



RESEARCH ARTICLE

FOOD SAFETY PRACTICES AND ITS ASSOCIATED FACTORS OF WOMEN FOOD BUSINESS OPERATORS IN SELF HELP GROUP IN PUDUCHERRY

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ABSTRACT

Food safety practices are the shared responsibility of everyone in the food industry in all stages like production, storage, packaging and serving food. It is an increasingly important public health issue to prevent or control food borne illness. The food safety practices of the food handlers are often associated with the certain factors like education, basic awareness about hygiene and sanitation, economic background etc. For this reason, assessing the food safety practices and its influencing factors among the Self Help Group Food Business Operators in Puducherry region was felt very indispensable. The study targeted the SHG FBO's in Puducherry region. The study involved a field survey and the food safety practices of the SHG FBO's were analyzed through interview schedule. Majority (59.7 percent) of respondents belonged to the age group of 31-40 years. Majority (46.7 percent) of SHG FBO's were able to read and write. Contribution of independent variables on food hygiene risk score was analyzed using Multiple Linear Regression analysis ($\alpha=0.05$ significant level). Out of the twelve independent variables, the regression coefficient of scheme of the SHG, monthly income, per capita income of the respondents and the years of experience in the field of SHG were statistically significant with the food safety practices of SHG FBO's. From the results it was clear that the SHG FBO's should be educated about the food safety practices, cross-contamination, safe temperature and technological aspects of street food vending.

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INTRODUCTION

Food safety is an increasingly important public health issue to prevent or control food borne illness (Gizaw *et al.*, 2014). WHO defines food safety as the conditions and practices that preserve the quality of food to prevent contamination of microbes or toxic chemicals resulting in food borne illness (WHO 1989). Bryan stated that more than hundred different diseases are known to be transmitted by the food (Bryan, 1982). In 2008, WHO estimated that in developing countries 70 percent of cases of diarrheal diseases are associated with the consumption of contaminated food and water (WHO, 2008). Contaminated food presents one of the major contributors to gastrointestinal illness like acute diarrhoea, nausea, vomiting and abdominal pain (Jacob, 1989). Laura Green *et.al* stated that food contamination may occur at any point during its journey through production, processing, distribution and preparation hence, all food caterers have a responsibility for ensuring the

food safety throughout the chain of food production and storage (Laura *et al.*, 2007; Mukherjee *et al.*, 2004). The food safety practices of the food handlers are often associated with the certain factors like education, basic awareness about hygiene and sanitation, economic background etc. Food handler's education qualifications have a direct influence on their food safety practices whereas the economic backgrounds indirectly influence the safety of the food (Lerin Dirks and Dr. James Groves, 2010). Thus, identifying the factors influencing the food safety practices of food handlers is very crucial in preventing food borne illness outbreaks.

Methodology

Study design

The research design of the study comprises of descriptive and observational study.

Study area and period

The study was carried out among the Self Help Group Food Business Operators involved in food business in Puducherry.

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Study Population

All women food handlers involved in food business in Self Help Group in selected parts of Puducherry region were study population. Female Self Help Group members from both rural and urban area under both Government and Non-Governmental Organization scheme were included in the study. Non Self Help Group women entrepreneurs involved in selling raw foods products like vegetables, fish and grocery items were excluded from the study.

Sample size

For the study, 216 Self Help Group Food Business Operators were selected. Among the selected samples, 112 Self Help Group were under the Government scheme and 104 Self Help Group were under NGO scheme. The samples were collected by convenience sampling method.

Data collection methods and instruments

The interview method was used as a tool to collect data. Data were collected by face to face interview with the help of framed questionnaire and observational checklist. The questionnaire had two sections socio-demographic profile, observational checklist for hygiene and food safety checklist. Under the socio-demographic profile age group, educational qualification, mode of family of the respondents was covered. The observational checklist was framed in yes or no format which was filled by the researcher without questioning the respondents. The reliability of the observational checklist has been tested using Cronbach's alpha test and the alpha coefficient value is 0.72 which is acceptable. Validity of the questionnaire was checked by the subject experts to check the content validity. The standardized food safety checklist from FSSAI (2012) was modified based on the study population. The questionnaire was pre-tested by conducting the pilot study and necessary corrections were done. After checking the consistency and completeness the data were entered using SPSS (version 18.0). Descriptive statistics of the collected data were done for most variables in the study using statistical parameters like percentage, mean and standard deviation, multiple regressions used to check which variables are associated with the dependent variable individually.

RESULTS AND DISCUSSION

Demographic Profile of the SHG FBO's

Age group: Majority (59.7 percent) of respondents belonged to the age group of 31-40 years. This age group is stated as the productive age by Raja Reddy and Reddy (2012) and they also stated that this age group (31-40 years) engage themselves in two or three economic activities at one time. About 26.9 percent of respondents were from the age group of 41-50 years, 16.2 percent of respondents were from below 30 years and 10.6 percent of them from the age group of 51-60 years.

Education Qualification: Majority (46.7 percent) of SHG FBO's were able to read and write this may be due to functional literacy imparted to them through National Literacy

Mission which focus on three 'R's Reading, Writing and Arithmetic. It was observed that 30.5 percent of respondents had completed their SSLC and 12.9 percent of them had completed their higher secondary and 8.3 percent of the respondents were illiterate but manage the accounting on their own method. It was observed that 2.7 percent of respondents only from the Government scheme were graduate.

Table 1. Demographic Profile

Socio-demographic variables	Government SHG N =112	NGO SHG N=104	Total N =216
Age group			
Below 30 years	11 (9.8)	24 (23.1)	35 (16.2)
31-40 years	47 (42.0)	47 (45.2)	94 (59.7)
41-50 years	39 (34.8)	19 (18.3)	58 (26.9)
51-60 years	11 (9.8)	12 (11.5)	23 (10.6)
Above 60 years	4 (3.6)	2 (1.5)	6 (2.8)
Educational Qualification			
Illiterate	6 (5.4)	12 (11.5)	18 (8.3)
Able to read & write	51 (45.5)	50 (48.1)	101(46.7)
SSLC	39 (34.8)	27 (26.0)	66 (30.5)
Higher secondary	13 (11.6)	15 (14.4)	28 (12.9)
Others	3 (2.7)	0	3 (1.3)
Mode of Family			
Nuclear family	31 (27.7)	30 (28.8)	61(28.2)
Joint family	80 (71.4)	69 (66.3)	149 (68.9)
Extended family	1 (0.9)	5 (4.8)	6 (2.7)

Mode of family: Majority (68.9 percent) of the respondents belonged to joint family system as it is social virtues or acts as a social insurance. The nuclear family system was followed by 28.2 percent of the respondents because nowadays nuclear families are developed due to urbanization and industrialization (Elishiba Njambi Kimani and Donald Kisilu Kombo, 2010).

Economic Profile of the SHG FBO's

Table 2. Economic Profile

Economic Variables	Government SHG N =112	NGO SHG N=104	Total N =216
Monthly Income			
Rs. 1001-2499	11 (9.8)	1 (1.0)	12 (5.5)
Rs. 2500-4999	21 (18.8)	10 (9.6)	31 (14.3)
Rs. 5000-9999	57 (50.9)	66 (63.5)	123 (56.9)
Rs. 10,000-19,999	16 (14.3)	24 (23.1)	40 (18.5)
Rs. 20,000-49,999	7 (6.31)	2 (1.9)	9 (4.1)
Above 50,000	0	1 (0.4)	1 (0.4)
Per Capita Income			
Class I (Rs. 5571 and above)	6 (5.4)	2 (1.9)	8 (3.7)
Class II (Rs. 2786 to 5570)	15 (13.4)	16 (15.4)	31 (14.4)
Class III (Rs. 1671 to 2785)	29 (25.9)	48 (46.2)	77 (35.6)
Class IV (Rs. 836 to 1670)	30 (26.8)	26 (25.0)	56 (25.9)
Class V (Below Rs. 836)	32 (28.6)	12 (11.5)	44 (20.4)

Monthly Income: SHG FBO's monthly incomes were categorized into six groups by using Kuppaswami and Pareekh socio-economic scale (Gururaj, Maheshwaran 2014). Majority (56.9 percent) of the respondents falls under the monthly income range between 5000-9999. About 18.5 percent of respondents were from the income group of 10,000- 19,999 and 14.3 percent of respondents were from income group of 2500-4999. Only 4.1 percent of respondents were in the income group of Rs. 20,000 - 49,999. The percentage of

respondents from the income group of Rs. 10,000 - 19,999 was higher in NGO scheme (23.1 percent) than in Government scheme (14.3 percent). This might be due to the fact that the families might have more than one earning members.

Per Capita Income: The per capita monthly income was categorized into five classes by using the revised version of Prasad's classification of May 2014 (Shankar Reddy Dudala *et al.*, 2014). Majority (35.6 percent) of respondents were in class III. 25.9 percent of respondents fall under class IV. About 20.4 percent of respondents were from class V, 14.4 percent of respondents fall under class II and only 3.7 percent of respondents are from class I.

Self Help Group Profile of FBO's

Table 3. SHG Profile of FBO's

SHG Profile Variables	Government SHG N=112	NGO SHG N=104	Total N=216
Number of Members in SHG			
10-15	39 (34.8)	18 (17.3)	57 (26.3)
16-20	73 (65.2)	86 (82.1)	159 (73.6)
Years of Experience			
Less than 1 year	3 (2.7)	4 (3.8)	7 (3.2)
1-5 year	22 (19.6)	26 (25.0)	48 (22.2)
5-10 year	54 (48.2)	52 (50.0)	106 (49.07)
10-15 year	33(29.5)	22 (21.2)	55 (25.4)
Investment Amount for Food Business			
Below 1000	19 (17.0)	21 (20.2)	40 (18.5)
1001-2000	9 (8.0)	10 (9.6)	19 (8.7)
2001-5000	16 (14.3)	18 (17.3)	34 (15.7)
5001-10000	38 (33.9)	19 (18.3)	57 (26.3)
10001-20000	5 (4.5)	5 (4.8)	10 (4.6)
Above 20000	25 (22.3)	31 (29.8)	56 (25.9)

Number of Members in SHG: Majority (73.6 percent) of the respondents belong to the SHG having 16-20 members. Remaining 26.3 percent of respondents were from SHG having 10-15 members.

Years of Experience in SHG: Nearly 25.4 percent of respondents have 10-15 years of experience in SHG. Majority of the respondents (49.07 percent) had been in the SHG for more than five years and 22.2 percent of them have 1-5 years of experience in SHG.

Investment Amount for Food Business: Majority (26.3 percent) of the SHG FBO's invested Rs. 5001-10,000 as their capital. Around 25.9 percent of the respondents stated that they have invested above Rs. 20,000 for starting business in separate shop. About 18.5 percent of the respondents invested below Rs. 1000 daily for their retail business because they are small street vendors. Around 8.7 percent of them invested capital amount ranging between Rs.1001-2000. Only 4.6 percent of the respondent's investment amount range from Rs. 10,001- 20,000.

Contribution of Independent Variables on the Food Safety Compliance Level of the SHG FBO's

With a vision to study the relationship between the selected independent variables and their influence on the food safety compliance level of the SHG FBO's, multiple linear regression

analysis was used and the results were discussed in the table below. Out of the twelve independent variables, the regression coefficient of scheme of the SHG, monthly income, per capita income of the respondents and the years of experience in the field of SHG were statistically significant with the food safety compliance level of the SHG FBO's.

Table 4. Multiple linear regression Analysis of food safety practice with predictor variables

Variables	Regression Coefficients		t value	Sig.
	β	Std. Error		
Scheme of SHG (Govt. / NGO)	-3.166	1.754	-1.8	0.0726*
Age of respondents	0.065	0.106	0.62	0.5382
Educational Qualification	0.455	1.099	0.41	0.6793
Monthly Income	0.001	0.000	2.44	0.0155*
Per-Capita Income	4.632	1.246	3.72	0.0003*
Years of Experience	0.355	0.178	1.99	0.0475*
Investment amount	-0.00005	0.00004	-1.33	0.1837
No. of members in SHG	-0.378	0.292	-1.29	0.1973
No. of assistants in Group	0.047	0.224	0.21	0.8337
Training Undergone status (Yes/No)	-1.586	1.953	-0.81	0.4177
Registration status (Yes/No)	-2.898	2.327	-0.8	0.423
License status (Yes/No)	-1.496	2.242	-0.69	0.4885

Note: Dependent variable modeled is Food safety compliance score. P-value with * indicates that the predictor variable(s) have statistical significant (at $\alpha=0.10$) impact on the level of food safety practice.

R	R ²	Adj. R ²	F	Sig.
0.659	0.435	0.401	13.01	<.0001*

The SHG was registered under either Government or Non-Governmental Organization and the scheme of the SHG ($t = -1.8$) was negatively contributing to the food safety compliance level. Among the demographic profile age group education has no influence on food safety practices of the respondents. The economic profile of the SHG FBO's, Monthly income ($t = 2.44$) and the per capita income of the family ($t = 3.72$) had a significant influence on the food safety compliance level. In the SHG profile years of experience in the field of SHG ($t = 1.99$) had a significant effect on the food safety compliance level because as a part of SHG activity they attend various training programme and that may be the reason for increase in the food safety compliance level. The training and the license status of the respondents had no influence on the food safety practices of the SHG FBO's. The table further indicates that the coefficient of multiple determination (R^2) with the twelve independent variables revealed 43.5 percent variability on the food safety compliance level of the SHG FBO's and it was found to be highly significant.

Conclusion

In Puducherry region Self Help Group Food Business Operators are involved in preparation of wide range of food items. Most of the SHG FBO's in the study are unaware about the licensing procedure and its importance. Out of twelve

independent variables the economic profile of the study respondents has a significant influence on the food safety compliance level. From the results it was clear that the SHG FBO's should be educated about the food safety practices, cross-contamination, safe temperature and technological aspects of street food vending. These education should be enforced to them by the Government bodies and NGO's for developing the healthy nation.

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