

A study on sanitation, hygiene practices and food safety knowledge among food vendors in different sectors of Chandigarh, India

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Abstract:

The present study were carried out to assess the hygiene practices and food safety among street food vendors in the city of Chandigarh. It includes 100 samples of vendors. Fifty vendors were mobile and other 50 was fixed vendors. A self planned questionnaire was used for data collection for the vendors. The questionnaire included questions about demographic information, hygiene practices and food safety. Thirty eight percent of vendors used stalls, but did not uphold their stalls well. Eighty-three per cent of the vendors had thrown garbage in the open vessel and 14.0% used dustbin for dispose garbage. Personal hygiene was also observed which indicated that the vendors never wear the head covers, handled food with bare hand and they did not wear overcoats/aprons as well. Street food vendors were not aware of hygienic and sanitary practice.

Keywords: Chandigarh area, Food safety, Sanitation, Street food, Vendors

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INTRODUCTION

Lifestyle changes and socio economic factors creates very small space for consumers to look at other alternatives one of which would be to prepare one's own meal (Kok and Balkaran, 2014). Mishandling and disregard of hygienic measures on the part of the food vendors may enable pathogenic bacteria to come into contact with food and in some cases survive and multiply in enough numbers to cause illness in the consumers (Chirag *et al*, 2013). The World Health Assembly (WHA) adopted a resolution in which, the World Health Organization (WHO, 1996) was asked "to give greater emphasis on food safety with the goal of developing suitable, integrated food safety systems for the reduction in health risk along the entire food chain, from main producer to the consumers". By WHO, five keys to safer food are: (i) Keep clean (ii) Separate raw and cooked (iii) Cook thoroughly (iv) Keep food at safe temperatures and (v) Use safe water and raw materials. The word "Sanitation" is derived from the Latin word "*Sanitas*" which means "health". It is the creation and maintenance of hygienic and healthful conditions while processing, preparing and handling food. Sanitation is a science to provide wholesome food handled in hygienic environment by the food handlers to prevent contamination

(Solanki, 2008). Therefore, the present investigations were conducted to assess the water, sanitation and hygiene (wash) practices and food safety knowledge among food vendors.

MATERIALS AND METHODS

Study area: The study was conducted in different sectors of Chandigarh. The data were collected by two methods i.e. Questionnaire method and Observation method. Questionnaire was a set of printed written questions about a choice of answers, devised for the purposes of a survey. Observation showed 93 % male vendors and 7 % female vendors; and 42.0% vendors sold *chaat* / snacks. Likewise, 58.0 % (42 fixed and 16 mobile) vendors sold full meal. The samples were selected by Purposive Random Sampling method. Hundred Street vendors were selected randomly from different sectors. Fifty vendors were those who served food at stall or mobile vending and other 50 were those who served food at *dhaba* or fixed vending. The information was gathered either by oral interview/ written questionnaire. A series of questions had been designed to elicit information, which was filled in by all participants in the Questionnaire.

Data collection: After completing the data collection, the questionnaire of vendors was sorted out and arranged in the series. The data were trans-

ferred in MS Excel sheet. The collected data got analyzed by SPSS and the results were calculated in mean percentage such as distribution of vendors on basis of gender.

RESULTS AND DISCUSSION

Distribution of vendors on gender basis: Table 1 showed that distribution of vendors on gender basis. Hundred samples of vendors were selected, it showed that 93.0% (43 fixed and 50 mobile)

Table 1. Distribution of vendors on gender basis.

| Vendors | Sex | | Total | Percentage (%) |
|---------|-------|---------|-------|----------------|
| | Males | Females | | |
| Fixed | 43 | 7 | 50 | 93.0% |
| Mobile | 50 | 0 | 50 | 7.0% |

Table 2. Category of vendors in different sectors.

| Different Sectors | Fixed | Mobile | Total | Percentage (%) |
|-------------------|-------|--------|-------|----------------|
| Sector-17 | 9 | 10 | 19 | 19.0% |
| Sector-41 | 20 | 24 | 44 | 44.0% |
| Sector -19 | 14 | 8 | 22 | 22.0% |
| Sector-22 | 7 | 5 | 12 | 12.0% |
| Sector-16 | 0 | 3 | 3 | 3.0% |
| TOTAL | 50 | 50 | 100 | 100.0% |

Table 3. Distribution of vendors on the basis of their meals.

| Vendors | Meal | | Total | Percentage (%) |
|---------|---------------|-----------|-------|----------------|
| | Chaat/ Snacks | Full Meal | | |
| Fixed | 8 | 42 | 50 | 42.0% |
| Mobile | 34 | 16 | 50 | 58.0% |
| Total | 42 | 58 | 100 | 100.0% |

Table 4. Distributions of vendors on the basis of overall appearance of stall.

| Appearance | Fixed | Mobile | Total | Percentage (%) |
|--------------------------|-------|--------|-------|----------------|
| Brand new | 9 | 9 | 18 | 18.0% |
| used well maintained | 12 | 6 | 18 | 18.0% |
| Used not well maintained | 17 | 21 | 38 | 38.0% |
| Poor condition | 12 | 14 | 26 | 26.0% |
| Total | 50 | 50 | 100 | 100.0% |

Table 5. Working hours of vendors.

| Hours of Working | Fixed | Mobile | Total | Percentage (%) |
|------------------|-------|--------|-------|----------------|
| 2-4 hours | 10 | 13 | 23 | 23.0% |
| 5-7 hours | 28 | 20 | 48 | 48.0% |
| 8-10 hours | 12 | 17 | 29 | 29.0% |
| Total | 50 | 50 | 100 | 100.0% |

Table 6. Type of employment.

| Own stall or Employee | Fixed | Mobile | Total | Percentage (%) |
|-----------------------|-------|--------|-------|----------------|
| Worker | 4 | 2 | 6 | 6.0% |
| In charge employee | 41 | 48 | 89 | 89.0% |
| Employee | 5 | — | 5 | 5.0% |
| Total | 50 | 50 | 100 | 100.0% |

were male vendors and 7.0% (7 Females) were female vendors, respectively. Rayza *et al.*, 2016) showed that among 43 street food vendors interviewed, 58% were male, 42% were aged between 40 and 59 years and 49% had completed only elementary school in a study during the chain of street food production in Florianopolis, Brazil.

Category of vendors in different sectors: Table 2 category of vendors in different sectors showed the fixed and mobile vendors from different sec-

Table 7. Distributions on the basis of hygienic.

| Hygiene | Fixed | Mobile | Total | Percentage (%) |
|-------------------------------|-------|--------|-------|----------------|
| Increase Hygiene Quality | 2 | 3 | 5 | 5.1% |
| Wearing Apron And Hand Gloves | 4 | 2 | 6 | 4.1% |
| Maintain Hygiene | 1 | 0 | 1 | 1.0% |
| Don't Change | 43 | 45 | 88 | 88.0% |
| Total | 50 | 50 | 100 | 100.0% |

Table 8. No. of employees helped in food preparation.

| Vendors | Preparation | | Total | Percentage (%) |
|---------|-------------|----|-------|----------------|
| | Yes | No | | |
| Fixed | 17 | 33 | 50 | 20.0% |
| Mobile | 3 | 47 | 50 | 80.0% |
| Total | 20 | 80 | 100 | 100.0% |

Table 9. If yes, employees helped in food preparation.

| Vendors | If yes | | Total | Percentage (%) |
|---------|---------------|--------|-------|----------------|
| | Family member | Others | | |
| Fixed | 16 | 2 | 18 | 18.0% |
| Mobile | 2 | 0 | 2 | 2.0% |
| Total | 18 | 2 | 20 | 20.0% |

Table 10. Meals prepared by vendors.

| Meals | Fixed | Mobile | Total | Percentage (%) |
|-------------|-------|--------|-------|----------------|
| One meal | 28 | 45 | 73 | 73.0% |
| Two meals | 22 | 5 | 27 | 27.0% |
| Three meals | 0 | 0 | — | 0.0% |
| Total | 50 | 50 | 100 | 100.0% |

Table 11. Distribution on the basis of wash food preparation surface.

| Wash food preparation | Fixed | Mobile | Total | Percentage |
|-----------------------|-------|--------|-------|------------|
| Everyday | 45 | 30 | 75 | 75.00% |
| After every meal | 3 | 2 | 5 | 5.00% |
| Once a week | 0 | 20 | 20 | 20.00% |
| Total | 50 | 50 | 100 | 100.0% |

Table 12. Distribution on the basis of clean surrounding.

| Vendor | Clean surrounding | | Total | Percentage (%) |
|--------|-------------------|----|-------|----------------|
| | Yes | No | | |
| Fixed | 35 | 15 | 50 | 64.0% |
| Mobile | 29 | 21 | 50 | 36.0% |
| Total | 64 | 36 | 100 | 100.0% |

Table 13. Distribution on the basis of wash food before cooking.

| Vendor | Wash food | | Total | Percentage (%) |
|--------|-----------|----|-------|----------------|
| | Yes | No | | |
| Fixed | 48 | 2 | 50 | 90.0% |
| Mobile | 42 | 8 | 50 | 10.0% |
| Total | 90 | 10 | 100 | 100.0% |

Table 14. Distribution on the basis of site where food prepared.

| Food prepared | Fixed | Mobile | Total | Percentage (%) |
|-------------------------------|-------|--------|-------|----------------|
| At home | 36 | 22 | 58 | 58.0% |
| At site | 14 | 25 | 38 | 38.0% |
| Obtain from other institution | 0 | 4 | 4 | 4.0% |
| Total | 50 | 50 | 100 | 100.0% |

tors of Chandigarh. Nineteen percent (9 fixed and 10 mobile) vendors were from sectors 17, 44.0% vendors (20 fixed and 24 mobile) from sector 41, 22.0% vendors (14 fixed and 8 mobile) taken from sector 19, 12.0% vendors (7 fixed and 5 mobile) from sector 22 and 3.0% (3 mobile) mobile vendors were taken from sector -16, respectively.

Distribution of vendors on the basis of their meals: Table 3 revealed that 42.0% (8 fixed and 34 mobile) vendors sold *chaat* /snacks. Likewise, 58% (42 fixed and 16 mobile) vendors sold full meal, respectively.

Distribution of vendors on the basis of overall appearance of stall: Table 4 revealed that overall appearance of stall 38.0 % (17 fixed and 21 mobile) vendors used stall but do not well maintain. Likewise 18.0% (9 fixed and 9 mobile) vendors stall appears like brand new, 18.0% (12 fixed and 6 mobile) vendors used their stall but well maintained and 26% (12 fixed and 14 mobile) vendors stall in poor condition

Working hours of vendors: Table 5 showed that 29.0% (12 fixed and 17 mobile) vendors were working for 8-10 hours. Likewise 23.0% (10 fixed and 13 mobile) vendors were working for 2-4 hours and 48% (28 fixed and 20 mobile) vendors were working for 5- 7 hours. (Joglekar and Bho, 2013) observed that working hours of the vendors that they spent were more than 5 hours in vending.

Type of employment: Table 6 revealed that only 6.0% (4 fixed and 2 mobile) vendors were work as a worker in stall, 89.0% (41 fixed and 48 mobile) vendors were in-charge of their stall and only 5.0% (5 fixed) vendors work as an employee. Jose S. Hilario(2015) noticed that 90% of street food vendors had concentrated peak hour of their business towards lunchtime and snacks during an evaluation of the hygiene and sanitation practices among street food vendors along Far Eastern University (FEU), Manila at Philippines.

Table 7 reveals that distribution on the basis of hygiene 88% don't ever participated in any train-

ing programme, 5.1% increase hygiene quality, 4.1% wearing apron and hand gloves and only 1% maintain hygiene.

Distribution of vendors on the basis of preparation process

Employees helping in food preparation: Table 8 revealed twenty percent (17 fixed and 3 mobile) vendors employed workers for help in preparation processes, 80% (33 fixed and 47 mobile) vendors were those who employed no worker for help in preparation. Street food operations involved the work of entire families in the procurement of raw materials, preparation and cooking of meals and their sale. Table 7 showed that 18% (16 fixed and 2 mobile) vendors take help from their family member and 2.0% (2 fixed) were those who appoint other than family member. Rayza *et al.*, (2016) showed that 58% of vendors had 3 family members and more than 30% had three to five family members in a study during the chain of street food production in Florianopolis, Brazil

Meals prepared by vendors: Table 10 showed that vendors most commonly prepared two meals in a day. Seventy three percent (28 fixed and 45 mobile) vendors prepared one meal per day. Likewise, 27.0% (22 fixed and 5 mobile) vendors prepared two meals a day.

Table 11 suggest that out of the total sample 100, majority of them (75%) wash their food preparation surface every day, whereas 20.0% were wash once a week, only 5.0% wash their food preparation surface every day.

According to table 12 distribution on the basis of clean surrounding. Out of 100.0% of the vendors 64% clean their surroundings and 36.0% of them are not clean their surroundings. Food Sanitation Unit (2006) found 13% of vendors have unclean food stall's surface.

Table 13 reveals that 90.0% of vendors wash their food properly before cooking and 10.0% out of total did not wash food properly.

Findings show that vendors prepared the foods either at home or at the stalls, which were located by the roadsides. Mostly fixed vendors are prepare food in the stall(58.0%) vendors prepared food from home to site and 38.0% are prepared food at the site mostly the mobile vendors and only 4.0% vendors purchase food from other institution .

The present study observed that hygienic practices and food safety were minimal in food street vendors in different sectors of Chandigarh, India. In view of the knowledge of roadside vendors on hygienic practices in food preparation, handling of utensils, place for food preparation and personal hygiene and methods of storing cooked food, it was indicated that vendors had a minimal knowledge of hygienic and sanitary practices. All the vendors, helpers/r food handlers should undergo a basic training in food hygiene. They must be aware. They also need health education to im-

prove the knowledge of food vendors on hygiene practices and food safety.

Conclusion

In a study on water, sanitation and hygiene (wash) practices and food safety knowledge among food vendors in different sectors of Chandigarh area in India, it was concluded that 93.0% (43 fixed and 50 mobile) were male vendors and 7.0% (7 Females) were female vendors. Nineteen percent vendors were from sectors 17, 44.0% vendors from sector 41, 22.0% vendors taken from sector 19, 12.0% vendors from sector 22 and 3.0% mobile vendors were taken from sector 16. 42.0% (8 fixed and 34 mobile) vendors sold *chaat* /snacks. Likewise, 58.0 % (42 fixed and 16 mobile) vendors sold full meal. Overall appearance of stall 38.0 % (17 fixed and 21 mobile) vendors used stall, but do not well maintain. Likewise, 18.0% (9 fixed and 9 mobile) vendors stall appears like brand new, 18.0% (12 fixed and 6 mobile) vendors used their stall, but well maintained and 26% (12 fixed and 14 mobile) vendors stall in poor condition. 6.0% vendors worked as workers in stall, 89.0% vendors were in-charge of their stall and only 5.0% (5 fixed) vendors worked as an employee. Twenty percent (17 fixed and 3 mobile) vendors employed as workers helped in preparation process, 80% (33 fixed and 47 mobile) vendors were those who employed no worker helped in preparation process. This research recommends that every fixed and mobile vendor food handler should undergo a basic safe street food training

programmes to have knowledge of hygiene practices.

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