Description of the Food Safety System in Hotels and How It Compares With HACCP Standards

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Background. Tourism is an important earner of foreign exchange in Jamaica; hence, the protection of the visitors' health is very important. A study of travelers to Jamaica in 1996 to 1997 found that travelers' diarrhea (TD) affected almost 25% of visitors. The Ministry of Health (Jamaica) initiated a program for the prevention and control of TD aimed at reducing attack rates from 25.0% to 12.0% over a 5-year period through environmental health and food safety standards of hotels. This article examines the food safety systems in Jamaican hotels located in a popular resort area to find out how comparable they are with the Hazard Analysis Critical Control Point (HACCP) strategy.

Methods. A cross-sectional study was done of hotels in St. Mary and St. Ann. Quantitative data were obtained from food and beverage/sanitation staff and qualitative data through in-depth interviews with hotel managers. Observation of the food safety operations was also done.

Results. The majority (75%) of larger hotels used a combination of HACCP and Ministry of Health food safety strategies ($p = 0.02$) and offered all-inclusive services ($r = -0.705$, $p = 0.001$). Larger hotels were more likely to have a better quality team approach, HACCP plan, and monitoring of critical control points (CCPs) and more likely to receive higher scores ($p < 0.05$). More than two thirds of hotel staff were knowledgeable of HACCP. Significantly smaller hotels (87.5%) received less than 70% in overall score ($r = 0.75$, $p = 0.01$). Identification of CCPs and monitoring of CCPs explained 96.6% of the change in the overall HACCP scores ($p = 0.001$). Hotel managers felt that some hotels' systems were comparable with HACCP and that larger properties were ready for mandatory implementation.

Conclusions. While some components of the HACCP system were observed in larger hotels, there were serious shortcomings in its comparison. Mandatory implementation of HACCP would require that sector-specific policies be developed for smaller hotels and implemented on a phased basis.

Many environmental and demographic changes in developing regions of the world have resulted in outbreaks of food-borne pathogens and many reemerging and newly identified food-borne pathogens. These vary from climatic changes, changes in microbial and other ecological systems, poor environmental sanitation, and decreasing freshwater supplies, resulting in outbreaks of disease such as gastroenteritis, hepatitis A, and others transmitted by food and/or drinking water.[1]

Mass tourism and huge international trade in food are causing food-borne pathogens to spread transnationally.

The Caribbean is one of the most tourism-dependent regions in the world and hence the need for healthy and sustainable operating systems to ensure a profitable hospitality industry and tourism growth.[2]

Several studies have found that diarrheal illnesses are affecting travelers. In 1998, Travel Weekly reported that of 63% of persons who experience illness while traveling, 35% classified their symptoms as gastrointestinal. MacLaurin quoting from Cheung and colleagues (2000) suggests that 17% of 100 UK citizens reported food-borne illnesses while traveling internationally within the past 5 years. She also went on to say that 35% of 290 international air travelers had suffered from food-borne illnesses; quoting from Delgado's (2000) study, she also reported that 38% of a sample of 200 German and UK vacationers had experienced food-borne illnesses while traveling.[3]

Steffen and colleagues[4] (1996–1997) found that 23.6% of tourists suffered from travelers' diarrhea (TD) during

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their stay in Jamaica. Food and/or water that can be contaminated with enteric pathogens therefore require that host countries make every effort to ensure that hotels and restaurants serving food to the population and the tourism sector apply safe food-handling and environmental sanitation practices.[5,6]

The Hazard Analysis Critical Control Point System

The General Principles of Food Hygiene describes the Hazard Analysis Critical Control Point (HACCP) system as a science-based systematic approach that identifies specific hazards and measures for their control to ensure the safety of food.

Initially conceived as a way to provide astronauts with foods of the highest level of quality, HACCP has been adopted by Pan American Health Organization and the World Health Organization, the US Food and Drug Administration, and many other agencies worldwide for the preparation of safe foods at all levels: home, restaurant, and the hotel industry. The HACCP system is based on seven principles, as follows:

Principle 1: Conduct a hazard analysis.
Principle 2: Determine the critical control points (CCPs).
Principle 3: Establish critical limit(s).
Principle 4: Establish a system to monitor control of the CCP.
Principle 5: Establish the corrective action to be taken when monitoring indicates that a particular CCP is not under control.
Principle 6: Establish procedures for verification to confirm that the HACCP system is working effectively.
Principle 7: Establish documentation concerning all procedures and records appropriate to these principles and their application.

Significant hazards for individual food products are identified after reviewing all the processing steps and scientific information related to the processing of that food. The steps at which these hazards can be controlled (CCPs) are identified, and critical limits, such as processing and cooling temperatures and holding times, are set at key process steps. Monitoring procedures are implemented for each CCP to evaluate conformance with these critical limits, and in the event that they fall outside these limits, predetermined corrective actions are taken to prevent the potentially defective product from entering the market. The HACCP system also relies heavily on verification and documentation to ensure that food safety has not been compromised during any step. HACCP therefore provides a structure for assessing risks or whatever could go wrong and putting the requisite controls in place to minimize such risks.[7]

Before HACCP can be implemented, prerequisite programs (PRPs) such as good hygienic practices, staff training, and documented standard operating procedure should be well established. HACCP's effectiveness relies on the knowledge and skills of both management and staff.[7] Taylor quoting from Holt (1999) pointed out that the most important factor driving the implementation of HACCP is the employment of experienced, technically qualified persons.[8] While flexibility appropriate to the business is important, all seven principles must be applied in the HACCP system. This takes into account the nature and size of the operation, including the human and financial resources, infrastructure, processes, knowledge, and practical constraints. The seven principles can be applied in businesses regardless of size and the nature of the operations.[7,9]

The efficacy of the system relies heavily on the relevant HACCP knowledge and skills, management commitment, and understanding of HACCP along with changes in attitude and organizational culture—all requiring adequate training to overcome barriers related to human resources.[9] Failure to adhere to HACCP has been seen to be behavior related; however, it is more widespread where there is a lack of policy and legislation to ensure compliance and standardization for the system, as exists in Jamaica and Ireland.[10,11] There is increasing evidence that while HACCP use is widespread in large food operations, its use is limited within smaller companies. In the larger food establishments, implementation is mainly motivated by customer demand, market pressure, and commitment to self-development and sometimes to meet licensing/certification regimes and surveillance programs.[11]

The Jamaican Situation

In Jamaica, food safety is a priority program of the Ministry of Health. Each hotel is expected to identify hazards and establish CCPs for monitoring food safety standards based on a manual of standards and acceptable practices developed by the Ministry of Health and the Tourism Product Development Company Limited to guide the process.[12]

A food safety system based on HACCP was implemented in hotels in Jamaica in 1996; however, the extent of its use in this sector is uncertain, and the knowledge, attitude, and practices of hotel staff are critical to the further implementation of the system throughout the tourism industry.

The Ministry of Health's hotel surveillance system captures information on selected health conditions among travelers to Jamaica, which includes data about gastrointestinal symptoms from guests and staff. The data for guests are calculated based on the number of guest nights stayed per week. The inclusion criteria for the hotel surveillance system are that hotels must have 100 or more rooms and serve at least three or more meals on a buffet daily. All-inclusive hotels having less than 100 rooms that serve children are also included. Of the 33 hotels, 12 met the criteria and are included in the surveillance system. Epidemiological surveillance data from the

Ministry of Health reveal a steady decline in TD rates since the inception of the HACCP-based program in 1996 from 23.22% to 4.31% in 2002. For the northeast region in which the study was concentrated, the rates declined from 23.22% to 5.31% over the period.[13]

This study aimed to describe the hotel-based food safety system among selected hotels and the extent to which it measures up to HACCP standards and where necessary to recommend training programs and the provision of other necessary support for the efficient and effective implementation of food safety systems in hotels and other food establishments.

Materials and Methods

A descriptive, cross-sectional study design was chosen to measure the current situation because this required using only one group (no controls required). Both quantitative and qualitative data–gathering instruments were used. The questionnaires used for the quantitative data were pretested in three hotels, and minor adjustments made before they were actually administered to the study population. An observation guide was used to evaluate the existing food safety system in relation to key components of the HACCP system.

Selection of Hotels

The sampling frame consisted of all hotels in a specific geographical section in the tourist resort area. These hotels were stratified into those with 100 or more rooms (10) and those with less than 100 rooms (23)—a total of 33 hotels. Using the stratified random sampling method, a 70% sample of each category of hotel that met the inclusion criteria was studied, which yielded 18 hotels (1 of the 18 selected hotels was closed for refurbishing and another opted out of the study, which resulted in 16 hotels making up the sample).

Selection of Participants

Food safety team members included supervisory and line staff involved in the hotels' food safety monitoring program. Staff members were selected based on a convenience method (limited time frame) and included food and beverage and sanitation staff, hotel nurses, environmental health and safety managers/officers, executive chefs and sous chefs, purchasing stores and staff, housekeeping staff, and nannies.

Key Informants

These were hotel managers or their designated representatives who were selected for in-depth interviews to obtain demographic data and background information on the hotels' food and safety system.

Data Collection

Quantitative Methods

A structured questionnaire based on earlier formulated objectives was used to collect data on demographic characteristics, knowledge, attitudes, and practices of the hotel workers.

Observational Methods

A standardized observation guide was developed and used to determine the components of the food safety system that were in place and were in keeping with the HACCP system as well as to identify whether HACCP prerequisites were in place.

Qualitative Methods

In-depth interviews with key informants to determine knowledge, attitude, and level of commitment to the food safety program and how they see it in relation to HACCP standards were undertaken. Probing was done to clarify concerns.

Triangulation of demographic data on each hotel and description of the food safety program were carried out. These procedures were also applied to obtain the perspective of management personnel as the importance of the program and how it compares with HACCP and to determine levels of commitment, motivation, and challenges to using the system. Analysis was done using the framework approach.

Results

Over one third of the hotels assessed did not use a team approach nor had a documented HACCP plan/food safety policy. Larger hotels, however, were more likely to have a documented plan and use a team approach. The majority of hotels had some means of identifying and monitoring CCPs, and more than 70% conducted regular internal audits. Control points were identified in their food safety protocols or standard operating procedures or otherwise designated, however only a few were clearly marked, or identified by numbers and correlated to actual documentation. In the instances where these were identified, their monitoring was above average in most hotels. This was more evident for storage (dry and cold), hot and cold holding, and to a lesser extent, receiving, preparation, and service (Table 1). Where records were kept of monitoring CCPs, these were above average and up-to-date in the majority (75.1%) of cases. Only a quarter of hotels did not do any form of internal audits, and over 43.8% kept audit records that were either below average or nonexistent. Of those that did, 60% did so above average (Table 1).

Verification of food safety practices was done using internal audits, but record keeping was mainly below average (Table 1). Overall, one half of the hotels received total scores less than 70%; the majority (87.5%) of those receiving score less than 70% were in the category of less than 100 rooms ($r = 0.75, p = 0.01$).

According to Table 2, staff in larger hotels were significantly more knowledgeable about the meaning and principles of HACCP and other food safety procedures ($p < 0.05$). The majority of staff in all hotels (81.0% in

Table 1 The degree of team approach, documentation, and monitoring of CCPs in hotels in St. Ann and St. Mary

Components	Level of implementation of components of HACCP system (%)					
Scale	None	Below average	Average	Good	Very good	Excellent
Team approach	37.5	0	12.5	18.8	0	31.3
Documented food safety protocol/ HACCP plan	31.3	6.3	18.8	18.8	12.5	12.5
Hazard analysis	31.3	31.3	37.5	0	0	0
Identification of CCPs	0	25.0	12.5	37.5	12.5	12.5
Monitoring of CCPs done	0	25.0	6.3	0	31.3	37.5
Receiving	0	31.3	0	12.5	12.5	43.8
Storage (dry)	0	18.8	6.3	6.3	18.8	50.0
Storage (cold)	0	18.8	6.3	0	12.5	62.5
Preparation	0	18.8	12.5	25.0	18.8	25.0
Actual cooking	0	25.0	12.5	43.8	6.3	12.5
Holding (hot)	0	12.5	12.5	18.8	6.3	50.0
Holding (cold)	0	12.5	12.5	18.8	6.3	50.0
Service	6.3	18.8	6.3	12.5	18.8	37.5
Records kept	25.0	0	0	6.3	18.8	50.0
Up-to-date	25.0	0	0	6.3	25.0	43.8
Verification						
Internal audits	25.0	12.5	12.5	6.3	6.3	37.5
Audit records kept/up-to-date	37.5	6.3	0	12.5	6.3	37.5

CCPs = critical control points; HACCP = Hazard Analysis Critical Control Point.

small and 97.2% in large) said they used written standard operating procedures; however, almost one third of those in smaller properties did not know the meaning of HACCP. Very few persons were able to list the main principles of HACCP without any assistance; however, when prompted, approximately half of those in smaller properties and even more in larger properties were able to identify the principles as identification of hazards, monitoring of CCPs, and verification ($p < 0.05$). While the trend was similar for all four principles, it was not significant for monitoring.

Staff in larger hotels were more knowledgeable of the existence of HACCP plans, HACCP principles, use of HACCP self-inspection checklists, standard operating procedures ($p = 0.001$), and methods of prevention of contamination ($p \leq 0.05$), as seen in Table 3.

The majority of hotels had not done hazard analysis, and where this was done, it was below average and significantly more so ($p = 0.001$) in smaller properties (Table 4). The Environmental Health and Safety Committee, or HACCP team as it is called in some properties, is set up to monitor all health, safety, and environmental issues that will impact the hotels' operations and verify that the systems in place are working effectively. They also agree that critical points in the hotels' operations are identified mainly in the larger hotels that operate on an all-inclusive basis and are based on the guidelines in the Health and Food Safety Manual for the tourism industry produced by the Ministry of Health. They also agree that there is no formal monitoring system in smaller properties.

Key informants identified benefits derived from having a food safety system in place as being: using the HACCP is seen to have tremendous benefits to the properties as it provides "leverage for the company and is a huge plus for Jamaica and just about all hotels are em-

bracing HACCP." Another benefit is that it is recognized by the tour and travel agencies that send guests to the properties. There was general consensus that the system provided a means of assurance against outbreaks and subsequent legal actions.

There was general consensus among key informants that hotel food safety systems were in keeping with the fundamental principles of HACCP. They also agreed that larger hotels were in a greater state of readiness for full implementation of HACCP.

After subjecting the correlations in Table 4 to a multiple linear regression, all variables except identification of CCPs and monitoring of CCPs lost their significance. This model explained 96.6% of the change in the overall HACCP scores as seen in Table 5.

Discussion

Team approach was inconsistent as more than one third of the hotels surveyed did not use this for the management of their food safety system. Larger hotels were more likely to have a good team approach ($p = 0.001$; Table 4).

At the introduction of the Ministry of Health's HACCP-based food safety system in 1996,[11] there appears to have been some confusion (based on interviews with key informants) between the Health and Food Safety Manual for the hospitality industry with a customized HACCP plan.

The fact that larger hotels (>100 rooms) were more likely to have a documented plan reflects the availability of technical expertise and resources to develop HACCP plans in contrast to smaller and less well-developed businesses.

The majority of hotels (65.5%) had not done hazard analysis or those that did so were below average; this was

Table 2 Knowledge of the meaning, main principles of HACCP, and food safety procedures in small and large hotels

Description	99 or less rooms	100 or more rooms	Significance (x^2)
HACCP plan, % (*n*)	*n* = 113		0.001
Yes	28.6 (12)	76.1 (8)	
No	38.1 (16)	11.3 (8)	
Don't know	33.3 (14)	12.7 (9)	
SOPs	*n* = 114		0.002
Yes	81.0 (34)	97.2 (70)	
No	16.7 (7)	0	
Don't know	2.4 (1)	2.8 (2)	
Use HACCP checklist, % (*n*)	*n* = 114		0.001
Yes	57.1 (24)	97.2 (70)	
No	33.3 (14)	0	
Don't know	9.5 (4)	2.8 (2)	
Knowledge of HACCP, % (*n*)			
Meaning of HACCP	*n* = 114		0.001
Yes	66.7 (28)	93.1 (67)	
No	33.3 (14)	6.9 (5)	
Identify hazard	*n* = 114		0.014
Mention unaided	7.1 (3)	9.7 (7)	
Mention aided	57.1 (24)	77.8 (56)	
No mention	35.7 (15)	12.5 (9)	
Establish CCPs	*n* = 114		0.020
Mention unaided	16.7 (7)	15.3 (11)	
Mention aided	50.0 (21)	72.2 (52)	
No mention	33.3 (14)	12.5 (9)	
Monitoring			0.74
Mention unaided	19.0 (8)	20.8 (15)	
Mention aided	47.6 (20)	63.9 (46)	
No mention	33.3 (14)	15.3 (11)	
Verification			0.021
Mention unaided	7.1 (3)	8.3 (6)	
Mention aided	54.8 (23)	76.4 (55)	
No mention	38.1 (16)	15.3 (11)	

CCPs = critical control points; SOPs = standard operating procedures; HACCP = Hazard Analysis Critical Control Point.

Table 3 Correlation* of HACCP knowledge with size of hotel[†]

Comparative variables[‡]	*R*	Significance (*p*)
Use of HACCP checklist	−0.495	0.001
Have SOP	−0.269	0.004
Hotels have HACCP plan	−0.439	0.001
Know meaning of HACCP	−0.342	0.001
HACCP principles—identification of hazards	−0.242	0.010
HACCP principle—verification	−0.224	0.016
Prevent contamination—time/ temperature control	−0.193	0.039
Prevent contamination—cold holding	−0.205	0.029
Prevent contamination—hot holding	−0.205	0.029
Prevent contamination—hand washing	−0.191	0.041
Prevent contamination—cleaning and sanitization	−0.218	0.020

HACCP = Hazard Analysis Critical Control Point; SOP = standard operating procedure.
*Only significant correlations are shown. Spearman's correlation coefficient used.
[†]Hotel size coded as 99 or less rooms = 1 and 100 or more rooms = 2.
[‡]Independent variables coded as use of HACCP checklist: 1 = yes, 2 = no, and 3 = don't know; have SOP: 1 = yes, 2 = no, and 3 = don't know; have HACCP plan: 1 = yes, 2 = no, and 3 = don't know; know meaning of HACCP: 1 = yes, 2 = no, and 3 = don't know; know HACCP principle—hazard analysis: 1 = mention unaided, 2 = mention aided, and 3 = no mention; know HACCP principle—establish CCPs: 1 = mention unaided, 2 = mention aided, and 3 = no mention; know HACCP principle—verification: 1 = mention unaided, 2 = mention aided, and 3 = no mention; know HACCP principle—monitoring: 1 = mention unaided, 2 = mention aided, and 3 = no mention; prevent contamination—time/temperature control: 1 = mention unaided, 2 = mention aided, and 3 = no mention; prevent contamination—cold holding: 1 = mention unaided, 2 = mention aided, and 3 = no mention; prevent contamination—hot holding: 1 = mention unaided, 2 = mention aided, and 3 = no mention; prevent contamination—hand washing: 1 = mention unaided, 2 = mention aided, and 3 = no mention; and prevent contamination—cleaning and sanitization: 1 = mention unaided, 2 = mention aided, and 3 = no mention.

food safety system was also significantly more evident among respondents in the larger hotels. This may be as a result of the structured HACCP-based food handlers training and ongoing training done by these larger establishments. Identification and monitoring of CCPs

significantly more so in smaller hotels (*p* = 0.001; Table 4). This may be related to the fact that only a few had documented plans.

Hazard analysis was judged on the premise of identification of hazards related to food process steps/activities and not necessarily on raw materials because validation testing, laboratory testing of samples, generic plans, and relevant and appropriate predictive models were not available.

Problems with hazard analysis are not unique to these hotels as over 57% of companies in Ireland[12] had insufficient details in their hazard analysis, 20% of companies had not conducted it at all, and 33% did not have any procedures for considering newly emerging hazards. It must be noted that detailed hazard analysis is required for a proper HACCP plan.

The majority of staff were very knowledgeable about the crucial areas identified in food safety protocols and standard operating procedures. This was based on their knowledge of the actual HACCP principles (Tables 2 and 3). The knowledge of components of the

Table 4 Relationship between hotel size, type of food service, and components of the hotel food safety system and total HACCP scores

Variable	*R*	Significance
Number of rooms*	0.54	0.001
Type of food service	−0.705	0.002
Team approach[†]	0.781	0.001
HACCP plan	0.847	0.001
Hazard analysis	0.842	0.001
Identification of CCPs[†]	0.879	0.001
Monitoring of CCPs[†]	0.858	0.001
Internal audits	0.857	0.001

Dependent variable: total HACCP score. HACCP = Hazard Analysis Critical Control Point; CCPs = critical control points.
*Pearson's correlation coefficient (rho): number of rooms coded as continuous variable.
[†]Spearman's correlation coefficient (rho): food service: 1 = all inclusive, 2 = a la carte, and 3 = both; team approach: 1 = below average, 2 = good average, and 3 = excellently good; HACCP plan: 1 = below average, 2 = good average, and 3 = excellently good; hazard analysis: 1 = below average, 2 = good average, and 3 = excellently good; identification of CCPs: 1 = below average, 2 = good average, and 3 = excellently good; monitoring of CCPs: 1 = below average, 2 = good average, and 3 = excellently good; internal audits: 1 = below average, 2 = good average, and 3 = excellently good.

Table 5 Stepwise multiple linear regression analysis of total HACCP assessment scores

Predictors	β ± SE	Significant *t*	R^2 change
Identifying CCPs	9.57 ± 1.39	0.001	0.872
Monitoring of CCPs	10.22 ± 1.73	0.001	0.094
Total R^2			0.966

CCPs = critical control points; HACCP = Hazard Analysis Critical Control Point.

play an essential role in the hotel's food safety system, as evidenced by over 70% of hotels doing some form of monitoring, which marks an improvement in the food safety system since the implementation of HACCP-based system in 1996. Identification and monitoring of CCPs together contributed 96.6% (*p* = 0.001) of the changes in overall scores received by the hotels (Table 5).

The findings of this study are therefore in keeping with those of Ashley, which postulated that reinspections' assessment scores showed an increase in the mean compliance scores for all CCPs over baseline values, reflecting an overall increased compliance to public health standards and represented real improvements in food hygiene standards. These improvements, however, were not evenly distributed across all hotels, as is the case in the present study.

Verification procedures were conducted in the form of internal audits. This is not given priority in most hotels, and there was concurrence among key informants that one of the challenges facing the staff is that they did not fully understand the need for the program, especially the record keeping that they often thought burdensome (Table 1). This finding was similar to what existed in Ireland where 48% of companies did not have a verification schedule and only 21% had a formal verification schedule in place.[12]

Quality assurance systems are also considered PRPs for HACCP. These programs are driven by policies that provide standards for purchasing/supply of foods and formal surveillance systems—with mandatory reporting of illnesses and health events on a weekly basis and sampling of potentially hazardous foods for food-borne illness surveillance. Potable water sampling is done routinely to assess bacteriological quality.

Experience has shown that the most successful implementation of HACCP is done within an environment of well-managed PRPs that screen out general hazards, thus allowing greater focus on significant hazards. It is highly desirable therefore that hotels in general and those that offer all-inclusive services in particular be encouraged to develop, document, and implement quality assurance systems.

Comparison of the System With HACCP

There was general consensus that the food safety systems surveyed were in keeping with the fundamental principles of HACCP even though the "structure" was absent at the smaller properties.

Where all-inclusive services are being offered, preparations for the implementation of the HACCP system are well advanced, and therefore, regulators will encounter less resistance at these properties. While there are similarities between the food safety systems, eg, the team approach, monitoring of CCPs and documentation, there were major limitations when compared with HACCP, and this was more so with the smaller properties. The implementation of the HACCP system in resource-constrained settings has once again been exemplified. Larger hotels are able to provide the PRPs needed, while smaller hotels are constrained by limited resources, and by extension, the quality of their food safety program is further reduced. The HACCP-based program initially implemented in 1996 has proven to reduce the incidence of TD significantly and is still effective today. This is evidenced by the reduction in TD rates from 23.22% to 5.31%. One limitation of this study is that the surveillance system does not capture information from the smaller hotels routinely; hence, the author is unable to do a valid comparison between large and small hotels of property. However, it is quite clear from the available data in larger properties that would pose the most risk of diarrhea that the system is effective in preventing and controlling food-borne illnesses.[13] There is therefore the need for the hotel food safety system in all hotels to be brought up to HACCP standards. This will guarantee greater effectiveness and recognition internationally, as well as to preserve the tourism product.

The PRPs at the majority of the larger properties can form the foundation for full implementation of HACCP with some technical assistance and support.

Due to the marked differences between the two types of hotels, there is the need for set policies and guidelines specific to the type of business. Tourism is a major contributor to the country's economy, and any effort to improve the quality of service offered by the sector can only be a plus. The government should actively look at developing sector-specific policies to cater to the different levels of hotels and seek to implement the mandatory implementation of HACCP on a phased basis.

Declaration of Interests

The authors state that they have no conflicts of interest.

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