

Assessment of Current Practices of Authorized Officers in Food Safety Program in a Rural District of Sri Lanka

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ABSTRACT

Background: Food is an essential component in human life. Contamination of foods with various biological, chemical and physical agents can cause food borne diseases. Worldwide it is a significant cause for morbidity and mortality. In Sri Lanka, food safety is assured by Food Act 26 of 1980 adopting the national Food Safety Programme (FSP) under the purview of the Ministry of Health in Sri Lanka. Though the system is well established, reported unsafe food related events have increased over the years. Similar trend was observed even in rural districts like Polonnaruwa.

Objective: Objective of this study was to assess the current practices of authorized officers in food safety program in Polonnaruwa district in Sri Lanka.

Methods: Descriptive cross sectional study was conducted including all the seven MOH areas in Polonnaruwa District. All the authorized officers of the food safety program were considered as the study population. A pretested structured data extraction sheet was used to collect existing data.

Results: The total study population of authorized officers (n=44) included one (1) F&DI, twelve (12) MOH/AMOH and thirty one (31) PHIs. All the MOH areas are occupied by a qualified medical officer. Planning and implementing of awareness programs for public and food handlers were happened but not properly planned throughout the district. No MOH area could meet standard in formal sample collection and most of them could reach only 50%. Food raiding throughout the district was done but not in an organized manner. Supervision and reviews were not happened regularly in the district.

Conclusion: District higher level and middle level officers and managers who had authority

in implementing food safety, did not much involve in the subject. Discrepancy of planning and execution of the Food Safety program can be identified between deferent MOH areas. District level strategic plan cannot be identified during the study.

Recommendations: Active involvement of supervisors in district food safety program is a must. Food safety program has to be conducted in much organized manner throughout the district.

Keywords: Food, Food Safety Programme, Authorised Officers, Food Handling Establishments

1. BACKGROUND

Food is an essential component for the life of human. According to Food and Agriculture Organization (FAO) of United Nations food is “Any substance, whether processed, semi processed or raw, which is intended for human consumption, and includes drink, chewing gum and any substance which has been used in the manufacture preparation or treatment of “food” but does not include cosmetics or tobacco or substances used only as drugs”.

1.1 Food safety

Food for human consumption is extremely varied. The ever increasing demand and due to the commercialisation and industrialisation of the food industry, the possibility of hazardous food products become inevitable. Therefore the need of food safety system is an important and essential requirement. Codex Alimentarius Commission (CAC), which is an intergovernmental body, established by the

FAO of the United Nations and the WHO in 1963 coordinates food standards at international level. According to CAC, food safety is the “assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use” (Codex Alimentarius Commission, 1997).

Globally, consumption of unsafe food is a significant cause for morbidity and mortality, due to food borne diseases (FAO/WHO, 2003).

Globally the burden of disease due to food borne illnesses is difficult to estimate. But in 2005 1.8 million people died due to diarrheal diseases worldwide. Out of that larger proportion was considered as infected with contaminated foods. In United States, approximately 76 million food borne illnesses, 325,000 hospitalizations, and 5,000 deaths are estimated to occur each year. It is estimated up to US \$35 billion is spent annually on these issues. In Australia, annually 5.4 million cases, 17,770 hospitalizations and 125 deaths occur as a result of food borne diseases. One out of four people in Australia suffer an incident of food borne illness annually. In China it is estimated as 300 million cases per an annum (FAO/WHO, 2003).

In Sri Lanka, disease burden due to food borne illnesses is also difficult to estimate as all the cases are not hospitalized. However according to the Annual Health Bulletin 2014, intestinal infectious diseases are the 11th leading cause of hospital admissions i.e. 620 cases/100,000 population (Ministry of Health Sri Lanka, 2014).

1.2 Food safety system in Sri Lanka

Food safety is assured by adopting the National Food Safety Programme under the Food Act 26 of 1980 and with amended Acts 20 in 1991, 29 in 2011. Implementation of the Food Act is carried out by the Ministry of Health in Sri Lanka. The Chief Food Authority is the Director General of Health Services (DGHS). Under this Act, food administration is handled by

the DGHS. Provincial Director (PD) and Regional Director of Health services (RDHS) are responsible for food safety activities at provincial and district levels respectively. Food and Drugs Inspectors (F&DI) at district level and Medical Officers of Health (MOH), Assistant Medical Officer of Health (AMOH) and Public Health Inspectors (PHI) at divisional level are the Authorized Officers (AOs) to carry out food safety activities. The Municipal Council Ordinance and the Pradeshiya Sabha Act also give provisions, to act on food safety in municipal council and Pradeshiya sabha areas.

Those are included,

1. Updating of Food Handling Establishments (FHEs) register – PHI is supposed to update the food handling establishments register at the beginning of the each year.
2. Inspection, rating, legal actions and medical examinations of food handlers.
3. Sampling of food for analysis (formal (Formal sampling: The standard is minimum of two samples per month should be taken by an authorized officer. Legal actions are taking if samples are unsatisfactory.), informal (Informal sampling is done to support FHEs and there were no legal procedure against FHEs.) and legal action or advice appropriately.

These facts clearly reveal the importance and the need of well established food safety programs as an essential component in modern life of human. Though the system is well established, reported unsafe food related events have increased over the years in Sri Lanka. Similar trend was observed even in rural districts like Polonnaruwa. At the same time very limited studies were carried out to see the efficacy of the program in Sri Lanka.

Therefore this study was aim to assess the current practices of Authorized Officers in Food Safety Program in Pollonnaruwa district in Sri Lanka.

2. METHODOLOGY

Descriptive cross sectional study was conducted including all the seven MOH areas belong to the Regional Director of the Health Service area of the Polonnaruwa District. All the authorized officers of the food inspection (MOH, AMOH, PHI and F&DI) in Polonnaruwa district were considered as the study population. Above officers worked more than six months were included in the study. The total population was (n=44) included one (1) F&DI, twelve (12) MOH/AMOH and thirty one (31) PHI.

A pretested structured data extraction sheet was developed by referring guidelines, manuals, circulars and Food Act. This was used to collect existing data. Data

on sessions allocated and sessions performed by MOH/AMOH and PHI, number of FHEs registered and graded, number of conducted public awareness programs, number of conducted programs for food handlers, number of conducted supervisions, number of review meetings done on food safety program, samples collected and food raiding were the main components in the data extraction sheet. Face validity and content validity of the data sheet was achieved by obtaining the consensus of five experts including former Director Environmental and Occupational Health.

Main variables used in the study are described in table 1.

Table 1: definition of the Main variables of the study

Morning session	8.00 am to 12.00 noon
Evening session	12.00noon to 4.00pm
Sessions allocated	Total sessions (morning or evening) pre approved by immediate supervising officer to conduct a program in the year
average monthly allocated session per a person	Allocated session per person per month
Sessions performed	Total actually performed sessions in an year (data were extracted from diaries)
average monthly performed sessions	Actually performed sessions per person per month
Satisfactory food sample	Food samples meets the standard declared by Food Act
unsatisfactory food samples	Following analyzing at government laboratory are Food samples not meet standard as above

Data on the advanced programs, sessions allocated were collected using diaries of MOH, AMOH and PHI for the period of three months from August to October in 2016 were collected using data extraction sheet. Data on food raiding, sample collection, and supervisory visits and reviews were taken from registers and returns of the year 2016.

SPSS 19.0 was used for the analysis of the data.

3. RESULTS

All the PHII, F&DI had more than six months experience and 12 out of 16 MOH/AMOHs had more than six months experience. The total study population of authorized officers (n=44) included one (1) F&DI, twelve (12) MOH/AMOH and thirty one (31) PHI. Their distribution in the district according to the MOH areas was mentioned in table 1.

Table 2: Distribution of the authorized officers in the MOH areas in Polonnaruwa district in year 2016

MOH area	Population	Number of registered FHE	Number of MOOH/AMOOH	Number of PHII and F&DI**
Thamankaduwa	98071	611	2	6
Hingurakgoda	72838	370	2	4
Medirigiriya	75098	254	2	4
Dimbulagala	93105	467	2	6
Welikanda	39859	173	1	4
Elahera	45538	391	1	3
Lankapura	40796	150	2	4
District Level				1**
District Total	465305	2416	12	32

** F&DI at district level

Thamankaduwa is the highest populated MOH area and Waliakanda was the lowest. All the MOH areas were occupied by the qualified Medical Officer with adequate experience.

Table 3: average monthly allocated and conducted food safety sessions per person (PHI and F&DI) in year 2016

MOH area And F &DI	Mean (\pm SD) monthly allocated sessions per	Mean(\pm SD) monthly performed sessions per	Ratio Registered FHE to average monthly performed sessions	% performed sessions against allocated sessions
Thamankaduwa	6 (\pm 1)	5 (\pm 0.9)	122:1	83.3
Hingurakgoda	7 (\pm 1)	2.6 (\pm 0.6)	142:1	37.2
Medirigiriya	26 (\pm 7)	12 (\pm 6.4)	21:1	46.2
Dimbulagala	17 (\pm 3)	11 (\pm 3.5)	42:1	64.7
Welikanda	5 (\pm 1)	2.4 (\pm 0.6)	72:1	48
Elahera	20 (\pm 7.6)	8.4 (\pm 3.3)	47:1	42
Lankapura	7.7 (\pm 1.6)	4.3 (\pm 1.3)	35:1	55.8
F&DI	5 (\pm 1)	3 (\pm 1)	-	60

Highest average monthly allocated sessions and average performed sessions were recorded at Madirigiriya MOH area and Lowest in both in Welikanda MOH area. The lowest FHE to average monthly conducted session ratio was noticed in Medirigiriya MOH area and highest was noticed in Hingurakgoda MOH area. Discrepancy between planning and implementing of the Food Safety program by relevant officers could be identified throughout the district.

Table 4: Awareness programs conducted for public on food safety during the year 2016

	Sessions conducted	Number participated	Population	% participants over population
Thamankaduwa	48	3600	98071	3.67
Hingurakgoda	1	74	72838	0.10
Medirigiriya	0	0	75098	0.0
Dimbulagala	12	492	93105	0.5
Welikanda	16	895	39859	2.24
Elahera	4	510	45538	1.11
Lankapura	8	350	40796	0.86
District	89	5921	465305	1.27

Highest number of (n=480 awareness programs were conducted in Thamankaduwa MOH area and 3.67% (n=3600) of population was participated. Welikanda MOH area (n=16) was the second and 2.24% (n=39859) of the population was participated. No session was conducted for public in Medirigiriya MOH area.

District value for the participation for food safety awareness programs was 1.27% (n=5921) for the year 2016.

Table 5: Awareness programs conducted for food handlers on food safety

	Sessions conducted	Number participated	Registered FHEs	% participants over registered FHEs
Thamankaduwa	10	975	611	160
Hingurakgoda	1	138	370	37
Medirigiriya	0	0	254	0
Dimbulagala	18	843	467	180
Welikanda	0	0	173	0
Elahera	4	168	391	43
Lankapura	0	0	150	0
District	33	2124	2416	88

Highest numbers of sessions for food handlers were conducted in Thamankaduwa and Dimbulagala MOH areas and participation percentage were 160% and 180% respectively. No session was conducted for food handlers in Medirigiriya, Welikanda and Lankapura MOH areas. District percentage for participation of food handlers for food safety programs over registered FHE was 88% in year 2016.

3.1 Food Sample collection

Table 6: Formal samples collected against the minimum in 2016

	Standard minimum no of samples per year	Number of samples taken	% sample taken against standard
Thamankaduwa	144	82	56.9
Hingurakgoda	96	79	82.3
Medirigiriya	96	61	63.5
Dimbulagala	144	96	66.7
Welikanda	96	61	63.5
Elahera	72	35	48.6
Lankapura	96	48	50
District	744	462	62

Standard number of samples couldn't be taken in any MOH area. More than fifty percent of the standard could be met at all MOH areas except Elahera MOH area (48.6%). Only 62% of standard could be met at the district level.

Table 7: Analysis of the results of formal samples collected in 2016

MOH Area	Satisfactory		Unsatisfactory		Pending		Total	
	N	%	N	%	N	%	N	%
Thamankaduwa	36	44	46	56	0	0	82	100
Hingurakgoda	38	48.1	41	51.9	0	0	79	100
Medirigiriya	45	73.7	16	26.3	0	0	61	100
Dimbulagala	56	58.4	20	20.8	20	20.8	96	100
Welikanda	40	65.6	11	18	10	16.4	61	100
Elahera	20	57.1	8	22.9	7	20	35	100
Lankapura	39	81.3	9	18.7	0	0	48	100
Total	274	59.3	151	32.7	37	6.9	462	100

More than 30% of total formal samples collected are not satisfactory in district level. In Hingurakgoda and Thamathkaduwa MOH areas more than 50% of the samples were unsatisfactory.

Table 8: Actions taken for collected unsatisfactory formal samples in 2016

MOH Area	Prosecuted						Advised		Total Unsatisfactory Samples	
	Convicted		Non-convicted		Pending					
	N	%	N	%	N	%	N	%	N	%
Thamankaduwa	35	76	11	24	0	0	0	0	46	100
Hingurakgoda	40	97.5	1	2.5	0	0	0	0	41	100
Medirigiriya	7	43.6	3	18.8	6	37.5	0	0	16	100
Dimbulagala	2	10	0	0	0	0	18	90	20	100
Welikanda	6	54.5	0	0	3	27.3	2	18.2	11	100
Elahera	2	25	0	0	6	75	0	0	8	100
Lankapura	6	66.7	0	0	0	0	3	33.3	9	100
Total	98	64.9	14	9.3	15	9.9	23	15.2	151	100

From all these unsatisfactory samples in the district, 64.9% (n=98) were convicted. It was noticed that in Hingurakgoda MOH area it was 97.5% (n=40) and 76% (n=35), 66.7% (n=6) in Thamankaduwa and Lankapura MOH areas respectively.

Table 9: Informal samples collected in 2016

	Number of samples taken	Satisfactory	Unsatisfactory	Pending
Thamankaduwa	20	4	16	0
Hingurakgoda	0	0	0	0
Medirigiriya	0	0	0	6
Dimbulagala	9	3	0	0
Welikanda	0	0	0	0
Elahera	0	0	0	0
Lankapura	0	0	0	0
District	29	7	16	6
% from total collected		24.1	55.2	20.7

Informal samples were collected only in two MOH areas (Thamankaduwa (n=20) and Dimbulagala (n= 9)). Out of all the informal samples collected more than 50% (n=16) were unsatisfactory and only 1/4 was (n=4) satisfactory.

3.2 Food raiding

Table 10: Food raiding in - 2016

MOH Area	Registered FHEs	Number of raids conducted	Number of Unsatisfactory items found		Ratio of unsatisfactory items per raid
			N	District %	
Thamankaduwa	611	6	216	40.2	36
Hingurakgoda	370	2	28	5.3	14
Medirigiriya	254	4	71	13.2	18
Dimbulagala	467	9	97	18	11
Welikanda	173	5	47	8.7	9.4
Elahera	391	14	57	10.6	4
Lankapura	150	8	22	4	2.8
District total	2416	48	538	100	11

Although Thamankaduwa MOH area is consisted with highest FHEs only 6 raids were done in 2016. Highest numbers of raids were conducted in Elahara MOH area where about 400 FHEs were exist. Although only 6 food raids were conducted in 2016, most of the unsatisfactory items in the district (40.2%) were found in Thamankaduwa MOH area.

Table 11: Outcome of the unsatisfactory samples of food raiding in Polonnaruwa district- 2016

MOH Area	Prosecuted				Destroyed		Total Unsatisfactory Samples	
	Convicted		Not-convicted		N	%	N	%
	N	%	N	%				
Thamankaduwa	42	19.4	0	0	174	80.6	216	100
Hingurakgoda	20	71.4	0	0	8	28.6	28	100
Medirigiriya	25	35.2	3	4.2	43	60.6	71	100
Dimbulagala	14	14.4	0	0	83	85.6	97	100
Welikanda	18	38.3	0	0	29	61.7	47	100
Elahera	DNA	-	DNA	-	DNA	-	57	-
Lankapura	7	31.8	0	0	15	68.2	22	100
Total	126	23.4	18	3.35	352	65.4	538	-

DNA*- Data Not Available

More than twenty percent (n=126) of unsatisfactory samples found in food raiding were prosecuted and convicted. In the district more than sixty percent (n=352) of unsatisfactory samples found in food raiding were destroyed. Sample destruction was high in Dimbulagala (85.6%), Thamankaduwa (80.6%) and Lankapura (68.2%) respectively.

Annual reviews and supervisory visits regarding food safety

There were no reviews conducted in MOH level or in District level in Polonnaruwa district in 2016. Only district PHI was done one district level supervisory visit regarding food safety in year 2016. RDHS or MOH/AMOH not involved in the supervision regarding food safety.

4. DISCUSSION

This study was focused on the performance of activities related to the Food Safety Programme in the district. None of the MOH/AMOH had neither allocated nor performed any food safety program in the respective areas. Discrepancy of planning and execution of the food safety program by PHI were shown in between and within all MOH areas. This revealed the absence of proper planned district level food safety activities.

Wide variations in number of awareness programs conducted and participation of both general public and food

handlers was noticed throughout the district. In some MOH areas no sessions were conducted. Though PHIs have to conduct awareness program for food handlers, there is no legitimacy need for every food handlers to attend. However in Malaysia, Food handlers training program is compulsory for every food handler, as the food handlers are the prime important in ensuring food safety (Abdul-Mutalib et al., 2015).

Although the PHI manual implies to collect minimum of two samples per month should be taken by an authorized officer, samples were not collected to reach the minimum requirement. Only around 50% of the required samples were taken except in one MOH division (82.3%). Over workload and lack of supervision of PHIs would be the reason for that. It was noted that over 50% of samples were unsatisfactory in certain MOH areas (Thamankaduwa and Hingurakgoda). This reveals the weaknesses of the level of conducting food safety program. Even at the time of the data collection, there were pending reports of some samples. The delays of receiving reports had affected the prosecution procedure for unsatisfactory food samples.

There were no separate review meetings conducted for the food safety program and no single supervision was done by RDHS, MOH/AMOH. Only one supervision was done by SPHID. This

implies there were obvious lack of review meetings and supervisions.

5. CONCLUSION

Mainly this study was focussed on the performance of activities related to the Food Safety Programme in a rural district of Sri Lanka. Considering the district, higher level and middle level officers and managers who had authority in implementing food safety, did not much involve in the subject. None of the MOH/AMOH had neither allocated nor planned any Food Safety Programmes in the respective areas and also they had not performed any of programmes during the study period.

Discrepancy of planning and execution of the Food Safety program by PHII were shown between deferent MOH areas. District level strategic plan cannot be identified during the study.

Wide variation in conducting awareness programs and number of participation was identified throughout the district. Some MOH areas none of the programs were conducted in 2016. Although PHII have to conduct awareness programmes for food handlers there is no compulsory legitimacy for every food handlers to attend for such a program. But in some Asian countries like Malaysia, Food handlers has to participate regular training as the food handlers are the prime important in ensuring food safety (Abdul-Mutalib et al., 2015).

Though it is clearly mentioned in the PHI Manual (Ministry of Health Sri Lanka, 2010), that minimum of two samples per month should be taken by an authorized officer, samples were not collected to reach the minimum requirement. Only around 50% of the requirement samples were taken except in one MOH division (82.3%).

It was noted that over 50% of samples were unsatisfactory in certain MOH areas (Thamankaduwa and Hingurakgoda). But number of the raids conducted in year was not satisfactory. Even at the time of the data collection, there were pending reports

of some samples. The delays of receiving reports had affected the prosecution procedure for unsatisfactory food samples. Formal and informal samples collected for analysis were not proportionate to the FHEs in the MOH areas. Outcome for the unsatisfactory formal samples were either go for litigation or giving advice. It showed that two different approaches were used by all MOH areas in different magnitude to improve the quality of the food handling.

There was no review meeting conducted for the Food Safety Program and no single supervision was done by higher level or middle level district officers like RDHS, MOH/AMOH. Only one supervision was done by Senior PHI of the district. This implies there were obvious lack of review meetings and supervisions.

6. Recommendations

Overall weaknesses were identified in food safety program regarding conducting awareness programs and training programs, participation for above programs, carrying out supervisory visits, conduction raiding and collection of samples.

To improve in all level smoothen the existing functions through available legal power is extremely important. Involvement of higher and middle level district officers for conducting food safety program in regular manner is a must. Policy reforms and introduction of new policies, amendments to existing legal acts should also happen.

Awareness for the food handlers on healthy safe food handling has to be improved using various strategies. Grading system for the FHEs can be introduced and regular supervision and encouragements has to be implemented. Displaying of grade obtained should be made compulsory to all FHEs. Workload of the MOOH/AMOOH and PHII should be re-assessed and allocation of suitable incentives is important. New information technological advancement can be successfully used to increase the awareness of the food handlers in safe food handling. Active participation

of upper and middle level managers in food safety program in district level is utmost important factor for its smooth drive and obtaining expected results.

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