

Assessment of Hygienic Practices of Street Food Vendors Serving in Lahore

Sajjad ul Hasan,¹ Syma Arshad,² Mohammad Humayun Naru,² Syed Hassan Tahir,² Laila Afzal³ and Muhammad Shahid Iqbal³

¹*Institute of Public Health, Lahore*

²*Central Park Medical College, Lahore*

³*Sharif Medical & Dental College, Lahore*

ABSTRACT

Introduction: The term “street food” refers to food and beverages prepared and/or sold by vendors in streets and other public places for immediate consumption or consumption at a later time without further processing or preparation. **Objectives:** The objectives of the study were to assess the hygiene practices of street food vendors and to observe the safety measures adopted by them. **Materials and Methods:** It was a cross-sectional descriptive study in which 100 street food vendors serving in Union Council No 79, Lahore were included. Data was collected through questionnaire, which was entered into computer using SPSS 19.0. **Results:** Among 100 street food vendors, 65% studied upto primary level and 48% were more than 30 years old. 69% had family monthly income $\leq 10,000$ rupees. Surroundings of 73% street food vendors were dirty where food was sold, 78% had clean utensils and 85% had no cracked or broken crockery in which food served. 55% street food vendors had long fingernails and 14% had sores on their hands. 77% were smoking during working. 100% street food vendors did not wash their hands in between handing food and money and 91% with soap after using toilet. 100% street food vendors were not vaccinated against typhoid/hepatitis. **Conclusion:** Condition of utensil and crockery in which food served was found satisfactory. Majority had sore free hands but more than half had long fingernails. Hand washing in between food handling and money and after using toilet with soap, were found entirely unsatisfactory. Personal hygiene of street food vendors should strictly be monitored. All street food vendors must have fitness/ health certificates and concerned department must monitor it carefully.

Key Words: Hygiene, street food, vendors, practices, food borne diseases

INTRODUCTION

The term “street food” refers to food and beverages prepared and/or sold by vendors in streets and other public places for immediate consumption or consumption at a later time without further processing or preparation.¹ According to the Food and Agriculture Organization (FAO), 2.5 million people eat street food daily.² Street food vending is a prevailing and distinctive part of a large informal sector. It is commonly seen in public places, particularly in the cities and is distinctive in the

sense that it provides a basic need to the urban inhabitants.³ This sector is flourishing rapidly due to growing and changing food demands by the urban dwellers needing cheaper eating food in the face of a harsh economy. Apparently, many people prefer eating foods from vendors instead of preparing or cooking at home. There are different types of food vending sites including mobile stalls, a variety of push-carts, roadside stands, and hawkers depending upon the ingenuity of the individual, resources available, types of food sold and the availability of others facilities. Women are often owners or employees of street food businesses worldwide. According to FAO study, 70%-90% vendors are

women, and they sell food in the street primarily to improve the food security of their family and for a degree of financial independence. Study also showed that street food consumers come from all levels of society, from low income to high income groups. Even school children depend on street food.⁴

While street vended foods are appreciated for their unique flavors as well as their convenience, they are also important in contributing to the nutritional status of the population.⁵ In contrast to these potential benefits, it is also recognized that street food vendors are often poor, uneducated, and lack knowledge in safe food handling, environment, sanitation and hygiene, mode of food display, food service and hand washing, sources of raw materials, and use of potable water. Consequently, street foods are perceived to be a major public health risk.⁶

Issues of food safety due to food-borne illnesses have led to an increase in global concern.⁷ Several food-borne disease outbreaks have been reported to be associated with poor personal hygiene of foodstuff handlers. Food-borne diseases are increasing in both developed and developing countries. Diarrheal diseases, mostly caused by food-borne microbial pathogens, are the leading causes of illness and deaths in the developing countries, killing an estimated 1.9 million person annually at the global level.^{8,9}

Food-borne diseases are on the increase throughout the world due to poor attention given to personal and food hygiene measures by both lawmakers and people in charge of food preparation, especially in developing countries. A study by the joint Food and Agriculture Organization (FAO) and the World Health Organization experts committee on food safety reported that illness due to contaminated food is perhaps the most widespread health problem in the world and a major cause of reduced economic productivity.¹⁰ Typhoid fever was also estimated to affect about 16.6 million individuals and accounted for 600,000 deaths worldwide each year.¹¹ It was also reported that approximately 76 million illnesses, 325,000 hospitalizations, and 5,000 deaths are caused by food-borne diseases in the USA each year.¹⁰

Investigations of outbreaks of food-borne diseases throughout the world show that, in nearly

all instances, they are caused by failure to observe satisfactory standards in preparation, processing, cooking, storing or retailing of food.¹² It is worthy of note that the problems of food safety differ considerably between industrialized and underdeveloped countries.¹³

While vended foods in underdeveloped nations are traditionally prepared and retailed under minimal hygiene and cost, problems with food hygiene in the industrialized countries are more with processing and packaging. In either case, as the purchase and consumption of meals from restaurants and other public places increase, proper and adequate hand hygiene at food preparation facilities is of increasing importance.⁷

In Pakistan during recent years there is an increasing trend in the sale and consumption of food on the road side. In many developing countries, street-food vending is a common part of urban lifestyle due to high unemployment and limited work opportunities. Vendors usually congregate in overcrowded areas where there are high numbers of potential customers. Such areas usually provide limited access to basic sanitary facilities.² Vending sites located alongside busy roads with heavy vehicular traffic, which increase air-borne particles add to the contamination.¹⁴

Most of the foods are not well protected from flies, which carry food-borne pathogens. Safe food storage temperatures are rarely applied to street foods. Potential health risks are associated with contamination of food by *E. coli*, *Salmonella typhi*, *Pseudomonas* species, *Staphylococcus aureus* and *Proteus* species during preparation, post-cooking and other handling stages. Even though people are aware that food-borne diseases could occur due to consumption of street food, the majority disregards these health hazards.¹⁵

World Health Organization (WHO) has developed five main keys to safer food, which include keeping clean, separating raw and cooked food, cooking thoroughly, keeping food at safe temperatures, and using safe water and raw materials.¹⁶ These five keys to safer food are of immense importance in developing countries, and equipping food vendors in countries with such information could impact significantly on food safety. However, Street food vendors do not follow

hygiene practices while preparing the food. Therefore, present study is conducted to assess the hygienic practices of street food vendors serving in union council No. 79 (Temple Road), Lahore.

METHODOLOGY

It was a cross-sectional descriptive study. The place of study was union council No.79 (Temple Road), Lahore. Street vendors serving in that union council were study population. The sample size of the study was 100 street food vendors serving in that union council. Convenient non-probability sampling technique was used to select the required number of vendors. Street food vendors involved in food business were included in the study. Street vendors involved in business other than food and unwilling participants were excluded from the study. A semi-structured questionnaire was prepared by the researchers and finalized after pre-testing. The street- food vendors were interviewed by the researchers themselves and responses were noted on the questionnaire. The data collected through questionnaires was entered in computer using SPSS 19.0. The data was cleaned and statistically analyzed with the same software.

RESULTS

Among 100 street food vendors, 13(13%) were ≤ 20 year old and 39(39%) were 21-30 years old while 48 (48%) were more than 30 years old. All (100%) street- food vendors were male. 17 (17%) were illiterate, 65 (65%) studied upto primary level (grade-5) while 18 (18%) were under matric. 38 (38%) were single while their majority (62%) was married 69 (69%) had family monthly income $\leq 10,000$ rupees while 31 (31%) had family monthly income more than 10,000 rupees. 93 (93%) were stationary while 7 (7%) were mobile (Table 1).

The surrounding of 73 (73%) street food vendors were dirty where food was sold while 27 (27%) had clean surroundings. 22 (22%) had dirty utensils while majority 78 (78%) had clean utensils. 15 (15%) had dirty cracked or broken crockery in which food was served while majority 85 (85%) had no such crockery. 93 (93%) cooked food during sale

while majority 7 (7%) did not cook during sale. Only 12 (12%) sold their food with covering while majority 88 (88%) sold without covering. 45 (45%) had short fingernails while majority 55 (55%) had long fingernails. 86 (86%) had their hands free of sores while 14 (14%) had not their hands free of sores. 77 (77%) were smoking while cooking and 23 (23%) were not smoking during working. Among 100 street food vendors, 31 (31%) were coughing over food while majority 69 (69%) were not coughing over food. Only 9 (9%) washed their hands with soap after using toilet while majority 91 (91%) did not wash their hands with soap after using toilet (Table 2).

Table 1: Socio-demographic characteristics of vendors (n = 100).

Socio-demographic Characteristics	Frequency	Percentage
Age (years)		
≤ 20	13	13.0
21-30	39	39.0
> 30	48	48.0
Qualification		
Illiterate	17	17.0
Primary	65	65.0
Under Matric	18	18.0
Marital status		
Single	38	38.0
Married	62	62.0
Total Monthly Family Income (Rs.)		
$\leq 10,000$	69	69.0
$> 10,000$	31	31.0
Types of vendor		
Stationary	93	93.0
Mobile	7	7.0

Food handling and selling practices of food vendors:

While comparing socio-economic variables with hygienic practices, there is statistically significant relationship between education and practices like food covering and coughing over food ($p < .001$). Likewise, comparison between family income and utensils condition, food covering is statistically significant ($p < .001$) (Table 3).

Table 2: Food handling and selling hygienic practices of food vendors (n=100).

Practices of food vendors	Frequency	Percentage
State of Surroundings		
Dirty	73	73.0
Clean	27	27.0
Utensils Condition		
Dirty	22	22.0
Clean	78	78.0
Crockery Cracked or Broken		
Yes	15	15.0
No	85	85.0
Food Cooked during Sale		
Yes	93	93.0
No	7	7.0
Food Sold with Covering		
Yes	12	12.0
No	88	88.0
State of Finger Nails		
Short	45	45.0
Long	55	55.0
Hands Free of Sores		
Yes	86	86.0
No	14	14.0
Smoking while Working		
Yes	77	77.0
No	23	23.0
Coughing over Food		
Yes	31	31.0
No	69	69.0
Hand Washing with Soap after Using Toilet		
Yes	9	9.0
No	91	91.0

DISCUSSION

Present study was conducted to assess the hygienic practices of street food vendors serving in union council No 79. (Temple Road), Lahore and found that more than half (52%) of street- food vendors were upto 30 years old while 48% more than 30 years old. A similar study carried out by Mangbon and Chintem (2014) showed that 47.5%

street- food vendors were upto 30 years old while 52.5% were more than 30 years old.¹⁷ As far as sex of street-food vendors is concerned, study identified that all (100%) street food vendors were male. This is because that in our culture mostly males are engaged in such business. The findings of our study are almost comparable with the study undertaken by Thakur and co-workers (2013) who reported that 97% street foods vendors were males.¹⁶

Table 3: Comparison of socio-economic characteristics with hygienic practices of vendors (n=100).

Education		Utensils conditions		p-value
literate	Illiterate	Clean	Dirty	0.18
83(83%)	17(17%)	78(78%)	22(22%)	
		Food sold with covering		<.001
		Yes	No	
		12(12%)	88(88%)	
		Coughing over food		<.001
		yes	No	
		31(31%)	69(69%)	
Family income		Utensils conditions		
<10000	>10000	Clean	Dirty	<.001
69(69%)	31(31%)	78(78%)	22(22%)	
		Food sold with covering		<.001
		Yes	No	
		12(12%)	88(88%)	
		Coughing over food		0.99
		Yes	No	
		31(31%)	69(69%)	

Role of education can not be overlooked as it improves the hygiene practices of people. It was very disturbing that 17% street food vendors were illiterate and majority 65% had primary education (grade-5) while 18% were under matric. The findings of the study done by Sarkodie and associates (2014) are comparable but showed better result than our study. 39% had primary education, 30% secondary and 10% studied upto college level.¹⁸ During study marital status of street food vendors was also assessed and found that most of them (62%) were married. This is in contrast to the finding of the study conducted by Rahman and teammates (2012) which stated that 47.6% street-food vendors were married. Study disclosed that mainstream (69%) of street food vendors had total family monthly income $\leq 10,000$ rupees while 31% were earning $>10,000$ rupees. The result of the

study conducted by Thakur and coworkers are better than our study results who elucidated that 40% street food vendors had family monthly income more than 10,000 rupees.¹⁶

Study showed very discouraging result that 73% street- food vendors' surroundings were dirty where food was being sold. Thakur and coworkers (2013) asserted in their study that only 20% of the vending sites were dirty.¹⁶

Neat and clean crockery and utensils prevent people from health hazards. Study identified that 15% street- food vendors' crockery was cracked or broken in which food served while 22% had dirty utensils. The result of our study are much better than the study undertaken by Gadaga *et al.*¹⁹ who reported that 88% street- vendors had dirty utensils.¹⁹

To attract more customers, majority of the street- food vendors cook food during sales. Study divulged that 93% street food vendors cooked food during sale. Another study done by Nayansi and collaborators (2014) elucidated that only 20% street-food vendors cooked food during sale.¹⁵

Study identified that most of the foods were being sold without covering and there were only 12% street food vendors who covered the food. The study undertaken by Thakur and coworkers (2013) showed that more than half (56%) of the street food vendors covered their food which they were selling.¹⁶

Dirty fingernails of street food vendors could be a leading cause of infectious diseases among population. It was very discouraging that more than half (55%) street food vendors had long fingernails. The results of the study carried out by Thakur and coworkers (2013) exhibited better scenario than those of our study which stated that only 28% street food vendors had long fingernails.¹⁶ Another study carried out by Odonkor and Coworkers (2011) also confirmed that only 14% street food vendors had long fingernails.¹⁶

Like fingernails, sores on the hands of street food vendors can also jeopardize health of population. It is significant to mention that 86% street food vendors had their hands free of sores while 14% had sores on their hands. The results of the study done by Thakur and coworkers (2013) are better than our study result which confirmed that

only 4% street food vendors were found having sores on their hands.¹⁶

Smoking is a major risk factor for non-communicable diseases like acute coronary syndrome, cerebrovascular accident, debilitating chronic disease like atherosclerosis, hypertension and chronic obstructive pulmonary disease. Study revealed that major proportion 77% of street food vendors was accustomed to smoking while the study conducted by Nayansi and collaborator (2014) showed that only 13.3% street food vendors were coughing over food. Nayansi and collaborator (2014) also did not show better results in their study that 26.6% street food vendors did coughing over food.¹⁶

Hand washing is the single most effective way to prevent the spread of infections. Regular hand washing, particularly before and after certain activities, is one of the best ways to remove germs. Study disclosed that none of street food vendors washed their hands in between handling food and money. While the study undertaken by Lawan and associates (2015) elucidated that 5% street food vendors washed their hands between handling food and money.¹⁰

It was very disturbing to know that only 9% street- food vendors washed their hands with soap after using toilets. The findings of the study conducted by Nayansi and collaborators (2014) were comparable but showed better scenario that 19% street food vendors washed their hands with soap after using toilet.¹⁵ Vaccination of street food vendors is not only essential to prevent them from infectious diseases but also the population. It was very discouraging that none of the street- food vendors had been vaccinated against typhoid or hepatitis.

CONCLUSION

Most of the street food vendors did not follow hygiene practices. Most of them were more than 30 years old. Educational status and income level were found unsatisfactory. State of surroundings where food was being sold was unsatisfactory (dirty). Condition of utensils and crockery in which food served was found satisfactory. Majority had sore free hands but more than half had long fingernails.

Smoking was observed among majority while coughing over food was also observed. Hand washing with soap in between food handling and money and after using toilet was found entirely unsatisfactory. None of the street food vendors had been vaccinated against typhoid or hepatitis.

RECOMMENDATIONS

- Street food vendors should ensure that their utensil and surroundings should be neat and clean.
- Personal hygiene of street food vendors should be strictly monitored to protect population from infectious diseases. Their nails should properly be trimmed and hands should be free of sores.
- Smoking is an ill habit. It should be avoided especially during cooking and serving food.
- Hand washing should be ensured with soap and sufficient water after using toilet.
- Seminars should be arranged for street food vendors and proper knowledge should be provided how to preserve food hygienically.
- Uniform and cap should be compulsory for all food vendors during food cooking.
- Health education to general population about the dangers of eating unhygienically prepared food by mass media like TV, etc should be provided.
- All street food vendors must have fitness/health certificates and should be vaccinated against typhoid and hepatitis.

REFERENCES

1. Ackah M, Gyamfi ET, Osei J, Hansen JK, Agyemang O, Socio-economic profile, knowledge of hygiene and food safety practices among street-food vendors in some parts of Accra-Ghana. *Internet J Food Safety* 2011; 13: 191-7.
2. Gadi C, Bala KL, Kumar A. Study of hygienic practices of street food vendors in Allahabad city, India and determination of critical control points for safe street food. *The Allahabad Farmer* 2013; LXVIII(2): 1-132.
3. Muzaffar AT, Huq I, Mallik BA. Entrepreneurs of the streets: an analytical work on the street food vendors of Dhaka city. *Int J Bus Manag* 2009; 4(2): 80-8.
4. Rahman MM, Arif MT, Bakar M, Tambi ZB. Food safety knowledge, attitude and hygiene practices among the street food vendors in Northern Kuching City, Sarawak. *Borneo Sci* 2012; 31: 107-16.
5. Khiruzzaman M, Chowdhury FM, Zaman S, Al Mamun A, Bari ML. Food safety challenges towards safe, healthy and nutritious street foods in Bangladesh. *Int J Food Sci* 2014; 2014:9.
6. Bhowmik S. Street vendors in global urban economy. Routledge: Taylor & Francis, New Delhi ; 2010.
7. Van Tonder I, Leus Jan FR, Theron MM. The personal and general hygiene practices of food handlers in the delicatessen sections of retail outlets in South Africa. *J Environ Health* 2007; 70(4): 33-8.
8. Schlundt J, Toyofuku H, Jansen J, Herbert SA. Emerging food-borne zoonoses. *Rev Sci Technol* 2004; 23: 513-5.
9. Rehman MM, Arif MT, Bakar M, Tambi ZB. Food safety knowledge, attitude and hygiene practices among the street food vendors in Northern Kuching City, Sarawak. *Borneo Sci* 2012; 31: 107-16.
10. Lawan UM, Ilyasu Z, Abubakar S, Gajida AU, Abdussalam A. Personal and food hygienic practices of subsistence food vendors operating in Kano metropolis, northwestern Nigeria. *Int J Med Sci Public Health* 2015; 4(2): 214-21.
11. Smith SI, Alao F, Goodluck HT, Fowora M, Bamidele M, Omonigbehin E, et al. Prevalence of Salmonella typhi among food handlers from Bukkas in Nigeria. *Br J Biomed Sci* 2008; 65(3): 158-60.
12. Okojie OH, Wagbatsoma VA, Ighoroge AD. Assessment of food hygiene among food handlers in Nigerian University campus (Benin). *Niger Postgrad Med J* 2005; 12: 93-6.
13. Mensah P, Yeobah-Manu D, Owusu-Darku K, Ablordey A. Street foods in Accra, Ghana: how safe are they? *Bull World Health Organ*

- 2002; 80: 546-54.
14. Gwande HA, Mishra AA, Shukla RN, Jain J. Socio- economic profile of street food vendors and quality evaluation of samosa and panipuri in Allahabad City, (UP) India. *Int J Agri Food Sci Technol* 2013; 4(3): 275-80.
 15. Nayansi, Mishra AA, Shukla RN, Ankita. Analysis of practices of street food vendors and sensory assessment of street foods(fast foods and juices) in Allahabad City, (UP) India. *Int J Sci Res* 2014; 3(8): 132-5.
 16. Thakur CP, Mehra R, Narula C, Mahapatra S, Kalita TJ. Food safety and hygiene practices among street food vendors in Delhi, India. *Int J Curr Res* 2013; 5(11): 3531-4.
 17. Mangbon TA, Chintem WDG. Hygiene and sanitary practices of street food vendors in Southern Kaduna, Nigeria. *Int J Health Med Information* 2014; 3: 49-57.
 18. Sarkodie NA, Bempong EK, Tetteh OA, Saaka AC, Mosses GK. Assessing the level of hygienic practices among street food vendors in Sunyani Township. *Pak J Nutr* 2014; 13(10): 610-5.
 19. Gadaga TH, Ntsike MM, Ntuli V. Socio-economic and hygienic aspects of street vending in Maseru City, Lesotho. *USWA Res J Agric Sci Technol* 2014; 15: 28-39.
- Syma Arshad,
Assistant Professor
Central Park Medical College,
Lahore
- Mohammad Humayun Naru,
Assistant Professor
Institute of Public Health,
Lahore
- Syed Hassan Tahir,
MPH Student
Institute of Public Health,
Lahore
- Laila Afzal
PGR-2 Community Medicine
Sharif Medical & Dental College,
Lahore
- Muhammad Shahid Iqbal
Professor
Sharif Medical & Dental College,
Lahore

Corresponding Author:

The Authors:

Sajjad ul Hasan,
Assistant Professor
Institute of Public Health,
Lahore

Muhammad Shahid Iqbal
Sharif Medical & Dental College,
Lahore