respondents are different in correspondence to different items on various parameters of food safety and hygiene. The study reflected anganwadi workers and supervisors are unaware of fortified foods, so efforts to be expedited by the Department of Women and Child development to bring out awareness so that the same knowledge could be delivered to local people by front line workers.

Keywords: FSSAI, fortified food, knowledge, food safety, ICDS

Introduction

In 1975 to address malnutrition and health issues, a flagship program was announced called ICDS with an objective to improve nutrition of children from birth to 6 years, pregnant women, lactating mothers, and adolescent girls [4]. ICDS aims to bring health services to the weakest and disadvantaged sections of society. It primarily focuses on providing food safety and nutrition to children and can significantly impact the overall development of the beneficiaries. It is very important to understand the beliefs and knowledge level of Anganwadi supervisors and workers who are the front line workers majorly involved in implementing and expanding the scheme. The main responsibility of assuring food safety and hygiene in kitchen lies in the hands of food handlers and workers who assumes a pivotal role in food production, storage and transportation [1]. In large scale cooking such as anganwadis, food passes through many hands, thereby increasing food contamination due to improper handling. Accidental or inappropriate handling of food can lead to a severe health hazard for the beneficiaries [2]. Most of the food borne infection are caused due to contamination of food via workers. The mishandling of food at various sources enables pathogens to come in contact with food [3]. Studies highlighted anganwadi centers are functioning properly in the state of Himachal Pradesh rather Uttar Pradesh [4]. Approximately 92% anganwadis are not equipped with proper storage mechanisms, 85% are carrying out their work in rented buildings, 8.2% are located in primary schools, only 6.7% have their own building [4]. Thus, anganwadis must be strengthened in structure and supplies, and an efficient system is required to be created.

In order to improve knowledge, attitude and practice of food handlers, education and training can be provided to make them learn and understand principles of food safety, nutrition and sanitation [5]. Food handlers should follow adequate knowledge on various food parameters, proper hygienic habits, wash their hands properly at regular intervals, clean their attire and ensure that they prepare safe and wholesome for the beneficiaries. According to various studies, workers in the kitchen are not trained properly on controlling food borne illnesses and infections which creates a havoc in assuring safe food [6]. Research studies have highlighted that there is a dearth of studies to understand the knowledge level of Anganwadi supervisors and workers on numerous aspects of food safety.

Due to lack of studies on food safety in ICDS, the research attempts to understand the knowledge level of Anganwadi supervisors and workers who are the major change agents on the ground level.

Materials and Methods

The present study was conducted to evaluate the food safety and hygiene awareness of Anganwadi supervisors and workers of North-East and North region of Delhi. The study was conducted for six months from October 2019 to March 2020. The permission was obtained from Women and Child Department, Govt. of NCT of Delhi and FSSAI to visit kitchens and conduct interview of supervisors and workers. 30 Anganwadi workers and 40 anganwadi supervisors participated in the study.

Research instrument

The research instrument used is a checklist to assess the knowledge level of Anganwadi supervisors and workers with respect to food safety and hygiene. It helps in assessment of their knowledge level and how much knowledge is being implied in the centres. This tool also helps in finding out the lacunas in food safety systems in anganwadis. A total of 30 questions have been kept to understand their knowledge level.

Results and conclusions

In the present study, out of 30 AW workers and 40 AW supervisors, 21 and 26 of them were aware of the six services mentioned under the ICDS scheme. The rest were not aware of the different components of ICDS, or the information provided by them was insufficient. All the AW workers and supervisors were aware that they have a significant role in maintaining the beneficiaries' health, nutrition, and well-being.

When asked whether any Food Safety and Hygiene training has been given to AW workers and supervisors, it was found that none of them have undertaken any training on food safety nor it was administered by the department, which emphasizes the need of having a training curriculum on food safety. Most of them reiterated that they had done training and lectures on nutrition for various age groups such as adolescents, pregnant women, and lactating mothers. 73.4% of anganwadi workers and 60% supervisors knew about pathogenic micro-organisms, and they were aware that food poisoning can be easily caused due to harmful micro-organisms; however, 26.6% of anganwadi workers and 40% of supervisors were not aware, which further stresses the need to strengthen food safety in anganwadis. 83.40% of anganwadi workers and 80% of anganwadi supervisors reported that half-cooked food is always harmful to health

and various diseases could occur due to half-cooked food. 66.70% of the AW workers and 70% of AW supervisors stated that food infection can be reduced by keeping raw foods separately from cooked food, 33.3% of AW workers and 30% of AW supervisors had no idea about it. When asked whether unwashed fruits and vegetables could be a source of food poisoning, all (100%) of them reported positively. 100% of the AW worker and supervisors stated that unhygienic practices followed by food handlers can cause infection to the children that focuses on sanitation and hygiene in kitchen premises. 100% of the AW workers and supervisors stated that the poor hygiene of food handler could cause infection to the children.

76.7% of AW workers and 85% of AW supervisors conveyed that keeping food in the refrigerator can prevent microbial contamination for longer hours. They were also aware that the food quality will be deteriorated due to physico-chemical changes in the food. 100% AW workers and supervisors reported that the food-borne infection could be caused by close contact of foods with bare hands. 100% of AW workers and supervisors said insects could also transfer food-borne infections that can lead to food poisoning. Out of 30, 21 AW workers and out of 40, 26 AW supervisors reported that eating left-over cooked food kept at room temperature is a high risk for causing food poisoning. Others were not aware about it. None of the workers and supervisors had any knowledge about the concept of room temperature. All of them reported null on the question related to multiplication of bacteria quickly at room temperature. 100% AW workers and supervisors reported that exclusive breast feeding should be continued till 6 months. 73.4% of AW workers and 60% of AW supervisors were aware of fortified foods as mandated by Govt. of India. Rest of them were not aware that stresses the need to sensitize supervisors on fortified foods and their usage in various public health programs.

F+ logo was not identified by any of the AW workers and supervisors. Surprisingly, all the anganwadis were using fortified foods in their kitchens as per Govt. mandate of supplying fortified foods for the beneficiaries. When the supervisors were asked to identify the fortified food F+ logo, they could not identify any of them. 63.4% of AW worker and 70% of AW supervisor reported positively on the items pertaining to contacting raw food with bare hands that might cause food-borne infections.

Food poisoning can result in hospitalization and even death. When inquired that healthy food handlers can also carry food-borne pathogens, 100% of AW workers and AW supervisors were aware about that. Table 1 shows the knowledge scores of 30 anganwadi workers and 40 supervisors.

Table 1: Results of knowledge level of anganwadi workers and supervisors

	Items	Worker's Category	No	Yes	Total	Chi square	p value
1	Services under ICDS centre	Anganwadi Worker	9	21	30	0.194	0.659
		Supervisor	14	26	40		
2	Anganwadis responsible for health of children	Anganwadi Worker	0	30	30	NA	NA
		Supervisor	0	40	40		
3	Food safety training	Anganwadi Worker	30	0	30	NA	NA
		Supervisor	40	0	40		
4	Food poisoning is caused by micro-organisms.	Anganwadi Worker	8	22	30	1.353	0.245
		Supervisor	16	24	40		
5	Half cooked food harmful	Anganwadi Worker	5	25	30	0.126	0.723
		Supervisor	8	32	40		

6	Food infection can be reduced keeping foods separate	Anganwadi Worker	10	20	30	0.088	0.766
		Supervisor	12	28	40		
7	Unwashed fruits and vegetables - source of contamination	Anganwadi Worker	0	30	30	NA	NA
		Supervisor	0	40	40		
8	Unhygienic practices - source of food contamination.	Anganwadi Worker	0	30	30	NA	NA
		Supervisor	0	40	40		
9	Poor hygiene of food handler can cause infection to the children	Anganwadi Worker	0	30	30	NA	NA
		Supervisor	0	40	40		
10	Keeping food in refrigerator helps in preventing microbial contamination	Anganwadi Worker	7	23	30	0.787	0.375
		Supervisor	6	34	40		
11	Food borne infection may be caused by contacting foods with bare hands	Anganwadi Worker	0	30	30	NA	NA
		Supervisor	0	40	40		
12	Insects can transfer food borne infections	Anganwadi Worker	0	30	30	NA	NA
		Supervisor	0	40	40		
13	The leftover food can be a high risk of food poisoning	Anganwadi Worker	9	21	30	0.194	0.659
		Supervisor	14	26	40		
14	Bacteria can multiply at room temperature very quickly	Anganwadi Worker	30	0	30	NA	NA
		Supervisor	40	0	40		
15	Exclusive breast feeding should be continued till 6 months	Anganwadi Worker	30	0	30	NA	NA
		Supervisor	40	0	40		
16	Knowledge about fortified foods	Anganwadi Worker	8	22	30	1.353	0.245
		Supervisor	16	24	40		
17	Knowledge about fortified logo F+	Anganwadi Worker	30	0	30		
		Supervisor	40	0	40		
18	Contacting raw food with bare hands might cause infections	Anganwadi Worker	11	19	30	0.345	0.557
		Supervisor	12	28	40		
19	Severe diseases can be caused due to food poisoning	Anganwadi Worker	0	30	30	NA	NA
		Supervisor	0	40	40		
20	Food borne pathogens can also be carried by healthy handlers	Anganwadi Worker	0	30	30	NA	NA
		Supervisor	0	40	40		
21	Food safety day is celebrated on 7th June	Anganwadi Worker	30	0	30	NA	NA
		Supervisor	40	0	40		
22	Washing hands is an important step before handling food	Anganwadi Worker	7	23	30	0.787	0.375
		Supervisor	6	34	40		
23	Wiping cloths can spread microorganisms.	Anganwadi Worker	0	30	30	NA	NA
		Supervisor	0	40	40		
24	Similar cutting board can be used for both raw and cooked foods	Anganwadi Worker	0	30	30	NA	NA
		Supervisor	0	40	40		
25	Reheating is not required for cooked foods	Anganwadi Worker	9	21	30	0.194	0.659
		Supervisor	14	26	40		
26	Before serving, cooked food to be kept hot	Anganwadi Worker	0	30	30	NA	NA
		Supervisor	0	40	40		
27	Refrigerating food only slows bacterial growth.	Anganwadi Worker	30	0	30	NA	NA
		Supervisor	40	0	40		
28	Water can be checked if it is safe or not by verifying it physically.	Anganwadi Worker	8	22	30	1.353	0.245
		Supervisor	16	24	40		
29	Certificate of analysis to be obtained with the procurement of food material	Anganwadi Worker	4	26	30	0.536	0.464
		Supervisor	8	32	40		
30	Cooking should be done with lid	Anganwadi Worker	11	19	30	0.345	0.557
		Supervisor	12	28	40		

When asked about the food safety day, none of the supervisors were aware that food safety day is celebrated every year on 7th June. In contrast, all of them conveyed September month to be celebrated every year as nutrition month, which highlights that the very focus of our Indian anganwadis is on nutrition leaving aside one important area, food safety. 76.7% of AW workers and 85% of AW supervisors were aware that washing hands is an important step before handling food. Rest of them were not aware. All of them were aware that wiping cloths can spread microorganisms; however, the clothes were found to be dirty, so practice was inadequate. All the supervisors and workers were aware that the similar cutting board cannot be used for both raw and cooked foods. When asked about whether cooked foods are required to be thoroughly reheated, 70% of the AW workers and 65% of the AW supervisors were

unaware. Rest of them were not aware. 100% of them reported that before serving cooked foods, they are required to be kept hot. Some of them also reiterated that there had been a delay in distribution of food in some of the anganwadis due to other engagements due to which the food gets cold when it comes to serving to the beneficiaries which is a huge concern and must be looked by the department. 100% of AW workers and supervisors were not aware about slowing down of bacterial growth due to refrigeration. 26.6% of AW workers and 40% of AW supervisors highlighted that the water can't be checked if it is safe or not by verifying it physically. Rest of them were not aware that the determination of safe water could be identified by conducting chemical and microbiological tests and not by its physical appearance only. 86.7% of AW workers and 80% supervisors reported positively on

certificate of analysis to be obtained with the procurement of food material. 63.4% of AW workers and 70% of AW supervisors were aware that the cooking shall be done with a lid; this would help in the retention of important nutrients. However, rest of them were not aware. Table 1 shows result of chi square to evaluate the knowledge level of anganwadi workers and supervisors. The table shows that there is no significant association between anganwadi workers and supervisors on various items of knowledge on food safety and hygiene.

Conclusions

The study has demonstrated the knowledge assessment of AW workers and supervisors on various aspects of food safety and hygiene. The component wise knowledge level of AW workers and supervisors showed that the extent of knowledge of the respondents are different in correspondence to different items used in the research tool. All the workers and supervisors were quite aware that they have prime role in assuring health and well-being of the children, unhygienic practices could be a source of contamination, poor hygiene of food handler could cause infection to the children. However, none of the supervisors and workers had received any lecture or training on food safety that is an important area to control food borne infections. Both the groups were not aware about multiplication of bacteria at room temperature, fortified foods, fortification food logo i.e. F+, food safety day, concept of refrigeration.

Since, fortification has emerged as a proven, scalable, simple, and cost-effective strategy to improve the beneficiaries' nutritional status. FSSAI has also notified standards for five fortified staples, namely wheat flour, rice, oil, milk, and salt, widely used in most of the Anganwadi. The study reflected anganwadi workers and supervisors are unaware of these foods, so efforts to be expedited by the Department of Women and child development to bring out awareness on such issues so that the same knowledge could be delivered to local people by front line workers. It is suggested that FSSAI and ICDS department should work in close coordination to spread knowledge about fortified products and food safety among ICDS functionaries and conduct workshops or lectures designed explicitly for ICDS supervisors and food handlers. Time to time training on food safety to be organized by both the departments.

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Conflict of Interest

The author declares no conflict of interest.

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