

Impact of an intervention programme on food safety among women food business operators

H.L. ANILA AND B. PRASANNA KUMARI

Food handlers have a prime role to play in food businesses, and that is to guarantee that meals served are hygienic for consumption. Conscious or inadvertent contamination of such food places consumers at risk of suffering from food-borne illnesses. For this reason the study was carried out to document the food hygiene knowledge and attitudes of food businesses operators from SHGs in Trivandrum and also conduct an intervention programme based on that. A food safety intervention programme of two days duration was conducted for the food business operators selected for the study. Prior to the conduct of the intervention programme, the existing knowledge and attitude followed by the respondents were assessed, so as to find out the impact of the intervention programme. The impact of the food safety intervention programme assessed immediately after the programme and also one month after the conduct of the programme showed that there was significant change in knowledge and attitude among the respondents showing the positive impact of the programme. Verification of the log book after one month revealed that the respondents started using the adulteration kit to detect the presence of adulterants in certain food articles used by them for processing.

Key Words : Knowledge, Attitudes, Food business operators, SHGs, Adulteration kit

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INTRODUCTION

Food is one of the basic necessities of life and food safety is a matter that affects anyone who eats food. Ensuring safe and healthy food is essential for improving quality of human life globally. Food safety is defined as the degree of confidence that food will not cause harm to the consumer when it is prepared, served, and eaten according to its intended use (www.foodsafety.com)

Improving the safety of food supply and reducing food borne diseases require a concerned effort by all stakeholders from farm to table (Suresh, 2001). Food safety has emerged as an important global issue with international trade and public health implications. In response to the increasing number of food borne illnesses, governments all over the world are intensifying their efforts to improve food safety. The World Health Assembly adopted a resolution in which, the World Health Organization (WHO) was asked “to give greater emphasis on food safety with the goal of developing suitable, integrated foodsafety systems for the reduction in health risk along the entire food chain, from primary producer to the consumers”.

Food safety education should be launched to women and repeated at specific intervals to ensure that learnt

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information is put in to the daily life practices (Singh, 2004). There was lack of awareness amongst the SHG Women involving in food processing trade (Gowri *et al.*, 2010). There is need for basic science training related to food quality and safety issues at school level to make them understand technical specifications and also medias such as radio, television can also be used effectively for the quality education (Daniel *et al.*, 2000). Food safety is a multi-stakeholder activity which requires effective and focused communication campaign (Gavaravarapu, 2009). A study on improvisation of existing physical facilities, sanitation hygiene and work schedule of a private canteen in Coimbatore indicated that educating and training the personnel brought about a greater awareness among the personnel which in turn improved the canteen (Rao *et al.*, 2010). With this objective, an awareness programme on food safety was planned and conducted for the respondents.

METHODOLOGY

Construction of food safety knowledge test :

A knowledge test to determine the knowledge level of the women food business operators about safe food, food quality and standards. Knowledge is a body of understood information possessed by an individual or by culture, which is in accordance with established facts (Henerson *et al.*, 1987). In order to measure the knowledge level of the women food business operators regarding safe food, a knowledge test was developed by means of a simple teacher made objective type test constructed following the procedure adopted by Santhoshkumar (1990) with slight modifications. Care was taken to ensure that the questions covered the entire range of subject matter selected for the study. A jury of subject experts analyzed the statements. In light of the suggestions made by experts, 50 statements were selected and were pre-tested. Based on the result of the pre-test, eight statements were discarded and remaining 42 items were selected for constructing the knowledge test. The responses were collected in a dichotomous pattern *i.e.*, Yes or No. Each correct response was given a score of one and the incorrect response was given a score of zero.

Measuring attitude of the respondents towards food safety :

An attitude scale to assess the attitude of the women food business operators towards food safety and its

importance in processing area. Thurstone (1946) defined attitude as the degree of positive or negative effect associated with some psychological object towards which people can differ in varying degrees. As attitude cannot be directly measured and have to be inferred from the opinion and expression of the individual, it is imperative to have as many as clear and simple statements as to provide opportunity to the respondents to reveal the extremes of his or her attitude (Bagchi, 1999).

Attitude of the respondents towards food safety was measured by developing an attitude scale using Edward method (1957). For measuring the attitude of the respondents towards food safety an attitude scale was constructed. For these 40 statements showing both positive and negative attitude towards food safety were collected from available literature. Finally thirty statements were selected for the attitude scale. Responses for each item were obtained on a five point scale ranging from 'strongly agree' to 'strongly disagree'. The scores assigned were "strongly agree-5", "Agree-4", "Undecided-3", "Disagree-2", "Strongly disagree-1". Negative statements were scored in the reverse manner.

Development of adulteration kit and educational aids:

Based on WHO software package (2007) on safe health practices for training food handlers, known as 'Five keys to safe health' a chart was prepared in Malayalam for conducting the intervention programme. A Booklet entitled "Aharapatharthangalilemayamengane-kandupidikkam – orukaipusthakam" was prepared in Malayalam. The booklet contains an introduction about safe food, food adulteration and its consequences, a table showing common adulterated foods and the methods of detection of adulterants. A log book was prepared in Malayalam with a table with different columns for name of the food articles tested, adulterants found if any, and remarks. This was supplied to the ten food processing units in order to test adulterants in the raw food materials purchased by them and record the adulterants present if any.

Adulteration of food cheats the consumer and poses a serious risk to health. A common consumer may not have sufficient knowledge about purity and quality of food articles. Mere visual inspection does not serve the purpose especially when adulteration has assumed high degree of sophistication. With this view, Food Safety and Standard Authority of India has developed a manual

entitled “Quick Test For Some Adulterants In Food” which helps the consumer to screen the day to day food articles for presence of adulterants if any. Based on this, an adulteration kit was developed, and supplied to the units for testing adulterants in the raw food materials used for processing.

Conduct of the intervention programme :

The intervention programme was conducted for selected fifty women food business operators from ten food processing units. A food safety intervention programme for two days duration was conducted for the respondents. The WHO software package (2007) on safe health practices for training food handlers, called ‘5 keys to safe health’ was also utilized with necessary modifications to suit local conditions (WHO, 2004). As per the WHO package, the 5 keys to safe health handling are : Keep clean, Separate raw and cooked, Cook thoroughly, Cook food at safe temperature and Use safe water and raw materials.

This package has been designed for use by personnel engaged in training of food handlers and can be downloaded for use. Awareness programme on safe food practices and demonstration of methods of detecting adulterants was conducted in the college under the supervision of the faculty of the Department of Home Science. Food safety education was imparted during the programme following the “5 Keys to safe health” with the help of charts and booklet prepared.

Impact assessment of the programme and the extent of use of adulteration kit :

The impact of the food safety intervention programme was assessed immediately after the programme and also one month after the conduct of the programme by studying changes in knowledge, attitude and adoption of safe practices in the food processing activities. The extent of use of the adulteration kit supplied was assessed by verifying the log book for recording adulterants present. The knowledge test and

attitude scale were once again administered to the respondents for a post test and the scores were calculated as done earlier.

OBSERVATIONS AND ASSESSMENT

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

Distribution of respondents based on their Knowledge and attitude score :

Table 1 shows the knowledge and attitude of respondents on different aspects of food safety. Majority of the respondents (70 %) had correct knowledge of food handling and cooking practices in the processing sector and only few respondents (35 %) had correct knowledge on food storage and pest control. A knowledge test was administered to the participants before exposing them to the intervention, immediately and also one month after the exposure to measure increase in their knowledge levels. The attitude of respondents on different aspects of food safety shows that about 47 per cent of the respondents had favorable attitude towards personal hygiene, 37 per cent of the respondents had positive attitude towards food handling and cooking practices. Only 53 per cent of the respondents had favorable attitude towards adulteration and quality of processed foods and only 20 per cent of the respondents had favorable attitude towards food storage and pest control. The respondents were exposed to various visual aids like charts which enabled them to understand the importance of food safety. The respondents were also given a hand out (booklet) on methods for detection of adulterants in raw foods for further guidance and follow-up. The intervention also included demonstration methods in order to test adulterants in the raw food materials purchased by the respondents and record the adulterants present if any. Earlier study proven that the actual impact of educational programme was the adoption of the gained knowledge and it was found that teaching had significance effect on

Table 1 : Knowledge and attitude of respondents on different aspects of food safety

Areas of food safety	Number of statements	Knowledge of respondents (%)	Number of statements	Attitude of respondents (%)
Adulteration and quality of processed foods	8	52	5	35
Food handling and cooking practices	18	70	10	37
Food storage and pest control	6	35	3	20
Personal hygiene	10	68	12	47

the adoption of good practices (Santhoshkumar,1990). Several studies have shown that nutrition education and intervention increases the nutritional knowledge of the respondents (Kaur and Maini, 2006; Naik, 2010).

The Table 2 shows the distribution of respondents based on mean knowledge and attitude scores. It was seen that the mean pre knowledge score obtained by the respondents was 31.94 out of a maximum of 43. After the intervention programme was conducted, the post test (immediately after the programme) revealed that the mean knowledge score was 38.12 out of 43. The post test (after one month of the programme) revealed that the mean knowledge score was 37.36 out of 43. From the score obtained for post test it is clear that there was significant gain in their knowledge immediately after the programme and also one month after the programme. An attitude test was administered to the respondents before and immediately after and also one month after the intervention to measure their attitude towards food safety. The pre test revealed that the mean attitude score was only 123.8 out of a maximum of 150. The post test conducted immediately after the intervention revealed that the mean attitude score was 135.42. The post test conducted after one month of the intervention revealed that the mean attitude score was 134.92 showing the impact of the programme on the attitude of the respondents. From the score obtained for the post test it is clear that teaching method has significant influence in changing wrong attitudes and wrong beliefs of the respondents.

From Table 3, it can be seen that the mean score for knowledge for pre test was 31.94 while for the post test it increased to 37.36. Result of the paired t- test shows that the gain in knowledge was significant at 1 per cent level. The mean score of attitude for pre test was 123.8 while for the post test it has to increase upto 134.92. Result of the paired t- test showed that the change in

attitude was significant at 1 per cent level. An estimated 't' value of 12.557 revealed that training programme had a significant effect on the attitude of respondents.

The extent of use of the adulteration kit supplied was assessed by verifying the log book for recording adulterants present. About 70 per cent of the respondents reported that the milk they used was adulterated with water and 20 per cent of them reported that ghee was adulterated with vanaspathy. All the selected units were found to be using the kit to test for adulterants. Food adulteration in India includes both willful adulteration and substandard food which do not confirm to prescribe food standard. Rarely any food item is spared from malicious practice of food adulteration. According to a news article published in year 2002, in The Times of India Hyderabad: "There might be iron filings in the sugar you use, including what is distributed through fair price shops all over the state (Rao *et al.*, 2010). In a shocking revelation, the Food and Drug administration (FDA) Mumbai in 2007, has said that "nearly 25 per cent of the milk produced in the state is adulterated"(Naik, 2010).The respondents had low awareness related to food adulteration. The adulteration problem in India has attained massive dimensions. Intentional adulteration is a willful act on the part of adulterator who intends to increase the margin of profit (Gupta and Panchal, 2009).

Conclusion :

Food safety has emerged as an important global issue and food adulteration is also a major public hazard which affects the quality of life of people. As consumers we all are concerned about the quality of the food that we consume. In the present times all of us consume a lot of processed foods which are sometimes processed in home level or in cottage level. At present, in Kerala, self help groups (SHG) are implementing a large number of village cottage industries, especially food processing

Table 2 : Distribution of respondents based on mean knowledge and attitude score

Category	Knowledge			Attitude		
	K ₀ (pre test)	K ₁ (post test)	K ₂ (after one month)	A ₀ (pre test)	A ₁ (post test)	A ₂ (after one month)
Mean score	31.94	38.12	37.36	123.8	135.42	134.92

Table 3 : Change in knowledge and attitude of the respondents

(n = 50)

Category	Knowledge		Attitude	
	K ₀ (pre test)	K ₂ (after one month)	A ₀ (pre test)	A ₂ (after one month)
Mean score	31.94	37.36	123.8	134.92
't' value	14.097**		12.557**	

industries. A food safety intervention programme of two days duration was conducted for the food business operators selected for the study. Prior to the conduct of the intervention programme, the existing knowledge and attitude followed by the respondents were assessed, so as to find out the impact of the intervention programme.

The impact of the food safety intervention programme assessed immediately after the programme and also one month after the conduct of the programme showed that there was significant change in knowledge, attitude and practices among the respondents showing the positive impact of the programme. Verification of the log book after one month revealed that the respondents started using the adulteration kit to detect the presence of adulterants in certain food articles used by them for processing. The study revealed that the respondents did not have adequate knowledge and attitude about food processing and food safety to be followed in the processing units. Hence, intervention programmes should be planned and conducted in the different areas of food processing and food safety, so as to prevent bacterial and chemical contamination of the foods.

LITERATURE CITED

- Bagchi, S. (1999).** Reaching the masses for nutritional improvement future prospects. *Nutr. Soc. Slvr. Jubilee. Snr.*, P 5-7.
- Chumber, S.K., Kaushik, K. and Savy, S. (2007).** Bacteriological analysis of street foods in Pune. *Indian J. Public. Health*, **51**(2): 114-116.
- Cicil, M.J. (2000).** Impact of nutrition education on mushroom, consumption. M.Sc. (Fs&N) Thesis, Kerala Agricultural University, Thrissur, 117p.
- Daniel, R., Daniel, B., Gilment, B. and Noonan, P. (2000).** "Audils International home food safety Study Report", Audils International, Available :<http://www.audils.com/2000HFS.html> [21 Sep].
- Edward, A.L. (1957).** Techniques of attitude Scale construction. Vakils, Feffer and simons private Ltd., Bombay.1-40p.
- Gavaravarapu, S.R., Vemula, S.R., Rao, P., Mendu, V.V. and Polasa, K. (2009).** Focus group studies on food safety knowledge, perceptions, and practices of school-going adolescent girls in South India. Extension and Training Division, National Institute of Nutrition (NIN), Hyderabad, Andhra Pradesh (AP), India. *J. Nutr. Educ. Behav.*, **41**(5) : 340-346.
- Gowri, B., Vasantha Devi, K.P., Sivakumar, K. and Marimuthu, P. (2010).** A study about the impact of nutrition education and awareness of food safety among women SHG Members. Gandhigram Rural University, Gandhigram, Tamil Nadu, India, Chikkaiah Naicker College, Erode, Tamil Nadu, India. Available :<http://mpira.ub.uni-muenchen.de/2238>
- Gupta, N. and Panchal, P. (2009).** Extent of awareness and food adulteration detection in selected food items purchased by home makers, Department of Family Resource Management, S.M. Patel College of Homescience, Vallabh Vidyanagar (Gujarat) India
- Henerson, M.E. Morris, L.L. and Gibbon (1987).** *How to measure attitude.* The International Professional Publishers, New Delhi. 185p.
- Kaur, N. and Maini, D. (2006).** Impact of nutrition counselling on the knowledge, attitude, and practice scores of at risk coronary heart diseases subjects. *Indian J. Nutr. Dietet.*, **43** : 82-89.
- Morris, D., Penhollow, T. and Hiller, V.N. (2002).** Impact of a knowledge-based food-borne illness program on food safety practices among college students. *Res. Q. Exercise. Sport.*, **76** : A42.
- Naik, Y. (2010).** 25 per cent of Milk in State Adulterated. *The Times of India* Accessed on 2/12/2010 Available: <http://timesofindia.indiatimes.com/city/mumbai/25-of-milk-in-state-adulterated/articleshow/2127308.cms>.
- Pappi, S.K. and Murugesan, T. (2004).** Improvisation of existing physical facilities, sanitation hygiene and work schedule of Saradalaya Canteen. M.Sc. Dissertation. Coimbatore (T.N.) India.
- Rao, P., Bhat, V.R., Sudershan, R.V. and Krishna, P.T. (2010).** Consumption of synthetic food colors during festivals in Hyderabad, India. *Br. Food. J.*, **105** (4&5): 276-284.
- Rao, S.G., Sudershan, R.V. and Vardhan, R.V. (2009).** Food safety awareness, practices and enabling assets in India – A nation-wide needs assessment study, NIN.
- Razeena, R.A. (2000).** Impact of educational programmes on the health and dietary practices of the workers of sewage farm in Thiruvananthapuram Corporation. M.Sc. (Fs&N) Thesis, Kerala Agricultural University, Thrissur, 80p.
- Santhoshkumar, S. (1990).** An experimental study on the relative effectiveness of selected visual aids in teaching neoliterate. M.Sc. (Ag.) Thesis, Kerala Agricultural University, Thrissur. 198p.

- Shiny, R.L. (2004).** Assessment of nutritional cognition of selected rural youth and the nutrition related practices of their families. M.Sc. (H.Sc.) Thesis, Kerala Agricultural University, Thrissur, 94-128p.
- Singh, A., Anu, B., Chaudhary, C., Pankaj, C. and Rajneesh, J. (2012).** A cross sectional study of food safety related perceptions and practices among women working in a north Indian university. *Indian J. Nutr. Dietet.*, **49**,494, Haryana, India.
- Singh, C.M. (2004).** Foodborne diseases in India. *Indian. J. Public. Health.*, **29** : 72-84.
- Suresh , J. (2001).** Effect of training on food safety measures to the anganwadi helpers of ICDS. M.Sc. (Fs& N) Thesis, Kerala Agricultural University, Thrissur, 89p.
- Tambekar, D.H., Hirulkar, N.B., Banginwar, Y.S., Rajankar, P.N. and Deshmukh, S.S. (2006).** Water hygiene behaviors in hotels and restaurants and their effects on its bacteriological quality. *Biotechnol.*, **5** (4): 475-477.
- Tambekar, D.H., Shirsat, S.D., Suradkar, S.B., Rajankar, P.N. and Banginwar, Y.S. (2007).** Prevention of transmission of infectious disease: Studies on hand hygiene in health-care among students. *Continental. J. Biomed. Sci.*, **1**: 6-10.
- Thurstone, L.L. (1946).** Scale for measuring attitude. *Am. J. Soc.*, **52** : 39-50.
- WHO (2004). Microbiological aspects of food hygiene. Report of a WHO Expert Committee with participation of FAO, WHO, Geneva. Annex 1, 92-93.
- WHO (2007). Five Keys to Safer Food Manual; Geneva, Switzerland.

■ WEBLIOGRAPHY

www.foodsafety.com

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