

Original Research Article

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Appraise of Clean Street Food Hub Guidelines Level at Mehdiptnam, Hyderabad City, India Post Covid-19

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ABSTRACT

The survey aimed to assess street vendors' responses to Clean Street Food Hub Guidelines and its effect on the socio-demography post Covid-19. The study reports 70% of the vendors are male followed by a female (30%) with a mean age of 35.785 ± 2.702 years, of which mostly 37% were youth and 48% were adults. In this informal sector, it was evident that 72% of primary to higher school qualified were employed for their family income with experience of 1-4 years (50%) and 8-10 years (35%). A significant response was received from vendors on twelve golden rules knowledge good response (77%) and 30% poor status was reflected on un-hygienic premises, and lack of disposal facilities. Whilst, 42% of the vendors have a significantly good attitude (questions 2, 6, 10, 11, and 12) remaining 17% is poor concerned on clean and disinfecting work station after vending, and constantly washing raw food before cooking. The street vendor's practice was average level for material collection, preparation, and washing (67.70%), fair at personal care (59.67%), sanitation practice (54%), and food handling, leftover disposal, and inspection (54.60%), whilst unscientific facilities and environment type (48.67%). It was found that, a significant ($P < 0.00$) association exists between vendor's responses on clean food safety guide scores and gender, age, education, and experience at a significant level of $p=0.05$.

Keywords

Attitude, Covid-19, Clean street food, Food safety, Knowledge, KAP, Practice

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Introduction

Street food vending is a low-cost investment, self-employment generation, and highly cost-effective food supply system in developing countries which will entice demanding taste buds at a lower cost of

ready meals or drinks by the marginal vendor (Gelormini *et al.*, 2017; Thi *et al.*, 2021). This sector has great potential to stimulate sustainable growth, not only in the economic but also in the social and ecological dimensions (Dittrich, 2017; Thi *et al.*, 2021).

Post the first wave of Covid-19, unemployed youth evolved with traditional recipe foods that stimulate the immune system (Molnár *et al.*, 2021) and their use should be encouraged if they are healthy foods (Steyn *et al.*, 2014). Besides all odds, the enactment of the Food Safety Standards Act 2011 and Street Vendor Act-2014 legitimacy paved milestones in transforming is global branding for street food safety (Pilato *et al.*, 2020; FSSAI, 2011). This legitimacy envisaged the Indian street vending businesses' contribution towards 50% of the country's savings and 63 % of the GDP (Bedi *et al.*, 2020). Later pandemic wave, street foods were wallowing under widespread concern about food safety and hygienic aspects such as personal hygiene, premises, infrastructure, and services (Reddy *et al.*, 2020; Gadi *et al.*, 2018), the overall hygiene practices of the vendors, lack of awareness of food safety guidelines, hygiene knowledge, and improper handling practices were not satisfactory (Alamo *et al.*, 2018). Thus, assessment of Clean Street Food Hub Guidelines awareness of street food vendors urged to be at most priority post Covid-19 pandemic to perceive public health risks. Hence, the study was framed to evaluate the street food handler response Knowledge (K), Attitude (A), and Practices (P) response scores and their effects on socio-demographic parameters.

Materials and Methods

Study Area

Mehdipatnam area located in the South-Western part of Hyderabad city, Telangana state, India was chosen. Five types of shops viz., Bakery, Juice, Chit chat, Fast food, and Mobile van food shops (n=60) were randomly selected in order to avoid bias and no particular order was followed when choosing participants.

Study Technique

The questionnaire was designed to analyze the four constructs namely: Knowledge, Attitudes, Practices (KAP), and demographic characteristics of the street

food handlers. However, data collection was carried out from December 2019 to January 2021 by some parts observational checklists and the remaining part face-to-face interviewing of “Yes” and “No” questioners.

Part A

Demographic study is part to investigate the background of the street food handlers such as age, gender, education level, and experiences. From the information obtained, the data was analyzed for its effect on KAP.

Part B

The “Yes” and “No” response questionnaires used in this study were formatted using the “FSSAI-Clean Street Food Hub” guideline and some from previous studies with slight modifications (Fontannaz *et al.*, 2019). Which, first 12 questions are FSSAI 12-golden rules on Knowledge (K), the second 12 questions on Attitude (A), and the third category scopes of the Practice (P) questions (38) with subheadings of a. Personal care, b. Facilities available and environment type, c. Sanitation practice, d. Material collection, preparation & washing, and, e. Food handling, leftover disposal, inspection & education (Tables 2, 3, and 4).

Statistical Analysis

Descriptive statistics namely, frequencies and percentages, and categorical data- mean, standard deviation, and error were calculated for demography and KAP from survey sample data (2007 MS-Excel). A cut-off percent was proposed for the classification of food safety and hygienic guideline status of stalls designated as >70% were considered to have “Good” status, whilst those with anything between as, 60-70% were considered to have “Average” status, 50-60% as “Fair” and <50% were considered to have “Poor” status (Monney *et al.*, 2014). The statistical analysis of experimental data utilized the one-way ANOVA program socscistatistics.com.

Results and Discussion

This sample (n=60) reports results of the Clean Street Food Hub Guidelines response (KAP) scores with mean, SD, and error and its significant analysis using one-way ANOVA, the effect of demographic parameters on the food safety aspects (KAP) and Pearson correlation among KAP and all street shops.

Part A-Socio demographic profile

The results of were interview are listed in below Table 1. Three fourth of the vendors reported male (70%) followed by females (30%). These vendors are aged between 20-30 years (37%) and 31-50 years (48%) with an overall mean age of 35.785 ± 2.702 years. This informal working sector was grown post Covid-19, with one-half of primary (25%) and secondary (25%), and 22% of higher school-qualified youth employed. Further, nearly 50% of less than 1 year (28%) and 2-4 year (22%) vendors newly ventured into this sector, along with 35% (8-10 years) experienced elders continued to support family income contribution. These results are corroboration by a previous study where 81.13% were male vendors whose qualification was middle (33.33%) and primary school (26.42%) (Mukherjee *et al.*, 2018), the mean age was 35.5 ± 10.3 years; out of them 53.77% vendors aged 20-40 year (Nkhebenyane *et al.*, 2021).

Part B- Knowledge, Attitude, and Practices (KAP) of Street Food Vendors

A complete survey data presented in Fig.1, the overall mean of KAP responses was Average (68%) which infers that the Mehdipatnam street vendors are quite aware of the clean street food guide. In specific, the response of KAP “Yes” and “No” was Good (77%), Average (66%), Fair(59%), and 23%, 34%, and 41%, respectively. However, the vendors having Good Knowledge (77%) and Average Attitude (66%) were unable to convert to Good Practices (59%) concern in this pandemic situation. A similar finding was suggesting that food vendors had favorable attitudes and mere knowledge is not

enough to have a good practice (Mukherje *et al.*, 2018; Clayton, *et al.*, 2002). Supporting this, street food vendors of Jashore region, Bangladesh score good knowledge (78.9 ± 14.68) and moderate attitude (66.23 ± 16.04), whereas, practice score was poor below 50% (46.40 ± 7.06) (Hossen *et al.*, 2020).

Food Handler Knowledge (K)

Food Handler Knowledge (K): The sample data on knowledge of food safety resulted in an overall 77% of good status with a mean of 1.43 ± 0.50 and an error of 0.04. The results in Table 2 states among the laid hygienic rules, vendors had good knowledge of using portable water (96.67%), keeping hot food hot and cold food cold after thorough cooking (100%), and separate handling and storage of veg. & non-veg. food (100%), store cold food cool (96.67%), wash hands after food is handled/toilet/cough/sneezing (83.33%), use clean and separate dusters to clean surfaces, and wipe utensils (81.67%). Whilst there was still concern with keeping vending premises/carts clean and pest free (55%) and keeping dustbins for food waste (56.67%). It was envisaged while data collection, the requirement of permanent infrastructures with the proper demarcation of clean and safe street food hubs to make it a global brand business near future.

A similar study was reported in Ghana, mean knowledge score found to be good ($78.35 \pm 9.33\%$) and in specific among knowledge, food handlers exhibited good regular hand washing after using the toilet/cough/sneezing (87%), cleaning and sanitization of utensils (84%), Wearing apron, gloves, and cap or uniform are personal hygienic (75%) (Addo-Tham *et al.*, 2020; Mustafa *et al.*, 2017; Nkhebenyane *et al.*, 2021; Hossen *et al.*, 2020).

Food Handler Attitude (A)

The attitude of vendors is presented in Table 3. All the food handlers scored satisfactory levels by showing Average Attitude corresponding to the

questions given. Results indicate nearly half of the respondent's good attitude about washing hands with soap and water (98.33%); utensils after serving food (76.67%), the staff is trained to the appropriate level (83.33%), don't freeze defrosted food (71.67%) and throw leftover foods at the end (88.33%), however, poor cleaning and disinfection of stall (48.33%) was a drawback in food safety aspects. An ANOVA test was conducted to compare the mean scores of the attitude response of food handlers. Despite, the Average Attitude (66%), the vendor's attitude was statistically significant ($p=0.001$).

Above outcome of attitude corroboration a previous report that Kolkata street food vendor's response was favorable (63.2%) (Mukherjee *et al.*, 2018).

Food Handler Practice (P)

The overall response of vendor's practice was fair (59%) with a mean of 1.41 ± 0.38 as summarized in below Table 4.

It was observed that three fifth of practice was Fair in sub-categories viz., Personal care (59.67%), Sanitation practice (54%), Material collection, Food handling, Leftover disposal and Inspection (54.63%), Average preparation and washing (67.7%), and poor Facilities available and environment type (48.67%).

In specific, 35% of the vendors follow good practices such as no spitting (76.67%) and smoking habit (80%), dusting/wiping (88.33%), the environment is hygienic (71.67%), attending work in good health (100%), separate storage for raw and cooked food (100%), keep separate utensils and equipment (88.33%), hand wash with water (71.67%), raw food washing (95%), use of potable water for cooking food (96.67%), first In first out (FIFO) of raw and cooked food (100%), washing utensils before serving food (100%) and strongly feel that offering hygienic food brings you profit (86.67%).

Contrary to this, 26% of the poor practice witnessed are hand (43.33%) and dishwashing (48.33%), pest control measures (30%), a unhygienic maintenance such as free from flies (36.67%), insects /rat/rodents (21.67%), off odor/smell (13.33%) and animals (40%). These vendors practice poor periodical medical checkups (31.67%), attend food safety training (16.67%), and food inspector visits (25%). The association between food safety practices by vendors was found statistically significant $Q_{1,74}=4.0833$, $p=0.0051$.

Present results are congruent with a previous study in which a fair 52% average of all translated practices from knowledge of some food safety aspects into practice (Reddi *et al.*, 2015). Also, the practice of with 72% of defrosted food must not be refrozen (Nkhebenyane *et al.*, 2021), storing raw and cooked food separately (95%), and 80 % throw away leftover food (Mustaffa *et al.*, 2017; Hossen *et al.*, 2020)

Effect of vendor's socio-demographic against clean street food safety (KAP)

Table 5 details the effect the demographic characteristics on KAP, the overall sample distribution according to the socio-demographic, and the association of those variables with the KAP scores. These vending activities were male-centric (70%) involved in food safety adoption was 45% and 18% of females are prominently aged between 25-30 years (Yes-23%, No-13%) to 31-50 years (Yes-30%, No-18%). Seventy-two percent of the street food vendors qualified with primary (25%), secondary (25%), and higher (22%) education are into this activity for the past 8-10 years old experience (Yes-22%, No-13%) following by fresher <1year (Yes-17%, No-12%), 2-4 year (Yes-13%, No-8%). A statistically significant ($P < 0.05$) association was found between respondents' clean street food (KAP) scores and gender ($p=0.00$), age ($p=0.00$), education ($p=0.00$), and experience ($p=0.00$).

Table.1 Distribution of street food handler by different socio-demographic characteristics

(n=60)

Characteristic	Frequency	Valid percent
Gender		
i. Male	42	70%
ii. Female	18	30%
Age		
i. <25 year	6	10%
ii. 25-30 year	22	37%
iii. 31-50 year	29	48%
iv. >50 year	3	5%
Education		
i. Illiterate	10	17%
ii. Primary	15	25%
iii. Secondary	15	25%
iv. Higher	13	22%
v. Collage	7	12%
Experience		
i. <1 year	17	28%
ii. 2-4year	13	22%
iii. 5-7year	9	15%
iv. 8-10year	21	35%

Table.2 Vendors Knowledge (K) response on Clean Street Food Guidelines

Sl.No.	Knowledge Questioners	Response		Mean(SD)	Error
		Yes (%)*	No (%)		
1	Keep vending premises/cart clean and pest free	33(55.00)	27(45.00)	1.45(0.50)	0.06
2	Use potable water for food preparation	58(96.67)	2(3.33)	1.03(0.18)	0.02
3	Cook food thoroughly. Keep hot food hot & cold food cold	60(100.00)	0(0.00)	1.00(0.00)	0.00
4	Handle and store vegetable and non veg. raw & cooked food separately	60(100.00)	0(0.00)	1.00(0.00)	0.00
5	Store cold food at cool temperature	58(96.67)	2(3.33)	1.03(0.18)	0.02
6	Use separate chopping boards, knives etc. for raw/cooked and vegetable and non-veg. food	27(45.00)	33(55.00)	1.55(0.50)	0.06
7	Wear clean clothes/ uniform	36(60.00)	24(40.00)	1.40(0.49)	0.06
8	Wash hands before and after handling food and after using toilet/coughing/sneezing	50(83.33)	10(16.67)	1.17(0.38)	0.05
9	Use waterproof bandage to cover cuts or burn wounds	33(55.00)	27(45.00)	1.45(0.50)	0.06
10	Don't handle food when unwell/sick	58(96.67)	2(3.33)	1.03(0.18)	0.02
11	Use clean, separate duster to clean surface & wipe utensil	49(81.67)	11(18.33)	1.18(0.39)	0.05
12	Keep separate and covered dustbin for food waste	34(56.67)	26(43.33)	1.43(0.50)	0.06
Total		46(77)	14(23)	1.23(0.32)	0.04

*Significant level at $p < .01$

Table.3 Vendors Attitude (A) response on Clean Street Food Guidelines

Sl. No.	Attitude Questioners	Yes (%)	No (%)	Mean (SD)	Error
1	I always wash hands before handling food	40(66.67)	20(33.33)	.38(0.49)	0.06
2	I always wash hands with soap and water	59(98.33)	1(1.67)	1.02(0.13)	0.02
3	I always wash hands with water only	38(63.33)	22(36.67)	1.45(0.50)	0.06
4	I always wipe hands with wet cloth/wipes	34(56.67)	26(43.33)	1.60(0.49)	0.06
5	I always wash raw food before cooking	20(33.33)	40(66.67)	1.80(0.40)	0.05
6	I always wash utensils after serving food	46(76.67)	14(23.33)	1.23(0.43)	0.06
7	I clean and disinfect work station after vending	29(48.33)	31(51.67)	1.58(0.50)	0.06
8	I will take leave if not well	30(50.00)	30(50.00)	1.60(0.49)	0.06
9	I believe covering food at all times improves the safety of food to customers	34(56.67)	26(43.33)	1.50(0.50)	0.07
10	I and staff are trained to an appropriate level and supervised to work hygienically	50(83.33)	10(16.67)	1.17(0.38)	0.05
11	I throw leftover of food at ending	53(88.33)	7(11.67)	1.13(0.34)	0.04
12	I do not refreeze defrosted food	43(71.67)	17(28.33)	1.28(0.45)	0.06
Total		40(66)	20(34)	1.40(0.43)	0.05
One way ANOVA		Q=5.9997, p=0.0010053			

* Significant level at $p < .01$

Table.4 Vendors Practice (P) response on Clean Street Food Guidelines

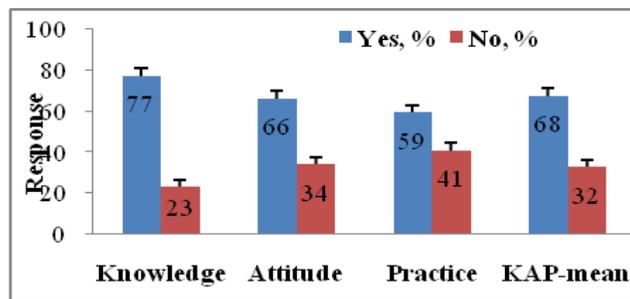
S.N	Practice Questioner - a. Personal care	Yes (%)	No (%)	Mean (SD)	Error
1	Wearing mask?	31(51.67)	29(48.33)	1.48(0.50)	0.07
2	Use head gear?	13(21.67)	47(78.33)	1.78(0.42)	0.05
3	Away from spitting?	46(76.67)	14(23.33)	1.23(0.43)	0.06
4	Away from smoking?	48(80.00)	12(20.00)	1.20(0.40)	0.05
5	Does vaccination against any disease	41(68.33)	19(31.67)	1.32(0.47)	0.06
b. Facilities available & environment type		35.8(59.67)	24.20(40.33)	1.40±0.44	0.06
6	Hand wash	26(43.33)	34(56.67)	1.57(0.50)	0.06
7	Dish/utensil wash	29(48.33)	31(51.67)	1.52(0.50)	0.07
8	Dusting/wiping (wet/dry)	53(88.33)	7(11.67)	1.12(0.32)	0.04
9	Closed type dustbins	40(66.67)	20(33.33)	1.33(0.48)	0.06
10	Drainage facility	34(56.67)	26(43.33)	1.43(0.50)	0.06
11	Animals are present near premises	24(40.00)	36(60.00)	1.60(0.49)	0.06
12	Free from flies	22(36.67)	38(63.33)	1.63(0.49)	0.06
13	Free from Insect/rats/rodents	13(21.67)	47(78.33)	1.78(0.42)	0.05
14	Free from Off odor/smell	8(13.33)	52(86.67)	1.87(0.34)	0.04
15	Environment is hygiene?	43(71.67)	17(28.33)	1.28(0.45)	0.06
c. Sanitation practice		29.2(48.67)	30.8(51.33)	1.53(0.45)	0.06

16	Practicing periodical medical checkup	19(31.67)	41(68.33)	1.68(0.47)	0.06
17	Present health status of handler is 'Good'	60(100.00)	0(0.00)	1.00(0.00)	0.00
18	Handling food and money at the same time?	28(46.67)	32(53.33)	1.53(0.50)	0.06
19	Touching food with bare hands during serving?	37(61.67)	23(38.33)	1.38(0.49)	0.06
20	Practicing any pest control measures	18(30.00)	42(70.00)	1.70(0.46)	0.06
d. Material collection, preparation & washing		32.4(54)	27.6(46)	1.37(0.32)	0.04
21	Raw material obtaining from authorized brand	60(100.00)	0(0.00)	1.00(0.00)	0.00
22	Raw material are purchased daily basis	23(38.33)	37(61.67)	1.62(0.49)	0.06
23	Storage facility available for raw / cooked food	60(100.00)	0(0.00)	1.00(0.00)	0.00
24	Keep separate utensil/equipment in preparation	53(88.33)	7(11.67)	1.12(0.32)	0.04
25	Keeping separate cloths and chopping boards for use with different kinds of food	22(36.67)	38(63.33)	1.63(0.49)	0.06
26	Keeping wiping cloths used in raw food areas out of other areas	46(76.67)	14(23.33)	1.23(0.43)	0.06
27	Washing hands with water only	43(71.67)	17(28.33)	1.28(0.45)	0.06
28	Wash raw food before cooking	57(95.00)	3(5.00)	1.05(0.22)	0.03
29	Potable water used for preparation of food	58(96.67)	2(3.33)	1.03(0.18)	0.02
e. Food handling, leftover disposal and inspection		46.89(67.7)	13.11(21.85)	1.15(0.24)	0.03
30	FIFO – First In First Out of raw & cooked food	60(100.00)	0(0.00)	1.00(0.00)	0.00
31	Washing utensils before serving food	60(100.00)	0(0.00)	1.00(0.00)	0.00
32	Do you feel that offering hygienic food brings you profit	52(86.67)	8(13.33)	1.13(0.34)	0.04
33	Store and reuse the leftover food	16(26.67)	44(73.33)	1.73(0.45)	0.06
34	Movable type infrastructure	30(50.00)	30(50.00)	1.50(0.50)	0.07
35	Holding license to run the business	30(50.00)	30(50.00)	1.50(0.50)	0.07
36	Did any food inspector visit your shop	15(25.00)	45(75.00)	1.75(0.44)	0.06
37	I am aware of Consumer Rights Act	22(36.67)	38(63.33)	1.63(0.49)	0.06
38	Willing to attend food safety training	10(16.67)	50(83.33)	1.83(0.38)	0.05
Total		32.78(54.6)	27.22(45.37)	1.66(0.46)	0.06
One way ANOVA Q=4.0833, p=0.0051 Grand total		36(59)	24(41)	1.41(0.38)	0.05

Table.5 Effect of gender, age, education level & experience on the food safety (KAP) of food handlers (n=60)

Details	KAP		P-value*	Mean(SD)
	Yes (%)	No (%)		
Gender				
i. Male	27(45%)	15(25%)	0.00 (F=30.89)	12.357(1.11)
ii. Female	11(18%)	7(12%)		5.206(0.468)
Age				
i. <25 year	4(7%)	2(3%)	0.00 (F=156.4205)	3.00(2.0522)
ii. 25-30 year	14(23%)	8(13%)		11.00(6.439)
iii. 31-50 year	18(30%)	11(18%)		14.50(8.788)
iv. >50 year	2(3%)	1(2%)		1.500(1.137)
Education				
i. Illiterate	6(10%)	4(7%)	0.00 (F=25.3693)	5.000(3.203)
ii. Primary	9(15%)	6(10%)		7.500(4.507)
iii. Secondary	9(15%)	6(10%)		7.500(4.684)
iv. Higher	9(15%)	4(7%)		6.500(3.950)
v. Collage	4(7%)	3(5%)		3.500(2.279)
Experience				
i. <1 year	10(17%)	7(12%)	0.00 (F=37.7525)	8.500(5.367)
ii. 2-4year	08(13%)	5(8%)		10.50(6.067)
iii. 5-7year	06(10%)	3(5%)		6.500(4.301)
iv. 8-10year	13(22%)	8(13%)		4.500(2.895)

Fig.1 Vendors Knowledge, Attitude and Practice (KAP) Scores on Food Safety and Hygienic (n=60)



Similar studies reported that there was a significant ($P < 0.05$) association between respondents' food safety KAP scores and gender, marital status, university degree, employment status, self-rating of food safety knowledge, and the source of food safety information (Osaili *et al.*, 2021), also significant association was found between food safety knowledge and attitude score and demographic characteristics of with age, gender and education, region, school type, residence type, the habit of

smoking and alcohol use, academic record and parents' education background (Cheng *et al.*, 2017; Bhattacharya *et al.*, 2014).

Inferring our findings, there is a significant vendor response evidenced by good Knowledge (77%), average (66%) and fair Practice (59%) on clean street food safety guidelines. Among the KAP, knowledge was strongly correlated with practice but weak attitude.

Further, this study helps to identified unregulated food vending zones, unscientific, temporary infrastructure, and weak facilities for water supply, waste disposals, drainage and toilet.

Thus, there is scope to impart awareness on clean street food hub guidelines through training or workshops or webinar towards prevention of public health risk and encourage supplying healthy and nutritional food to population for improving immunity strength.

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