

Original Article

Assessment of Hygiene Practices among Eateries in Amai Community: A Mixed Intervention Study

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Abstract

Background: There is an observable increase in food-borne diseases, food poisoning among the rural dwellers in the study setting which is perceived to be due to consumption of poorly handled food. This was a strong justification for this study.

Objective: This study aimed at assessing the environmental and storage system for unprocessed and processed food amongst identified eateries and to implement interventions based on observed wrong practices.

Methodology: This study adopted a mixed descriptive cross-sectional intervention study (a questionnaire, observational check list and Key Informant Interviews for data collection among 38 respondents). The items in the checklist were adapted from World Health Organization standard for assessing food vendors and premises. The quantitative data collected was coded and analyzed using SPSS version 20 while qualitative data was transcribed verbatim with themes and sub-themes.

Results: At pre-intervention phase, apron use was 15 (39.5%) with 3 (7.9%) consistency; chef caps usage was 14 (36.8%) with 8 (21.1%) consistency but there was no observable use of facemasks. Twenty-three (60.0%) reported Personal Protective Equipment (PPE) burden. At the post-intervention phase, apron use was 37 (97.4%) with 35 (92.1%) consistency; chef cap use was 28 (73.7%) with 26 (68.4%) consistency;

facemask use was 33 (86.8%) with 19 (50.0%) consistency. By implication, 36.8% wear it under the chin, and 13.2% still feel uncomfortable using it.

Conclusion: Interventions can influence the practice of good food handling practice among food handlers and consistency in the use of PPE to prevent food contamination via droplets.

Keywords: Food hygiene practice, Intervention, Public health. Mixed intervention studies.

Introduction - Background

In as long as food is essential for living, it must be handled with utmost care, stored in a clean environment, free of rodents and served in a clean environment. Food handlers and eateries owe their consumers a clean meal free from toxins, contaminants and pollutants to guarantee satisfaction and safety. In view of this, it will be pertinent for eateries to constantly be assessed to ensure that there is continuity in ensuring that food is stored, prepared and served in clean environment. This assessment will include assessing the food handler themselves to ensure they use personal protective equipment to prevent them from injury and prevent contamination of meals either through droplets if the nasal and oral routes are not covered or food contamination by hair resulting from uncovered head with chef caps. Assessment in this regard is an appraisal of the premises and persons involved in the food handling to determine their adherence to public health ethics in food handling (Etim et al., 2018a). All food handlers are required to maintain proper hygiene and sanitation practices when handling food (Ifiadike et al., 2014). In other words, food hygiene is the set of basic principles employed in the systematic control of the environmental conditions during production, packaging, delivery/transportation, storage, processing, preparation, selling and serving of food in such a manner as to ensure that food is safe to consume and is of good quality (Etim et al., 2018a; Pal, & Ayele, 2020).

In a cross-sectional descriptive study using 168 food vendors, Ifiadike et al. (2014) assessed the food hygiene practices of food handlers and made recommendations to improve food safety measures within food establishments in the Federal Capital Territory by collecting data using a mix of quantitative methods (structured

interviewer-administered questionnaires and observation checklist). The authors reported that 55.9% used aprons/chef caps, 60% maintained good environmental hygiene, 89.3% washed their hands after the use of toilets, whereas only 26.7% changed their hand gloves at work, 71.4% underwent regular medical checkup, 31.5% are isolated from workplace when ill, 30.4% used sanitizers/disinfectants at workplace, whereas 22.6% checked food temperature with thermometer, and 61.3% used ideal waste disposal methods at workplace ($P < 0.01$) (Ifiadike et al., 2014). In a recent study by a group of researchers to assess the food hygiene practice and determinant factors among food handlers working at the University of Gondar using univariate and multivariable binary logistic regression analyses showed that 46.7% had good self-reported food hygiene practice (Lema et al., 2019).

A 2017 global statistic showed that about 600 million individuals became ill every year due to consumption of contaminated food and an approximately 420,000 of these victims die per annum (Zanin et al., 2017). The World Health Organization (WHO) disclosed that 1 in 10 individuals worldwide are sick from foodborne illnesses (WHO, 2015). The consumption of contaminated food is correlated with an estimated 70% of diarrheal diseases in developing countries which of course Amai community is one in such a developing country-Nigeria (Lema et al., 2019). The occurrence of foodborne illnesses is more common in developing nations because of poor hygiene, absence of drinking water, contaminated and inappropriate food storage equipment and absence of food safety education (Stratev et al., 2017). In addition, in low-income countries in particular, foodborne diseases outbreak is more serious due to inadequate sanitation, insufficient food safety

regulations, weak regulatory structures, unsafe raw food, poor storage infrastructures, inadequate cooking, poor personal hygiene, improper handling methods, and cross-contamination of cooked food with uncooked raw food (Odeyemi, & Bamidele, 2016; Odeyemi, & Sani, 2016). However, potential foodborne diseases in a community like Amai with an institution of higher learning with a high number of people is a Public Health concern, since outbreaks in those places may affect a large number of consumers at once. Food handlers are expected to have excellent hygiene practice to reduce cross contamination and protect the consumers from foodborne diseases.

The consumption of poorly handled food may result in food poisoning which may in turn result in gastro-intestinal tract (GIT) problems for the consumer. This may cost the vendor his/her license in an ideal society if the source of food poisoning is traced to the eatery during epidemiologic analysis of the incidence. Therefore, there is need for eateries to handle food appropriately to prevent '*out of processing and handling contamination of food*' (Etim et al., 2018a; Etim et al., 2018b). This implies contamination resulting from poor processing or poor handling of food. This was a strong justification for this study. Hence, as objectives, this study was informed to identify number of eateries operating within Amai community; to assess the environmental and storage system for unprocessed and processed food among the identified eateries; to assess the environment upon which the food is being handled or processed (preparation and servings); to observe the use of personal protective equipment (PPE) like face mask, chef caps and aprons during food handling process; and lastly, to implement an intervention to change poor practice and improve on the good practice as well as evaluating the outcome of the intervention after three month to check if the intervention failed or there was continuity on what was demonstrated as well as identify gaps that may warrant a new area for further intervention.

Methodology

Study area/setting: Amai is one of the fastest developing rural communities in Ukwuani Local Government Area of Delta State. It lies within latitude 05°45' N and longitude 06°50' E in the Niger Delta region of Southern part of Nigeria. The population according to estimate is about 100,000 (65,000 females and 35,000 males). The surrounding communities include Obiaruku (North), Ogume (South), Umuebu (East), and Ezionum (West). It has Novena University campus located at the central part of the community which helped in giving the community a lime light for development. Amai kingdom as usually being called is divided into five major quarters; namely Umuosele, Umuekum, Umubu, Ishikaguma, and Amai-Nge. The major occupation of the people is peasant farming. Their major and easily accessible sources of drinking water are from hand dug wells. Most residential areas have borehole for private use.

Study design and participants: This study adopted a mixed descriptive cross-sectional intervention study involving quantitative (questionnaire and observational check list) and qualitative (Key Informant Interview guide) approaches for data collection among 38 respondents from five (5) eateries identified in the community. Since the sample was manageable, all the food handlers and eateries constituted the sample for the study.

Data analysis: Items used in designing the questionnaire and the checklist was adapted from World Health Organization standard for assessment of food vendors and premises. The quantitative data collected was coded and analyzed using SPSS version 22 while qualitative data was transcribed verbatim with themes and sub-themes. Results were presented using descriptive statistics. Ethical approval was sought for and verbal informed consent was sought for from all the eateries and respondents before commencement of data collection and intervention programmes.

Ethical Approval and Consent to participate: The study obtained ethical approval from Novena University Research Ethics Committee and verbal informed consent

from participants before the commencement of the study.

Results

Socio-demographic characteristics of respondents: There were a total of 38 (100%) respondents of which 9 (23.7%) were males while 29 (76.3%) were females. Majority 17 (44.7%) were within the age bracket 18-25 years, followed by 12 (31.6%) aged 26-35 years while 5 (13.2%) and 4 (10.5%) were aged 45 years above and 36-45 years respectively. A greater proportion 27 (71.1%) had tertiary education, 7 (18.4%) had secondary education, while 2 (5.3%) independently had primary and no formal education respectively.

Result of pre-intervention phase from observational check-list

Assessment of premises and food handlers in identified eateries before intervention

1. Environmental assessment

a. Dry floors (no wet floors): All the eateries identified were found guilty of wet floor both at point of serving and food preparation point.

b. Storage of raw food items free from rodents and arthropods: here again, all the assessed eateries were found wanting.

c. Storage of prepared/processed meals: A good practice was observed across the eateries.

d. Environment where food is served: all the eateries were again found not to meet standard.

2. Food handler's assessment

a. Use of apron, face mask and chef caps: A total of 15 (39.5%) were found using their apron, out of which only 3 (7.9%) were consistent in using it while 12 (31.6%) were not consistent; there was observable 14 (36.8%) usage of chef caps, out of which 8 (21.1%) were consistent in usage while 6 (15.8%) were not consistent but there was no observable use of facemasks (Figure-1). That is none of the eateries were consistent in the use of these PPEs.

b. Assessment of health status and routine health checks by food handlers. Food handlers provided certificates showing their being fit and they undergo routine health checks at least annually.

Determinants of non-use or adherence to effective and consistent use of PPEs based on questionnaire and KII guide

Out of the 38 respondents interviewed on why they do not like using the PPEs provided, 23 (60.0%) reported the PPE burden. Respondents reported that it comes with discomfort and difficulty in breathing freely especially using the facemask. Apart from discomfort as a major sub-theme for why people are not using the PPEs, 30% reported that the PPEs cannot go round all the staff, therefore, only those who manage to see one uses it. This presents insufficiency as another sub-theme.

“I don't like to use it oh. It makes me feel uncomfortable but now that you have told me why I must use it, I will try to always use it” (28 years old female key informant).

“I only use when I remember even though I never saw the need to always use the chef cap especially the facemask” (Male Key Informant aged 31).

“I would have loved to use it but the facemasks, chef caps and the apron are limited in number compared to the number of us working here” (A female key informant aged 24).

Result of intervention phase: Based on the results and findings of the study, an intervention was carried out to address the problems and challenges encountered by the eateries and food handlers to solve them. The following intervention activities were carried out in all the eateries used for the study:

i. Health education on maintaining clean premises for food storage, preparation and handling; consistency in the use of facemasks, aprons and chef caps; and the need for routine

health checks for all staff working in the eateries.

ii. Distribution of free facemasks, aprons and chef caps to all the eateries used in the study.

The managers of all the eateries were delighted on the intervention and the show of concern for presenting such items to them and educating them on the need to maintain a clean environment for food handling and ensuring staff are medically fit to handle customers' meals.

"I must confess, I like what I'm seeing. I can't remember when last such an intervention took place in this community" (One of the managers aged 41).

"I have tried my best in providing the aprons but I will try to keep it up from these ones your team have given us" (One of the managers aged 39)

"I have really learnt a lot from this health education piece and I believe even other participant have gained more insight the same way I did" (Male participant aged 36)

Result of Evaluation (post-intervention)

Phase: Assessment of premises and food handlers in identified eateries three months after intervention

1. Environmental assessment

a. Dry floors (no wet floors): There was an observable compliance to maintenance of dry floors by avoiding wet floors at storage

rooms and kitchens including service rooms/halls.

b. Storage of raw food items free from rodents and arthropods: at the time of evaluation, there was no observable trace of rodents or cockroaches or other food contaminating organisms.

c. Storage of prepared/processed meals: the practice was better than how we met it. That is to say, the good practice was improved upon.

d. Environment where food is served: the standard was better than how the research team left it.

2. Food handlers' assessment

a. Use of apron, face mask and chef caps: A total of 37 (97.4%) were found using their apron, out of which only 35 (92.1%) were consistent in using it while 2 (5.3%) were not consistent; there was observable 28 (73.7%) usage of chef caps, out of which 26 (68.4%) were consistent in usage while 2 (5.3%) were not consistent; 33 (86.8%) were found to use facemasks, out of which 19 (50.0%) were consistent in usage while 14 (36.8%) were not consistent in the use of facemasks. That is, 36.8% wear it under the chin, and 5 (13.2%) still feel uncomfortable using it (Figure-1).

b. Assessment of health status and routine health checks by food handlers. Food handlers provided certificates showing their being fit and they undergo routine health checks at least annually. That is, results were the same as compared to results presented at the pre-intervention phase.

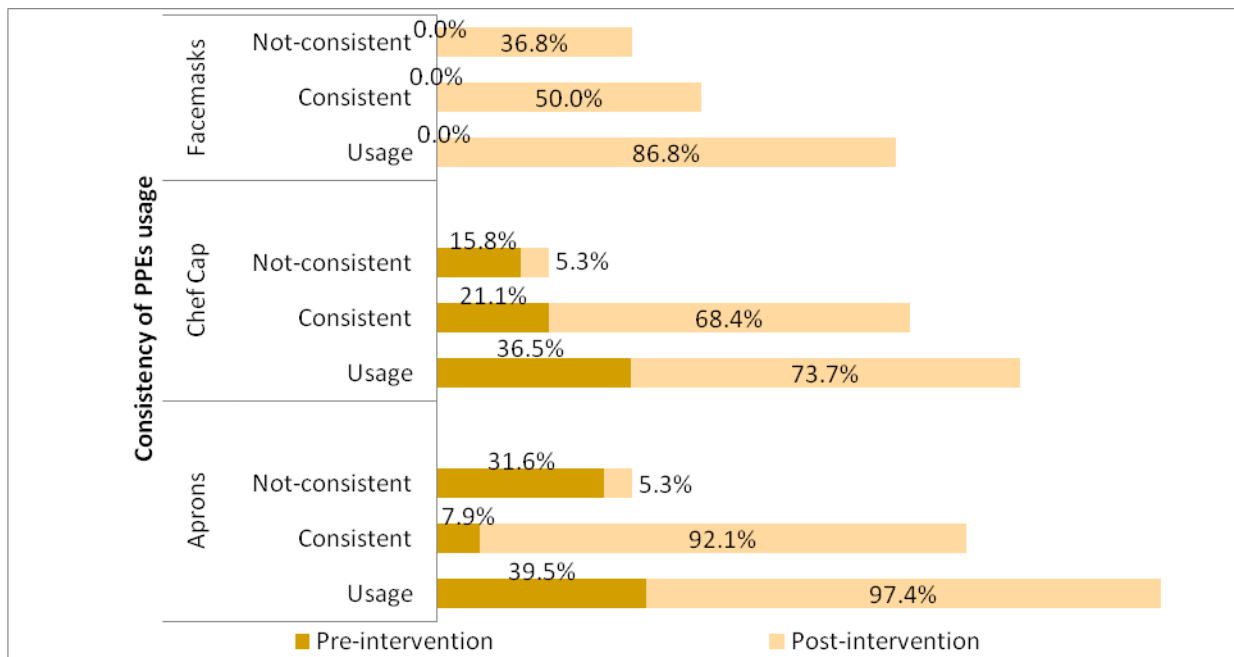


Figure-I: Summary of results showing consistency in the use of PPEs by respondents

Discussion

This study practically demonstrated an increase in practice and use of PPEs after the intervention. This is reflected in the observation of post-intervention assessment of the environment and storage system for unprocessed and processed food among the identified eateries; the assessment of the environment upon which the food is being handled or processed (preparation and servings); and the observed usage of personal protective equipment (PPE) like face mask, chef caps and aprons during food handling process.

There was a change from poor practice to improved practice after the intervention. This was ascertained during the evaluation phase after three months of intervention. Based on this study, there is observable 92.1%, 68.4%, and 50.0% consistency and appropriateness in the use of aprons, chef-caps and facemasks respectively. This is a reflection that the intervention was successful. This finding is in line with the finding by a group of researchers who reported an 84.3% to 99.6% increase in knowledge, attitude and practice of food

handlers after a pre and post intervention (Barjaktarovic-Labovic et al., 2018). This is also in tandem with the study by another team of researchers who found out that there was a change in practice after intervention on food handling (Lema et al., 2019). However, determinants for non-use or inconsistency were attributed to discomfort associated with the use of these PPEs especially facemasks and low supplies of the PPEs by management.

Conclusion: Health education and demonstrations are essential in changing behaviour. Based on the findings of this study, it can be concluded that such interventions can influence the practice of good food handling practice among food handlers and consistency in the use of PPEs (aprons, chef caps and facemasks) to prevent food contamination via droplets. Hence, there is need for such study to be replicated in other localities within the LGA, State and the country in general. However, policy makers should find a way of ensuring that standards are provided and enforced so that it will not just remain an admonition, but a rule that must be strictly adhered to.

List of Abbreviations

GIT: Gastrointestinal tract
KII: Key Informant Interview
LGA: Local Government Area
PPE: Personal Protective Equipment
WHO: World Health Organization

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