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RESEARCH ARTICLE

FOOD SAFETY & HYGIENE PRACTICES AMONG URBAN AND RURAL STREET FOOD VENDORS: A COMPARATIVE STUDY IN AND AROUND DELHI, INDIA

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ABSTRACT

Street foods are ready-to-eat foods and beverages prepared and/or sold by vendors and hawkers especially in streets and other similar public places. Street food vendors may be stationary, semi-mobile or mobile. This food sector plays a significant role in providing livelihood to millions of street food vendors, meeting the nutritional requirement of a large section of the society; However there have been concerns associated with the safety of street food primarily due to poor hygiene practices adopted by the street food vendors, lack of potable water, waste disposal facilities and the location of their carts. In India, petty manufacturers including street food vendors have to be registered under the Food Safety and Standards (Licensing and Registration of Food Businesses) Regulation 2011 and to comply with the sanitary and hygiene requirements that have both controllable and non-controllable requirements. Most of the studies on street food vendors have focused on urban setting, the status in rural areas not given much attention. Thus, in a marked departure from conventional studies, present investigation compares the food safety and hygiene practices amongst urban as well as rural vendors. Based on a survey of 300 vendors in urban Delhi and rural areas of Haryana and Uttar Pradesh (around Delhi) it was observed that in both the milieus street food vendors do not vary too much in their personal hygiene practices. But do so in regulatory compliances, garbage collection, garbage disposal practices, and other environmental factors. A triangular collaborative approach focusing on different stakeholders can improve the safety and quality of street-vended food.

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INTRODUCTION

Street food definition as agreed at an FAO Regional Workshop on Street Foods in Asia, held in Indonesia in 1986 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 places. Street food vendors can be mobile, semi-mobile or stationary. Street foods are recognized by academics, FAO and World Health Organization (WHO) inter-alia, as an essential instrument to achieve food security in urban areas because of their easy availability, accessibility and economic nature (http://www.fao.org/fsnforum/ activities/ discussions/ Street-food-UPA). In many low and middle-income countries, a large segment of the urban population relies on food provided by street vendors (McKay and Singh, 2016). They are also appreciated for their unique flavours, convenience and the role they play in the cultural and social heritage of societies (Ekanem, 1998 and FAO, 1997). The sale of street foods provides a source of livelihood to millions of individuals with limited access to financial sources as the overheads for starting street food vending are low, and traditional skills are generally adequate for this profession. The National Policy for Urban Street Vendors/Hawkers stated that street vendors constitute approximately 2% of the population of a metropolis (Bhowmik, 2005). Other estimates put the number of street food vendors in India to be over 3 million (Fellows and Hilmi, 2012) and some even peg them at 5 million (Walvekar, 2017). It is evident that street food vendors play an important role in not only generating self-employment but also meeting the nutritional requirement of many low-income people. However, due to informal nature of the enterprise, the activities of the vendors are difficult to regulate, and this leads to practices that pose a risk to human health (Alimi, 2016). Here, the primary concern is of food safety, and other concerns relate to sanitation problems, traffic congestion, illegal occupation of public/private spaces and various social issues (FAO, 2017). Food safety of street food is a primary concern as these are prepared and sold under unhygienic conditions, with limited access to safe water, sanitary services, or garbage disposal facilities (Singh, Dudeja, *et al*. 2016). One of the leading causes of food borne diseases (FBD) is lack of adequate food

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hygiene and according to WHO FBD Burden Epidemiological Reference Group (FERG), 1 in 10 people in the world fall ill every year due to eating contaminated food (WHO, 2016). In India, Food Safety and Standards Authority of India (FSSAI) established under the Food Safety and Standards Act, 2006 (FSSA, 2006) is mandated with laying down science-based standards for articles of food and to regulate their manufacture, storage, distribution, sale and import, to ensure availability of safe and wholesome food for human consumption and for matters connected therewith or incidental thereto. The Food Safety and Standards (Licensing and Registration of Food Businesses) Regulation 2011 hereinafter referred to as Regulation is notified under the FSSA, 2006 and lays down the criteria for licensing and registration of the food business operators (FBOs) including the sanitary and hygiene practices to be followed by them as licensing and registration requirements.

Meeting regulatory requirements involve multiple stakeholders with different responsibilities (Aluko, *et al*. 2014 and Apaassongo, *et al*. 2016). It is easy to address some of the requirements relating to hygienic practices and thus, there has been a lot of emphasis on training, capacity building and awareness generation of the street food vendors with a focus on improving their hygienic practices (Choudhury, *et al*. 2011). However, most of the street food vending studies focus on the street food vendors in the urban areas (Chakravarty, et al. 2017, Etzold 2008, Kharel, Palni *et al.,* 2016, and Martínez, et al. 2017). There has been limited work on the street food vendors in rural areas and their comparison with urban street food vendors is highly scanty. A survey was conducted of 200 urban street food vendors in Delhi, and 100 street food vendors from the rural areas of states of Haryana and Uttar Pradesh to address this gap.

Food safety regulatory framework governing street food vending in India

As per the FSS Act, 2006 food safety means assurance that food is acceptable for human consumption according to its intended use. Food Safety Management System (FSMS) means the adoption of Good Manufacturing Practices (GMP), Good Hygienic Practices (GHP), Hazard Analysis and Critical Control Points (HACCP) and as such other practices that may be defined by the regulation, for the food business. Street Food Vendors (SFVs) are not explicitly defined either under the Act or the Regulation but the Act defines the FBOs in relation to food business as a person by whom the business is carried on or owned and is responsible for ensuring compliance of the Act, rules and regulations made there under.

Though not specifically defined, the SFVs are broadly covered under the "petty manufacturers" as defined in the regulation. Petty food manufacturer *inter-alia* includes any food manufacturer, who (a) manufactures or sells any article of food himself or a petty retailer, hawker, itinerant vendor or temporary stall holder; or distributes foods including in any religious or social gathering except a caterer, etc. Under this Regulation, the petty manufacturers are to be registered and have to comply with basic hygiene and safety requirements provided in Schedule 4 Part I, and Part 1A is specifically meant for SFVs and units other than manufacturing/processing. It lays down the sanitary and hygienic requirements to be followed by the SFVs to ensure the safety of street vended food. These sanitary and hygiene conditions include adherence to various requirements, some of which are under the control of SFVs and can be called as controllable such as the type of vending cart, use of cooking utensils and crockery, covering articles of food meant for sale, provision of covered rubbish bin, personal hygiene of the street food vendor etc. On the other hand, certain requirements are not under the control of SFVs like a location for vending, air pollution at that site, availability of potable water and solid waste disposable facilities, etc. can be termed as non-controllable. It is important that these basic hygiene and safety requirements are met because various studies have identified the sources of food safety issues involved in street foods to microorganisms belonging to the genus Bacillus, Staphylococcus, Clostridium, Vibrio, Campylobacter, Listeria, Salmonella (Rane, 2011). However, epidemiologic information about the diseases caused by the street foods with adverse health impacts is not available in a structered manner. Few studies have reported the linkages between street food consumption and disease outbreak (Lianghui, *et al*. 1993). The Integrated Disease Surveillance Programme (IDSP) launched in 2004 by the National Centre for Disease Control (NCDC), India collects data on diseases outbreaks for the country as a whole. Aggregate analysis of data from 2011-2016 shows food borne diseases together with acute diarrheal diseases constitute nearly half of outbreaks reported under IDSP from 2011-2016 (http://www.ncdc.gov.in/writereaddata/linkimages/cdalert03175347761127.pdf). However, no separate data on the food borne disease outbreak is being captured that could be traced to consumption of street foods.

Also, to the registration required under the FSS Act for food safety regulatory compliance, the street vendors are also required to take license from the municipal authorities for vending on streets. For example, in Delhi under the Delhi Municipal Corporation Act, 1957 under bye- laws relating to streets, the permission, regulation or prohibition of use or occupation of any street or place by itinerant vendors or hawkers or by any person for the sale of articles or the exercise of any calling or the setting up of any booth or stall and the fees chargeable for such occupation is to be paid to the municipality. The Street Vendors (protection of livelihood and Regulation of street vending) Act 2014 aims to protect the livelihood rights of street vendors as well as regulate street vending through demarcation of vending zones, conditions for and restrictions on street vending. Any person intending to undertake street vending needs to register with the Town Vending Committee (TVC) and the TVC comprises of the municipal commissioner, representatives of street vendors, local authority, planning authority, local police, resident welfare association and other traders associations.

MATERIALS AND METHODS

This was a cross-sectional study covering urban SFVs in the city of Delhi and rural SFVs in the states of Haryana and Uttar Pradesh (U.P.). In the field survey, a sample of 200 urban SFVs and 100 rural SFVs was taken. For the study, only street food vendors serving cooked food were considered and vendors selling fruit juices, ice-creams, water, etc. were excluded from the study. Sample size has been decided based on the availability of different food items in different locations, the location of street-vending and market size. The questionnaire for undertaking the field survey was finalized after pre-testing of the questionnaire in February 2015 with 30 SFVs. The villages covered in the survey were from the

Ghaziabad and Gautam Budh Nagar Districts of UP and Sonipat, Gurugram and Jhajjar districts of Haryana.

The villages covered were:

Kherigaon, Bhudhana, Tigaon, Faridpur, Bhatola, Karhera, Banthla, Jwali, TillaKothi, Parsanda, Harthala, Allipur, Ghamroj, Bhandosi, Dhumila, Dharampur, Bajheda, Baroli, Nayagaon, Beri, Koundli, Sirsa, Jati, etc. For the urban street food vendors, the selection of survey locations was based on the geographical spread of the city of Delhi. All zones, i.e., north/south/east/west and central were included in the survey. The locations identified for survey in Delhi (urban area) covering all the regions of Delhi included locations like: Sarojini Nagar, Nehru Place, Kalkaji, Ber Sarai, Kalu Sarai, Karkuma Duma, Kamala Nagar, Pahar Ganj including railway station, Chandni Chowk, Patel Nagar, Rohini, etc. For urban street food vendors, commercial places both for shopping and office area were included in the survey so that both residential and office going customers are included. The survey was undertaken in March 2015 to May 2015. The street food vendors included in the survey were mobile, semi-mobile vendors selling cooked food and the questionnaire covering (i) information of the owner including socio-economic status, technical knowledge, and skills; (ii) existing facilities provided to the street food vendors at the vending site and information on the food cart; (iii) access of street food vendors to basic infrastructure facilities; (iv) buying and storage of raw materials ; (v) cooking and serving practices; (vi) assessment of training needs; and (vii) assessment of other appropriate food safety and hygiene needs was administered for collection of data. The exhaustive questionnaire covering 125 questions was accompanied by an observation list of 17 points. The observations on the sanitary and hygiene conditions of the location of the cart, vending practices and the personal hygiene of the street food vendor were recorded without the knowledge of the street food vendor. The data were analyzed using SPSS version 17.0.

RESULTS AND DISCUSSION

Findings from survey

The results reported in this section are from the survey and are primarily covering the aspects related to socio-demographic profile, food safety, hygiene and compliance with food safety regulatory requirements. There was diversity in the type of food being sold including their combinations.36.5% urban SFVs and 28% rural were selling full meals consisting of rice, chapatti/naan, lentils, vegetable curry etc. On the other hand, a range of different food items like samosas, bread pakora, potato chaat, potato tikki, kachori-subzi, poori-vegetable curry, moong pakori, mirch pakori, chole/Kulche, chole bhature, Chinese (noodles/momos) were being sold. Only 4% of the urban SFVs and 5% of rural SFVs were selling meat/fish (non-vegetarian food). There were few vendors selling sweets like jalebi, moong ladoo, besan ladoo, etc.

Socio-demographic profile of SFVs

Out of the 200 urban street food vendors interviewed, most of the street food vendors (82.5%) were migrants from rural areas of other states in search of livelihood. In case of rural street food vendors, 62% were from the rural areas of UP, 8% were from Haryana and remaining from Bihar, M.P., Rajasthan, Jharkhand, and Punjab. Only 6.5% of the urban street food vendors were females, and this number was abysmally low in the rural areas (1%). Maximum vendors (42%) in the urban area were in the age group of 31-45 years followed by 34% in the age group of 18-30 years. While in the rural area maximum vendors (48%) were in the age group of 18-30 years followed by 38% in the age group of 31-45 years. So far as the educational qualifications were concerned, 25% of the urban street food vendors and 22% of the rural street food vendors were illiterate. The educational levels of the vendors in the urban, as well as the rural area, were almost equal. Similarly, the average family size 1-5 was same in both urban as well rural vendors. The similarity in the education level and the family size may be on account of the fact that most of the vendors in the urban area were also migrants from rural areas (Table 1).

Type of vending & ownership of the cart

Most of the vendors surveyed in the rural as well as the urban areas were semi-stationary, implying that they were vending from one designated place to which they were bringing their cart every day. Mobile vendors were slightly higher in the rural area at 10% as compared to 8% in urban areas. So far as ownership is considered, most of the vendors in urban (96%), as well as rural areas (99%), owned their cart and business (Table 2). All the urban street food vendors were vending throughout the year, while 2% of the rural vendors were not vending during the months they were involved in agricultural activities. 99.5% of the urban vendors and 98% of the rural vendors were selling the same food throughout the year.

Status of Regulatory compliance/surveillance of street food vendors: Only 12% of the urban street food vendors had license/registration from the municipal corporation or food safety department whereas none of the rural vendors had a license or registration. Overall, both in rural as well as the urban area only 8% of the street food vendors had a license/registration. Of the urban street food vendors that had license/registration, 83.3% were issued by the municipal authorities and only 16.7 % by the food safety department. Only 5% of the rural street food vendors reported regular inspection/monitoring by the various authorities whereas 52.5% of the urban street food vendors were inspected. Of the vendors inspected in both urban as well as rural areas, around 79% were inspected by municipal authorities followed by food safety officers (15.5%), police (4.5%) and the health department for malaria (0.9%).87% of the urban vendors reported being fined for unauthorized use of sidewalk for vending, dumping of garbage, selling unsafe/unclean food etc., while only 3% of rural vendors said being fined by the various regulatory authorities (Table 3).

Improvement in the design of the cart: 29% of the urban street food vendors and 24% rural street food vendors had received suggestions from their customers on maintaining the cleanliness of the cart and surrounding areas whereas 34.5% and 69% customers had no suggestions to make in the urban and the rural areas respectively. 96% of the urban street food vendors and 93% rural street food vendors were aware of the importance of keeping their vending cart/place free from flies/rats/other animals. 75.5% of the urban street food vendors and 56% of the rural street food vendors showed interest in improving the design of the street food cart (Table 4). However, only 55% urban street vendors and 46% rural street food vendors were interested in availing credit/loans for improving/buying a new cart.

Table 1. Socio-demographic profile of SFVs

Study Parameters	Variables	Urban Area (%)	Rural Area(%)	Total (%)
	Female	6.5	1	4.7
Gender	Male	93.5	99	95.3
	<18	0.5	1	0.7
	18-30	34	48	38.7
Age-Group	31-45	42	38	40.7
(in years)	46-60	20.5	10	17.0
	61-80	3	3	3
Level of education	Illiterate	25	22	24
	Primary School (1-5)	28.5	31	27.4
	Middle School (6-8)	19	23	22.3
	High School (9-12)	26.5	23	25.3
	>12	1	1	1
Size of the family	1-5	62	62	62
(Number of members	6-10	34	37	35
in family)	11-15	3	1	2.3
	>15	1		0.7

Table 2. Type of vending & ownership of the cart

Study Parameters	Variables	Urban Area (%)	Rural Area (%)	Total (%)
Type of vendors	Mobile	8	10	8.7
	Semi-stationary	92	90	91.3
Ownership of the business	Self-owned	96	99	97
	On rental	4	1	3

Table 3. Status of Regulatory compliance/surveillance of street food vendors

Study Parameters	Variables	Urban Area (%)	Rural Area (%)	Total (%)
Regulatory compliance	Having License/registration	12	Nil	8
Issuing Authority of	Municipal Authority	83.3	Nil	83.3
Licenses/Registration	Food Safety Department	16.7	Nil	16.7
Surveillance	Conduct of regular monitoring/inspection of the food stalls by the regulatory authorities	52.5	5	36.7
	Municipal Authorities	81.8	20	79.1
Surveillance conducting	Food Safety Department	14.3	40	15.5
Authority	Police	2.9	40	4.5
	Health Department (Malaria)	1.0	Nil	0.9
Penalty	Fines by Government authorities	87	3	59

Table 4. Improvement in the design of the cart

Urban		Rural		Total	
N	%	N	%	N	%
200	100.0	100	100.0	300	100.0
151	75.5	56	56.0	207	69.0
49	24.5	44	44.0	93	31.0

Availability of water and waste disposal practices

Most of the urban street food vendors used the water available through municipal water supply (78.5%) for cooking while the rural vendors were using water from tube wells/handpumps (68.5%). On the other hand, the drinking water at the vending cart was primarily being supplied through packaged drinking water jars of 5 liters' both in rural (38%) as well as urban areas (30.5%) followed by municipal water supply in urban areas (32%) and tube wells/handpumps (21%) in rural areas. Overall, 13% vendors reported not serving water with food. About waste collection practices, it was recorded that 80% of the urban vendors and only 56% of the rural vendors reported use of dustbin. For the waste disposal practices 72% of the urban street vendors reported throwing garbage at the designated locations and 27% were collecting it in a plastic bag that was then picked up by a garbage collector. 41% of the rural vendors reported throwing at a dirty place and only 37% of the vendors were throwing it at the designated locations for garbage disposal.

Rural vendors also reported burning of the garbage, throwing it in a drain, at the road corner as other means of garbage disposal. None of these practices were reported by the urban street vendors (Table 5).

Personal hygiene behaviour profile of the vendors

The personal hygiene behaviour parameters do not show much variation between the urban and rural street food vendors (Table 6). Most importantly, awareness about washing hands was almost equal in both the vendors including the need to keep nails trimmed and hair short. However, both the did not fare well in their practice of wearing protective gear like apron, gloves, and headgear while handling food. The overall adherence level was only 5%, which was even lower at 1% in the rural vendors. As toilet facilities are not readily available in the vicinity of their vending areas, most of the urban street food vendors reported using the toilet facilities at the nearest establishment (84.5%) where as rural vendors were doing it in in the open: on roads (49%), fields (6%).

Table 5. Availability of water, waste disposal practices and other environmental factors

Study Parameters	Variables	Urban Area (%)	Rural Area (%)	Total (%)
Source of water for cooking	Municipal Tap supply	78.5	6	54.3
	Tubewell/handpump	5.5	68.5	26.3
	Tank	11.5	21	14.7
	Packaged drinking water	4	5	4.3
	Water not required for cooking	0.5	Nil	0.3
Source of drinking water at the vending cart	Municipal Tap supply	32	2	22
	Tubewell/handpump	4	21	9.7
	Tank	12.5	13	12.7
	Packaged drinking water in bottles & pouches	6.5	16	9.7
	Packaged drinking water in jars of 5 liters' and above	30.5	38	33
	No drinking water served with food	14.5	10	13
	Earthen Pot	0.5	Nil	0.3
Garbage collection at the vending site	Use of dustbins	80	56	72
	Throw at the proper waste disposal facilities	72	37	60.3
	Keep in plastic bags near the vending area for the garbage collector to collect	27	6	20
Garbage disposal practices	Throw it in the nearby dirty place	1	41	14.3
	Burn it	Nil	9	3.0
	Throw it in a drain	Nil	4	1.2
	Throw at the road corner	Nil	4	1.2
Awareness about effects of air-pollution	Yes	76	72	74.7
	No	24	28	25.3

Table 6. Personal hygiene behaviour profile of the vendors

Study Parameters	Variables	Urban Area (%)	Rural Area (%)	Total (%)
Smoking/chewing gutka/pan while cooking or serving food	Yes	24.5	26	25
	No	75.5	74	75
Wearing rings/wrist-watch/bangles while handling food	Yes	19	27	21.7
	No	81	73	78.3
Wearing gloves/aprons/head gear while handling food	Yes	7	1	5
	No	93	99	95
Awareness about importance of washing hands during cooking and vending	Yes	98.5	99	98.7
	No	1.5	1	1.3
Keeping nails trimmed and hair short	Yes	90	91	90.3
	No	10	9	9.7
Washing of hands with soap before starting work and after toilet or touching unclean objects	Yes	86	98	90
	No	14	2	10
Use of toilet while at vending site	At the nearest establishment	84.5	30	66.2
	At home only	10	15	11.6
	On the road	6	49	20.2
	Near sewage site	0.5	2	1
	In open field	nil	6	2

So far as capacity building/training is concerned, 86% of the urban, as well as rural street food vendors reported not having been trained at all in food safety/ handling of food etc.55% of the rural vendors and 38.5% of the urban vendors were not even interested in getting trained. Out of those who were interested in getting trained, 53.7% urban vendors and 42.2% rural vendors wanted it within 1 KM of their vending area. Overall, 94.6% also felt that periodic training of one hour (72.6%) should be imparted after their working hours (67.9%).

DISCUSSION

The holistic approach for the safety of street food involves the adoption of good practices at every step in the chain, from procurement of raw materials to food consumption. Each link in the chain is essential (Alimi, 2016). There are threats and health risks to the consumers due to cross-contamination of food, ignorance of food safety measures by the vendors and non-compliance of guidelines on food safety (Samapundo, *et al*., 2016). Street food vendors are often poor, uneducated and may lack the appreciation of hygienic practices (Trafialek, *et al*., 2018). This is borne out from different studies across the world. It was observed that the food safety knowledge and hygiene practices are very poor among the street food vendors as they are ignorant of basic food safety issues, are often unlicensed and are not only untrained in food hygiene but also unaware about toxicological hazards (Proietti, *et al*., 2014). Points-of-sale usually has a limited infrastructure, with restricted access to drinking water, toilets, water

disinfecting methods, refrigeration or ice, as well as hand washing and waste disposal facilities (FAO and OPAS, 1994). A logical step towards reducing the risks of food borne illness from street foods would be controlling the steps in food preparation and sale that may contribute to the contamination, growth, and survival of the microbes responsible for the food borne illness. The efforts made should focus on (a) educating the food handlers on the safety and hygiene (b) improving the environmental conditions under which the trade is carried out (c) providing essential services to the vendors to ensure the safety of their commodities. Success in this regard can only be assured where food control authorities, street food vendors and all other stakeholders, including academic institutions, collaborate to improve the sector, with all stakeholders having a clear understanding of their roles and responsibilities (Holy and Makhone, 2006). This would require the involvement of various government agencies, important ones being the municipal authorities, police authorities, the food safety organizations, non-government organizations, consumers and educational institutions (FAO, 1995). In the present study, it was observed that so far as personal hygienic practices are concerned, urban and rural vendors do not show much variation. Both were equally good so far as the practice of washing hands is concerned trimming of nails and keeping hair short is concerned. However, both were similarly not following the practice of wearing protective like gloves, aprons and headgear. However, what is of concern is that none of the rural vendors was either licensed or registered. Two authorities are responsible for licensing/registration of the street food vendors. Municipal authorities are responsible for issuing licenses for vending while the Food Safety Department of the respective states is responsible for issuing the registration to the street food vendors under the FSS (Licensing and Registration), Regulation, 2011. Both the authorities have seemed to fail in this regard. Rural street vendors have not fared too well when compared with urban vendors on their practices of waste collection and disposal facilities too. Only 56% rural vendors reported use of dust-bins and 9% reported burning of trash. Indiscriminate open-air burning of trash may also expose foods to poly aromatic hydrocarbons (PAH) and dioxins (Imathiu, 2017).

Similarly, only 76% of the urban vendors and 72% of rural vendors were aware about the effects of air-pollution. Air-pollutants including traffic-related pollutants apart from contaminating the street food that is sold in the open, on the streets (Proietti, *et al*. 2014), also have an adverse effect on the street vendor's health (Noomnual and Shendell, 2017). In Thailand an approach structure called "Triangle that Moves the Mountain" is well-known (Wasi, 2000). The Mountain means a big and complicated problem, usually unmovable. This approach is used to handle issues that are interconnected, complex and difficult to solve.

The Triangle consists of:

- Creation of relevant knowledge through research,
- Social movement or social learning and
- Political involvement. This approach can be suitably remodeled to address the problem of food safety, hygiene and related aspects associated with street food vending by suitably modifying the triangle.

The Triangle can consist of:

- Facilitating regulatory compliance by collaboration between various government authorities
- Training/capacity building/awareness generation
- Inter-sectoral involvement

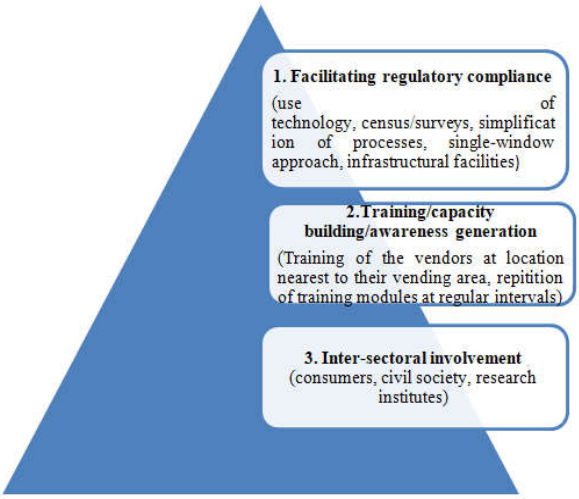

Figure 1. Based on the strategy "Triangle that moves the Mountain Strategy" for street vended food

To improve regulatory compliance, a collaborative approach is required between diffrent government authorities aided by technology (use of mobile phones, hand-held devices etc.), data (collected through surveys/census) and facilitation (single-window approach). This has to be complemented with the provision of facilities like availability of water, waste disposal facilities etc. Though FSSAI has launched the 'Clean Street Food' project (www.fssai.gov.in/dam/jcr:20cb6493-19b8-4e10.../Clean_Street_Food_Brochure.pdf) with partners from food industry as well as the civil society and street food vendors are being trained, there is a need to re-orient the current training model. It has to be of short-duration, repeated at regular intervals and delivered at the vending sites in clusters. There is also tremendous opportunity for inter-sectoral involvement at different levels. It can begin with the active engagement of academic institutions through their research programmes to focus on various aspects that can be addressed through use of technology in providing low-cost water purification solutions, better waste disposal techniques, more research into association between air-pollution and its impact on vendor health as well as safety of food. Standardization of cart-design can also go a long way in addressing some of the problems. Consumers can also provide 'push' factor for improving the quality of street-vended food by demanding street-vendors to follow hygienic practices. Overall, as per the data gathered and analyzed, only 39% had given feedback or made suggestions for improvement to the SFVs.

Conclusion

The scale of street food vending poses a real challenge in regulating this informal sector that provides employment to millions of vendors and meets the daily food requirements of a large section of the society both in urban as well as rural areas. The registration process of the SFVs under the FSS Act, 2006 is simple but registration is low in urban areas and negligible in rural areas. Linked to the registration process is the compliance to sanitary and hygiene practices as per the FSS regulation, 2011. Though the personal hygiene practices of both rural and urban areas were almost similar both scored low in the use of protective gear like gloves, caps and aprons while preparing and serving food. Rural vendors also fared poorly in

garbage collection, garbage disposal practices, and other environmental factors. Multiple legislative frameworks govern the street food vending and a triangular collaborative approach as explained above focusing on different stakeholders is required to assure of the safety and quality of street-vended food.

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