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Survey of Knowledge, Practice on Food Selection to Prevent Food Poisoning of Foodservice Business People in Soc Trang Province, Vietnam in 2021

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ABSTRACT

A cross-sectional descriptive study was carried out to describe knowledge, practice and identify some related factors on food choices to prevent food poisoning on 175 foodservice business people. After collecting the information for the study, the data were statistically summarized using EpiData 3.1 software and analyzed using SPSS 20.0 statistical software. The results showed that the percentage of main processors with common knowledge and common practices on food safety was relatively high (89.11%) and 88%. There was a statistically significant difference between the educational level, training frequency of the main processor and the general knowledge of food safety. Further, there was a statistically significant difference between educational level, training frequency and general practice on food safety. General knowledge had a statistically significant difference to the general practice of food safety of people directly involved in processing.

Key words : Catering service, food choice, food hygiene, food safety, knowledge, practice

INTRODUCTION

Food safety is currently an emerging and hot issue that is of special concern to all levels, sectors and the whole society. Food poisoning, if it occurs, will cause harm to consumers' health, affect social security and economic losses (Food Safety Department, 2015). In the complicated situation of the COVID-19 epidemic, the requirement is to continue to improve the state management capacity and strengthen the control of food safety to ensure public health (Mohammadi-Nasrabadi *et al.,* 2021). The type of food service has been developing strongly in recent times and is also a subject of high risk of food poisoning and food-borne diseases for consumers.

Food safety is of special importance in social life, having a direct and regular impact on human health and on the development of the race of the nation. Although the health sector has made many efforts in implementing activities to ensure food safety, in recent years, food poisoning is still quite common, becoming increasingly complicated and difficult to control.

RESEARCH METHODOLOGY

The main processors were the persons directly processing at the foodservice business establishment. A cross-sectional descriptive study using quantitative research methods was conducted from March to December 2021. Following formula was used to calculate sample size to estimate a population proportion.

$$n = Z^2_{1-\alpha/2} \frac{p(1-p)}{d^2}$$

Where, n was sample size needed for the study, Z was the confidence level taken at the probability threshold $\alpha = 0.05$ $Z_{1-\alpha/2} = 1.96$, P was rate of updating knowledge and practice on food safety from 88.3% P= 0.883 (This rate was based on the Prime Minister's Decision No. 1125/QD-TTG dated July 31, 2017, approving the Target Program for Health - Population for the period 2016-20) and D was acceptance error, chosen d = 0.05.

According to the above formula, the calculated sample size was 159 people, plus 10% of the error of giving up, the number of backup

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samples, so the total number of samples for the study was 175 samples.

Data were collected using questionnaires to ask about some general information, knowledge and practices of the main processor. Data were analyzed using Data entry EpiData 3.1 and processing on SPSS 20.0 software.

RESULTS AND DISCUSSION

A total of 175 primary processors participated in the study. Research results (Table 1) show that demographic characteristics were 73.7% under 40 years old. This result was different from that of Fortune *et al.* (2017) where majority of food handlers were 41-50 years old (39.1%). The results showed that 26.3% were over 40 years old. Gender distribution of men and women was 13.7 and 86.3%, respectively. This result was higher than that of Fortune *et al.* (2017) that most of the processors were women (76.6%). Most food handlers were 73% female and 95% trained (Maria *et al.*, 2017). The result showed that 92.0% had an education level above lower secondary school. Research on factors of training and occupation showed that the percentage of main processors who were trained in cooking was 61.1%; the percentage of main processors with less than five years and more than five years of working time was 74.3 and 25.7%, respectively; 78.9% had completed two or more training courses on food safety.

To have satisfactory general knowledge of food safety, the main processor must achieve at least 80% of the total score (30) or more i. e. at least 24 points or more. After synthesizing the answers, the percentage of main processors with satisfactory general knowledge of food safety was 89.71, and 10.29 of unsatisfactory knowledge (Tables 2, 3 and 4).

The research results showed that the general knowledge of food safety that met the requirements of the regulations was relatively high (89.71%). This result was higher than 88.0% by Larissa *et al.* (2017), 86.06% of Aimi *et al.* (2018), 77.9% of Nada *et al.* (2019) and 70.0% of Sadi *et al.* (2020). In particular, the results were consistent with the targets in the National Strategy on Food Safety for the period 2011-20 and a vision to 2030 approved by the Prime Minister (over 85% of food producers, processors and traders) having the correct knowledge and practice of food safety (Vietnamese Government, 2017).

After summarizing the variables, the practical part consisted of 17 variables and was calculated according to the maximum scale of

Table 1. General information of the main processor

Variable	Characteristics	Frequency	Percentage
Age group (years)	< 40	129	73.7
	≥40	46	26.3
Gender	Male	24	13.7
	Female	151	86.3
Educational level	Below middle school	14	8.0
	Above middle school	161	92.0
Qualification	Untrained	68	38.9
	Trained	107	61.1
Working time	Less than 5 years	130	74.3
	Over 5 years	45	25.7
Participate in knowledge training	Less than 2 times	37	21.1
	More than 2 times	138	78.9

Table 2. General knowledge of main processors

Variable	Qualified	
	Frequency	Percentage
The concept of safe food	153	87.4
Causes of unsafe food	157	89.7
Harm of unsafe food	111	63.4
Knowledge of the causes of food poisoning	147	84.0
Insects harmful to food	133	76.0
Do the stages of the processing process make food contaminated?	157	100
Causes of contaminated food	126	72.0
Assess general knowledge	107	61.1

Table 3. Knowledge of food selection and food preservation by direct processors

Variable	Qualified	
	Frequency	Percentage
Information on pre-packaged food labels	126	72.0
How to choose fresh meat?	128	73.1
How to choose fresh fish?	145	82.9
How to choose fresh eggs?	161	92.0
How to choose fresh vegetables?	166	94.9
How to store food in the fridge?	130	74.3
How to use leftovers from last meal>	175	100
How long does it take to use food after processing?	174	99.4
Assessment of knowledge about food selection and food preservation	155	88.6

Table 4. Knowledge of food poisoning prevention of people directly processing

Variable	Qualified	
	Frequency	Percentage
Diseases that are not allowed to work directly when infected	133	76.0
Treatment when suffering from the above diseases	175	100
How long to store food samples?	157	89.7
Where to report food poisoning?	171	97.7
Samples of food, patient samples should be kept when food poisoning occurs	90	51.4
Assessment of knowledge about food poisoning prevention	128	73.1

the answer part of 20 points. For satisfactory general food safety practices, the main processor must achieve at least 80% of the total score or more i. e. at least 16 points or more. After synthesizing the answers, the percentage of main processors with satisfactory practice rate was 71.2, unsatisfactory practice was 28.8% (Tables 5, 6 and 7).

The results of the study showed that, in terms of general food safety practices, the percentage of satisfactory compliance with regulations was relatively high (88). This result was lower than 92.6% of Nada *et al.* (2019) but higher 19.94% by Aimi *et al.* (2018) and 76.0% by Larissa *et al.* (2017). In general, the high food safety practices of the processors were due to the self-consciousness of each main processor, along with the constant attention and supervision of the school board and the manager who regularly organized training on knowledge of food safety, thereby promptly providing regulations in the field of food safety.

Table 5. Processing practices of main processors

Variable	Qualified	
	Frequency	Percentage
Implement the processing process	161	92.0
How to wash your hands?	160	91.4
How to wash vegetables?	173	98.9
How to use food stored in the freezer?	155	88.6
Food preparation place	156	89.1
Food delivery record	174	99.4
Evaluation of practice in processing	159	90.9

There was no statistically significant difference in food safety knowledge between main processors over 40 years old and under

Table 6. Food preservation practices by direct processors

Variable	Qualified	
	Frequency	Percentage
How to store food after cooking?	172	98.3
Perform food sharing	161	92.0
How to use a food divider?	168	96.0
How to preserve food for human consumption?	174	99.4
Use leftovers from previous meals for the next meal or the next day	175	100
Handling uneaten foods	175	100
Save food samples	175	100
Where to save samples?	175	100
Evaluation of practice in food preservation	175	100

Table 7. Kitchen hygiene practices and waste by main processors

Variable	Qualified	
	Frequency	Percentage
Cleaning kitchen, processing area	170	100.0
Garbage containers	148	84.6
Garbage collection time	173	98.9
Practical assessment of kitchen hygiene and waste	146	83.4

40 years old (Table 8). Statistical results showed that there was no statistically significant difference in food safety knowledge between the male main processor and the female main processor. There was a statistically significant difference in food safety knowledge between the main processor with higher than lower secondary education and lower secondary school education. Key processors with lower secondary education had knowledge 20.08 times higher than those of primary processors with lower secondary education, the confidence interval for the difference 95% CI was (6.41-62.9). Knowledge was higher in the group with a high level of education (P=0.02) (Maria *et al.*, 2017). The results of this study were 5,926 times higher than the research results of Nada *et al.* (2019) those who only attended primary school, and higher than the research results of Le (2015) that lower secondary education or higher had four times the knowledge of food safety with two times higher than those with a high school education or less.

There was a statistically significant difference in food safety knowledge between the main processor with specialized training in food processing and the main processor without specialized training in food processing. Results showed that there was a statistically significant difference in food safety knowledge between the main processor who had participated in food safety training twice or more times and less than two times. The main processor having two or more times of knowledge training had the rate of gaining food

Table 8. The relationship between general characteristics of research subjects and knowledge about food safety

Independent variables		Food safety knowledge		$\chi 2$, P-value OR 95% CI
		Not achieved (%)	Obtained (%)	
Age group (years)	< 40	13 (10.1)	116 (89.9)	$\chi 2$=0.023, P=0.879, OR=0.919, 95% CI=(0.3-2.74)
	≥40	5 (10.9)	41 (89.1)	
Gender	Male	13 (54.2)	11 (45.8)	$\chi 2$=0.349, P=0.56, OR=1.297, 95% CI=(0.55-3.1)
	Female	72 (47.7)	79 (52.3)	
Educational level	Below middle school	13 (41.9)	18 (58.1)	$\chi 2$=40.89, P<0.0001, OR=20.08, 95% CI=(6.41-62.9)
	Above middle school	5 (3.5)	139 (96.5)	
Qualification	Untrained	16 (14.4)	95 (85.6)	$\chi 2$=5.61, P=0.019*, OR=5.22, 95% CI=(1.16-23.5)
	Trained	2 (3.1)	62 (96.9)	
Working time	Less than 5 years	16 (11.7)	121 (88.3)	$\chi 2$=1.33, P=0.249, OR=2.38, 95% CI=(0.52-10.84)
	Over 5 years	2 (5.3)	36 (96.7)	
Food safety knowledge training	No training	3 (13.6)	19 (86.4)	$\chi 2$=0.31, P=0.58, OR=1.45, 95% CI=(0.39-5.49)
	Trained	15 (9.8)	138 (90.2)	
Frequency	Less than 2 times	12 (24.5)	37 (75.5)	$\chi 2$=14.9, P<0.0001, OR=6.49, 95% CI=(2.28-18.48)
	More than 2 times	6 (4.8)	120 (95.2)	

*Fishers Exact Test.

safety knowledge 6.49 times higher than that of the main processor having the number of times of training on food safety knowledge, products less than two times, the confidence interval for the 95% CI difference was (2.28-18.48).

This result was similar to the results of Dinh (2014), Hezekiah *et al.* (2015) and France *et al.* (2020), whereas Larissa *et al.* (2017) and Nada *et al.* (2019) observed that the knowledge was not satisfactory even 75% of the respondents had a certificate of training in safety food. Sadi *et al.* (2020) observed that there was a significant relationship between total knowledge of food safety and age, experience, educational level and enrolled food handlers in training course.

There was no significant difference in food safety practices between the main group of processors over 40 years old and under 40 years old (Table 9). Even there was no statistically significant difference in food safety practices between male and female processors. The main processor with an educational level above lower secondary school had a rate of achieving food safety practice 12.28 times higher than that of the main processor with a lower secondary school education or less. The confidence of the 95% CI difference was (4.48-33.66).

Further, that there was statistically significant difference in food safety practices between the main processor with specialized training in food processing and the main processor without specialized training in food processing. There was no statistically significant difference in food safety practices between trained main processors (5 years) and untrained main processors. The main processor with two or more times of knowledge training had the rate of achieving food safety practice 8.824 times higher than that of the main processor with less than two times of training, about confidence of difference 95% CI was (3.18-4.48). This result was higher than Nguyen (2011) that those with high school diplomas and above had 4.9 times higher food safety practices than those who graduated from high school at base

Table 9. Relationship between general characteristics of research subjects and practice

Independent variables		Food safety knowledge		χ2, P-value OR 95% CI
		Not achieved (%)	Obtained (%)	
Age group (years)	< 40	15 (11.6)	114 (88.4)	χ2=0.064, P=0.8, OR=0.88, 95% CI=(0.32-2.42)
	≥40	6 (13.0)	40 (87.0)	
Gender	Male	5 (20.8)	19 (79.2)	χ2=3.35, P=0.067, OR=2.79, 95% CI=(0.89-8.7)
	Female	13 (8.6)	138 (91.4)	
Educational level	Below middle school	13 (41.9)	18 (58.1)	χ2=31.97, P<0.0001, OR=12.28, 95% CI=(4.48-33.66)
	Above middle school	8 (5.6)	136 (94.4)	
Qualification	Untrained	19 (17.1)	92 (82.9)	χ2=7.53, P=0,007*, OR=6.4, 95% CI=(1.44-28.45)
	Trained	2 (3.1)	62 (96.9)	
Working time	Less than 5 years	18 (13.1)	119 (86.9)	χ2=0.76, P=0.57, OR=1.765, 95% CI=(0.49-6.34)
	Over 5 years	3 (7.9)	35 (92.1)	
Food safety knowledge training	Untrained	5 (22.7)	17 (77.3)	χ2=2.742, P=0.15, OR=2.518, 95% CI=(0.82-7.75)
	Trained	16 (10.5)	137 (89.5)	
Frequency	Less than 2 times	15 (30.6)	34 (69.4)	χ2=22.33, P<0.0001, OR=8.824, 95% CI=(3.18-4.48)

Table 10. Relation of food safety knowledge to food safety practice

Independent variables		General food safety practice		χ2, P-value OR 95% CI
		Not achieved (%)	Obtained (%)	
General knowledge of food safety	Not achieved	9 (50)	9 (50)	χ2=27.436, P<0.0001, OR=12.083, 95% CI=(4.04-36.14)
	Not obtained	12 (7.6)	145 (92.4)	

and below. Study by Saurabh *et al.* (2016) showed that all practices related to food hygiene were very well followed by the majority of food handlers in the study.

The main processor with general food safety knowledge had the rate of achieving general food safety practice 12.083 times higher than that of the main processor with poor general food safety knowledge, the confidence interval of 95% (Table 10).

General knowledge about food safety had a significant difference with general practice on food safety. People with good general knowledge had satisfactory practice 7.49 times higher than those with bad general knowledge. This result was 4.2 times higher by Dao (2015). There was a relationship between knowledge and practice (Aimi *et al.*, 2018; Nada *et al.*, 2019).

CONCLUSION

The general food safety knowledge of the main processor was relatively high (89.11%); and the overall food safety practice of the main processor was also relatively high (88%). In some related factors, the results of the study identified related factors with statistical significance as : educational level, training frequency of main processors with general food safety knowledge, educational level and frequency of training with general food safety practices. In particular, general food safety knowledge had a statistically significant relationship with general food safety practices. It was suggested to establish owners, management boards, and managers of food service establishments needed to strengthen the monitoring of personal hygiene of main processors daily; regularly organize training to update knowledge on food safety; directing and supervising the practice in processing and cleaning waste kitchens, giving priority to recruiting people with a high school diploma or higher. Management agencies to strengthen inspection and supervision of food safety food, propagating regulations on food safety for collective kitchens, canteens, companies and enterprises having foodservice organizations that must ensure food safety under their management.

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