



Assessment of HACCP Application and Knowledge of Food Handlers in five star categorized hotels of Delhi-NCR

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Abstract

This study assessed the knowledge of HACCP of food handlers in standard hotels in Delhi NCR. The study adopted a cross-sectional survey research design and was conducted in Delhi NCR. All the hotels classified by the India HRACC Ministry of tourism government of India as either five star-rated were targeted. A purposive and stratified sampling technique was used to select the study units who constituted the respondents for the study with a total of 31 hotels involved in the study. A questionnaire was used to get information on knowledge on HACCP and its implementation by 31 food handlers. Data were presented in tables. Findings from this study has revealed that under 20% of the respondents in the various hotels use HACCP as the quality control strategy, less than 50% understand the concept of HACCP. Results also revealed that there is an insignificant relationship between years of service in the food establishment and the knowledge on HACCP. More results revealed that there is no significant relation between formal training and knowledge on food safety. Results also revealed that there is no significant relationship between knowledge of HACCP by food handlers and their implementation in food preparation. This insignificant relationship between formal training and knowledge on food safety could mean that there may be other factors preventing food handlers from implementing food safety practice, this



may include time, cost of carrying out the practices or even personal attitude of the food handlers during food handling. Food handlers should be taught food safety practices practically rather than theoretically.

Keywords: HACCP, Food Handlers, Hygiene Practices, Food safety, Hotels.

1. Introduction

Food plays an important role in society and affecting people's lifestyles, health, and habits, as it is an important aspect of socializing. Today, star categorized hotels must pay more emphasis on to food safety, environmental protection, and everything else connected to the ethical content of economic operations in the developing world .According to the World Health Organization (WHO), it is growing concern about food hygiene and safety in hotels. It is currently estimated to accountfor more than three million reported cases of food poisoning in India. Food poisoning, and certain other health disorders, affects every country, regardless of income and development level. Many studies have found that food-borne diseases impose a significant economic as well as quality-of-life burden on society. Food handlers play an important role in maintaining food hygiene and safety throughout the processing, manufacturing, storage, and preparation of food chain. Food contamination by the food handler is responsible for 15 to 20% of food-borne diseases outbreaks. Poor handling of food and disdain for sanitary precautions allow bacterial growth in food and,in certain situations, survive and reproduce in sufficient quantities to cause illness. Personal hygiene of food handelers and environmental sanitation are



crucial in the spread of food-borne diseases. Investigations on food-borne illness and its outbreaks in the world reveal that, in almost cases, they remain caused by a failure to meet acceptable standards in the food preparation, processing, and storage . Hotels provides various guest services within the same or of different outlet which are regularly accessible for the use of the both resident and non- resident of the hotel. These include the provision of food and refreshment services in restaurant, bars and banqueting halls, conference rooms and leisure facilities. Hazard analysis Critical Control Points (HACCP) is recognized universally as the best methods for guaranteeing the food safety. In 2004, the European Union (EU) accepted a few new directions on the hygiene and food safety, all food vendors realize techniques dependent on the HACCP standards. Government specialists over the globe, including Canada, Australia and Japan, have embraced or are receiving the HACCP-based food safety framework .According to Scott and Stevenson, it was expressed that, threat identified with the production of food items can be minimized to a permissible limit or eliminated through the implementation of HACCP .There is a need to determine the knowledge of HACCP of food handlers in star hotels in Delhi NCR. This study designed to assess the knowledge of HACCP of food handlers in star hotels in Delhi NCR. The specific objectives of the study are to evaluate the knowledge of food safety practices of the staff and management as regards HACCP compliance in star hotels, assess the level of professional training held by star hotel managers andtheir food-handlers. The study is done on the following Hypothesis Testing (HT):

Ho₁: There is no relationship between time of service and understanding of HACCP in star hotels in Delhi NCR.

Ho₂: There is no relationship between formal training and application of quality



control strategy in food in five star hotels in DELHI NCR.

H₀₃: There is no relationship between knowledge on HACCP and support of the hotels with implementation of HACCP in star hotels in DELHI NCR.

2. Materials and Methods

Study Design

The study is done on a cross-sectional survey research design and conducted in Delhi NCR. All the hotels classified by HRACC ministry of tourism government of India star-rated were targeted. A purposive and stratified sampling technique was used to select the hotels for the study that constituted the respondents.

Sampling Technique

A purposive and stratified sampling technique was used to select the hotels that constituted the respondents for the study with a total of 40 hotels sampled for the study but only 31 hotels allowed to conduct the study.

Study Population

The study population comprised of all food handlers working in the star categorized hotel in the Delhi NCR.

Research Instruments



The instrument used for data collections was semi-structured self-administered questionnaire and observation checklist.

Questionnaires

This study considered 31 semi-structured questionnaires administered to food handlers in food outlets of five star hotels. The questionnaires for the food handlers were divided into sections; A, B, C, D, Close-ended questions were used in both questionnaires.

Statistical Analysis

The data was checked before entry into Statistical Package for the Social Sciences (SPSS). The data was analyzed using techniques such as percentages, figures, tables, as tools of descriptive data analysis which determines the group characteristics with chi-square test.

Limitations of the study

- Most of the hotels did not permit more than one food handlers to be involved in the study because of the working time.
- Some hotels did not allow entry into their hotels as they feel they are going to be in trouble after the study.

3. Results

Table 1: Demographic Characteristics



AGE	N	%
18-25 yrs	11	27.5
26-33yrs	25	62.5
34-41yrs	4	10
50yrs and above	0	0
GENDER		
Male	19	47.5
Female	21	52.5
EDUCATION		
Primary	0	0
Secondary	0	0
Diploma	20	50
Degree	20	50
DESIGNATION		
Manager	11	27.5
Head cook	22	55
Cook	7	17
Waiter	0	0
Cleaner	0	0
YEARS OF SERVICE		
2 months	3	7.5
Above 3months	37	92.5
NO. OF TRAINING ATTENDED		
None	14	35
One	4	10
Two	2	5
Three	10	25
Four	3	7.5
Five and Above	7	17.5
FORMAL TRAINING CATERING CLASSES		
Yes	25	62.5



No	15	37.5
CETIFICATE TRAINING		
Yes	27	67.5
No	13	32.5
HOW OFTEN YOU GO FOR TRAINING		
Not at all	1	2.5
Quarterly	7	17.5
6 months	10	25
Yearly	22	55.5

Table 2: Knowledge on Quality Control

Statements	N	%
Do you know any quality control measures for food establishment?		
Yes	32	80
No	8	20
If yes, which of the measure		
Good Manufacturing Practice	6	15
Good Agriculture Practice	15	37.5
Standard Operation Procedure	10	25
Standard Sanitation Operation Procedure	7	17.5
HACCP Points where would you apply this		
Receiving Food Products only	12	30
Storing food products only	0	0
Kitchen during cooking only	5	12.5
All of the above	23	57.5
What kind of quality control measures does you now apart from the mentioned?		
From where did you know these strategies?		
Health Officers	32	80
Local government	4	20
Customer	2	10
Mass media	1	2.5
Can't Remember	1	2.5
Have you heard of the term "Hazard Analysis and Critical control points"		
Yes	31	77.5



No	9	22.5
Do you have a written food Hygiene statement Apart from HACCP		
yes	18	45
no	22	55
How would you rate your understanding on HACCP		
Excellent	0	0
Good	8	20
Fair	28	70
Poor	2	5
Very Poor	2	5

Table 3: Relationship between years of service and understanding of the term “HazardAnalysis and Critical Control Points”

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.942a	1	0.332
Continuity Correction b	0.063	1	0.801
Likelihood Ratio	1.599	1	0.206
Fisher's Exact Test			
Linear-by-Linear Association	0.918	1	0.338
No. of Valid Cases	40		

Table 4: Relationship between Formal Training and Application of Quality Control Strategies in theFood Preparation

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.906a	2	0.386
Likelihood Ratio	1.91	2	0.385
Linear-by-Linear Association	0.668	1	0.414
No. of Valid Cases	40		

3 cells (50.0%) have expected count less than 5. The minimum expected count is1.88.



Table 5: Have you heard of the term" Hazard Analysis and Critical Control Points" how much supportive or unsupportive is your hotel with implementation of HACCP .

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.171a	1	0.279
Continuity Correctionb	0.484	1	0.487
Likelihood Ratio	1.151	1	0.283
Fisher's Exact Test			
Linear-by-Linear Association	1.142	1	0.285
N of Valid Cases	40		

4. Discussions

According to data food handlers were between the ages on 34-41years (62.5%), while 27.5 % of the food handlers were between the ages 26-33 yearswhile (10%) were with 18-25 years. This study is similar with research done by Ulusoy and Colakoğlu were most respondents were aged 19–40 and over 40 (75.8% and 19.4%, respectively) in the survey on determination of HACCP knowledge of foodhandlers in Istanbul food businesses. This is similar to studies in Ghana by Annor and Baiden who showed that majority of food handebers were under thirty years. At thisage, food handlers are young and are able to manage any work assigned to them. Table 1 shows, (50%) of the food handlers were males and 50% were females. All male participants were in management positions in the “Food handlers’ knowledge on food hygiene: The case of a catering company in Portugal”. From the table 1 above, majority of the handlers in Delhi NCR revealed that (50%) have Diploma qualification while 10% has a qualification degree while 20% of the food handlers have secondary school qualification, with another (20%) in primary school. This is in contrast with Mukhtar *et al.*, where among the 350 respondents, 5.1% of the respondents did not have any formal education, 16.9% have



primary level education, 71.1% have secondary education, 4.6% have diploma and 2.3% have degree. Previous research revealed the fact that food safety training increased knowledge regarding food safety in staff. In table 1, a good number of the respondents in this study were at the position of Head cooks (55%), (27.5%) were managers, and 17% were cooks. This is contrast to the work by Rahman *et al.* with respondents' position, Cook (23%), Manager (53%). Preparation (23%). In Table 1, when asked about the years of service in the establishment, Most of the respondent (92.5%) of them is working from more than three months in the hotel, when they asked the number of training attended, (35%) responded never attended any training program about food safety, (10%) has attended more than two training programs, (5%) has attended two programs, (25%) attended three program, and (7.5%) have attended four training programs (17%) has attended five and more training programs with (62.5%) of the respondents. This is also in contrast with the findings obtained from the study of Bas *et al.* indicated that 28.4% of senior staff and 56.3% of junior food handlers had not done basic food hygiene training. Results from this study say that a large number of the respondents have done formal food training and have been certified, thus they have better knowledge of food safety and HACCP practices in food production.

Knowledge on Quality Control

From the table 2, the respondents were questioned if they know any quality control initiative in food outlet, most of the respondents (80%) said yes while a few (20%) responded negative in the sampling of selected hotels in Delhi NCR. When they asked the type of quality control initiative they use in their food outlet. Findings from this study show that the respondents have



divergent knowledge on food quality control measures which may make sure safe production of food. In table 2 , when asked about the where they will apply the quality control measures, (12.5%) of the respondents replied in the food preparation during cooking only, (30%) replied when receiving raw food products only, (0%) replied during storage, while most of the respondents (57.5%) mentioned all of the above. This implies that majority of the respondents understands the principles of HACCP and food safety that food safety applies to all processing steps in food production.

5. Conclusion

Findings from this study has revealed that under 20% of the respondents in the various hotels uses Hazard Analysis and Critical Control Points (HACCP) has the quality control strategy, less than 50% understand the concept of HACCP. Results also revealed that there is an insignificant relationship between years of service in the food establishment and the knowledge on HACCP at p- value (0.05). This could mean that food handlers may not upgrade, regarding new food safety methods or may choose to stick their old knowledge on food safety. Findings from this study also show that there is no significant relation between formal training and knowledge on food safety. This could be understand that there may be other factors preventing food handlers from utilizing food safety practice, this may include time, cost of carrying out the practices or personal attitude of the food handling staff during food handling. Results also prove that there is no significant relationship between knowledge of HACCP by food handling staff and their implementation in food preparation. This could be as a result of time constraints, costly in implementation of HACCP. Conclusively, the



findings of this study may encourage the expansion of training programs aimed at expanding food hygiene and food safety knowledge and increasing awareness levels among the star hotels.

Recommendations

- i. Regular training programs should be organized for food handlers by their establishment by the Public Health Officers to acquire new knowledge on food safety.
- ii. Food handlers should be trained in food safety practices practically rather than theoretical methods.
- iii. Hotel owners should employ professional HACCP consultant in the implementation of HACCP systems in their hotels.
- iv. Hotels should prepare HACCP plans for different foods in their hotels to allow timely implementation of the system.



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