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Safety Food Standards of Eating Houses in Calabar South Local Government Area, Cross River State, Nigeria

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Abstract

This descriptive study assessed safety food standards in eating houses in Calabar South Local Government Area, Cross River State, Nigeria. The maintenance of safety standard in all food processing outfits, especially eating houses is fundamental for the protection of consumers from food related illnesses hence the study. Three (2) hypotheses were formulated to direct the investigation. The study seeks to find out how variables of equipment maintenance and environmental maintenance relate to food safety in the area. A sample of One Hundred and ten (110) respondents was drawn from the population in Local Government Area through simple random sampling technique for the study. Data were collected using well designed and validated structured questionnaire. Data collected were subjected to statistical analysis using Chi-square (χ^2) test statistics.

Results obtained indicated that, equipment maintenance, and environmental maintenance exerted significant effect on food safety standard in eating houses in the area. It was concluded that good proper maintenance of equipment and good environmental maintenance/hygiene is fundamental in all eating houses so as to ensure maintenance of food safety standard. This will culminate to food protection from contamination thus reducing food related illnesses. From the findings, it was recommended among others that government and food regulatory agencies should enforce food safety standard by ensuring that all eating houses maintained good proper maintenance of equipment, and sound environmental hygiene of their eating houses as this will enhance food safety and protect consumers from food-borne illnesses in the area.

Keywords: Safety Food, Equipment Maintenance, Environmental Maintenance

Introduction

A major public health problem in both developed and developing countries is food borne illness. Most outbreaks are caused by food that has been mistreated during preparation and storage. This is a matter of particular concern for the food service industry, since the serving of contaminated food can have significant impact, not only on the health of the consumers, but also in terms of economic loss for the establishment itself. It is therefore, essential for the premises within which food is handled to be structurally designed with separate units for the different processes of food preparation, the equipment used must be adequate and hygienic, the environment where food is processed should be clean and the personnel to handle such food material to be healthy as well.

Right from the point where raw food materials are received for processing, it is then handled in areas where contamination is prevented. Foods either raw or cooked are properly stored or refrigerated so as to prevent contamination.

The materials for the construction of the premises should be such that they would stand the test of time and capable of preventing pests infestation that invariably would cause assent food contamination thereby not ensuring its safety.

In the same vein, the rise of contaminated cookery, cutlery, pots, pans, knives, chopping boards, surface, sinks and other equipment cannot enhance food safety. Hence, they have to be preserved before use. Food quality can never be guaranteed when the item used for food prevention, consumption and service are unhygienic. Therefore, they should be cleaned each time they have been put to use.

Additionally, the environment where food is prepared plays a vital role to a safety/quality. Well ventilated and properly lighted units of food premises ensure good work practices. Soundings fill from pest (flip, contracted rodents) due to the presence of

filthy and foul air space, uncontrolled refuse management unhygienic toilet, ongoing offensive odour from attached use cooking/eating equipment should be tolerance food which is intended for sale. In addition, snowflakes upon food is found and served should be properly cleaned.

Equipment maintenance and food safety standard

Equipment for food preparation should be kept in good condition and be frequently cleaned and disinfected. Slice and mixers should be cleaned thoroughly after each use. At the end of working periods, all machines and similar equipment should be cleaned in accordance with the manufacturer instructions. Raw meat and cooked meat must never be preserved on the same machine without thorough cleaning in between. Utensils should not have wooden components or handles. They should be made of metal or other nonabsorbent materials. Crockery, cutlery, pots and pans - Rodary (1999)^[12] said if these items are to be washed by hand, twin sinks should be used, one for washing and one for rinsing. This ensures efficient rinsing. Water containing detergent and rinsing water should be changed frequently. The rise will have no disinfecting effect unless it is kept at 75-82°C. This temperature is too high for barn hands, so baskets will be needed. Nylon brushes, washed and thoroughly dried between each use are preferable to cloths. Cutlery should be machine-washed at a minimum temperature of 60°C with a final rise of 82°C.

Surfaces - World Health Organization (2000) said preparation should be impermeable, and constructed so that they can be cleaned thoroughly. Wooden surfaces should not be used. Cutting slabs and chopping blocks or boards should be made of polypropylene or a similar material. The supporting structures must be maintained to a high standard and should be regularly inspected and cleared. Tables should stand away from the wall or be built into the walls. The junction of the table and the world should be covered and sealed. Food preparation storage surfaces should be kept clean at times. It is important that surfaces in direct contact with food are clean dry before rise, particularly if the food being prepared is to be eaten without further cooking (WHO, 2000)^[14]. Sinks - Sink units should preferably be made of stainless steel. They should be designed and sited so that any cleaning and maintenance needed behind or below the sink can be easily carried out.

Refrigerators - Refrigeration facilities should be far away as possible from stoves and other sources of heat. Whatever the size, a kitchen requires proper refrigeration facilities for temperature-controlled storage of foods. If possible, they should be separate storage for raw and cooked meats. Refrigerators should be cleaned and defrosted regularly. Vending machines: These used for perishable foodstuffs should be cleaned daily in accordance with the manufacturer's instruction. Their cleaning should be specifically allocated to a member of staff. Details of the cleaning instructions should be displayed next to the machine and should be strictly followed.

Environmental maintenance and food safety standard

Food should be prepared in a clean environment free from dust, insects and rodents. The interior of the premises should be periodically cleaned by the removal of cobwebs from the ceiling, ensuring that the walls are devoid of all forms of dirt and the floors should be large with tiles and mopped

frequently in order to discourage dust from accumulation which may be roused as workers or customers move within and around the premises. Where it becomes impossible for air conditioners to be used, windows should be opened in order to achieve proper ventilation and adequate lighting ensure a comfortable indoor environment (Nwankwo, 2004^[10] and WHO, 2010).

All refuse materials should be properly stored in fitting lid. According to Anosike (2010)^[3] and Ebong (2010)^[5] rats and insects are attracted to premises where refuse is not properly managed. Rats and mice are destructive and are dangerous carriers of infection. They breed rapidly, destroy food in field and stores and carry and transmit pathogenic bacteria. Any surface they touch must be regarded as contaminated. Hence, constant and careful watch must be kept for signs of infestation. When premises are infested, steps should be taken immediately to destroy rats and mice. In the same vein, flies, bluebottles, cockroaches and ants can carry germs from refuse to excrement to food and cause food borne diseases. Insects may drop into food, and meat can become contaminated with insect eggs or larvae, leading to complaints from diners and perhaps action being taken against the food service establishment for the sake of dirty food. When the presence of insects are noticed in eating houses, necessary action must be taken to get rid of them.

Methodology

This study was conducted in Calabar South Local Government Area of Cross River State, Nigeria. The Local Government Area is part of Calabar Metropolis, the seat of Cross River State government. It is located in mangrove ecological zone of the state at the edge of the Bight of Bonny. Being an urban environment is highly populated and this attracts varied businesses including eating houses. The study sample consisted of 110 subjects drawn from owner and staff of eating houses (target population) in the local government. The sample was drawn using simple random sampling technique to ensure that the sample is representative devoid of bias.

A 24 items structured questionnaire titled Food Safety Questionnaire (FSSQ) was designed and used for collecting data from the sampled owners/staff of eating houses. The questionnaire had 2 sections A and B. Section A was made up of 4 demographic variables while section B consisted of 20 closed-ended items that measured the four main variables used in the study, which included: food safety standard, structural layout, maintenance of equipment, and environmental maintenance/hygiene. A pilot study was carried out using 30 owners/workers of eating houses from nearby local government area which was not part of the study's sample, to establish the reliability of the instrument. Cronbach Alpha reliability statistics was used to establish reliability estimate and the result ranged from 0.73 to 0.90 figures which confirmed that the instrument was reliable in realizing the study's objectives. Data collection was done through direct administration of the instrument personally by the researcher with the aid of two research assistants recruited and trained for the study. This measure yielded 100% percent return rate as all copies of questionnaire distributed were completely retrieved and used for analysis. Chi-square statistics was used for the analysis of data collected for the study.

Analysis of Results

Hypotheses two: There is no relationship between equipment maintenance and food safety standard in eating houses. The independent variable in this hypothesis is equipment maintenance in eating house while the dependent variable is food safety standard. The hypothesis was tested using Chi-square statistics since the variables were measured on a nominal scale. The result is shown Table 1.

Table 1: Shows the relationship between equipment maintenance and food safety standard in eating houses

| Equipment maintenance | Food safety standard | | Total | X^2_{tab} | X^2_{cal} |
|-----------------------|----------------------|-----------|----------|-------------|-------------|
| | High | Low | | | |
| Maintained | 58 (52.7) | 17 (15.5) | 75(68.2) | | |
| Not maintained | 7 (6.4) | 28 (25.4) | 35(31.8) | 3.841 | 32.4 |
| Σ | 65(59.) | 45(40.9) | 110 | | |

Source: Field study (2022)

Table 1 shows data analysis on the hypothesis which holds that there is a relationship between equipment maintenance and food safety standard in eating houses.

One hundred and ten (110) respondents were studied out of which 75(68.2%) carried out regular equipment maintenance in their eating houses while 35(31.8%) do not. Of the 75(68.2%) who carried out regular equipment maintenance in their eating houses, majority of them 58(52.7%), maintained high food safety standard with only 17(15.5%) who maintained low food safety standard. On the other hand, out of the 35(31.8%) with poor equipment maintenance culture, majority of them 28 (25.4%) maintained low food safety standard while only 7(6.4%) who maintained high food safety standard. The statistical test of the hypothesis showed that $X^2_{cal} = 32.4 > X^2_{tab}$ at $\alpha, 0.05 = 3.841$. We therefore reject null (H_0) and conclude that there is a significant relationship between regular equipment maintenance and food safety standard in eating house in the area. The positive relationship means that as the equipment maintenance in eating house improves, food safety standard also improves and vice versa.

Hypotheses three: There is no relationship between environmental maintenance and food safety standard in eating houses. The independent variable in this hypothesis is environmental maintenance in eating house while the dependent variable is food safety standard. The hypothesis was tested using Chi-square statistics since the variables were measured on nominal. The result is shown Table 2.

Table 2: Shows the relationship between environmental maintenance and food safety standard in eating houses

| Environmental maintenance | Food safety standard | | Total | X^2_{tab} | X^2_{cal} |
|---------------------------|----------------------|------------|-----------|-------------|-------------|
| | High | Low | | | |
| Maintained | 50 (45.45) | 20 (18.18) | 70(63.64) | | |
| Not maintained | 15 (13.64) | 25 (22.73) | 40(36.36) | 3.841 | 12.12 |
| Σ | 65(59.09) | 45(40.91) | 110 | | |

Source: Field study (2022)

Table 2 shows data analysis on the hypothesis which holds that there is a relationship between environmental maintenance and food safety standard in eating houses. One hundred and ten (110) respondents were studied out of which 70(63.64%) carried out regular environmental

maintenance in their eating houses while 40(36.36%) do not. Of the 70(63.64%) who carried out regular environmental maintenance in their eating houses, majority of them 50(45.45%), maintained high food safety standard with only 20(18.18%) who maintained low food safety standard. On the other hand, out of the 40(36.36%) with poor environmental maintenance culture, majority of them 25 (22.73%) maintained low food safety standard while only 15(13.64%) who maintained high food safety standard. The statistical test of the hypothesis showed that $X^2_{cal} = 12.12 > X^2_{tab}$ at $\alpha, 0.05 = 3.841$. We therefore reject null (H_0) and conclude that there is a significant relationship between regular environmental maintenance and food safety standard in eating house in the area. The positive relationship means that as the environmental maintenance in eating house improves, food safety standard also improves and vice versa.

Discussion of Results

Hypothesis 1: Information gathered in respect to the above hypothesis show that there is a significant positive relationship between equipment maintenance in eating houses and food safety standard in the area. From the statistical test of the hypothesis, the calculated chi-square is greater than the critical value chi-square ($X^2_{cal} = 32.4 > X^2_{tab}$ at $\alpha, 0.05 = 3.841$). It therefore showed that proper equipment maintenance in eating houses positively enhanced food safety standard in the area. This means that when equipment are properly maintained in eating houses the chances of food contamination is reduced thus enhancing food safety standard. The finding agreed with Rodary (2019) who observed that the quality of food is dependent on the hygiene condition of the equipment used in handling it. According to him the quality of food depends on how clean or dirty the equipment used in preparing them are.

Hypothesis 2: Data analysis in respect to the above hypothesis showed that there is a significant positive relationship between environmental maintenance in eating houses and food safety standard in the area. From the statistical test of the hypothesis, the calculated chi-square is greater than the table chi-square ($X^2_{cal} = 12.12 > X^2_{tab}$ at $\alpha, 0.05 = 3.841$). It therefore showed that proper environmental maintenance and hygiene in eating houses positively enhanced food safety standard in the area. This means that when the environment is properly maintained in eating houses the risk of food contamination is reduced thus enhancing food safety standard. It also means that the type of environment where food is prepared either indoor or outdoor contribute significantly to food safety. This result is in line with Ebong (2010)^[5] who maintained that unkempt environment in eating premises attract vermin such as flies, rat cockroaches which make food unsafe thereby predisposing consumers to risk of diseases.

Conclusion

Based on the findings, the study concludes that there is a relationship between the condition of the equipment and the safety of food; there is a relationship between the type of environment and the safety of food in eating houses. This means that when the environment is properly maintained in eating houses the risk of food contamination is reduced thus enhancing food safety standard. This implies that the type of environment where food is prepared either indoor or outdoor

contribute significantly to food safety. This result maintained that unkempt environment in eating premises attract vermin such as flies, rat cockroaches which make food unsafe thereby predisposing consumers to risk of diseases.

Recommendations

Base on the findings and conclusion made so far, the researcher wishes to recommend that the following measures to avert or minimize the problems associated with unsafe food offered for sale in eating houses.

1. Laws should be enacted and proper enforced on the proper layout of eating houses in order to minimize the distances raw food materials are to be passed from one unit to another.
2. Equipment used for preparation and consumption of food should be kept in hygienic condition and at times.
3. Food safety Workers in eating houses should carry periodic medical examination in order to detect early cases of infections as well as treat already established ones.
4. Food vendors found to be ill should be barred from handling food until he/she gets well.
5. Periodic inspection of eating houses should be carried out in order to face out these with short comings.
6. More environmental health officers should be trained, employed and empowered in the area of equipment maintenance.

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