



ISSN: 0975-833X

RESEARCH ARTICLE

FOOD SAFETY AND HYGIENE PRACTICES AMONG STREET FOOD VENDORS IN DELHI, INDIA

^{1,*}Chander Pal Thakur, ²Rakesh Mehra, ³Chahat Narula, ⁴Swati Mahapatra and
⁵Tapan Jyoti Kalita

¹Programme Coordinator, Public Health Foundation of India, New Delhi

²Asst. Program Coordinator (CCEBDM), Public Health Foundation of India, Gurgaon, Haryana 122002

³Project Officer, HISP India, New Delhi

⁴Program Officer (Research), Path, New Delhi

⁵Action Research Coordinator, Colorado University and University of Minnesota, New Delhi

ARTICLE INFO

Article History:

Received 13th September, 2013

Received in revised form

18th September, 2013

Accepted 27th October, 2013

Published online 19th November, 2013

Key words:

Safety,
Hygiene,
Street food,
Food vendor

ABSTRACT

A study was done to assess food safety and hygiene practices amongst street food vendors in Delhi, India. Practices and hygiene status of 200 street food vendors was studied by a questionnaire based findings and observations at the vending site. Data was entered and analyzed with the help of MS-excel.

Result: It was found that majority of the respondents (33 %) were in the age group of 25 to 34 years of age and 24% were illiterate. Around 36% of the vendors were permanent residents of Delhi and from rest of the respondents, 55% were from Uttar Pradesh only. None of the respondents were registered or licensed. Seventy two percent were disposing garbage in open lid bins and 16% were throwing it on the road, only 3% of the vendors were using hand gloves and from rest only 2% were washing hands before and after handling raw or cooked food. Majority of respondents (72 %) had short clean nails and few (4 %) had open wounds present. Presence of flies/mosquitoes was observed in 45% of the vending sites. 19 % were washing utensils in open.

Conclusion: Food vended is of different flavor, cheap and tasty, which becomes popular among people easily. This study highlighted few points which need to be addressed for better hygiene status and food practices amongst street food vendors. There is a need of generating awareness amongst street vendors and WHO's five "keys to safety" should be incorporated.

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INTRODUCTION

As a result of rapidly growing economy and better employment opportunities in urban areas, urban sector attracts a large proportion of population for employment and results in settlement of this section in outer areas of big cities and development of suburbs. Suburbs consequently lead to growth informal sector because of better purchasing power and living conditions. Due to mechanization and less free time, demand for processed and ready to eat food is increasing day by day. Processed and ready to eat food saves one's time from standing in kitchen for long hours to cook food.

Informal sector may be defined as *economy that is not taxed, monitored by Government or included in any gross national product, unlike formal sector.*

According to National Policy on Urban Street Vendors, 2004, a Street Vendor is broadly defined as a person who offers goods for sale to the public without having a permanent built up

structure but with a temporary static structure or mobile stall (or head load). Street vendors may be stationary by occupying space on the pavements or other public/private areas, or may be mobile in the sense that they move from place to place carrying their wares on push carts or in cycles or baskets on their heads, or may sell their wares in moving trains, bus etc. (National policy on urban street vendors, 2004)

India is a rapid growing economy. Hence it also faces problem of rural – urban migration for employment opportunity. Due to this transition, food habits of people are getting affected. Nowadays, street food is becoming very popular and is in demand because it saves one's time and energy as it is ready to eat.

The Food and Agricultural Organization (FAO) of the United Nations defines Street Foods as *ready-to-eat foods and beverages prepared and/or sold by vendors and hawkers especially in streets and other similar public place* (FAO, 1988). Apart from this, street foods are appreciated for the taste, flavor they offer at low, affordable price to the general population (Bhowmick, 2005). According to a study conducted by Sunita Mishra in Varanasi on safety aspect of street food it

*Corresponding author: Chander Pal Thakur

Programme Coordinator, Public Health Foundation of India,
New Delhi

was found that about 82% of people of all age groups prefer to go to street vendors against 18% only who prefer to go to restaurants in the evening. 61% of the students in age group of 14- 21 years who consume foods from the street vendors at least once during the lunch break (Mishra, 2007). Vendors prepare food at home and sell or they prepare food at the site of selling. In India, varieties of ready to eat foods are available. This generally includes Chinese fast food, Paranthas, Puribhaji, Bhature and Kulche apart from lighter snacks like tea, biscuits, mathi, fan etc. This is the major source of income for the vendors and consumers get instant, tasty and cheap food in return. So Street Food Vending in urban areas especially in metropolitan cities has become an integral part of the urban lives and culture. It is also recognized that despite of good taste and easily availability, street food vendors are often poor, uneducated and lack hygiene practices. So street food are perceived to be a major public health risk (WHO, 2013)

According to WHO (1989), *food handling personnel play important role in ensuring food safety throughout the chain of food production and storage. Mishandling and disregard of hygienic measures on the part of the street vendors may enable pathogenic bacteria to come into contact with and in some cases survive and multiply in sufficient numbers to cause illness in the consumer*

So this study tried to highlight the hygiene practices followed by vendors in Delhi and also to gain insight on food safety and hygiene status of food they sell.

MATERIALS AND METHODS

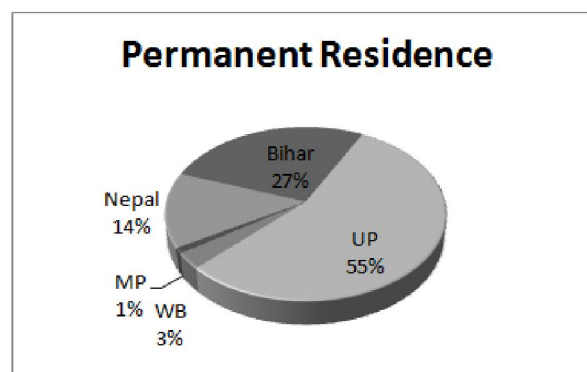
This was a cross sectional study conducted amongst the street food vendors of Delhi, India. A sample of 200 street food vendors was contacted during the study by convenient sampling from various locations of study area. Mixed approach i.e. quantitative and qualitative methodology was adopted to collect the data. Pre tested questionnaire was used to record the responses of participants and observation approach was adopted to assess the hygiene practices of participants and hygienic status of the vending site. As soon as the data collection was over, data was checked for its completeness, correctness and consistency then entered into Microsoft excel and was checked and analyzed.

RESULTS

Majority of the respondents (33 %) were in the age group of 25 to 34 years. In the extreme age groups, i.e. below 15 years and above 45 years, less percentage of vendors were observed, only 2 and 6 % respectively. Very few respondents were females and majority of the vendors were male (97%). (Table 1) Out of the total respondents, 42 % of the vendors have achieved primary level of education while 24 % are illiterate. None of the vendors attained education more than matriculation level but 34% of the vendors have completed metric level. As study was conducted in Delhi and literature review has shown migration as one of the major factor behind booming of street food vending, information was collected about the permanent residence of the respondents. Around 64 % of the respondents were not permanent residents of Delhi. They have migrated from the other states of India like, Uttar Pradesh, Bihar, Madhya Pradesh and also West Bengal. Few vendors have migrated from Nepal also. (Graph 1)

Table 1. Background Characteristics of Study Population

VARIABLE	RESPONDENTS
Age	
Below 15 years	02 %
15-19 years	07 %
20-24 years	22 %
25-34 years	33 %
35-44 years	30 %
45+ years	06 %
Gender	
Male	97 %
Female	03 %
Education	
Never been to school	24 %
Primary	42 %
Metric	34 %



Graph 1. Status of Residency of Study Population

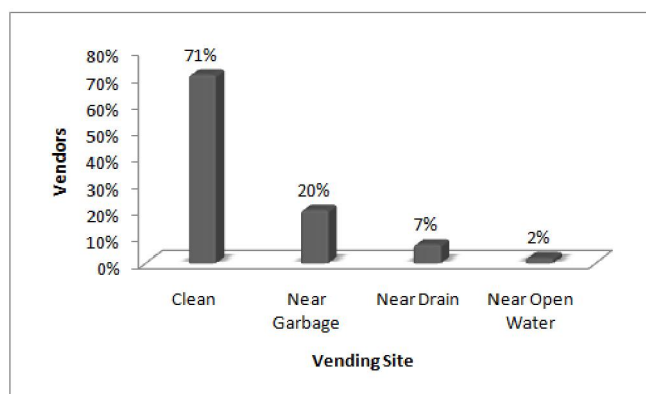
In 95% of the responses, vending operation was full time. Rest of the vendors were doing it part time. On asking about the number of people involved from family in vending, 85% of the respondents were the only person from the family who was involved in vending the street food. Income generated was more, above of Rs. 10000. Forty percent (40%) of the vendors reported Rs. 10,000 and above as their monthly income. Next big percentage share in monthly income generation was 28 % vendors, who were earning between Rs. 5000- 10000 in a month. Small chunk of total respondents (06 %) were able to earn between Rs. 1000- 3000 in a month. On asking about whether vendors were registered with any society/body/ association, 85 % of the vendors responded that they were not registered or licensed. Rest 15 % of the respondent said that they did not want to tell or comment about their registration or license status. Majority of vended food was observed to be- Roti Sabji, Naan, Chhole Bhature, Kulche, Gol Gappe, Chaat, Momo, Chowmein and many Non vegetarian snack items like kabab, roll, keema and tikka. Among the vendors studied, 19 % prepared food at home and then brought it to vending site. About fifty nine (59 %) percent vendors cooked vended food at vending site while, 19 % were engaged in preparing food both at home and vending site. On enquiring about the addition of any artificial colours/additives/sweeteners, 13 % of the vendors were found to be using artificial colours or additives. Sixty three percent (63%) of the respondents were using same utensils for cooking, heating and serving. Responding to kind of water used to clean the utensils, 36% of the vendors said that they use soapy water to clean the utensils. Buckets were used by 25% of the vendors for cleaning the utensils. It was observed that around 19% of the vendors were cleaning their utensils in open only. They were neither using buckets nor basin. (Table 2)

Table 2. Hygiene practices among street food vendors

Variable	Status	Percentage
Type of Plates Used To Serve Food To The Customers	Metal Plates	37 %
	Plastic Plates	06 %
	Paper/ Disposable plates	57 %
Kind of Water Used For Cleaning The Utensils	Soapy Water	36 %
	Clean Water	07 %
	NA(paper/ disposable)	57 %
Disposal of Garbage	Open Lid Bin	72 %
	Closed Lid Bin	11 %
	On Road	16 %
	In Polythene Bags	01 %

In context to disposal of garbage, majority (72%) of the vendors used open lid bins for disposal of garbage. Only 11% of the respondents told that they were using closed lid bin and 16% reported that they were throwing their garbage openly on the road. (Table 2) Four percent (4%) reported that they were suffering from illness of any sort at the time of interview, though these were minor illnesses like fever and cough. When observing about the use of apron while cooking or dealing with the cooked food, only 2% were observed using an apron. In context of usage of hand gloves while cooking, serving of cooked or raw food, 97% of the vendors under study were not wearing hand gloves. Only 3% of the vendors were using hand gloves while dealing with the raw or cooked food. Only 2% were found to wash their hands before and after handling the raw food. It was found that DDA water supply was the source of drinking water in majority of the cases. 61% of the vendors were using regular DDA water supply as their source of drinking water for the customers.

When observed that whether head of the vendors under study were covered or not (during handling/ cooking/ serving raw or cooked food), it was found that in majority of cases (95 %) vendors were not wearing any head cover. A significant proportion (72 %) of the vendors had well- kempt, short and clean nails. Twenty eight percent of the vendors were observed to be having long, unclean nails. It was seen that 4 % of the observed vendors had open wounds present. It was noticed that only 56 % of the vendors had covered their food which they were vending. It was observed that 20 % of the vending sites were near garbage and very few vending sites (7 %) were found to be vending nearby to any open drain. Only 2 % of the vending sites were operation with any open water source present close to the vending site. (Graph 2) In a large proportion (40%) of the sites observed, there was presence of dust or vehicular traffic around the vending site.

**Graph 2. Observation at Vending Site**

But 60% of the sites observed were free of any dust or any vehicular traffic around the vending site. Thirteen percent (13 %) of the vending sites were having presence of stray animals or animal waste around the site. But majority of sites (87%) were not having presence of any stray animals or animal waste around the sites.

DISCUSSION

While comparing with other studies done in India, it was found that much lower hygiene practices were found in those studies. In this study, it was revealed that, 72% of the vendors have short nails and 56% of the vendors covered their food while vending. These results showed marked increase in these practices being followed in Delhi. Vadodara (Sheth, 2005) study has shown a very poor picture in this aspect. In that city, only 5 % of the vendors had short nails. The reasons behind this huge difference can be the factor of being in a metropolitan city, as mentioned in another study being done in East Delhi (Mishra, 2007). It explains that reason behind this difference could be as street vendors in Metropolitan cities are more exposed to health and hygiene related messages. Food vended is of different flavor, cheap and tasty, which becomes popular among people easily. This study highlighted few points which need to be addressed for better hygiene status and food practices among street food vendors. Street foods provide variety of foods available to population and it is a medium for integrating rural and urban areas economically. In a study conducted in Varanasi (Mishra, 2007), it was observed that 42% of working men, 23% of working women and 61% of students prefer having street foods.

Adapting the Five Keys to Safer Food to address the street food sector (WHO, 2011). WHO has developed few measures for street food vendors based on the principles of five keys to safer food. These can be incorporated and taught in Indian scenario. These are:

Key 1: Keep clean

Key 2: Raw and cooked food should be kept separated

Key 3: Destroy hazards when possible

Key 4: Keep microorganism in food from growing

Key 5: Use safe water and raw material.

Since this is an unorganized sector, there is felt need of generating government's initiatives for its development. There is also need of generating food and personal hygiene and ensuring an effective system of regular health examinations of vendors and regular sample collection of food they are serving to the customers.

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