



ISSN: 2395-7476
IJHS 2016; 2(2): 85-89
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www.homesciencejournal.com
Received: 16-03-2016
Accepted: 18-04-2016

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A study on assessment of food safety knowledge and practices among the street food vendor of urban and semi urban areas of Guwahati, Assam

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Abstract

The present study was undertaken to highlight the hygiene practices and food safety knowledge among street food vendors in the semi urban and urban areas of Guwahati. 100 random samples of street food vendors were selected. Data was collected using pre-test structured questionnaire and observation checklists. The relationships in the factors studied were determined. Results depicted that none of the vendors had undergone any formal training or apprenticeship on food preparation. Of the vendors interviewed, a majority of them (82%) had garbage bins; while the rest 18% disposed their garbage just near the stalls. Results also showed that 62% of the vendors use tap water, 30% use municipal water and 8% use filtered water for the preparation of the food. 75% of the vendors did not cover the food items, while 20% of them used newspapers, pages from the magazine, nets and cloth pieces to cover the food. Glass jars and boxes were used by 5% of the vendors to store food items. Majority (62%) of the vendors accepted that they repeatedly reused the same oil for frying. The use of apron, gloves, hairnet was devoid in 92% of the vendors. Long and dirty nails were also a common observation. Coughing, sneezing and touching of hair during handling of food were also not uncommon. Vendors stored the left over foods in cupboards (21%), polythene bags (44%), plastic containers (10%) and open areas (25%) for sale the next day. Hence, 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.

Keywords: Street foods, Hygiene, Vendors, Food safety

1. Introduction

Food safety remains a critical issue with outbreaks of foodborne illness resulting in substantial costs to individuals, the food industry and the economy (Kaferstein *et al.*, 1997) [10]. Mishandling of food plays a significant role in the occurrence of foodborne illness. Improper food handling may be implicated in 97% of all foodborne illness associated with catering outlets (Howes *et al.*, 1996) [9]. Food safety is an area of public health action to protect consumers from the risks of food poisoning and foodborne diseases, acute or chronic. Unsafe food can lead to a range of health problems: diarrhoeal disease, viral disease, reproductive and developmental problems, cancers. Keeping the relevance of food safety in mind WHO has made "FOOD SAFETY" as theme of world health day 2015, a theme of high relevance to all people on the planet, and multiple stakeholders, including government, civil society, the private sector, and intergovernmental agencies (WHO; 2015) [18].

Food hygiene consists of several principles adopted to ensure food safety and to protect food from any chemical, microbiological or other type of contamination that can render it unfit for human consumption, to prevent the spread of communicable diseases associated with food and food processing and also to ensure that consumers of food are not fraudulently treated. It also ensures that food when purchased is of a nature, composition and quality as demanded by the purchasers. Proper food hygiene should ensure that food is handled, stored, prepared and served in such a way and under such conditions so as to prevent, as far as possible, the contamination of the food (WHO, 2011) [17].

Street foods are defined by the Food and Agricultural Organization (FAO) as ready to- eat foods and beverages prepared and sold by vendors and hawkers in streets and other similar public places (FAO, 1997) [4].

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The street food industry plays an important role in cities and towns of many developing countries both economically and in meeting food demands of city dwellers (Cress-Williams, 2001). Foods are therefore prepared in an informal setting and street food vendors are classified as informal food vendors. Street food vendors are thus exposed to climate and temperature, unsafe water supplies, sanitation and pests. The foods are often prepared under unsanitary conditions and stored for long periods in unsuitable conditions before selling. It is known that poor personal and environmental hygiene contribute significantly to food contamination and resultant foodborne diseases (Mathee *et al.*, 1996^[12]; Bryan, Michanie, Alvarez, and Paniaywa, 1988)^[1]. Street food vendors have shown epidemiological links with illness (El-sherbeeney 2005) certain street vended foods can pose significant risk to consumer due to microbiological contamination. The risk is dependent primarily on the type of food, the method of preparation, and the manner in which it is held before consumption (WHO, 1996). Street vended food types greatly differ between countries and cultures (Muinde A & M kuria E 2005). A total of 2.5 billion people all over the world eat street foods everyday (Food and Agriculture Organization (FAO), 2007)^[3].

There has been an increase of food vendors in the urban and semi urban areas of Guwahati city. Very little is known about the health and hygiene practices of street food vendors in Guwahati. Keeping in view the above statement, the present study was undertaken to highlight the hygiene practices and food safety knowledge among street food vendors in the semi urban and urban areas of Guwahati.

Methodology

An observational study was used in the assessment of food safety practices (food preparation, cooking and serving) by street-vendors during their trade. Presence of public and sanitary utilities was determined e.g. running pipe-borne potable water versus stored water in containers, availability of garbage bins, adequate washing facilities, storage at vending units. The exterior of the vending premise was also assessed (no litter, some litter, a lot of litter). Practices such as methods of washing utensils and packaging and storage of leftovers were studied. The appearance of vendors was noted e.g. whether head gears and aprons were worn, if nails and hands were clean. The source of food was investigated (whether commercially bought or self-made). Information's were also collected on the knowledge of FSSAI certification, food safety trainings and reading of food labels.

Data Collection

A total of 100 vendors were randomly selected for the study from the urban and semi urban areas of Guwahati city namely Narengi, Panikhaiti, Six mile, Downtown, Jayanagar and Ganeshguri.

Results and Discussions

The results and discussion pertaining to the study "Hygiene and Sanitary Practices of Vendors of street foods in Guwahati, Assam" are discussed under the following heads.

Socioeconomic-cultural Profile

Majority of the street food vendors were male at 96%, while 4% were female. Most of them practiced street food vending as a part time job. The educational level was very low as more than 80% of food vendors have reached primary education only.

The peak hour of business for all the vendors was during lunch and evening time. Street food vending has an important tradition in most countries of the world. Because of socio-economic changes, many countries have experienced the growth of this sector (Freese *et al.*, 1998)^[8].

Acquisition of knowledge on food preparation and food safety

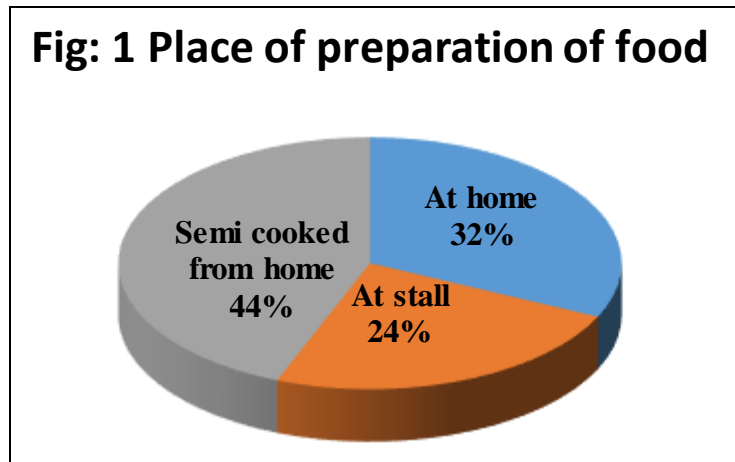
Out of the 100 interviewed vendors, none had undergone any formal training or apprenticeship on food preparation. They claimed to be self-taught by observing others.

According to FAO 1997^[4], food handlers should have the necessary knowledge and skills to enable them to handle food hygienically. Systems should be put in place to ensure that food handlers remain aware of all procedures necessary to maintain the safety and suitability of food. Street food vendors are often unlicensed, untrained in food hygiene and sanitation, and work under crude unsanitary conditions (FAO, 1997)^[4]. FAO 1999^[7], recommends that every vendor/helper of food should undergo a basic training in food hygiene before licensing. These street food vendors who usually sell 'ready-to-eat' foods on streets with or without a license to do it. Practicing a good personal hygiene will decrease the probability of propagation of bacteria which already exists in our surroundings. The percentage of vendors having FSSAI certification was void and neither were they aware of it. Also, none of the interviewed vendors had attended any food service training. Findings also showed that 68% of the vendors had the habit of reading food labels before the buying them. They usually read the date of manufacturing and date of expiry of the non perishable food items.

Place of Preparation of Street foods

Results showed that vendors prepared the foods either at home or at the stalls. Majority of the foods were pre-prepared from home and cooked in the stalls. While the rest were brought fully cooked and reheated before serving (Fig 1). The stalls were made of wood, thin metal alloys and push carts. In some places vans were also set up as stalls. The use of big plastic umbrella to protect them from the heat or rain was also commonly seen. The report of FAO (*Food and Agriculture Organization, 2011*)^[17] noted that foods should be prepared in a place set aside exclusively for that purpose, while the place of preparation should be kept clean at all times and should be far from any source of contamination which includes rubbish, waste water, dust and animals. Vending stalls should be designed and constructed so that they are easily cleaned and maintained. Food should be prepared properly on a clean and sanitized place to prevent foodborne diseases (Kidiku, 2001)^[11].

Fig: 1 Place of preparation of food

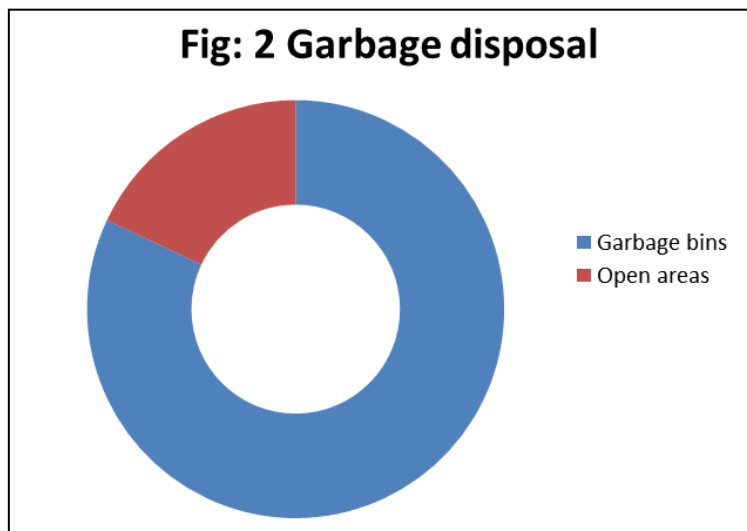


Garbage Disposal

Observation during the study showed that the vendors prepared their foods in unhygienic conditions. In all the study areas, garbage and dirty waste were conspicuously close to the stalls.

of the vendors interviewed, a majority of them (82%) had garbage bins; while the rest 18% disposed their garbage just near the stalls. Spills of oil, spices and sauces were a common observation in majority of the stalls (Fig 2).

Fig: 2 Garbage disposal



Handling of Street foods

Observation couldn't be made if the vendors washed the fresh foods like carrots, cabbages, coriander leaves, capsicum etc before preparation, as they were cooked or chopped from home and brought. On interviewing, hundred percent of the vendors asserted that they thoroughly wash the vegetables. This statement however, cannot be entirely trusted. Results also showed that 62% of the vendors use tap water, 30% use municipal water and 8% use filtered water for the preparation of the food.

According to Mc Swane (2006), *Salmonella typhi* is one of the most common bacterial problems when working with foodstuffs. The bacteria can be spread both through direct and indirect contact and the bacteria can multiply at an astonishing rate, especially in uncooked food, specifically poultry and eggs, when it is kept at room temperature. It is one of the leading food-borne illnesses and is even responsible for death in some cases. The existence of such bacteria is a proof in itself for the need for basic food hygiene standards.

Observation was also made on how the cooked foods were kept before they were sold. Food items which sold at a fast rate like fries, noodles, chops were not covered and were exposed to flies, smoke from the vehicles' engine and dust. 75% of the vendors did not cover the food items, while 20% of them used newspapers, pages from the magazine, nets and cloth pieces to cover the food. Glass jars and boxes were used by 5% of the

vendors to store food items. Observation was also made on the storage of raw and cooked foods, wherein it was seen that only 41% of the vendors stored raw and cooked foods separately. Few foods like panipuri, bhelpuri, chats and kulfi do not require heating, while the other foods were given heat treatment by 93% of the vendors.

Results also showed that reuse of the same oil over and over again were a common practice among the vendors. Majority (62%) of the vendors accepted that they repeatedly reused the same oil for frying (Table 1). This resulted in change of colour of the oil, and this was reflected in the foods, which had unusual colour and odour by the end of the day. It was also noticeable that the oil used for cooking reaching its smoking point. This is a stage in the hydrogenation of oil where in, it starts to be carcinogenic, which is bad for the health.

Table 1: Handling of Street Foods

Source of water used for cooking	Tap water	Municipal water	Filtered water
	62%	30%	8%
Food storage	Open	Covered with papers and cloth	Glass jars
	75%	20%	5%
Reuse of oil	Yes	No	Oil not required
	62%	26%	12%

Serving Utensils/Materials

The serving stage is a critical point in the street food industry. Enteropathogens can survive on the hands for three hours or longer. Food service utensils like plates, bowls, spoons and fork used by the vendors were made from plastic or metal. The plastic utensils were disposed off.

Water supply

As there was no source of potable water supply available at their areas of operation, water was ferried from homes of the street food vendors. Vendors carried water to their business premises in containers of different capacities ranging from 5 to 20 litres. This water, however, was not enough for food preparation and dishwashing. It was observed that metal plates were not washed after every use unlike the spoons and forks. The reason for this was because paper was placed over the plate and the food was served over it. The utensils were washed using water in buckets, were rinsed only once and the water was used repeatedly before it was replaced. The water for washing and rinsing the utensils was observed to be dirty.

Personal Hygiene of the Vendors

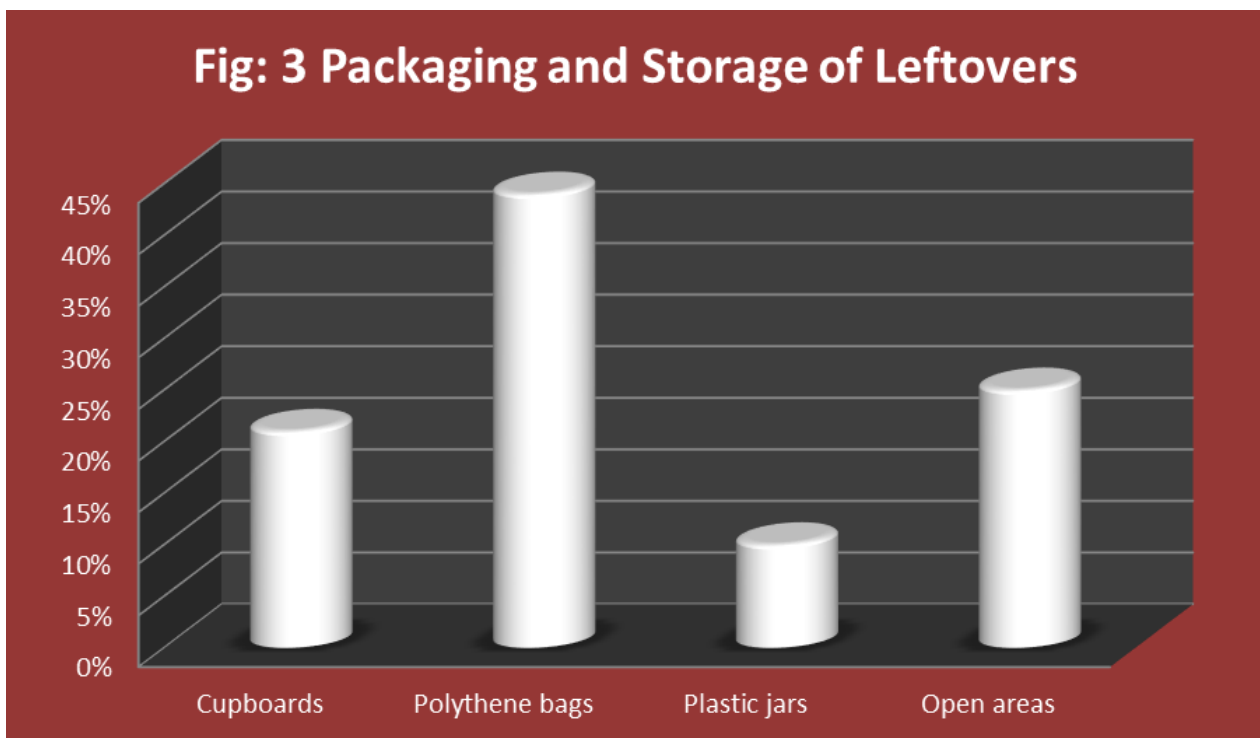
Personal hygiene of the vendors was observed while the vendors were preparing, selling and cleaning in their respective stalls. The use of apron, gloves, hairnet was devoid

in 92% of the vendors. Long and dirty nails were also a common observation. Coughing, sneezing and touching of hair during handling of food were also not uncommon. All the vendors handled money while serving food and most of them had worn jewelry and other accessories. Another observation which was found common in majority of the vendors was their habit of wiping their hands in a towel after each preparation. This was however, opposite to the claim of the vendors during the interview that they wash their hands after each preparation.

Methods for Packaging and Storage of Leftovers

Majority (97%) of the vendors interviewed said that they usually have leftovers before closing. Vendors stated that consumption of left over foods was a common practice among them. They also stated that they stored left-over food for sale in the next day. The left over foods were not stored in the proper temperature, this is quite risky because safety from contamination by pathogenic microorganisms was not assured and the maintenance of optimal qualities of color, texture and nutritive value were not put into consideration. Vendors stored the left over foods in cupboards (21%), polythene bags (44%), plastic containers (10%) and open areas (25%) for sale the next day (Fig 3).

Fig: 3 Packaging and Storage of Leftovers



Conclusion and recommendations

The findings of this study reveal areas of improvement which would translate into positive change towards attaining safe street food. Every vendor, helper or food handler should undergo a basic training in food hygiene. This is to ensure that they follow the required rules for proper hygiene and sanitation. As street food forms an integral part of our society, vendors should be encouraged to participate and train under the different schemes related to food safety and hygiene launched by the government. This will in turn upgrade the skills of the street food vendors and also contribute to prevent food borne illness. The outcome of this study can serve as a baseline data for management and improvement of the street food safety based on these areas.

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