# Investigating Hotels' Compliance With Food Hygiene Regulations Within Bauchi Metropolis, Bauchi State Nigeria.

***Esther** O. **Adebitan***
*Department of Hospitality Management.*
*The Federal Polytechnic, Bauchi, Bauchi State, Nigeria.*
*+2348039364271.*

**Abstract:** Food is what contains the nutrients which are essential for body nourishment. The World Food Summit of 1996 defined food security as 'when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life. The hotel is one place where people are served food at a cost. This implies that the hotel has a stake in ensuring food security for all people. Hotels world over are guided by Regulations and Codes of Ethics in their operations. One of such regulations is the Food Safety Act ( FSA) of 1996 which spells out what hotels must do to ensure that foods sold to the public are safe in addition to being nutritious. Recurring reports of hotels food safety infractions spurred the need to carry out this investigation in order to determine their level of compliance to hygiene regulations in Bauchi metropolis. The study was limited to the Urban and Sub-Urban classified hotels. The diagnostic survey design was adopted and a census population was used for a reliable result. Structured questionnaires were used to elicit information from three respondents drawn from the regulatory agencies responsible for the enforcement of relevant laws on hotels. Observation checklist was also used to assess the sanitary conditions of hotels premises. The one-way ANOVA was used to test for differences among the means and to analyze the total compliance scores of the eight hotels used for the study as regards all the 24 conditions of hygiene and sanitation outlined in the FSA that the regulatory agencies had scored them. This was based on a Likert scale with 5 points (5-Very Good, 4-Good, 3-Average, 2-Poor, and 1-Very Poor). A score between 24 and 56 implied Low Compliance, a score between 57 and 89 implied average compliance while a score between 90 and 120 implied high compliance. The significant test for the hypothesis was at 95% confidence level ($p < 0.05$). The study finding was that the level of compliance with hygiene and sanitation regulations was below the average scores of between 57 and 89. The study recommended among others, a mandatory course on food hygiene and sanitation for prospective hotel entrepreneurs as a prerequisite for obtaining license for all food businesses in Bauchi.

**Key words:** Food, Food safety, Compliance, Hotel.

## 1.0 Introduction

In 1996, the world food summit comprising of almost 10,000 participants and representatives from 185 countries adopted what is widely referred to as the Rome Declaration on World Food Security (World Food Summit, 1996). This Declaration was fallout of a *debate forum on the importance of the overbearing* necessity to eradicate hunger and ensure that there is Food for All. According to the Summit, Food Security is a situation "when all people, at all times, have *physical* and economic access to sufficient, *safe and nutritious food* to meet their dietary needs and food preferences for an active and healthy life. (World Food Summit, *1996*).

Food is here defined by Gross *et al.* (2000) 'as any substance that people eat and drink to maintain life and growth'. Gross *et al.* also emphasized that 'food has to meet physiological requirements in terms of quantity, quality, and *safety* and to be socially and culturally acceptable'.

The crux of the Rome Declaration considered to be of relevance to the hospitality industry is the third item of the Summit's Plan of Action which in part quotes; "…Governments are responsible for creating an enabling environment for private and group initiatives to devote their skills, efforts and resources, and in particular investment, towards the common goal of food for all. This should be undertaken with the cooperation and participation of all members of society. Farmers, fishers and foresters and other *food producers and providers, have critical roles in achieving food security, and their full involvement and enablement are crucial for success"*. By this, the hospitality industry as food producer and provider, automatically qualifies as a stakeholder in the world wide drive of safe Food for All. Safe food is one described by McLauchlin and Little *(2007)* as being nourishing, attractive and free from noxious substances such as poisonous chemicals, toxins and pathogenic microorganisms. One very crucial way by which the quality of food may be compromised is through unwholesome food preparation practices resulting in contaminated food most especially through unhygienic food handling.

A hotel is a commercial sector of the hospitality industry. It is profit driven and is a place where food is made available to the public outside their homes at a cost. In order to maximize profit, Manning and Baines (2004) observed that in many cases, food businesses tend to focus on minimizing costs rather than producing safe and wholesome foods. One of the ways to checkmate this tendency was through the

*Corresponding author:
*eoadebitan@yahoo.co.uk*; ***Esther O. Adebitan***

establishment of food safety regulations one of which is the Food Safety Act of 1990 (Adebitan *et al.*, 2014). This Act spells out specific areas of attention required for safe food production and service.

Results of studies carried out by Adebitan *et al.*(2012) and Adebitan *et al.* (2014) indicate that regulatory agencies responsible for enforcing these regulations are constrained in carrying out their statutory responsibilities and that hotel food handlers are scarcely aware of these food safety regulations which are legal tools formulated for ensuring that foods made available for public consumption are safe. These are intended to serve as guides to those who are into food business with the intent to ensure that public health is not jeopardized for gain. The perceived implication of these results is that safe food and invariably food security is uncertain.

## 2.0 Materials and Methods

### 2.1 Hotels sampled and study area

Urban and Sub-urban classified hotels within the Bauchi metropolis of Bauchi state, Nigeria were used for the study. These hotels were selected because they were at the time of the study budget hotels, with higher patronage as compared with other classes of hotels within the metropolis. The Urban and Sub-urban classified hotels totaled ten. These were coded as hotels A, B, C, D, E, F, G, H, I and J. Two of these, Hotels E and H were used to pre-test the research instrument. The study was guided by an alternative hypothesis stated thus:

$H_1$: The level of compliance of hotels in Bauchi metropolis with hygiene and sanitation regulations is above average.

### 2.2 Research design

Diagnostic survey design was adopted for the study. A structured questionnaire was used to elicit information from three respondents drawn from the regulatory agencies responsible for the enforcement of relevant laws on hotels within the study area. Observation checklist was also used to assess premises' sanitary conditions of the hotels. The one-way ANOVA was used to test for differences among the means of, and to analyze the total compliance scores of the eight hotels used for the study as regards all the 24 conditions of hygiene and sanitation outlined in the FSA by which the regulatory agencies had scored them, based on a Likert scale with 5 points (5-Very Good, 4-Good, 3-Average, 2-Poor, and 1-Very Poor). A score between 24 and 56 implied Low Compliance, a score between 57 and 89, implied average compliance while a score between 90 and 120 implied high compliance. The significant test for the hypothesis was at 95% confidence level ($p< 0.05$).

Three regulatory agencies were asked to give their ratings of how the eight hotels fared in complying with the twenty-four items of the food hygiene and sanitation requirements listed. Their ratings were based on a Likert scale of 1 to 5. The lowest value of 1 was allotted to 'very poor', 2- 'poor', 3-'average', 4-'good' and the highest value of 5 was assigned 'very good'.

Descriptive statistics was used to cross-tab between compliance scores of the hotels and the agencies' ratings of the 24 hygiene and sanitation requirements listed. The average score was 74.25. Since the highest score possible was 120, and the lowest score possible was 24, levels of compliance are thus computed;

A score between 24 and 56 connotes Low Compliance

A score between 57 and 89 connotes average compliance and

A score between 90 and 120 connotes high compliance

In order to have firsthand information about the hotels' hygiene state of affairs, the researcher conducted a personal survey of the facilities available at the hotels using the FSA, (1990) as a guide. The researcher's observation checklist had the same 24 items as contained in the regulatory agencies' questionnaire used to assess the hotels for compliance. Concerning each hotel, the researcher indicated 'Yes' against the requirement that is fulfilled and 'No' against the requirement that was not fulfilled.

## 3.0 Results and Discussion

### 3.1 Level of Hotels' compliance in Bauchi State to Hygiene and Sanitation Regulations.

A disturbing 75% of the eight hotels were rated to be performing below average in terms of compliance to food hygiene and sanitation regulations. Only one hotel (12.5%) was rated to be on average compliance and only one (12.5%) hotel also was rated to have high compliance performance.

The three regulatory agencies were requested to assess the eight hotels' hygiene and sanitation status as either 'satisfactory' or 'not-satisfactory'. Of the three regulatory agencies, only one (33.3%) is of the opinion that the hotels' hygiene and sanitation status were satisfactory. The other two agencies' verdicts ere that the hotels' hygiene and sanitation status were not satisfactory. This result is of immense health significance and implication because this result can be taken to infer that food operations in these hotels are done under unhygienic conditions. The observations also imply that consumer health is at risk and that a food-borne disease outbreak is a disaster waiting to happen, a situation which calls for urgent remedial actions.

Figure 1.0 represent the result of hotel's levels of compliance with hygiene and sanitation regulations in Bauchi.

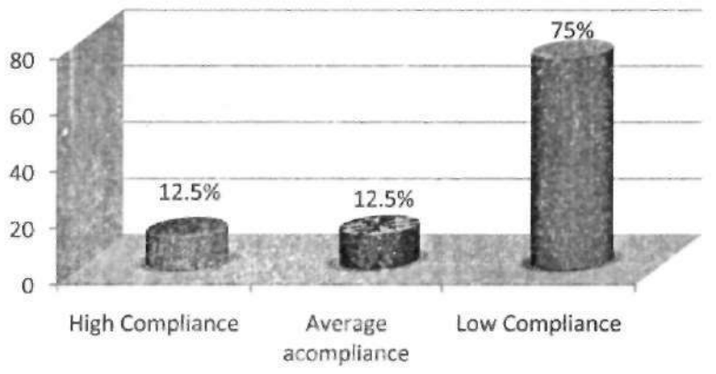


**Figure 1.0: Regulatory agencies' rating of hotels' compliance with hygiene and sanitation regulations**

This result cannot be far removed from the upshots of hotels' operators' presupposed ignorance of the hygiene and sanitation requirements that exist to guide their food operations as discovered by Adebitan *et al.* (2014). This shows inevitably that the hotel operators will not comply with what they are not aware of. Figure 2.0 represents regulatory agencies' assessment of the hotels' hygiene and sanitation status in Bauchi.

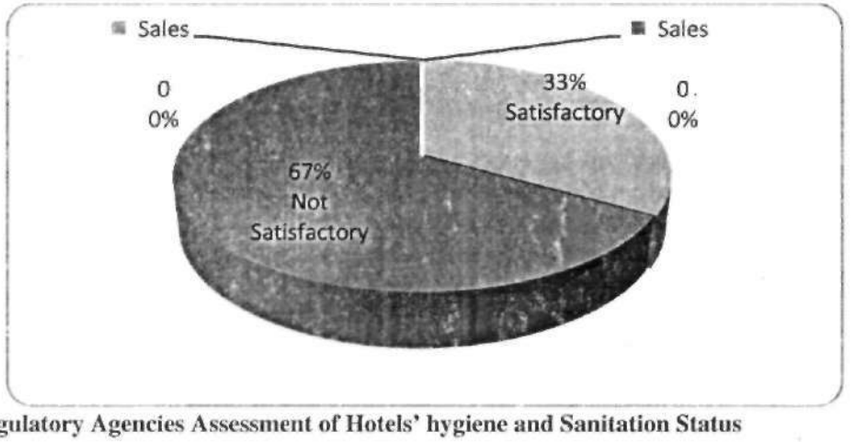


**Figure 2.0: Regulatory Agencies Assessment of Hotels' hygiene and Sanitation Status**

### 3.2 Findings of the Researcher's Personal Observations

For a food premises to be considered hygienic and food processed therein as safe, it is necessary that such premises comply with all hygiene and sanitation aspects of the FSA. This is because each and every aspect is an integral part of the food hygiene and safety whole frame. A default in one aspect of the whole frame has the tendency to jeopardize efforts on other aspects as well as make worthless, all erstwhile and perceived food hygiene gains (McLauchlin and Little, 2007)

As compiled in Table 1.0, the items of the checklist to which at least 50% of the hotels have been found to have complied with have been put in bold type while those not found to have been complied with by at least 50% of the hotels have been italicized. Table 1.0 shows that at least half of the eight hotels have complied with only eleven items on the checklist as observed by the researcher. These observations have been assayed as follows;

***All sections of the food premises are clean and maintained in good repair;***

As presented on Table 1.0, the researcher observed that all of the eight hotels (100 %) had their premise kept cleaned that is, swept with no noticeable repulsive filthiness as prescribed by Mohini, (2004).

***Layout, design, construction and size of the food premises is designed and built to ensure good hygiene;***

Food premises' design, layout and size as proposed by Birchfield (2008) and Mohini (2004) should be large enough to accommodate all materials and equipment, allow for free movement of people and goods, prevent contact between high-risk and other foods, and incorporate a well defined work flow among other considerations. The data entry on Table 1.0 shows that only 3 hotels have the size of their food premises built in such a manner that staffs have enough space to move about freely, have equipment arranged with a definite flow and have a layout that reduces the risk of cross-contamination. The hotels that did not comply with this requirement encouraged unhygienic practices as warned by Blanch (2003).

***All sanitary and hand washing facilities in the food premises are adequate and in good condition*;**

This is recommended recognizing the fact that the food hander's hands come into contact with wastes discharged from the body such as feces and urine. These contain pathogenic microbes which contaminates anything touched before the hands are washed. For this reason, McLauchlin and Little (2007) recommends that sanitary and hand washing facilities are placed adjacent to the toilet cubicles. Only 3 (37.5%) of the hotels visited had complied with this requirement.

The researcher's survey revealed that five of the hotels' staff toilets either did not have the hand washing facilities or the facilities are in states of distrepair and as such the food handlers wash their hands in the sinks in the kitchen when they come back from the toilet. This is a grievous health risk especially in the event that any of the food handlers is suffering from diarrhea related infections. That means the food and surfaces in the food area risk being contaminated.

***The food premises have wash basins with hot/cold running water and materials for drying hands* and *there are separate facilities for washing food and for washing hands*;**

Stemming from the fact that the hands are used extensively to touch and hold things including raw food (which may contain mud and dust), soaps or even poisonous items such as rat poisons, it behooves that the food handler washes hands in separate sinks from that used for the washing of food. Only one out of the eight hotels had complied with these requirements. This means in other hotels, hands were washed unto food and in the process contaminants transferred unto the food, or into the sink used for washing food which eventually contaminate the food that may be washed therein. This is in contrary to Blanch. (2003) recommendation for the prevention of bacterial and cross contamination.

***There are adequate ventilation facilities which are also accessible and suitable for cleaning* and *all areas in the food premises have adequate lighting;***

Ventilation mechanisms are means of extracting fumes, odor and stale air which is necessary for preventing water vapor from condensing and creating moisture that drip from ceilings or run down walls, as well as reduce the buildup of heat and odor. The ventilation mechanisms could either be natural or mechanical as suggested by McLauchlin and Little. (2007).

Four hotels each were observed to have complied with these requirements. Hotels A, I and B are examples of food premises with relatively adequate ventilation and lighting. Hotels J and F portray examples of the food facilities which have inadequate ventilations and inadequate lighting. The researcher observed that these hotels have neither windows at opposite directions which could facilitate cross ventilation nor extractor fans for the exhausting of smoke and stale air. Considering the intense heat generated in food preparation areas couple with the high atmospheric temperatures of northern Nigeria, there is likelihood of water vapor condensation which may drip from ceilings and walls unto worktops, surfaces and food, causing contaminations.

***The food premises have adequate drainage in all the appropriate places*;**

The necessity for drainages is to provide channels through which liquid wastes leave the food preparation area. These are recommended by McLauchlin and Little, (2007) to be provided around equipment and items of equipment such as potato peelers. Only one (12.5%) of the hotels (Hotel A) has drainages in appropriate places as proofed in. Not only does hotel C not have drainages in appropriate places but even the sinks' pipes that should convey water away from the sinks are in states of disrepair necessitating drippings from the sink to be collected with buckets. Wastes water left to accumulate or stagnate in the food preparation area has capability to cause offensive odor, provide breeding space for varmints and cause accidents through slips.

***There are enough changing facilities in the food premises*;**

Also only one (12.5%) of the hotels (Hotel A) has a changing facility designated for staff. All others did not have. This may be attributed to the fact that in most of the hotels, food handlers perform their duties wearing their home cloths.

***All rooms' floors, walls, ceiling and other surfaces maintained clean and disinfected;***

This is true of only four (50%) of the food premises. For example Hotel-I has walls that appear pristine. The other four food premises' walls or ceilings or surfaces were in obvious states of dilapidation. For

example, in Hotel C, the ceiling of the food premises has its paints peeling off, ready to fall (unto food). Hotels J and B show walls that appear derelict. This is s situation that makes the food premises microbes prone just as McLauchlin and Little, (2007) noted that the accumulation of dirt on walls, ceilings and surfaces undermines food hygiene as these dirt harbor food contaminating microbes and can easily get unto the food being processed.

***There are enough facilities, tools, and equipment for cleaning purposes;***

The purpose of separating and ensuring proper designation of cleaning materials such as buckets, towels and bowls from those used in food preparation is to ensure that these are not mistaken for each other. Six (75%) of the food premises provided evidences of having enough materials for cleaning purposes which they claim they do not use for any other purposes. This ensures that whatever is cleaned away from the food area is not transferred back into the food. Two of the premises have items of cleaning but the workers were neither able to convince the researcher that the same items were not being used for food preparation nor show those used separately for food preparation.

***All utensils, fittings and equipment that can come into contact with food are made of materials that can be kept clean*;**

The researcher observed that all the food premises (100%) complied with this requirement. This is so since in the Nigerian market, the federal government's relevant agency, (the Standard Organization of Nigeria) ensures that all cooking materials sold in the market are made of materials that can be kept clean.

***All equipment is moveable to ensure cleaning of surrounding areas*;**

Industrial cooking equipment such as are used in the hotels is often large and heavy because of the volume of cooking that takes place. During the process of cooking however, food and other particles drop off around and especially behind these equipment and due to the size and weight of these equipment, the dropped off particles cannot be easily reached and removed. These then become center attractions and safe havens for microorganisms, varmins, pests and rodents. Appropriate equipment arrangement has been identified by Knowles, (2002) and McLauchlin and Little, (2007) as means of ensuring that no rubbish is left behind equipment thereby making certain that thorough cleaning has been carried out.

The assessment of food premises carried out by the researcher reveals that only one (12.5%) of the hotels (Hotel A) has adopted a suitable style of equipment arrangement which allows for the surroundings of the equipment to be swept, cleaned or mopped. All other hotels' equipment was fixed to the wall and did not have any room for them to be moved away from where they have been attached or fixed. This means that cleaning was not being carried out satisfactorily and the likelihood of the presence of rodents in these food premises could not be ruled out which in itself is a threat to food safety.

***All food and other wastes from the food premises are disposed of quickly to avoid accumulation*;**

The accumulation of wastes in food areas according to McLauchlin and Little (2007) and Fosket and Ceserani (2007), attracts and serves as a breeding ground for rodents, pests and flies, as well as stimulus for accidents, contaminations, unpleasant odors, fire hazard and pollution, hence the requisite for immediate waste clearing and proper management.

On the days the researcher visited these food premises, five (62.5%) of the premises showed compliance with this requirement and the researcher assumed this is a regular practice. Garbage was noticed to be accumulated in three of the food premises - Hotel F where the garbage bin was noticed to be filled and full to over flowing, Hotel G where garbage collected is in an exposed container and Hotel J where garbage from the kitchen was being piled and burnt right in the front of the kitchen. This action not only makes the food premises unsightly, but also indicates lack of proper waste management, which poses health and hygiene hazards as the smoke from the fire finds its way into the food area, thereby settling on food, equipment and surfaces.

***All containers for food and other wastes can be closed, cleaned and disinfected* and *All storage and waste disposal facilities are designed and built so that they are easily cleaned and are pets proof*;**

Containers for food and other wastes are required to be such that can be closed, cleaned and pest proof so that they do not become breeding grounds especially for pests. This is thus recommended considering the fact that pests (rodents, insects, birds) cause damage to food and building, introduce pathogens into food, contaminate food products by means of their bodies or body parts, furs, eggs and droppings and are a potential source of infections as postulated by Blanch (2003) and Coleman *et al.* (2000).

Closed, cleaned and disinfected waste containers repel pests thereby subsequently reducing the chances of pests' infestation. Researcher's observations presented in Table 1.0 shows that only 2 representing 25% of the food premises comply with this requirement. Other food premises collect wastes either in baskets or cartons, exposing the waste to pest invasion and the food premises to pest infestation.

***There is adequate supply of portable drinking water*;**

Acknowledging the fact that water can serve as means of contamination, the quality and quantity of water used in food preparation is advocated to be of

utmost quality and sufficient in quantity. Either of these is greatly influenced by the source of the water. In all the food premises visited, only one (12.5%) of the hotels has irregular water supply but has a borehole dug to satisfy water needs of the food premises. This is a form of guarantee that water-borne diseases are not disseminated from the food premises.

***All ice consumed in this hotel are made from drinking water;***

Only one of the hotels (Hotel A) produces its own ice through an ice making machine and does this using drinking water. The other hotels do not produce their own ice but chill drinks and water in the refrigerator.

***All staff handling food wears suitable, clean and appropriate protective clothing.***

This being the first component of personal hygiene as it concerns food safety, is meant to ensure that those who come directly or indirectly into contact with food are not likely to contaminate the food with all the dust and other possible impurities they may have come in contact with outside the food preparation area. This stems from the fact that the food area is assumed to be a perpetually 'sanitized zone'. Failure to maintain appropriate degree of personal cleanliness can contaminate food as presumed by Eastham *et al.* (2001) which also pointed out strongly that the protective clothing is actually more to protect food from the food handler and not vice versa as widely assumed.

As important as protecting food from the food handler through protective clothing as been shown to be, only two (25%) of the hotels surveyed (Hotels A and J) were found to have made any provision for staff clothing. In other hotels, both service and production staff worked with their personal clothing which in some cases, did not cover the entire body. Any sweats from the body of these food handlers stand the chance of falling unto and contaminating the food as it is not absorbed in any way or by any protecting clothing. .

***Every staff handling food in the food premises is healthy, that is, free from any disease that can be transmitted through food;***

The very nature of close human interactions that take place in the food preparation and service areas makes it imperative to ensure that no one permitted to work or be in the food preparation area is suffering from any form of contagious disease. This is to prevent human to human and /or human to food infection. In other to adequately safeguard the health of both staff and customers of a food premises, the FSA specifies that each food handler be mandated to have periodic thorough medical examination and be issued with a 'Certificate of Fitness', signifying that the food handlers is free from any communicable disease, and is fit to work and interact with other employees.

In all the food premises visited the researcher did not observe any of the food handlers to be suffering from an obvious communicable disease or to have an unprotected infectious or septic wound. However, food handlers' responses to researcher's question as to whether or not they possess any Certificate of Fitness reveal that only a distressing 11.9% of the food handlers have ever been issued with any. With Leach *et al.* (2001) assertion that not all diseases or infections will show clinical symptoms and that certain people may be carriers of (especially) gastrointestinal illnesses even after symptoms have resolved, the researcher's physical observation of food handlers' health cannot be considered sufficient for a medical conclusion on the health status of the food handlers hence the need for medical laboratory tests to ascertain the food handlers' medical fitness for work.

The alarming number (37 out of 42 or 88.1%) of uncertified food handlers processing or handling food (Adebitan *et al.* , 2014) could be described as startling going by McLauchlin and Little (2007) revelation that food handlers from developing countries are more predisposed to gastrointestinal infections. This means that without proper and thorough medical checkup coupled with the food handlers' susceptibility to infections and the near non-existent sanitary facilities in the hotels (assay on hotels' sanitary facilities), food contamination and spread of infections is inevitable within these food premises.

***Every food handlers in the food premises is closely supervised and well trained in food hygiene to an appropriate level;***

Just as the medical fitness of food handlers cannot be ascertained by physical examination, so the researcher could not tell by observation, if the food handlers are adequately trained. The findings in Adebitan *et al.* (2014) however shows that of the 42 food handlers used for that study, only 14 (33.3%) had the minimum professional qualification of Certificate in Hospitality Management. This shortfall is reflected in the food handlers' confessed ignorance of food hygiene regulations that exists, connoting (as interpreted by Mortlock *et al.*, 2000) that food operations are carried out without adequate understanding of the hygiene principles that should be followed. This is further aggravated by the realization of the fact presented in Adebitan *et al.* (2014) where it was known that the units' heads' equally lack academic prerequisites for supervising the food handlers. This negates the recommendation of Knowles's (2002) recommendation at unsupervised staff must have adequate training in food hygiene especially, under the situation where the number of staff available are few and does not warrant engaging a supervisor.

***The hotel never uses raw materials which are contaminated or suspected to be contaminated***;

The researcher did not observe any of the hotels using contaminated raw materials as at the time of visit and so assumes that this is a regular practice. This observation could not be deemed conclusive of the fact that only wholesome raw food materials are always used hence its assumption. This would have been ascertained by the agency whose area of jurisdiction covers quality of raw food used during the supposed routine inspections (Adebitan *et al.*, 2012).

***All stages of food preparation are protected from being contaminated;***

Contamination of food during one stage of preparation to the other is largely prevented through a well laid out and demarcated workflow which particularly separates preparation sites for raw and cooked foods, and between high risk and other foods (McLauchlin and Little, 2007; Knowles, 2002).As per the researcher's observation, only one of the food premises (Hotel A) has a work flow that can prevent cross contamination at each stage of food production. The researcher's observations are catalogued in Table 1.0. Hotels F and B displayed multi-tasked tables where both high-risk and other food items are put together for processing. Contamination of food in these hotels is more assured than not especially judging the fact that the food handlers in these hotels are neither professionals nor are they trained in-house by their employers (Adebitan *et al*, 2014)

***The food premises have facility for holding food at appropriate temperature before service;***

Customers to hotels do not all come at the same time and some degree of cooking is traditionally done and held in anticipation of the guests. Food poisoning bacteria are prone to take advantage of this waiting time to multiply especially if the food is allowed to stay at critical temperatures of between $7^0$ and $63^0$ for a long time (Blanch, (2003); Fosket and Ceserani, (2007)). Only Hotel A is noted to have complied with this requirement, having hot cupboards for holding food at appropriate temperature before service.

**Table 1.0 Researcher's Observation of the Hotels' Hygiene and Sanitation Condition**

| S/N | Hygiene and Sanitation Requirements | Yes | | No | |
|---|---|---|---|---|---|
| | | Freq. | % | Freq. | % |
| **1** | **All sections of the food premise are clean and maintained in good repair** | **8** | **100** | **0** | **00** |
| *2* | *Layout, design, construction and size of the food premise is designed and built to ensure good hygiene.* | *3* | *37.5* | *5* | *62.5* |
| *3* | *All sanitary and hand washing facilities in the food premise are adequate and in good condition.* | *3* | *37.5* | *5* | *62.5* |
| *4* | *The food premise has wash basins with hot/cold running water and materials for drying hands.* | *1* | *12.5* | *7* | *87.5* |
| *5* | *There are separate facilities for washing food and for washing hands.* | *1* | *12.5* | *7* | *87.5* |
| **6** | **There are adequate ventilation facilities which are also accessible and suitable for cleaning.** | **4** | **50** | **4** | **50** |
| 7 | **All areas in the food premise has adequate lighting.** | **4** | **50** | **4** | **50** |
| *8* | *The food premise has adequate drainage in all the appropriate places.* | *1* | *12.5* | *7* | *87.5* |
| **9** | **All rooms: floors, walls, ceiling and other surfaces maintained clean and disinfected.** | **4** | **50** | **4** | **50** |
| *10* | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **11** | **There are enough facilities, tools, and equipment for cleaning purposes.** | **6** | **75** | **2** | **25** |
| **12** | **All utensils, fittings and equipment that can come into contact with food are made of materials that can be kept clean.** | **8** | **100** | **0** | **00** |
| **13** | **All equipment are moveable to ensure cleaning of surrounding areas.** | **4** | **50** | **4** | **50** |
| **14** | **All food and other wastes from the food premise are disposed of quickly to avoid accumulation.** | **5** | **62.5** | **3** | **37.5** |
| *15* | *All containers for food and other wastes can be closed, cleaned and disinfected.* | *2* | *25* | *6* | *75* |
| *16* | *All storage and waste disposal facilities are designed and built so that they are easily cleaned and are pets proof.* | *2* | *25* | *6* | *75* |
| **17** | **There is adequate supply of portable drinking water.** | **7** | **87.5** | **1** | **12.5** |
| *18* | *All ice consumed in the food premise are made from drinking water.* | *1* | *12.5* | *Not applicable* | |
| *19* | *Every staff handling food wears suitable, clean and appropriate protective clothing.* | *2* | *25* | *6* | *75* |
| **20** | **Every staff handling food in the food premise is healthy, that is, free from any disease that can be transmitted through food.** | **8** | **100** | **0** | **00** |
| **21** | **The hotel never uses raw materials which are contaminated or are suspected of being contaminated.** | **8** | **100** | **0** | **00** |
| *22* | *All stages of food preparation are protected from being contaminated.* | *1* | *12.5* | *7* | *87.5* |
| *23* | *All food handlers in the food premise are closely supervised and are well trained in food hygiene to an appropriate level* | *1* | *12.5* | *7* | *87.5* |
| *24* | *The food premise has facility for holding food at appropriate temperature before service.* | *1* | *12.5* | *7* | *87.5* |

3.4 Testing the research hypothesis;

$H_1$: The level of compliance of hotels in Bauchi metropolis to hygiene and sanitation regulations is above average.

To test this hypothesis, the one way ANOVA was used to analyze the total compliance scores of the eight hotels as regards all the 24 conditions of hygiene and sanitation that the regulatory agencies had scored them based on a Likert scale of 1-5. Table 2.0 shows the result of the ANOVA test;

**Table 2.0: ANOVA Test**

| | | |
|---|---|---|
| N | Valid | 24.000 |
| | Missing | .000 |
| | Mean | 74.250 |
| | Mode | 65.000[a] |
| | Skewness | .568 |
| | Std. Error of Skewness | .472 |

The total average score was 74.3 and the modal value (most frequent score) was 65 with a skewness of 57. Since the mean is greater than the mode, it means that the compliance is positively skewed. A positively skewed distribution according to Kothari (2004) means that most of the hotels' compliance is below average. For this reason, the hypothesis that the level of compliance of hotels in Bauchi metropolis to hygiene and sanitation regulations is above average, is rejected. It is thus upheld that the level of compliance of hotels in Bauchi metropolis with hygiene and sanitation is below average agreeing with Knowles (2002); Worsfold &Griffith (2003) and Subratty (2004) assertion that hotels' operational good practices do not meet legislative objectives, just as Mohini, (2004) regrets that kitchens (referring to developing countries), do not maintain hygiene standards of pride.

## 4.0 Conclusion

From the findings of this study, it can be deduced that out of the eight hotels investigated, only one has a high compliance level, one has an average compliance level and all other six hotels which represent 67.5% of the hotel population have a low compliance level. It is thus concluded that the general compliance level of hotels to hygiene and sanitation regulations within Bauchi metropolis is below average. This is in agreement with Knowles (2002), who observes that there exists a gap between legislative intentions and hotels' operational good practices especially in the area of compliance with hygiene and sanitation regulations and which is not without its attendant negative implications for the provision of safe food to the customer.

## 5.0 Recommendation

Based on the findings of this research, hygiene and sanitation standards in urban and sub-urban hotels in Bauchi can be improved by adopting some of the following suggestions:-

1. That as a matter of urgency, government of Bauchi should constitute a special task force which will make a thorough investigation of the hygiene state of affairs in the hotels food premises with a view to 'sanitize' this hospitality sub sector of its hygiene decadence.
2. That a mandatory course on food hygiene and sanitation for prospective hotel entrepreneurs be a prerequisite for obtaining license for all food businesses in Bauchi.

## References

Adebitan, E.O., Khayiya-Ombworie, R and Mugambi, R (2012). Assessing regulatory agencies' effectiveness in enforcing food hygiene standards in Hotels in Bauchi state, Nigeria. *International Journal of Research and Sustainable Development.* 4(4):8- 15. http://www.panafricanjournal.org

Adebitan, E.O., Khayiya-Ombworie, R and Mugambi, R (2014). Investigating Hotels food handlers' awareness of food safety regulations in Bauchi metropolis of Nigeria. *International Journal of Advanced Studies in Economics and Public Sector Management.*2(1):61- 73. http://www.internationalpolicybrief.org

Birchfield, J.C. (2008).*Design and Layout of Foodservice Facilities.* 3rd Edn. John Wiley & sons, inc. New Jersey.

Blanch, S. (2003).Food Hygiene. London. Hodder and Stoughton.

Bowman, B.A and Russell, R.M. (Eds). (2001). Present Knowledge in Nutrition. 8th Edn. Washington DC. International Life Sciences Series.

Coleman, P., Griffith, C., Botterill, D. (2000).Welsh Caterers: an exploratory Study of Attitudes Towards Safe Food Handling in the Hospitality. Hospitality Management. Vol 19, pp. 145-57.

Eastham, J.F., Sharples, L., Ball, S.D. (Eds) (2001).*Food Supplies Chain Management. Issues for the Hospitality and Retail Sector.* Oxford. Elsevier Butterworth Heinemann.

Fosket, D. and Ceserani, V. (2007). '*Ceserani and Kinton's The Theory of Catering*' (11th Edn). Hodder Arnold. London.

Gross, R., Schoeneberger, H., Pfeifer, H. & Preuss H.A. (2000).*The Four Dimensions of Food and Nutrition Security: Definitions and Concepts*. Deutsche Gesellschaft fur Tecchnische Zusammenarbeit (GTZ) GmbH.

Knowles, T. (2002)*Food Safety in the Hospitality Industry*. Oxford. Butterworth – Heinemann.

Kothari, C. R. (2004).*Research Methodology. Methods and Techniques*. (2nd Edn) New Age International Publishers. New Delhi.

Leach, J., Mercer, H., Stew, G. and Denyer, S. (2001).Improving food hygiene standards – a customer focused approach. *British Food Journal* .103(4):238-252.

McLauchlin, J. and Little, C. (Eds) (2007)*Hobbs' Food Poisoning and Food Hygiene*. (7th Edn). Hodder Arnold.London.

Mohini, S. (2004).*Institutional Food Management*. New Age International (P) Ltd. New Delhi.

Mortlock, M.P., Peters, A.C. and Griffith, C. (2000). A National Survey of Food Hygiene Training and Qualification Levels in the UK Food Industry. *International Journal of Environmental Health*. Vol. 10, pp. 111-123.

Manning, L. & Baines, R.N. (2004). Effective management of food safety and quality.*British Food Journa*. 106(8):598 – 606

Subratty, A.H., Beeharry, P. and Chan Sun, M. (2004). A Survey of Hygiene Practices Among Food Vendors in Rural Areas in Mauritius. *Nutrition and Food Science* Journal. 34(5):203-205.

The National Archives (2010). *Food Safety Act 1990*. Legislation.gov.uk. Crown Copyright.

The UN (1996). World Food Summit. http://www.un.org/en/development/devagenda/food.shtml World Food Summit (1996).Rome Declaration on World Food Security. Rome Italy. http://www.fao.org/docrep/003/w3613e/w3613e00.HTM

Worsfold, D. and Griffith, C. J. (2003). A Survey of Food Hygiene and Safety Training in the Retail and Catering Industry. Nutrition and Food Science. Vol. 33, pp 68-79.