

Original Research Article

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Food Safety and Hygiene Practices among Street Food Vendors in Noida, Uttar Pradesh, India

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ABSTRACT

The present study was conducted on two hundred street food vendors randomly selected from New Okhla Industrial Development Authority (NOIDA) of Gautambudh Nagar district of Uttar Pradesh, to assess the food safety and hygienic practices among street food vendors. The information was collected with the help of questionnaire and observation of vending site. Data was entered and analyzed with the help of MS excel. The result revealed that Majority of the respondents (42.5%) was in the age group of 15 to 30 years and 85% were male. Out of the total respondents, 35% vendors have achieved primary level of education while 24 % were illiterate. Around sixty percent of the vendors reported Rs. 10,000 and above as their monthly income. 45% of the respondents were not permanent residents of Uttar Pradesh. They have migrated from the other states of India like, Bihar, Madhya Pradesh and also West Bengal. Only 5% vendors were registered. Majority of respondents (88.0%) sell their food stuff on mobile cart. More than fifty per-cent vendors (62.5%) prepared their foodstuffs at their own marketplace and half of the vendors prepared food at morning and during the sale. Majority of vendors (85%) used the tap water for food preparation and 60% washed their utensils in cold water either in a bucket or directly from tap water. Over 61% did not give due preference to cover their food items and more than 80% of the stalls were exposed to flies. Majority of food vendors (74%) did not use any serving fork or spoon while 98.0% served with bare hands. Most of the vendors (98.0%) practiced to sell their food items without wearing gloves. 79.6% did not cover their head and 76.8% did not wear an apron. Less than a half of the food handlers washed their hands before food preparation and after using the toilet.

Keywords

Safety, Hygiene,
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Introduction

The Food and Agricultural Organization (FAO) of the United Nations defines Street Foods as ready to eat food and beverages prepared and/or sold by vendors and hawkers especially in streets and other similar public place (1988). The trend of street food vending is mushrooming globally due to fast

urbanization, technological advancement and alarmingly increasing hasty lifestyle. People are more inclined to shop ready to eat foods instead of cooking at home. They are inclined towards easier ways of spending life without realizing about safety concerns. These foods provide a source of inexpensive, convenient and often nutritious food for both the urban and rural poor. It is estimated that 2.5 billion

people worldwide consume street foods each day. Only in Latin America, street foods account for up to 30% of urban household purchases (Samapundo *et al.*, 2015). In Southern Asian countries like India, Bangladesh, Bangkok, Thailand, and Indonesia, street foods are an important portion of their diet. Particularly for women in the developing world, street-vended foods also serve as a major source of livelihood providing a means of self-employment and the opportunity to develop business skills with low capital investment.

Despite the numerous benefits provided to people, street-vended foods can also be a source of food borne illnesses resulting from poor hygiene practices by vendors, insanitary conditions at food vending points, among others. According to Chapman *et al.*, (2010) about 70% of disease outbreaks have been linked to street-vended foods while evidence provided by Mensah *et al.*, (2002) point to the fact that, street foods are potential sources of enteropathogens.

Estimates by the World Health Organisation suggest that, food-borne illnesses account for about 2.2 million deaths annually, out of which about 86% are children.

Street food safety is highly dependent on the handling of raw food to the cooking of food till its consumption. The fact that street food vendors possess the underprivileged local infrastructure in general, lack of sanitary facilities, no proper training about food hygiene, poor sanitation and limited knowledge of personal hygiene have posed countless problems. Many studies conducted to assess the quality of street foods in various countries show that most of the times such food is not up to the safety standards, many are responsible for various food borne diseases and known to be the amongst greatest challenges of the 21st century.

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 eat. According to a study conducted by Sunita Mishra in Varanasi on safety aspect of street food it 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 foods 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 Noida and also to gain insight on food safety and hygiene status of food they sell.

Materials and Methods

Present study was conducted in Noida (New Okhala Industrial Development Authority) of Gautambudh Nagar district of Uttar Pradesh. Noida was selected purposely, on the basis of number of street food vendors. From Noida two hundred street food vendors operating in busy streets (Atta market sector 18, Bhangale), near colleges and offices were selected randomly. Data was collected through pre-tested questionnaire and results were presented in terms of frequency and percentage.

Results and Discussion

Socio-economic characteristics of respondents

Socio- Economic characteristics included the age, education, sex and income of the study subjects as presented in table 1. Majority of the respondents (42.5%) was in the age group of 15 to 30 years. In the extreme age groups, i.e. below 15 years and above 45 years, less percentage of vendors were observed, only 2% and 20 % respectively. Very few respondents were females (15%) and majority of the vendors were male (85%). Out of the total respondents, 35% of the vendors have achieved primary level of education while 24 % were illiterate. None of the vendors attained education more than intermediate level but 27.5, 11% and 2.5% of the vendors have completed metric level, high school and intermediate level of education respectively. Around sixty percent of the vendors reported Rs. 10,000 and above as their monthly income. Next big percentage share in monthly income generation was 31% vendors, who were earning between Rs. 5000- 10000 in a month. Small chunk of total respondents (9%) were able to earn between Rs. 1000- 5000 in a month. Around 45% of the respondents were not permanent residents of Uttar Pradesh.

They have migrated from the other states of India like, Bihar, Madhya Pradesh and also West Bengal. Few vendors have migrated from Nepal also. Chander Pal Thakur, *et al.*, (2013) in Delhi reported the similar findings.

Occupational traits of the respondents

Basic occupational information of the vendors is shown in Table 2. Majority of street food vendors (95%) were not registered under Food Safety and Standard Authority of India only 5% vendors having Food Safety and Standard Authority of India (FSSAI) registration certificate. In 95% of the responses, vending operation was full time. Rests of the vendors were doing it part time. Majority of vended food was observed to be Biryani (veg, chicken, mutton), Chhola Bhatura, Kulcha, Momose (veg, paneer, chicken), Chowmeen, Paratha (aalu, paneer), Puri Subji, Rolls, Tikka (Paneer, chicken), Gol-gappe (Chaat), Fruit Juice, Sugarcane Juice.

As far as experience in vending is concerned majority of respondents (40%) having 6-10 year experience followed by 11-15 year (25%). Eighty eight per-cent of the vendors were selling their food stuff on mobile carts locally known as Thela followed by Dhabas (11%) known as roadside mini restaurants while 3.0% had a wooden cart fixed near footpath. Zaheer *et al.*, (2017) in Rawalpindi Pakistan reported the similar findings.

Food handling and preparation practices

In present study food handling and preparation practices were carefully observed, Table 2 reveals that majority of vendors (62.5%) prepared their foodstuffs at their own marketplace followed by At home + own market place (22.5%) and at home (10.5%) while 4.5% vendors bring food stuff from other site. Around half of the vendors prepared food at morning and during the sale.

Table.1 Socio-economic characteristics of street food vendors

Characteristics	Categories	Frequency (n)	Percentage (%)
Age	Below 15 years	04	2.0%
	15-30 years	85	42.5%
	30-45 years	70	35.0%
	Above 45 years	41	20.5%
Sex	Male	170	85.0%
	Female	30	15.0%
Education	Illiterate	48	24.0%
	Primary	70	35.0%
	Metric	55	27.5%
	High School	22	11.0%
	Intermediate	05	2.5%
Income(Rs. per-month)	1000-5000	19	9.5%
	5000-10000	62	31.0%
	10000-20000	52	26.0%
	20000-30000	40	20.0%
	30000-50000	20	10.0%
Permanent Residence	Uttar Pradesh	110	55.0%
	Bihar	60	30.0%
	West Bengal	12	6.0%
	Madhya Pradesh	04	2.0%
	Nepal	14	7.0%

Table.2 Basic occupational traits of the vendors

Characteristics	Categories	Frequency (n)	Percentage (%)
Registered under Food Safety and Standard Authority of India	Yes	190	95.0%
	No	10	5.0%
Occupation type	Full time	190	95.0%
	Part time	10	5.0%
Types of food stuff vended	Biryani (Veg & Non-Veg)	52	26.0%
	Bhatura & Kulcha	40	20.0%
	Momose	30	15.0%
	Chowmeen	10	5.0%
	Paratha & Puri Subji	20	10.0%
	Rolls & Tikka (Veg & Non-Veg)	16	8.0%
	Gol-gappe (Chaat)	27	13.5%
Experience (Years)	Fruit Juice	15	7.5%
	Sugarcane Juice	10	5.0%
Type of cart	1-5	45	22.5%
	6-10	80	40.0%
	11-15	50	25.0%
	16-20	15	7.5%
Number of co-workers	>20	10	5.0%
	Mobile carts	172	88.0%
	Fixed cart	6	3.0%
	Dhaba	22	11.0%
	1-3	110	55.0%
	>3	90	45.0%

Table.3 Food handling, preparation and water consumption practices

Variables	Categories	Frequency (n)	Percentage (%)
Preparation site	At home	21	10.5%
	At own market place	125	62.5%
	At home + own market place	45	22.5%
	Get from another source	9	04.5%
Timing of food preparation	In the morning	29	14.5%
	During the sale	68	34.0%
	Morning + During the sale	31	15.5%
	At previous night + morning	72	36.0%
Heating of food before selling	Yes	95	47.5%
	No	7	3.5%
	Not required	98	49.0%
Washing of utensil	Cold water	30	15.0%
	Warm water	21	10.5%
	Detergents	45	22.5%
	Drying with cloth	2	1.0%
	Washing in bucket	91	45.5%
	Warm water+ Detergents+ Drying with cloth	11	5.5%
Source of water for preparation of food	Tap water	170	85.0%
	Filter water	30	15.0%
Proper covering of food	No	121	60.5%
	Yes	79	39.5%
Presence of flies on food	No	24	12.0%
	Yes	176	88.0%
Washing of food items before use	No	76	38.0%
	Yes	124	62.0%

Table.4 Serving of food

Variables	Categories	Frequency (n)	Percentage (%)
Serving with fork and spoon	No	148	74.0%
	Yes	52	26.0%
Food served with bare hands	No	4	2.0%
	Yes	196	98.0%
Type of utensils used for serving food	Paper bag	15	7.5%
	Polythene bag	18	9.0%
	Stainless steel	30	15.0%
	Plastic	12	6.0%
	Disposable	125	62.5%

Table.5 Personal hygienic profile of the food handlers

Personal hygiene	Categories	Frequency (n)	Percentage (%)
Use of gloves	No	192	98.0%
	Yes	8	4.0%
Use of head covering	No	179	89.5%
	Yes	21	10.5%
Use of apron	No	146	73.0%
	Yes	44	22.0%
Washing of all coverings	Daily	0.0	0.0%
	After one day	4	2.0%
	After two day	41	20.5%
	Weekly	155	77.5%
	Before preparation of food	73	36.5%
Hand washing	After touching each food Items	20	10.0%
	After using toilet	23	11.5%
	Before preparation of food + After using toilet	84	42.0%

Nevertheless, there were two exceptions – fruit Chaat (76.7%) and the sugar cane juice (100%) are the items which were freshly sold by the vendors; seem to be the good practice among the vendors. Furthermore results regarding handling practices among vendors from different clusters showed that over 61% did not give due preference to cover their food items and the remaining practiced to cover their food but it was not properly covered therefore more than 80% of the stalls were exposed to flies. Chander Pal Thakur *et al.*, (2013) in Delhi reported the similar findings.

Majority of vendors (85%) used the tap water for food preparation supplied by Noida Industrial Development Authority. Only

fifteen per-cent vendors used filtered/ R.O water. Out of 200, 60% washed their utensils in cold water either in a bucket or directly from tap water, significantly seen in vendors with mobile carts and stalls near to footpath. The severity of contamination seemed to multiply when same water was reused for multiple times, especially on mobile carts having buckets for cleaning purpose. Similar findings were reported by Zaheer *et al.*, (2017) in Rawalpindi Pakistan.

Serving of food

Food serving practices by the vendors are revealed in Table 3. Majority of food vendors (74%) did not use any serving fork or spoon while 98.0% served with bare hands. Since bare hands cause food contamination as

enteropathogens can survive on hands for three hours or longer. The serving utensils are equally important. It was found that more than sixty per-cent (62.5%) used to sell their food in disposable utensils – mainly, the Chaat, Chowmeen, Momos. Stainless metallic utensils were used to serve Chhole Bhatore, Chhole Kulche, Poori Subji rice and juices by fifteen per-cent vendors. Chander Pal Thakur, *et al.*, (2013) in Delhi reported the similar findings.

In the present study, it was observed that 7.5 % vendors sold food also in paper bags, plain and with old and fresh newsprints. Since, these bags use gums / glues that are not recommended by any food control authority, plus papers are scavenged from unknown sources, we believe that the origin of these bags in itself is questionable. About 9% vendors used the polythene bags.

Personal hygiene of food handlers

Personal hygienic practices of food handlers rank amongst the major concerns that may potentially lead towards foodborne outbreaks. In this study, personal hygiene was assessed in terms of usage of gloves, head coverings, apron and hand washing of the respondents. The study revealed that most of the vendors (98.0%) practiced to sell their food items without wearing gloves. 79.6% did not cover their head and 76.8% did not wear an apron. Less than a half of the food handlers washed their hands before food preparation and after using the toilet. Chander Pal Thakur *et al.*, (2013) in Delhi reported the similar findings.

The study concluded that vendors are not selling the safe food to consumers. Their main objective is money making without considering the health of community. Positive aspect of the study was that, vendors were willing to have food safety training and learn about the key traits of food safety. So there is

an immense need to impose education on the food safety knowledge and practices before vendors are allowed to trade. Street food stalls should be registered and the sanitary condition of street food production should be monitored. Most of the vendors possessed good knowledge of health and personal hygiene. They still need to put their knowledge into practice. For making sure of that, authority supported awareness raising training programs and periodic monitoring should be introduced to street food vending in Noida.

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