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## RESEARCH ARTICLE

### STUDY ON FOOD SAFETY KNOWLEDGE, ATTITUDE AND PRACTICES FOLLOWED BY STREET FOOD VENDORS IN CHENNAI, INDIA

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#### ABSTRACT

The study was conducted with the aim of evaluating the Food Safety Knowledge, Attitude and Practices followed by the Street Food Vendors in Chennai. A total of 138 street food vendors were surveyed over a period of one month by convenient sampling from southern parts of Chennai. A structured questionnaire consisting of 15 questions was used to record the responses of participants. Quantitative and qualitative methodology was adopted to collect the responses from the vendors. This study revealed that a majority of the vendors, (76%) of them were not registered or licensed as food business operators. In addition to this, 82.6% of the respondents possessed minimum knowledge on food safety and 39.9 % are aware of the laws and regulations that govern their business. The practices followed which were categorized as general hygiene, personal hygiene, food handling, packaging practices and cooking practices varied among the vendors. The vendors showed a positive attitude towards training and 76.1% were willing to attend the training underscoring the need for such training program to enhance compliance to standards.

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## INTRODUCTION

In India, there has been a considerable increase in the sale and consumption of foods on the roadside. Street food vending has become a common sight in commercial areas. Dependency on street foods is steadily increasing especially in the urban areas of cities and small towns. These foods are appreciated for the taste and flavour that they offer at affordable price to the general population, particularly to the migrant labourers. Street food vendors are often people from the low economic strata, without formal education and hence, may lack hygiene practices. Despite this, the food safety aspect has not been given adequate attention and remains a huge concern among all stake holders. Food and Agriculture Organisation (FAO) of United Nations defines Street foods as "are ready to eat foods and beverages, prepared and / or sold by vendors and hawkers, especially in streets and similar public places". According to the 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 maybe 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. A total of 2.5 billion people all over the world eat street foods everyday (FAO, 2007). Street vended foods provide a source of inexpensive and convenient food for urban and rural people. It has become a source of attractive and varied food for the working professionals and the economically advantaged (Codex, 1999). According to the Tamil Nadu Migration Survey (2015), conducted by the Centre for Development Studies, Thiruvananthapuram, Loyola Institute of Social Science Training and Research, Chennai and Centre for Diaspora Studies, MS University, Tirunelveli, (2016) Tamil Nadu is the second largest state economy in India with Rs.4789 billion (US\$71 billion) in Gross Domestic Product. The state has the highest number (10.56 per cent) of business enterprises and stands second in total employment (9.97 per cent) in India, with a population share of about 6 per cent of the nation's total. It was also ranked the third most developed state in India based on a "Multidimensional Development Index" in a 2013 report published by a panel headed by Reserve Bank of India Governor Mr. Raghuram Rajan. Chennai city with its area of 175sq. km. has a population of 4646732 (highest in the state), expressing the highest degree of urbanization and density mainly due to immigration and sporadic development of industries on the outskirts (The Census of India, 2011).

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Food handling personnel play an 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 (WHO 1989). Consumer health and awareness in food safety have now become a point of paramount significance. Food Safety and Standards Authority of India (FSSAI) strongly believes that assurance of safety cannot be based on end product testing. It is a holistic system which primarily includes the practices and procedures to be followed by food business operators which include Good Manufacturing Practices, Good Handling Practices, etc. However, the lack of knowledge and awareness of food safety is evident in the unauthorised sector. To bridge this gap, both education and training are needed. While education aims at influencing the way of life and empowering people to make a choice, training is a process by which one is enabled to acquire a skill. Chander Pal Thakur *et al.* (2013) reported on food safety and hygiene practises in Delhi, which showed that as low as only 3% of the respondents used hand gloves and 2% wash their hands before and after handling raw or cooked foods. Also flies were observed in 45% of the vending sites which poses a threat to public health. In view of all these aspects, this study was formulated with the main objective of understanding the food safety and hygiene practices followed by street food vendors in southern part of Chennai and also to gain insight on the hygiene status of these vendors.

## MATERIALS AND METHODS

This was a cross sectional study conducted in southern part of Chennai (Taramani and Thiruvanmiyur). The locality in and around this area is densely populated by the Information Technology sector. Even though there are many food courts and established food vendors in this area, the street food vendors are the favourites among the group. A sample of 138 street food vendors was surveyed over a period of one month by convenient sampling from the study area. A pre- tested questionnaire consisting of 15 questions was used to record the responses of participants. The data collection focused primarily on knowledge of food safety and personal hygiene, food safety practice, type of food sold, information about the establishment and knowledge of laws and orders on food safety. Mixed approach i.e. quantitative and qualitative methodology was adopted to collect the data. Observational approach was used to assess the hygiene practices of participants and hygienic status of the vendor's site and in the assessment of food safety practices (food preparation, cooking and service) during their trade. The data collected was checked for its completeness, correctness and consistency, recorded and analysed using Microsoft Excel (Version 2003).

## RESULTS

Among the total 138 food vendors surveyed; most vendors sold breakfast, lunch, snacks and "chat items" while the remaining were involved in selling hot beverages like tea, coffee, milk; fresh juice (lemon, melon, sweet lime and sugarcane); traditional fermented beverages (*ragi koozh*, buttermilk) and snacks (Table 1). While 45.7 % sold single food items, most vendors sold multiple foods. A majority of the vendors were male (68.1%) and had either primary or no schooling (Table 2). Almost one third (32.6%) of the vendors

have been in this business for over 10 years. The annual turnover of business was less than Rs.12 lakhs for all the respondents, as seen from Table 3. As per FSS Regulations 2011 for licensing and registration of Food Business Operators, it is said that vendors whose annual turnover is above 12 Lakhs should get an FSSAI License to run their business. In general, these vendors exhibited average understanding on food safety knowledge and practices required. The gender and level of education did not have a significant impact on the food safety knowledge possessed by the vendors. The low level of education is likely to be the cause for poor handling of food and sanitation practices and presents potential risks to the consumer. As seen from Table 4, although a majority of the vendors, 76% of them were not registered or licensed as food business operators. In addition to this 82.6% of the respondents' possessed minimum knowledge on food safety and 39.9 % are aware of the Laws and Regulations that govern their business. The prime reason for this is the location of their food business. The locality of Taramani and Thiruvanmiyur being the industrial buzz, the targeted population insists on general food safety. To sustain in their business these food vendors try to follow the minimum food safety standards to attract consumers. However, only 28.3% knew that licensing / registration is mandatory to run their business.

**Table 1. Types of foods sold**

Type of Food	Percentage
Chat Items	8.0 (11)
Juices and Beverages	45.7(63)
Breakfast and Lunch	24.6(34)
Snacks	21.7(30)

**Table 2. Educational status and gender of the street vendors**

Educational Status	Percentage
No Schooling	21.0 (29)
Primary Level Schooling	8.7 (12)
Higher Secondary Level Schooling	22.5 (31)
Secondary Level Schooling	37.7 (52)
Under Graduate/ Post Graduate	10.1 (14)

**Table 3. Years of operation and business turnover of the vendors**

Years of Operation	Business Turnover per annum < Rs.12 Lakh (Percentage)
< 1 year	16.7
1 -5 Years	27.5
6 -10 Years	23.2
Above 10 Years	32.6

**Table 4. Knowledge on Food Safety, General Hygiene Practices and Personal Hygiene practices followed**

Subject	Percentage
<b>Knowledge on Food Safety</b>	
Laws/Regulations	39.9 (55)
Food Safety	82.6(114)
Registration & Licensing	28.3(39)
<b>General Hygiene Practices</b>	
Wearing hand gloves and head cover	79.0 (109)
Hygiene and sanitation of surrounding and vessels	76.1(105)
Maintain Personal Hygiene	59.4(82)
Maintain and covering Dustbins	16.8(19)
<b>Personal Hygiene Practices</b>	
Maintain clean and short nails	79.0(109)
Washing hands before and after handling food	23.9(33)
Wearing clean clothes	82.6(114)

Table 5. Food Handling Practices

Subject	Percentage Yes	Percentage No	Percentage N/A
<b>Food Handling Practices</b>			
Usage of separate ladles for different ladles/vessels for different foods	52.9(73)	4.3 (6)	42.8(59)
Food Sold is kept covered	68.4(80)	26.8(37)	15.2(21)
Clean water for cooking and cleaning vessels	86.5(115)	13.0(18)	3.6(5)
Separating Vegetarian and Non Vegetarian foods during storage	60.0(12)	5.8(8)	85.5(118)
<b>Food Packaging Practices</b>			
Practice of opening covers through blowing	0	43.5(60)	56.5(78)
Usage of food grade plastics	47.2 (19)	12.3(12.3)	73.9(102)

Seventy nine percent of the vendors were seen wearing hand gloves and head cover while serving food, 76.1% ensured hygiene and sanitation of the surrounding, 59.4% maintain their person hygiene and look presentable. In the context of food waste disposal, only 16.8% of the vendors' site had covered dustbins for waste collection. The practices that these vendors followed are categorised as General Hygiene, Personal Hygiene, Food Handling, Packaging practices and cooking practices. As in the case of personal hygiene it was observed that 82% of the respondents were wearing clean clothes, 79% maintained clean and short nails, while only 23.9% of the vendors were seen washing hands before and after handling foods. The practice of not washing their hands before and after handling foods may be a main concern due to a high risk for cross contamination. As seen from table 5; it was evident that food handling practices were followed by many, like use of separate ladles for different foods (92.4%); clean water for cooking and washing vessels (86.5%); keeping foods covered (68.4%) and separate storage of vegetarian and non vegetarian foods (60%). Despite the vendors claim of using clean water, the potability of the water used for cooking and cleaning cannot be guaranteed. Packaging of foods was also found to be safe in 56.5% of the vending sites (Table 5). All the vendors were aware that they should not blow open the plastic covers while packing foods and usage of food grade plastics was only evident in 47.2% of the outlets. The foods were also being packed in newspapers with a thin layer of low grade plastic liners which are not safe. Most of the time it was observed that the food is in direct contact with the printing inks in the newspaper which poses a risk to food safety. With respect to cooking practices, 54.4% sold the goods within 4 hours of preparation and 15.9% of them hold it for a longer time. Among the vendors who sold fried foods 21% reuse the oil used for frying for more than 4 times or till the oil gets completely used up. This practice makes the oil dark in colour and affects the quality of the food and also poses a health risk. All the respondents showed a positive attitude towards training. A large majority (92.8%) were aware that training is required and 76.1% were willing to attend the training if offered at free or at a subsidised cost. In general, it was also observed that the vendors who were talking while serving foods add to the risk of introducing harmful micro-organisms that can trigger food-borne infections especially if the vendor is already a carrier of such organisms like tuberculosis bacteria. Money exchanges through bare hands may serve as carriers of harmful organisms. The vendors were seen to be handling money while serving food and this may introduce contaminants through hand contact with the food. Foods stored on trays were exposed to flies and other contaminants and this could be a serious hazard. Overall, this study has revealed that the street foods have become popular amongst the urban crowd in Chennai because of the easy access and their affordability when compared to hotels and restaurants. These street vended foods represent a mixed cuisine and thus, attract people of all ages and strata.

The customers of street vended food in this area surveyed include people from IT sector, college students, school children and people from low income strata. This indicates that a majority of the population of the study area depend on these street vended foods.

### Conclusion

The present study shows that street vendors can play a very important role in the urban informal economy by generating employment and by providing food to both the urban poor as well as the rich. Vendors are aware of basic food safety and hygienic practices that are to be followed to ensure food safety. While some were able to comply with the standards many could not. The challenges that are to be addressed to ensure food safety need to be underscored. Priority is to enhance the awareness on food safety among all food handlers. They require a structured food safety training programme and guidance on the food handling practices. This also calls for support from the government in the form of basic infrastructure and services such as potable water supplies and waste disposal measures. Since this is an unorganized sector, there is felt need for Government's initiatives for its development. An effective system of regular health examinations of vendors and collection of food sample they are serving to the customers must also be employed. In order to maintain the benefits of street-vended food while assuring the safety of the food sold, authorities must implement policies aimed at assisting, controlling and maintaining the street food sector. Documentation and licensing of food vendors would enable authorities to identify persons employed in such enterprises and the types of food sold. The main emphasis should be on providing periodic training with respect to laws and practices on food safety standards. As these vendors lack financial assistance, the support from government and Corporate Sector through their social responsibility is required for better compliance by these vendors to enhance the quality of the foods.

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