



An Observational Study of Chennai Street Food Vendor's Food Safety Knowledge and Practices

KEYWORDS

Food safety, Hygiene, Street food

Mrs. SUJAYA. J

Department of Nutrition and Dietetics
Dr. N.G.P. Arts and Science College

Dr. (Mrs.) D. SRIDEVI

Department of Nutrition and Dietetics
Dr. N.G.P. Arts and Science College

ABSTRACT *The present study was undertaken to observe knowledge, attitude and practices followed by street food vendors in Chennai city. Using an observation form hygienic practices of 36 street-food vendors from 6 different areas were assessed. A continuous monitoring in each activity from pre-preparation to cleaning is required in the street food centers to avoid any food borne pathogenic outbreaks in the future. Results of the study, call for stringent supervision and implementation of food-safety practices and regular education on food and personal hygiene among vendors.*

Introduction

Street vended foods are defined as those foods prepared on street or prepared at home and consumed on street without further preparation (1). Street foods which are inexpensive and readily available, form an integral part of diet across all income groups (2). Street foods provide a source of affordable nutrients to majority of people in developing countries (3). Practices used during their preparation, handling, cleaning, packaging, storing are some of factors that increase risk of acquiring microbes (4). Contamination from raw materials and equipments, improper handling and unhygienic conditions contribute to entry of bacterial pathogens (5). The decline in quality of street food is due to problems associated with environmental contamination, littering of streets with wastes (6). Wastewaters and garbage's are discarded nearby, providing nutrients for insects and rodents, which may carry food borne pathogens (7). The food borne illnesses can reduce economic output, and impose substantial stress on health care system (8). Studies in fields of street foods are limited in India. Some information is however available in street-foods of Bombay, Puna, Calcutta, Coimbatore, Secunderabad and Hyderabad. Hence present study was undertaken to observe street food vendors in south Chennai. To be most effective, education programs are targeted to vendors, to improve quality of street food vending in Chennai and ensure consumers safety.

Objectives

- To observe food handling practices followed by the street vendors.
- To educate the vendors and implement standard hygienic practices.

METHODOLOGY

Observative checklist:

S.NO	KAP QUESTIONS	YES	NO
PERSONAL HYGIENE			
1.	Head gear/aprons/gloves are used		
2.	Short/trimmed finger nails		
3.	Avoids wearing jewels		
4.	Avoids handling hair and nose		
5.	Avoids handling food with cuts/infection		
6.	Avoids talking/sneezing/coughing over food		

7.	Avoids blowing air into polythene bags		
8.	Avoids touching rims of dishes		
9.	Washes hands before cooking		
10.	Resist smoking		
SANITATION AND HYGIENE			
11.	Cleans premises/preparation-surface/utensils before cooking		
12.	Ensures adequate lighting		
13.	Food is protected from sun/wind/dust		
14.	Transport is done in protected containers		
15.	Location is away from animals/toilets/drains		
16.	Cart is free from personal-items/sanitizers		
17.	Fuel/sanitizers/chemicals are stored away from food		
18.	Dustbins are covered properly		
PREPARATION OF FOODS			
19.	Raw foods are of fresh quality		
20.	Raw foods are washed properly		
21.	Raw-semi-cooked foods are stored separately		
22.	Ingredients are used within expiry date		
23.	Foods are heated before serving		
24.	Foods are not served on next day		
25.	Boiled drinking water is provided		
26.	Cooking/Storing/serving utensils are not toxic		
27.	Cooking is done with safe water		
SERVING OF FOODS			
28.	Serving plates are not broken/chipped		
29.	Disposable items are used in serving		
30.	Disposable items are not reused		
CLEANING OF UTENSILS			
31.	Cleaning is done with clean water		
32.	Utensils are rinsed/scrubbed/washed after every operation		

Selection of area

1. T-Nagar (Shopping-complex) 2. Saidapet (Railway-station) 3. Ashok-Nagar (School-area) 4. West-Mambalam (Market-area) 5. Arumbakkam (Bus-stand) 6. Triplicane (Beach-area)

Education

To be most effective education programs are targeted to vendors. It is the most cost effective way to reduce incidence of food borne disease. Therefore education on food-safety practices from pre-preparation to cleaning and personal hygiene was given to street food centers to avoid any food borne pathogenic outbreaks in future. Five-keys of safer food have been utilized in educating vendors. Education was given to vendors using study materials like pamphlets and flip charts and also provided the vendors (from whom the data were collected) aprons, gloves and head gear.

RESULTS & DISCUSSION

TABLE 1: KAP SCORES OF STREET FOOD VENDORS BEFORE EDUCATION

AREA		Personal hygiene	Sanitation & hygiene	Preparation of foods	Serving of foods	Cleaning of utensils
1	Mean	6.67	6.17	7.50	2.67	1.17
	S.D	1.211	1.169	1.761	.516	.983
2	Mean	2.83	4.50	4.33	2.50	.83
	S.D	2.639	3.271	2.582	.548	.983
3	Mean	3.17	3.83	3.50	1.67	.50
	S.D	2.483	2.041	1.378	1.366	.548
4	Mean	1.67	3.17	4.17	1.67	.17
	S.D	1.633	1.472	1.941	.516	.408
5	Mean	1.83	3.33	4.00	1.33	.67
	S.D	.983	1.633	2.449	.516	.816
6	Mean	3.50	3.17	5.17	2.00	.33
	S.D	2.429	2.563	1.722	.632	.516

Table 1 show that all area vendors are very poor in cleaning of utensils. Water for street food preparation was not enough. This resulted in vendors using little water for washing utensils hence hygiene was compromised. Without enough water, hygiene and sanitary practices cannot be met. Street vendors wash their utensils, in water that has been used previously perhaps many times. This violations compromise the food safety. All area vendors are only average in Serving of foods. The use of a fork or spoon to serve food will reduce the level of contamination. The serving stage is a critical point in the street food industry. Enteropathogens can survive on the hands for three hours or longer. Even Personal hygiene, Sanitation & hygiene, Preparation of foods of street food vendors was not that good.

TABLE 2: KAP SCORES OF STREET FOOD VENDORS AFTER EDUCATION

AREA		Personal hygiene	Sanitation & hygiene	Preparation of foods	Serving of foods	Cleaning of utensils
1	Mean	8.83	6.67	7.83	2.83	2.00
	S.D	.983	.516	.983	.408	.000
2	Mean	6.50	5.83	5.83	2.50	1.00
	S.D	1.378	1.472	2.317	.548	1.095
3	Mean	5.00	4.50	4.17	2.17	1.00
	S.D	2.530	2.429	1.472	1.169	.894
4	Mean	4.17	5.33	6.17	1.83	1.00
	S.D	2.137	.816	.983	.408	1.095
5	Mean	5.50	4.67	5.17	1.33	.67
	S.D	1.378	.816	1.602	.516	.816
6	Mean	9.00	6.00	7.50	2.17	1.67
	S.D	.894	.000	.837	.408	.516

Table 2 show that all area vendors, improved after education. Majority of them have started washing their hands before cooking, trimmed their finger nails, avoided wearing jewels; blowing air into polythene bag; touching their hair and nose while handling food; touching the rim of dishes; talking/ sneezing/ coughing directly over food, resists smoking, cleans premises; preparation-surface and utensils before cooking, ensures adequate lighting in vending cart, protects food from sun/wind/dust, transports food in protected containers, carts were free from personal items/sanitizers, stores fuel/sanitizers/chemicals away from foods, washes the raw foods properly, stores raw-semi-cooked foods separately. But even after educating majority of them uses broken/chipped plates, cleans the utensils with unclean water, handles food with cuts/ sores/ skin infection. Only minority of vendors have started wearing apron, gloves and hairnet. None of vendors provides boiled drinking water and covers dustbin properly.

SUMMARY & CONCLUSION

Overall hygienic condition of vendors was not good. None of the vendors wore apron, gloves and hairnet, none of them washes their hands before cooking, all vendors handled food with bare hands and also wiped their utensils with unclean towels/hands. Only 36.1% of them had short nails, 66.7% of them avoided wearing jewels, 30.6% of the vendors avoid blowing air into polythene bag, 61.1% of them resist smoking. 69.4% of vendor touches their hair and nose while handling food; 63.9% of vendors touch the rim of dishes, majority handles food while having cuts/ sores/skin infection; 61.1% talk/sneeze/cough directly over the food. It was found that 55.6% vendors cleans premises, preparation surface and utensils before cooking, 55.6% of food was protected from sun/wind/dust, 58.3% of carts were free from personal items/sanitizers, 25% of vending location was away from animal/toilets/drains. Almost none

of them cover dustbin properly. Vendors deposited their food and water wastes beside the stalls; this resulted in a dirty environment. 41.7% of them use fresh quality raw-foods and 50% uses ingredients within expiry date. 55.6% of them heats the food before serving. Only 5.6% of vendors provide boiled drinking water. Majority of them uses broken/chipped plates for serving. Disposable items were found with 66.7% of the sellers only and surprisingly it was found that majority of them do not re-use it. Majority of them cleans utensils with un-clean water and only 30.6% of them clean utensils after every operation.

Vendors improved after educating. 16.7% of vendors have started wearing apron, gloves and hair net, 80.6% of them started washing their hands before cooking, 63.9% of them had trimmed finger nails. Majority of them avoided wearing jewelry. 80.6% of the vendors avoided blowing air into polythene bag. 77.8% of vendors avoided touching their hair and nose while handling food; 83.3% of vendors avoided touching rim of the dishes, 36.1% of vendors avoided handling food with cuts/sores/skin infection. 61.1% of vendors started avoiding talking/sneezing/coughing directly over food. Majority of them resists smoking while handling food considering "smoking is bad for health" and it will be worst if food handlers smoke and serve food at the same time. After education it was surprisingly found that majority of vendors cleans premises, preparation surface and utensils before cooking, ensures adequate lighting in vending cart, protects food from sun/wind/dust, transports food in protected containers, carts were free from personal items/sanitizers, stores fuel/sanitizers/chemicals away from foods. Even after educating almost none of them covers dustbin properly. 66.7% of them use fresh quality raw-foods and 77.8% washes raw foods and 83.3% stores Raw-semi-cooked foods separately. 55.6% uses ingredients within expiry date. 61.1% of them heats food before serving, 63.9% of them uses safe cooking water and none of them serves the remaining food on next day and almost none of vendors provides boiled drinking water. 63.9% of them use safe cooking water. 58.3% of them use broken/chipped plates for serving. Disposable items were found with 75.0% and surprisingly majority of them do not re-use it. 55.6% of them clean utensils with clean water and 66.7% of them have started cleaning utensils after every operation.

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