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ASSESSING THE KNOWLEDGE AND ADOPTED PRACTICES OF STREET FOOD VENDORS IN THE CITY OF ANAND – VIDHYANAGAR REGARDING FOOD HYGIENE AND SAFETY

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ABSTRACT

Street foods are defined as ready to- eat foods and beverages prepared and sold by vendors and hawkers in streets and other similar public places. However, the foods are often prepared under unsanitary conditions and stored for long periods in unsuitable conditions before selling. A study was undertaken to assess the knowledge and adopted practices of street food vendors in the city of Anand-Vidhyanagar regarding food hygiene and safety in Gujarat state.

From the study, it has been found that street food vendors have adequate information with regard to the 5 principles of food safety. It was also observed that proper training and FSSAI certification of all the street food vendors are needed for gaining consumer confidence and regulatory control in street food vending. Information generated from this study will be useful for future formulation of regulatory policies for the street food vendors.

KEYWORDS: *Food Hygiene, Food Safety, Street Food Vendors, Knowledge, Adopted Practices*

INTRODUCTION

The street food industry plays an important role in cities and towns of many developing countries both economically and in meeting food demands of city dwellers. It contributes substantially to household food spending and provides income to many female-headed households. It is estimated that street food contributes significantly to the daily diet of urban consumers in developing countries (Suneetha, Manjula and Depur, 2011).

India has a rich history of street food vending reflecting the traditional rich local culture of the country. The rich availability of wide variety and delicacy of the offerings, not to forget the comparatively low prices, have made street foods popular with all the sections of society. But the modern consumer is becoming aware today and demands a high ownership of the relevant stakeholders to educate not only consumers but also implement the new regulatory environment to ensure safety and quality of the food offered by the Street food vendors (Kumar, 2015; Dalal, 2016).

Street foods are defined by the Food and Agricultural Organization (FAO) as ready to- eat foods and beverages prepared and sold by vendors and hawkers in streets and other similar public places (FAO, 1997). Foods are therefore prepared in an informal setting and street food vendors are classified as informal food vendors. Street food vendors are thus exposed to climate and temperature, unsafe water supplies, sanitation and pests (Campbell, 2011; Rahman *et al.*, 2012; Pokhrel & Sharma, 2016). The foods are often prepared under unsanitary conditions and stored for long periods in

unsuitable conditions before selling. It is recognized internationally that these informal street food supply systems, which provide low-cost nutrition, should be managed and encouraged to develop, but with the emphasis on food safety.

Under Schedule, Part 1 A of Schedule 4 of Food Safety and Standards (Licensing And Registration Of Food Businesses) Regulations, 2011 'Sanitary and hygienic requirements for street food vendors and units other than manufacturing/processing' have been stated (FSSAI, 2011). Education of food industry personnel in hygiene matters has been recommended as a means of improving food handling practices and thus the safety of food. In March 2016, Food Safety and Standards Authority of India (FSSAI) partnering with the Ministry of Skill Development & Entrepreneurship launched 'Clean Street Food' project to raise the safety standards of foods sold on streets by training street food vendors (Dalal, 2016).

It is thus imperative that an assessment of what information street food vendors have, in relation to food safety, has potential to identify areas that require strengthening or attention in the training programme with regard to ensuring the safety of street foods. There has been a continuous increase in street food vendors in Anand-Vidyanagar city. Very little is known and documented about the health and hygiene practices of street food vendors here. Considering the above facts, a study was undertaken to assess the knowledge and adopted practices of street food vendors in the city of Anand-Vidhyanagar regarding food hygiene and safety in Gujarat state of India with the following objectives:

- To describe the demographic characteristics of street food vendors.
- To describe the knowledge of street food vendors with regard to food hygiene and safety.
- To identify the practices of street food vendors with regard to food hygiene and safety.

METHODOLOGY

Sampling Method: Five major modern format retail stores of Anand, namely, Big Bazaar, DB's, D'mart, Amul Green and Reliance Fresh, were selected for inclusion in the study. In each of the selected supermarkets, 30 respondents were interviewed in order to attain the estimated sample size of 150. Respondents were selected using convenient – quota sampling method because of unavailability of sampling frame due to the nature of the study population and site. Any person of over 18 years of age who was found purchasing pre-packaged food items and accepted to participate in the study was included.

A semi-structured questionnaire, finalized after pilot survey, was used to collect information on the study variables including social demographic characteristics of respondents, awareness of food labeling information, format and language of food labeling information and product attributes such as price, appearance and packaging design. Respondents were asked on how informed they are on food labeling. Level of awareness on food labeling was also obtained by asking respondents to express their familiarity with the eleven standard informations which is supposed to be found on pre-packaged food labels as were read by interviewers from the questionnaire. Respondents were also asked about their perception of the importance of food labeling information and whether they read food labels or not. Those who read a food labels were further enquired for their motivation for reading food label, circumstances under which they skip reading label and difficulties they encounter in reading and understanding food labels.

Treatment: Data were entered into a computer database using MS Excel computer software. Responses were coded before entry into the computer. MS Excel computer software was used for data analysis. Respondents' level of awareness on food labeling information was determined by the awareness score that was computed using respondents' response to their familiarity with the 11 standard informations found on pre-packaged food labels. The level of awareness was classified into 3 categories: high level of awareness if one responded to 8-11 items, middle level of awareness if the responses were on 4-7 items and low level of awareness if responses were on 3 items and less.

Chi–square test was performed to assess statistical significance between the demographic characteristics of respondents and awareness and use of food labeling information in decision making during a purchase of pre-packaged foods. Frequencies for information mostly sought by respondents when reading food labels, motivations to read food labeling information, perceived importance of food labeling information, circumstances in which respondents purchase pre-packaged foods without reading labeling information and difficulties encountered in reading food labeling information were determined.

RESULTS AND DISCUSSIONS

Demographic Characteristics of Respondents (Street Food Vendors)

The demographic characteristics of the participants are presented in table 1. 75 street food vendors working with cooked food participated in this study. The majority of street food vendors (76 percent) were over 30 years of age. It was also observed that more than three fourth of the respondents (77.3 percent) has undergone some formal education. Interestingly, 38.7 percent of respondents had received a secondary level education or more. 38.7 percent of the respondents were the sole operators with 61.3 percent creating a job opportunity for at least an additional person. 40 percent stated that the reason for participation in this type of business venture was 'to increase income', which was followed by 'family business' and unemployment'.

Association between Social-Demographic Characteristics of Respondents and Training

Table 2 indicates that of all the respondent street food vendors, only 23 (30.7 percent) reported receiving some kind of training on food safety and hygiene. Receiving training was observed to be slightly lower than the sample population average in case of respondents of higher age group; whereas it was found to be slightly higher among respondents with secondary or higher education and those who reported the increase of income as the reason for being in this business. Different categories of a number of employees showed a similar trend in receiving training.

Among the social demographic characteristics of respondents, results did not reflected the statistically significant difference in the extent of getting training on food safety and hygiene among various age groups ($p=0.769$), level of education ($p=0.518$), job creation ($p=0.989$) and among various reasons for business ($p=0.349$).

Table 1: Demographic Profile and Geographical Distribution of Street Food Vendors (n=75)

Characteristic (N	Frequency	Percentage
Age (Years)		
<30	18	24.0
31-50	23	30.7
>50	34	45.3
Level of education		
No formal education	17	22.7
Primary level	29	38.7
Secondary & above	29	38.7
Job creation		
1	29	38.7
2	19	25.3
3 & >	27	36.0
Reasons for		
To increase income	30	40.0
Unemployment	19	25.3
Family business	26	34.7

Association between Social-Demographic Characteristics of Respondents and Compliance with FSSAI Licensing Requirement

Table 3 indicates that of all the respondent street food vendors, more than half of the respondents (54.7 percent) reported to complying with the FSSAI licensing requirement. Compliance with the FSSAI licensing requirement was observed to be slightly lower than the sample population average in case of respondents of higher age group; whereas it was found to be much higher among respondents with 3 or more number of employees. Compliance was also found to be higher among the respondents with secondary or higher education and those who reported an increase in income as the reason for being in this business.

Among the social demographic characteristics of respondents, although results did not reflected the statistically significant difference in the extent of compliance with FSSAI licensing requirement among various age groups (p=0.7299), level of education (p=0.324) and reasons for business (p=0.345). However, the statistically significant difference in compliance with FSSAI licensing requirement was reflected by the chi-square test among respondents with different levels of job creation capacity (p=0.016).

Table 2: Association between Social-Demographic Characteristics of Respondents and Training

Social-demographic variables	Training received, N=75		c^2	P value
	Yes, n=23	No, n=52		
	Frequency (%)	Frequency (%)		
Age groups			**0.525**	**0.769**
<30, n=18	**6**	**12**		
	33.3	66.7		
31-50, n=23	**8**	**15**		
	34.8	65.2		
>50, n=34	**9**	**25**		
	26.5	73.5		
Level of education			**1.314**	**0.518**
No formal education, n=17	**5**	**12**		
	29.4	70.6		
Primary level, n=29	**7**	**22**		
	24.1	75.9		
Secondary & above, n=29	**11**	**18**		
	37.9	62.1		
Job creation			**0.023**	**0.989**
1, n=29	**9**	**20**		
	31.0	69.0		
2, n=19	**6**	**13**		
	31.6	68.4		
3 or more, n=27	**8**	**19**		
	29.6	70.4		
Reasons for business			**2.103**	**0.349**
To increase income, n=30	**12**	**18**		
	40.0	60.0		
Unemployment, n=19	**5**	**14**		
	26.3	73.7		
Family business, n=26	**6**	**20**		
	23.1	76.9		

Association between FSSAI Licensing and Knowledge about Regulations

The association between the compliance of FSSAI licensing requirement and the knowledge of respondents about the food safety and hygienic regulations was stated in Table 4. It was observed that 53.3 percent of respondents reported knowing why an FSSAI license is required by a food business operator and 42.7 percent opined that the Food Safety Officer is helpful for his/her business. However, 57.3 percent have reported that they didn't know about the local food safety officer, 54.7 percent of the respondents mentioned that no food inspector has visited his place, and 60.0 percent of the respondents reported negatively about the testing of their sample by FSSAI.

A statistically significant difference in compliance with FSSAI licensing requirement was reflected by the chi-square test among respondents with different responses on their knowledge about why one needed an FSSAI license or registration (p=0.009).

Table 3: Association between Social-Demographic Characteristics of Respondents and Compliance with FSSAI Licensing Requirement

Social-demographic variables	FSSAI Licence, N=75		c^2	P value
	Yes, n=41	No, n=34		
	Frequency (%)	Frequency (%)		
Age groups			**0.632**	**0.729**
<30, n=18	**11**	**7**		
	61.1	38.9		
31-50, n=23	**13**	**10**		
	56.5	43.5		
>50, n=34	**17**	**17**		
	50.0	50.0		
Level of education			**2.253**	**0.324**
No formal education, n=17	**8**	**9**		
	47.1	52.9		
Primary level, n=29	**14**	**15**		
	48.3	51.7		
Secondary & above, n=29	**19**	**10**		
	65.5	34.5		
Job creation			**8.292**	**0.016**
1, n=29	**15**	**14**		
	51.7	48.3		
2, n=19	**6**	**13**		
	31.6	68.4		
3 or more, n=27	**20**	**7**		
	74.1	25.9		
Reasons for business			**2.126**	**0.345**
To increase income, n=30	**19**	**11**		
	63.3	36.7		
Unemployment, n=19	**8**	**11**		
	42.1	57.9		
Family business, n=26	**14**	**12**		
	53.8	46.2		

Food Safety Knowledge

5 Keys to Safer Foods are: Key 1: Keep Clean; Key 2: Separate Raw & Cooked; Key 3: Cook Thoroughly; Key 4: Keep food at safe temperatures; Key5: Use safe water and raw materials. Table 5 shows that of all respondents, 25.3 percent of street food vendors were aware of the all the 5 Keys to Safer Foods; whereas 37.3 percent were aware of 3 to 4 keys and 37.3 percent were aware about only 1 to 2 keys of safe food.

Table 4: Association between FSSAI Licensing and Knowledge about Regulations

Social-demographic variables	FSSAI Licence, N=75		c^2	P value
	Yes, n=41	No, n=34		
	Frequency (%)	Frequency (%)		
Do you know why you have/need a Registration/ License?			**9.443**	**0.009**
Yes, n=40	**28**	**12**		
	70.0	30.0		
No, n=18	**5**	**13**		
	27.8	72.2		
Don't know, n=17	**8**	**9**		
	47.1	52.9		
Do you know who the Food Safety Officer/Inspector is?			**3.655**	**0.161**
Yes, n=15	**10**	**5**		
	66.7	33.3		
No, n=43	**25**	**18**		
	58.1	41.9		
Don't know, n=17	**6**	**11**		
	35.3	64.7		
Do you think that the Food Safety Officer/Inspector is helpful for your business?			**2.857**	**0.240**
Yes, n=32	**21**	**11**		
	65.6	34.4		
No, n=18	**9**	**9**		
	50.0	50.0		
Don't know, n=25	**11**	**14**		
	44.0	56.0		
Did a Food Safety officer ever inspect your premises?			**4.552**	**0.103**
Yes, n=18	**13**	**5**		
	72.2	27.8		
No, n=41	**18**	**23**		
	43.9	56.1		
Don't know, n=16	**10**	**6**		
	62.5	37.5		
Did a Food Safety personnel take samples of any of your food?			**1.650**	**0.438**
Yes, n=15	**10**	**5**		
	66.7	33.3		
No, n=45	**22**	**23**		
	48.9	51.1		
Don't know, n=15	**9**	**6**		
	60.0	40.0		

Table 5: Participants Awareness of the 5 Keys (n=75)

Awareness about 5 keys	No.	Frequency (%)
All 5 keys	19	25.3
4 keys	15	20.0
3 keys	13	17.3
2 keys	16	21.3
1 keys	12	16.0

Despite the poor awareness of what the 5 Keys to Safer Foods are respondents, answered satisfactorily with regard to the principles that the 5 Keys to Safer Foods are aimed at, i.e. Food Safety. Table 6 shows the results of the components of the questionnaire that related to an in-depth knowledge of the 5 Keys or Food Safety knowledge. It illustrates that 55 (73.3 percent) were aware that chopping boards could cause cross-contamination. Knowledge on the correct storage of foods to prevent cross contamination can be considered to be good as 59 (78.7 percent) correctly answered. 49 (65.3 percent) of all respondents correctly identified wiping cloths as a source of cross-contamination. Temperature control received satisfactory answers as 48 (64.0 percent) were aware that cooked foods need to be served hot. A very high percentage of respondents, i.e., 85.3 percent, showed their knowledge of the correct times to wash hands. Cause for concern was that 59 (78.7 percent) believed that clean water can be determined through observation.

Table 6: Combined Table of Respondent's Knowledge of Selected Questions Regarding Food Safety (n=75)

	Yes, n	%	No, n	%
Keep Clean (Key 1) – Correct Hand washing	64	85.3	11	14.7
Cross Contamination (Key 2) –Chopping Boards	55	73.3	20	26.7
Cross Contamination (Key 2) –Storage	59	78.7	16	21.3
Cross Contamination (Key 2) –Wiping Cloths can spread germs	49	65.3	26	34.7
Temperature (Keys 3&4)-Cooked food must be served hot	48	64.0	27	36.0
Use Safe water (Key 5) - Safe water can be seen	59	78.7	16	21.3

Table 7 shows the knowledge of street food vendors toward the principles for the prevention and control of foodborne diseases. 68.0 percent of all the street food vendors agreed that keeping surfaces clean was important. The findings were similar (78.7 percent) for the other temperature control variable of thawing food correctly. However, only 44.0 percent of the respondents agreed that it was unsafe to keep foods unrefrigerated for more than two hours. Another cause of concern is only slightly more than half of the respondents accepted that it is important to throw away foods, which crossed its expiry date.

Adopted Practices of Street Food Vendors

More than half of the street food vendors reported having FSSAI license/registration indicating that the premises/facilities were suitable for the preparation of food. However not all the facilities were adequately equipped on the basis of the observational findings as indicated in Table 8. Although the license/registration is specific for the structural aspects, conditions relating to food preparation should also be considered when issuing the certificate. Cause for concern is that, from observation, only 10.7 and 13.3 percent of the respondents had used gloves and apron, respectively, while preparing and selling the food items.

Table 7: Knowledge of Street Food Vendors about Food Safety Principles (n=75)

	Agree,	%	Not	%	Disagree,	%
Keeping surfaces clean reduces the risk of illness	51	68.	22	29.	2	2.
It is unsafe to keep food unrefrigerated for more than 2	33	44.	37	49.	5	6.
Thawing food in a cool place is safer	59	78.	12	16.	4	5.
It is important to throw away foods that have reached	41	54.	31	41.	3	4.

Table 8: Observation Findings of the Premises (n=75)

	Yes, n	%	No, n	%
A covered water container to carry water	67	89.3	8	10.7
A bowl or bucket for washing hands	66	88.0	9	12.0
Clean hand drying towels	65	86.7	10	13.3
Soap for hand washing	50	66.7	25	33.3
A bowl or bucket for washing dishes and utensils	63	84.0	12	16.0
Soap powder or liquid to wash dishes	59	78.7	16	21.3
Cleaning cloths	61	81.3	14	18.7
Broom and or mop	49	65.3	26	34.7
Covered Dustbin / Waste bag	51	68.0	24	32.0
Cool box	25	33.3	50	66.7
Apron	10	13.3	65	86.7
Gloves	8	10.7	67	89.3
Fingernails trimmed, clean	42	56.0	33	44.0
Pots with lids or a cover for cooked food	56	74.7	19	25.3
Away from rubbish, wastewater, toilet facilities, open drains and stray	54	72.0	21	28.0
Surfaces in contact with food built of solid, rust/ corrosion resistant materials	52	69.3	23	30.7
Cooking utensils and crockery are clean, not broken/ chipped	66	88.0	9	12.0

CONCLUSIONS

The respondent profiling of the survey on the basis of age, level of education, job creation and reasons for being in the business suggested that the selected study population and the convenient selection of respondents had a positive impact in getting a wide range of consumers' responses and views. This study has shown that street food vendors have adequate information with regard to the 5 principles of food safety. Similar observations were recorded by earlier workers (Campbell, 2011; Okojie and Isah, 2014; Dun-Dery and Addo, 2016). The knowledge about clean water does however, require further investigation. Proper training and FSSAI certification of all the street food vendors are the need of the hour for gaining consumer confidence and regulatory control in street food vending, similar suggestions were also made by Kumar, 2015 and Pokhrel & Sharma, 2016. Information generated from this study may assist regulatory authorities with regard to policy and approaches to street food vendors.

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