

Implementation of legislation on food safety by Public Health Inspectors

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Abstract

Objective

To assess the level of knowledge, attitudes, self-assessed competencies and performance of Public Health Inspectors (PHII) in implementing legislation on food safety.

Methodology

A cross sectional study was carried out covering five districts to assess the knowledge, attitudes, self competencies and skills of Public Health Inspectors in implementing specific legislation on food safety. Pre-tested self administered questionnaires and checklists were used as study instruments.

Results

The baseline knowledge was poor in the areas of enactments in food safety, food labelling, food sampling, meat and fish inspection and legal procedures.

PHII had unfavorable views, particularly towards the available facilities and support services. A high level of self-assessed competency was present in a majority of PHII, in relation to performing tasks in implementing food legislation. However, observations of performance indicated that performance was poor in the activities carried out in the field as well as in the office.

The high level of self-assessed competency shown by the PHII did not match their knowledge and performance. There was a negative correlation seen between self-assessed competency and knowledge, and self-assessed competency and performance.

Conclusion

Knowledge, attitudes and skills of PHII in implementing legislation on food safety was poor. Although PHII indicated a high level of self-assessed competency in performing their duties it did not match their performance.

Key words

Public Health Inspector; food legislation; self assessed competency; performance

Introduction

Food safety refers to prevention of hazards, whether chronic or acute that may make food injurious to the health of the consumer (1).

Millions of people fall ill and many die as a result of consuming unsafe food. According to the WHO, up to one-third of the populations of developed countries is affected by food-borne illnesses and the problem is likely to be widespread in developing countries (2).

The prevalence of food-borne diseases is increasing in most countries. By the year 2025 more than 1000 million of the world's population will be aged over 60 years. More than two thirds of them will live in developing countries. At old age a person may become more susceptible to food borne diseases and this would result in increase in food-borne diseases (3). Trends in global food production, processing, distribution and preparation present new challenges to food safety. In some countries one person in four is especially at risk of food borne diseases (4). A national food safety programme that aims to protect consumer health should be a priority for all governments. Governments should have up to date food legislation and regulations, which are properly enforced (5).

The report of the Task Force for Formulation of a Food and Nutrition Policy for Sri Lanka states that, although food safety is an integral aspect of food security, it receives scant attention at present. It is well known that most foods available for sale are contaminated. Water is either contaminated or polluted. It further reveals that substandard food processing and marketing is also posing a threat. It is, therefore, necessary that food safety issues be given adequate attention (6).

Food legislation provides the foundation for national food safety programmes. It plays a pivotal role in directing the food control efforts of food inspectors. It informs producers and processors of requirements regarding production, processing methods and provides the consumer expectations of a given food (7).

The administration and implementation of food laws requires a qualified, trained, efficient and honest food inspection service. The food inspector is the key functionary who has day-to-day contact with the food industry, trade and often the public. The reputation and integrity of the food control system depends to a large extent, on his integrity and skills (1).

Even when adequate food safety and quality legislation exists, the shortage of trained and adequately equipped inspection officials may compromise effective enforcement of legislation (8). To be effective, food inspection officials should have well planned food inspection programmes, should understand their duties and

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responsibilities and maintain close collaboration with other food control services (9).

In Sri Lanka the most important legislative enactment relating to food safety is the Food Act No 26 of 1980 and the Food (Amendment) Act No. 20 of 1991 which provides for the control of the importation, manufacture, distribution, storage and sale of food (10). The Public Health Inspector is one of the main Authorized Officers to implement public health laws in Sri Lanka. Of their many duties, Public Health Inspectors play a major role in maintaining food safety that affects the health of the community at large. As the food legislation is one area where a major responsibility in implementation lies with the health sector and studying the factors associated with the implementation of the legislation on food safety is of importance as any intervention to improve the implementation could be carried out successfully within the framework of the health sector.

Methodology

The study was a descriptive cross sectional study and included the following components:

- Assessment of knowledge of PHII on implementation of legislation on food safety
- Obtaining views expressed by PHII on implementation of legislation on food safety
- Self-assessment of competencies in performing activities in implementation of legislation on food safety
- Observation of performance of PHII in conducting activities of implementing legislation on food safety

The study was conducted in the Western and North-Western provinces. All five districts in these provinces namely Colombo, Gampaha, and Kalutara in the Western province and Kurunegala and Puttalam in the North-Western province were included in the study.

Range PHII (PHI who has been allocated a PHI range in a MOH area) serving in these districts were selected as the study population. PHII performing duties in the specialized campaigns were excluded as they do not carry out activities in food safety.

The following study instruments were developed:

- A self administered short answer questionnaire to assess knowledge.
- A self administered questionnaire to assess opinions.
- A self administered questionnaire for self assessment of competencies.

- Checklists to assess performance.
- A self administered questionnaire to collect service and socio-demographic information of PHII.

The short answer questionnaire contained questions to test the knowledge of PHII relevant to: Enactments on food safety i.e. ordinances, acts, regulations and by-laws that are applicable in specific areas in food safety, knowledge on food labelling, meat and fish inspection, food sampling and legal procedures i.e. court procedures and penalties imposed.

The opinions of PHII towards importance of implementation of food legislation, adequacy of currently available legislation, adequacy of facilities for implementation of legislation, training opportunities in food safety and support from higher authorities in implementation of legislation were obtained.

A list of activities in the following areas: inspection of food establishments, food sampling, interpretation and detection of violations of legislation, court procedures and documentation, which are important for the implementation of legislation on food safety, were considered, to test the self assessed competencies of PHII.

Checklists to observe the performance of the PHII in three broad areas relevant to food safety were developed. They were inspection of food establishments, food sampling, planning, documentation and maintenance of records. Non-participatory direct observation was done in the field setting in respect of inspection of food establishments and food sampling. Record keeping was assessed at the office setting.

Marking schemes

A marking scheme was developed for the short answer questionnaire in which each correct response was awarded two marks. Incorrect answers and unanswered questions received zero marks. No negative marks were awarded. A total knowledge score was calculated from the cumulative scores which ranged from 0 – 100 and given as a percentage.

In awarding marks for self assessed competencies, *very competent* received 3 marks, *competent* – 2 marks, *not competent* – 1 mark and *cannot perform* – zero marks. Each statement was awarded marks accordingly and a cumulative for selected activities such as food sampling, labelling, identifying relevant legislative enactments, carrying out legal procedures was calculated separately and given as a percentage

score.

In the assessment of performance, each observable activity correctly performed was given one mark and no marks were awarded for incorrectly performed activities or activities not performed. The performance score for activities of inspection and categorization of food establishments, food sampling and maintenance of records was calculated separately and was given as a percentage score.

In assessing attitudes/opinions, statements on a Likert Scale format contained five responses, 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. PHII were requested to indicate their extent of agreement to the listed statements, ranging from 'strongly agree' to 'strongly disagree'. In calculating the responses, for each statement responses 'strongly agree' and 'agree' were amalgamated as *agree* and 'disagree' and 'strongly disagree' as *disagree*. For each statement the PHII who agreed, disagreed and were undecided was given as a percentage.

The knowledge, attitudes and self competencies were assessed in all eligible Range PHII. However, the assessment of performance had to be limited to a subsample of 25% of Range PHII in two districts due to practical constraints as it took considerable time to complete the observations both in the field and office settings.

Results

Knowledge score

The mean scores obtained in each of the five components included in the assessment of knowledge shows that the highest mean score of 53.7 marks was obtained in meat and fish inspection, followed by 53.2 marks in food labelling. All the other three categories had a poor mean score of less than 40 marks, with knowledge on food sampling being the lowest with 24 marks (Table 1).

Table 1 – Mean score obtained in the five components of the knowledge assessment

Component	Mean score
Enactments on food safety	31.1
Food labelling	53.2
Food sampling	24.0
Meat and fish inspection	53.7
Legal procedures	38.8
Overall mean score	40.1

Opinions expressed by PHII towards implementation of legislation on food safety

Enactments: 43.1% were of the view that currently available legal provisions are adequate to maintain food safety and hygiene. 51.1% disagreed and 5.8% undecided. The response to the statement 'food safety cannot be maintained satisfactorily by educating and training of food handlers as against taking legal action' showed that 251(61.1%) PHII agreed, 5.8% undecided and 33.1% disagreed.

Training: It was observed that 353 (85.9%) PHII had expressed that the basic training received on food legislation was not adequate to meet the needs and challenges in food safety activities and also indicated that currently available opportunities for in-service training on food safety are not adequate. However, 71.4% of PHII expressed that knowledge and skills received through an in-service training on food safety would be useful to carry out activities on food safety.

Support services: A majority of PHII were not satisfied with the availability of transport facilities (77.1%), availability of funds (66.4%), and availability of laboratory facilities (79.3%). A high proportion of PHII (n=372; 90.5%) expressed that the availability of a standard set of equipment for food sampling will improve food sampling activities. It was found that nearly 50% had received support from the local authorities.

Other factors: 362 (88%) PHII were of the opinion that giving priority to food safety activities in the duties of the PHI will have a major effect in improving the health of the community. However, 267 (64.9%) PHII were of the view that political interferences influence the activities of implementing legislation on food safety.

Self assessed competencies

As shown in Table 2, a high proportion of the PHII rated themselves either 'very competent' or 'competent' in activities related to inspection of food establishments and food sampling. Only a minority indicated that they cannot perform the listed activities.

Planning and documentation are activities that are closely linked with implementation of legislation on food safety. A majority of the PHII rated themselves either 'very competent' or 'competent' in performing the listed activities (Table 3). Only a minor proportion has rated themselves 'not competent' or 'cannot perform' in performing the activities.

Table 2 – Distribution of PHII by self assessed competencies related to inspection of food establishments and food sampling

Activity	Competency				Total (%)
	Very competent (%)	Competent (%)	Not competent (%)	Cannot perform (%)	
Inspection and categorization of food establishments	153 (37.3)	174 (42.3)	78 (18.9)	6 (1.5)	411 (100.0)
Detecting irregularities that violate labelling regulations	113 (27.5)	204 (49.6)	82 (20.0)	12 (2.9)	411 (100.0)
Sampling for bacteriological examination	220 (53.5)	149 (36.3)	40 (9.7)	2 (0.5)	411 (100.0)
Sampling for chemical examination.	176 (42.8)	153 (37.2)	76 (18.5)	6 (1.5)	411 (100.0)

Table 3 – Distribution of PHII by self-assessed competencies related to planning and documentation

Activity	Competency				Total (%)
	Very competent (%)	Competent (%)	Not competent (%)	Cannot perform (%)	
Drawing up an action plan on food safety for the area	151 (36.8)	195 (47.4)	58 (14.1)	7 (1.7)	411 (100.0)
Carrying out educational programmes on food safety	161 (39.2)	178 (43.3)	65 (15.8)	7 (1.7)	411 (100.0)
Correct documentation of the Pocket Note Book	240 (58.4)	140 (34.1)	29 (7.0)	2 (0.5)	411 (100.0)
Maintaining office records on food safety	192 (46.7)	147 (35.8)	68 (16.6)	4 (0.9)	411 (100.0)

Implementation of legislation on food safety includes several legal procedures. A high proportion of the PHII rated themselves to be competent in a majority of the listed activities with a minority indicating they cannot perform the activity (Table 4). It can be noted that a substantial proportion had indicated that they are not competent (n=137; 33.4%) and cannot perform (n=42; 10.2%) "Court procedures in food safety", which is a deviation from the competency pattern observed in other activities.

Performance

It was revealed that in inspection of a food establishment, 78.3% PHII belonged to the 'poor' performance category; none of the PHII could be categorized as 'good' performers (Table 5). Performance in food sampling shows that 63.4% PHII belonged to the 'poor' performance category and only 2 (3.3%) fell into the category of 'good' performance. In the performance of planning, documentation and maintenance of records a majority of the PHII 46 (76.7%) fall into the

'poor' performance category and not a single PHII in the 'good' performance category.

Discussion

Results of the knowledge assessment revealed that the knowledge was poor in a majority of the PHII. The overall mean knowledge score was 40.1 marks out of 100 marks. In comparing the scores obtained in each of the five broad categories, food sampling scored the lowest marks (24.1marks) closely followed by knowledge on enactments on food safety with 29.1 marks. Compared to other sections, knowledge on food labelling (53.2 marks) and meat and fish inspection (53.7marks) had a higher knowledge score.

As adequate knowledge in the above areas is required for proper implementation of legislation in food safety, prompt remedial actions have to be taken to rectify this deficiency of knowledge. Periodic review of the curriculum of the basic training programme and in-service training programmes should be carried out on a regular

Table 4 – Distribution of PHII by self assessed competencies related to legal procedures

Activity	Competency				Total (%)
	Very competent (%)	Competent (%)	Not competent (%)	Cannot perform (%)	
Correctly identifying the relevant legislation for prosecution	120 (29.2)	164 (39.9)	120 (29.2)	7 (1.7)	411 (100.0)
Implementing legislation on manufacture of food	87 (21.2)	210 (51.1)	104 (25.3)	10 (2.4)	411 (100.0)
Implementing legislation on food processing	87 (21.2)	206 (50.1)	110 (26.8)	8 (1.9)	411 (100.0)
Implementing legislation on storage of food	101 (24.6)	204 (49.6)	98 (23.9)	8 (1.9)	411 (100.0)
Implementing legislation on transport of food	93 (22.6)	193 (47.0)	117 (28.5)	8 (1.9)	411 (100.0)
Implementing legislation on sale of food	161 (39.2)	196 (47.7)	50 (12.2)	4 (0.9)	411 (100.0)
Performing court procedures in court cases related to food safety	79 (19.2)	153 (37.2)	137 (33.4)	42 (10.2)	411 (100.0)

Table 5 – Performance of PHII in carrying out in selected activities

Activity	Performance score		
	Poor 0-49 marks (%)	Moderate 50 –69 marks (%)	Good 70 –100 marks (%)
Inspection and categorization of food establishments	47 (78.3)	13 (21.7)	0 (0.0)
Food sampling	38 (63.4)	20 (33.3)	2 (3.3)
Planning, documentation and maintenance of records	46 (76.7)	14 (23.3)	0 (0.0)

basis for continuous updating of knowledge.

In the assessment of opinions a substantial proportion expressed their dissatisfaction with the support services provided to implement legislation on food safety. Attitudes and opinions are influenced by many factors that are associated with the duties of the PHII. As a majority of PHII expressed that they were not satisfied with the currently available support services, policy planners and health administrators should pay more attention and give priority in providing the required facilities. This will enable the PHII to carry out their duties with more satisfaction.

A high level of self-assessed competency was demonstrated by PHII in performing a majority of the listed tasks in implementation of food legislation. However, the activity of performing Court procedures in Court cases related to food

safety showed a low self assessed competency compared to other activities. Study of an association between self-assessed competency and knowledge indicated that a majority of PHII have assessed themselves competent, although they had a poor knowledge score.

Although there was a high level of self assessed competency in performing activities in both groups, this did not match with the performances in the field. The possible reason is that the majority of PHII were not exposed to continuing education after their basic training and were unaware of new developments in this field. Therefore the PHII assume that they are capable of performing activities from the knowledge received during basic training that has not been updated to suit the current trends in the food industry. In addition, the respondents who considered it was “not appropriate” to assess

themselves to be incompetent would have indicated they were competent, even though they were actually incompetent.

This finding also points out that although self assessed competency is easy to obtain, it has major limitations in using as a method of assessing performance. Thus one should be cautious in using self-assessed competency to evaluate performances. However, topics/ subject areas, where the self assessed competencies are low, need to be addressed.

Performance in all three main areas namely, inspection and categorization of food establishments, food sampling and record keeping was poor. Among them, record keeping was the task most poorly performed indicating inadequate and ineffective supervision.

Remedial action should include adequate, effective supervision and providing training to improve the field activities of PHII. Development and implementation of a comprehensive plan for implementation of continuing education programmes for PHII in food safety and in other areas of relevance should be considered a priority.

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