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Original Research Article

Improving knowledge of street food vendors through an educational intervention in Kandy district, Sri Lanka

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ABSTRACT

Background: Street food sector plays an important role in urban areas of many developing countries in catering to the needs of the urban population. Contamination of ready to eat food and beverages sold by street food vendors rendering them unacceptable for human consumption has become a global problem. The aim of this study was to evaluate the effectiveness of providing a health educational programme in improving knowledge related to food safety on street food vendors.
Methods: Study used a quasi-experimental pre-test, post-test design. Evaluation instruments consisted of a questionnaire and a checklist. A total number of 427 street food vendors were included. A visual educational intervention was developed to provide training to all vendors in the intervention area. The study areas covered were method of food contamination, personal hygiene, safe food handling of potentially hazardous street vended food and time temperature control.
Results: The results of the pre intervention survey showed that the baseline knowledge was poor. Vendors had unfavorable views particularly towards available facilities and support services. It was revealed that over 50% of the study population had received information on safe food handling though public health inspectors. Post intervention showed knowledge had improved significantly in the intervention group in all subject areas, when compared to control group ($p<0.001$).
Conclusions: Health education intervention was effective in improving knowledge of the street food vendors in safe food handling practices and food borne disease prevention.

Keywords: Health education, Hygiene, Knowledge, Street food vendors

INTRODUCTION

Street foods are "ready-to-eat foods and beverages prepared and/or sold by vendors and hawkers (street food vendors are also known as hawkers or sellers) especially in streets and other similar public places".[1] Street foods are a vast global business in many communities in the world since ancient times. Many countries have experienced a rapid growth of this sector because of socio economic changes. Street food vending is prevalent in urban areas of developing countries.[2,3]

According to the Food and Agricultural Organization access to safe and nutritious food is a basic human right and contamination of food with noxious agents (biological, chemical and physical) poses a great threat to human health and the resultant problems and issues related to the safety of food are ever increasing.[4] Street vendors selling food are often poor, uneducated and untrained. They are often ignorant about food hygiene, which are the conditions and measures necessary to ensure the safety of food from production to consumption. Lack of adequate food hygiene can lead to food-borne illnesses due to improper food handling practices and in extreme events, even death of customer.[5]

Food handler/vendor plays an important role in ensuring food safety throughout the chain of production, processing, storage and preparation. The mishandling of food and disregard of hygienic measures enable pathogens to come into contact with food and in some cases to survive and multiply in sufficient numbers to cause illness in consumers. Personal hygiene and environmental sanitation are key factors in the transmission of food borne diseases.

Vendors are trainable in food hygiene, if they are given the knowledge on food hygiene and safety.[3,6,7] Food safety education is more effective if the messages are targeted towards the specific audience.[8] Training and Education of street food vendor is one of the most effective interventions to assure the safety of street foods. The training of vendors in simple food handling practices has also been touted as a measure to improve food safety and hygiene. According to Tinker (1997), these measures have proven to be far more effective than the enforcement of regulatory instruments. Food safety education is more effective if the messages are targeted toward the specific audience.[8] The majority of food-related illnesses and death could be controlled or eliminated by food safety education and training.[9] Knowledge and consistent use of proper food handling techniques will reduce or prevent the incidence of food borne illness.[10,11]

Currently in Sri Lanka, where there is rapid urbanization a large proportion of the public patronizes street vended foods (Sandaratna 1991). Strategies for improving street foods should be based upon studies of the local street food system. Available literature indicates scares data are available in this field on food safety. Currently, proper licensing or registering system for this sector is not operating and they are not given any recognition.[12]

METHODS

A quasi experimental design was used in this study. This field study was carried out among street food vendors in the Kandy district where total population of about 1.7 Million. The study period was February to October 2018. For the purpose of this study a street food vendor was defined as “a person who sells and/or prepares ready to eat foods and beverages to the public on the streets and other public places”. Any vendor who was selling street food as part/extension of a permanent food establishment was excluded from the study. The study population was randomly allocated to two groups, study and the control group. All the selected vendors in a single geographical area of public health inspector area were allocated to one of the groups to minimize contamination. All vendors in the MOH areas that fall into the category of street food vendors (427) were included in the study sample.

Baseline assessment was carried out using structured interviewer administered questionnaire to assess Knowledge. This included the following parts namely socio-demographic and economic characteristics of street food vendors, knowledge on food contamination, food safety practices, high risk foods and food borne diseases and their prevention. Questionnaire was developed by reviewing of literatures and the documents on Street food safety guidelines drafted by the WHO.[7] This study was approved by the Ethical Review Committee of the Faculty of Medicine University of Peradeniya Sri Lanka

Intervention in the form of health education program was developed. An educational package was identified as most suitable, with a Flip chart for educating the vendor and a didactic (instructing) guide for the field investigator. The aim of developing the guide was to maintain the uniformity of the messages that are to be delivered to the participants. It consists of four chapters and each chapter included learning objectives, and teaching/training materials and a summary of the training content. Chapter one provided the introductory information, chapter two covered importance of personal hygiene, chapter three covered the importance of environmental hygiene and chapter four dealing with concepts of food hygiene. Health education package was administered to the intervention group. Education materials were administered to the vendors in the intervention group individually at their place of vending. This one to one direct approach made a good rapport between vendor and the field investigator. Flip chart was introduced in an interactive way of questions and answers as presented in the didactic guide. Administering the flip chart to a single vendor took 15-20 minutes. It took a longer time when customers were present at the outlet.

Post interventional assessment was conducted after six months from administering the first health education intervention identical survey tools were used to gather data on both assessments. Post intervention assessment was done in both intervention and control groups, following the intervention.

Statistical Package for Social Sciences (SPSS) was used for data analysis.

RESULTS

A sample of 220 street food vendors from the control area and 207 from the intervention area were surveyed during the pre-intervention survey. Of these street food vendors 180 from the control area and 202 from the intervention area participated during the post intervention survey.

The comprehensive knowledge gap indicates that there was a significant improvement in knowledge among vendors in the intervention group on methods of food contamination, awareness of symptoms following an episode of food poisoning, cross contamination, perishable ready to eat food, hand washing, cleaning utensils, handling food when sick. Knowledge on keeping food at safe temperature was poor (Table 1).

Table 1: Comparison of knowledge before and after the intervention on different domains.

Domain	Intervention group		P value	Control group		P value
	Pre N (%)	Post N (%)		Pre N (%)	Post N (%)	
Awareness of methods of food contamination	90 (43.5)	133 (65.8)	P<0.001	97 (44.1)	90 (50.0)	P=0.17
Food safety practices in reducing food contamination	40 (19.3)	52 (27.7)	P=0.04	31 (14.1)	18 (10.0)	P=0.18
Awareness of symptoms following an episode of food poisoning	36 (17.4)	70 (34.7)	P<0.001	62 (28.2)	64 (35.6)	P=0.11
Preparation and handling practices of vendors in preventing food borne diseases	13 (6.3)	41 (20.3)	P<0.001	5 (2.3)	3 (1.7)	P=0.36
Handling food during an ailment of the vendor	43 (20.8)	74 (36.6)	P<0.001	75 (34.1)	54 (30.0)	P=0.27
Knowledge on hand washing	91 (44.0)	147 (72.8)	P<0.001	107 (48.6)	98 (54.4)	P=0.12
Knowledge on handling food during an ailment of the vendor	43 (20.8)	74 (36.6)	P<0.001	75 (34.1)	54 (30.0)	P=0.27
Knowledge on cleaning utensils	67 (32.4)	123 (60.9)	P<0.001	80 (36.4)	76 (42.2)	P=0.19
Knowledge on keeping food at safe temperature	08 (3.9)	06 (3.0)	P=0.40	5 (2.3)	4 (2.2)	P=0.31
Knowledge on cross contamination	59 (28.5)	94 (46.5)	P<0.001	69 (31.4)	57 (31.7)	P=0.39
Knowledge on easily perishable ready to eat cooked foods	30 (14.5)	82 (40.6)	P<0.001	31 (14.1)	48.0 (20.7)	P=0.09

Table 2: Comparison of post interventional level of knowledge.

Level of knowledge	Intervention group		Control group		Significance
	No	%	No.	%	
Poor (<47)	48	23.8	91	50.6	χ^2 =29.5, df=1, p<0.001
Good (≥47)	154	76.2	89	49.4	
Total	202	100.0	180	100.0	

Comparison of knowledge taking median value (47) of the range as the cut-off, showed that there was a statistically significant improvement in knowledge in the intervention group when compared to the control group (Table 2).

The median score obtained by the respondents of both control and intervention areas during pre-intervention survey was analyzed using Mann Whitney U test. The results of the statistical analysis showed that the difference observed between intervention and control areas at the pre intervention survey was not statistically significant (p>0.05). Following the post intervention the median score of the respondents of the intervention group was higher than that of the control group and the difference was statistically significant (Table 3).

Table 3: Comparison of pre-post intervention knowledge.

Level of knowledge	Intervention group		Control group		Significance
	Median	Range	Median	Range	
Pre-intervention	42	3-65	44	5-66	P=0.11
Post-intervention	56.5	6-67	46	6-66	P<0.001

DISCUSSION

In the current study in analysing individual components a scale known as "comprehensive knowledge gap'' was used. Comprehensive knowledge gap indicates the number of respondents who correctly identified all correct responses in the section concerned. Similar scales have been adopted in a recent study where knowledge was assessed prior to an educational intervention.[11]

Knowledge on correct procedures for hand washing and avoiding cross-contamination was widespread before intervention as indicated by the high percentage of respondents who choose the correct answer on the pre-test. This finding is of interest because improper personal

hygiene and cross contamination are common errors in home kitchens and likely are major contributing factors to food borne illnesses.[12]

Before intervention, knowledge was limited for several areas including time- temperature control, serving of high risk foods. Overall knowledge score indicated that knowledge was poor in both groups. Review of food borne disease out breaks in several countries have shown that the major risk factor for salmonellosis is time temperature abuse.[13,14] The results of the current study is in consistent with a study done in Accra, Ghana in 2002 where it was found that the knowledge on topics that dealt with personal hygiene, food contamination and mode of transmission of food borne diseases were poor among street food vendors.

At the post intervention assessment same vendors who participated in the pre intervention study were included. The advantage of using same respondents in pre and post intervention assessments was that there is a baseline value of the same individual to compare with after the intervention, so that more valid conclusions could be arrived in educational interventions.

Comparison of median scores obtained by respondents in assessment of knowledge revealed that (using Wilcoxan rank sum test) the difference observed in overall knowledge between pre and post intervention survey of control group was not significant ($p>0.05$) while similar scores obtained in the intervention group was statistically significant ($p<0.05$).

Overall results showed that the health education intervention implemented was successful in training the food handlers. Even though interventions have been carried out in areas such as street food fortification with micronutrients.[15] There are no reported studies on educational interventions for street food vendors on safe food handling, where the findings could be compared with (Medline, Popline, FSTA).

The final outcome revealed that the current study was effective in improving the knowledge significantly in the intervention group, when compared to the control group. The outcome of the current study shows that the educational method carried out at the street food vending site itself was simple, feasible and could be carried out by the public health inspectors during routine duties, incurring minimal cost and is well accepted by the recipients as it had minimal interference to their business. The improvements shown in the intervention group suggests that regular exposure of street food vendors to educational programmes coupled with provision of supportive services could lead to the improvement of overall quality and safety of street vended foods.

The study was carried out in a single district in Sri Lanka. This limits the generalizability of the study results to the entire country which has diverse pattern of street food vending.

CONCLUSION

The vendor's knowledge in areas of food contamination, food borne diseases, safe handling of perishable high risk cooked foods, time- temperature control and personal hygiene was unsatisfactory at the pre interventional assessment and knowledge on safe food handling improved after the intervention survey.

Recommendations

Street food vendors should be exposed to basic training in food hygiene to ensure that they follow proper hygienic and sanitation practices. This should be an ongoing education at regular intervals in the form of onsite training.

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Ethical approval: The study was approved by the Institutional Ethics Committee of the Faculty of Medicine University of Peradeniya Sri Lanka

REFERENCES

1. FAO, 1989, Street Foods, Report of an FAO Expert Consultation, Yogyakarta, Indonesia, 5-9 December 1988, Food and Nutrition paper, Rome: Food and Agricultural Organization. 1989;46:1-96.
2. Solomons NW, Gross R. Urban nutrition in developing countries. Nutr Rev. 1995;53(4):90-5.
3. Chakravarty I, Canet C. Street foods in Calcutta. Food Nutr Agricult. 1996;17(18):30-7.
4. FAO, 1997, Food hygiene basic text, Rome: Food and Agricultural Organization.
5. World Health Organization, 2015. Food borne diseases. Available from: http://www.who.int/foodsafety/areas_work/foodborne-diseases/en/. Accessed on 4 January 2020.
6. Von Holy A, Makhoane FM. Improving street food vending in South Africa: achievements and lessons learned. Int J Food Microbiol. 2006;111(2):89-92.
7. World Health Organization. Food Safety Team. (1996). Essential safety requirements for street-vended foods. Revised edition. World Health Organization. Available from: https://apps.who.int/iris/handle/10665/63265. Accessed on 4 January 2020.
8. Edwards PK, Mullis RM, Clarke B. A comprehensive model for evaluating innovative nutrition education programs. J Nutr Educ. 1986;18(1):10-5.
9. Christie AB. Food hygiene and food hazard. 2nd edition. Queen square, London: Faber and Faber Publication; 1981.

10. Haapala I, Probart C. Food safety knowledge, perceptions, and behaviors among middle school students. J Nutr Educ Behav. 2004;36(2):71-6.
11. FAO. To bring about proper coordination in the street food sector and consumer advocacy programme. A strategy document. Technical Cooperation Programme (TCP) Project on Improving street foods in South Africa, TCP/SAF/8924(A). Rome: Food and Agricultural Organization of United Nations; 2001.
12. Medeiros LC, Hillers VN, Kendall PA, Mason A. Food safety education: what should we be teaching to consumers? J Nutr Educ. 2001;33(2):108-13.
13. Tinker I. Street Foods: urban food and employment in developing countries. Berkelery: Oxford University Press; 1997.
14. Sevanatha. 2001, City Development Strategy, Colombo, Sevanatha Publication. Available from: https://www.ircwash.org/sites/default/files/822-LKCO00-16645.pdf. Accessed on 4 January 2020.
15. Sanderatne N. The informal sector in Sri Lanka, dynamisms and resilience- the Silent Revolution. The Informal Sector in Five Asian and Near Eastern Countries. San Francisco: ICS Press; 1991.

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