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Assessment of Practice of Food Safety and Hygiene among Food Vendors within Jos North Local Government Area of Plateau State, Nigeria

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Abstract

Food handlers play a very important role in ensuring food safety and hygiene. This survey attempt to assess the practice of food safety and hygiene by food vendors. Questionnaires were administered to 200 respondents drawn from Jos by purposive and convenience sampling. The average age of respondents is 25 years with women constituting majority (76%). Majority (81.5%) of the respondents had no training on food preparation and handling. Seventy- five percent of the untrained food vendors do not practice proper food handling. Furthermore, 11% of the respondents had no formal education. A null hypothesis raised and tested at significant level of 0.05 indicated that a significant relationship exist between training and practice of food hygiene and safety principles. It was concluded that respondents' knowledge about food safety and the practice of food safety and hygiene are low. Therefore government should organise a special training program for food vendors in order to ensure food safety and hygiene and should also institute a modality for regular monitoring of food vendors.

Keywords: Practice, Food Vendors, Food Hygiene, Jos, and Food Safety.

1. Introduction

The street food industry plays an important role in cities and towns of many developing countries, both economically and in meeting food demands of city dwellers ^[1]. It also contributes substantially to household food spending, and provides income to many female-headed households. It is estimated that street food contributes up to 40% of the daily diet of urban consumers in developing countries ^[2] This global phenomenon is not uncommon in Nigeria, with estimate of employment generated by this sector between 6-20% ^[3].

Food borne diseases are important public health issues in the globe and the problem is more noticeable in developing countries due to prevailing poor food handling and sanitation practices, inadequate food safety laws, weak regulatory system, lack of financial resources to invest on safer equipment and lack of education for food handlers ^[4]. Food-borne disease outbreaks are common in Jos, Plateau state, but are rarely reported ^[5]. Data on food-borne illness in the study area is limited. The preparation and handling of street food by the typical vendor can result in potential significant health risks for the Nigerian consumer and there is special cause for concern, because of health risks that are related to unsafe food ^[6]

Food handlers play a major role in ensuring food safety throughout the chain of producing, processing, storage, and preparation of food. Mishandling and disregard for good hygiene measures on their part may result in food contamination and its attendant consequences ^[1]. Food poisoning and other food related diseases like typhoid and cholera could result if food is not properly handles and prepared. For example, during the worst outbreak of cholera in Nigeria, since 1991, when 7,654 people died, street food and water were reported as a possible avenue for its spread. Priority sanitary actions were taken to reinforce street food control programmes ^[7]. Proper food handling and preparation is an important aspect of nutrition and community health that require attention in Jos and Nigeria at large. Street foods are defined by the food and Agricultural Organisation (FAO) as ready-to-eat foods and beverages, prepared and sold by vendors and hawkers in streets and other similar public places ^[8]. Foods are therefore prepared at informal setting and street food vendors are classified as informal. Street food vendors are thus exposed to climate and temperature, unsafe water supplies, sanitation

and pests. The foods are often prepared under unsanitary conditions and stored for long periods in unsuitable conditions before selling^[9]. It is recognised internationally that these informal food supply systems, which provide low-cost nutrition, should be managed and encouraged to develop, but with the emphasis on food safety^[2]. In 1996, WHO recommended that member countries should ensure that street food vending is regulated and that measures are taken to ensure the education of street food vendors in hygienic food preparation principles^[6]. There is an assumption that by their nature, street food contamination is inevitable, yet millions of people depend on this source of nutrition. Education of food industry personnel in hygiene matters has been recommended as a means of improving food handling practices and thus the safety of food.

Estimates of the burden of food-borne disease are complicated by the fact that very few illnesses can be definitively linked to food. Often these links are only made during outbreak situations^[10]. The extent of the problem is however unknown as food-borne diseases often go undetected or under-reported. Studies determining the burden of acute gastroenteritis provide the basis for estimating the burdens due to food and specific pathogens commonly transmitted by food. Although acute gastrointestinal diseases are not all food-borne and food-borne diseases do not always result in acute gastroenteritis^[10]. Obtaining global estimates is further complicated in that when data obtained from various countries are pooled to derive regional or global estimates, the influence of the study design and existing surveillance systems on those estimates have to be considered^[10].

Estimates reveal that as much as 70% of diarrhoeal diseases in developing countries are believed to be of food-borne origin¹⁰. Due to socioeconomic changes in many countries, the street food sector has experienced phenomenal growth in the past few decades. Urbanization and population growth are expected to continue and street vended foods, which are largely but not exclusively an urban phenomenon, will expand accordingly^[11]. Street food trade has emerged as an economic activity and a source of income for the poor in many developing countries. Street foods are also considered essential for maintaining the nutritional status of the population^[12]. In a longitudinal study conducted in Ghana, street foods accounted for 19-27% of food expenses and provided 134-417kcal per day per person^[13]. This underpins the contribution of street food in the life of an average Ghanaian. Various projects have shown that street food trade generates a large volume of business, involving large amounts of money and provides a competitive source of employment and income to millions of people. It is also postulated that street-food vendors, owing to their lack of or no education as well as being poor, lack an appreciation for safe food handling. Consequently, this together with the surroundings that they are prepared and sold in, street food is perceived to be a major public health risk^[6, 14]. The main health hazard associated with street food is microbial contamination, although pesticide residues, transmission of parasites, the use of un-permitted chemical additives, environmental contamination and limited access to safe water have also been identified as possible hazards^[15, 16]. The potential for the contamination of street foods with pathogenic micro-organisms has been well documented and several disease outbreaks have been traced to consumption of contaminated street foods^[15] the risk of microbial contamination is dependent on the type of street food and how the food is prepared. Food risk is influenced by food type, pH, and method of preparation, water availability, handling,

exposure temperature, and holding time^[9] Other factors implicated in causing microbial contamination include poor food preparation and handling practices, inadequate storage facilities, the personal hygiene of vendors, and a lack of adequate sanitation and refuse disposal facilities^[15]. Martins^[3] conducted a formative assessment on 200 street food vendors and 800 consumers in Johannesburg investigating the socioeconomic background of vendors and their consumers, as well as vendors' facilities and aspects relating to the quality and safety, including microbial testing of foods. The author found that street vendors did observe good hygiene in preparing, cooking and handling foods; even thus they were not aware of the reasons for doing so^[6]. The health risk from street foods may be no greater than that posed by foods or dishes from other sources such as in restaurants^[15] Studies conducted in India found that the microbial quality of street foods was equivalent to, if not better, than that of foods bought from hotels and restaurants^[17] With regard to potential risks, formal vendors had more vending experience, used some precautions in food preparation and had better hygiene practices^[9] A study of 406 food handlers in Ethiopia revealed that most respondents were female, and majority had good food handling practices^[4] Tessema *et al*^[4] further posited that good food handling is associated with marital status, monthly income, knowledge about food handling, existence of shower facility and separate dressing room. A study in Illorin Nigeria reported that most food handlers had no formal education and that majority had received training on food hygiene^[18] They identified the need for training of food handlers on the principles of safe food handling. A similar study in Edo state Nigeria reported that most food vendor had formal education and good knowledge and practice of food hygiene^[19]. Poor practice of food hygiene was reported in Nigeria's Federal Capital Territory^[20]. On the other hand, a high adherence to food safety principles was reported in Ghana^[21]. Education of food industry personnel in hygiene matters has been recommended, as a means of improving food handling practices, and thus the safety of food^[6, 8]

There is a lack of documentary evidence of improvements in food hygiene standards which can be directly related to education or training. It is thus imperative that an assessment be conducted to assess what information street food vendors have, in relation to food safety.

Null Hypothesis

There is no significant relationship between the practice of food hygiene and safety and food preparation training.

Methodology

The study population consists of street food vendors selling cooked food in Jos north. A descriptive study design was adopted for this study. Two hundred (200) food vendors were purposively/conveniently selected to participate voluntarily. Data was collected using questionnaires. The questionnaire was use as an interview guide for respondents that cannot read and write. The data was analysed manually using frequency and percentages. Chi-square test was used to test relationship between variables.

Anonymity and confidentiality was assured and maintained.

Results

Table 1 show the gender and age distribution of respondents. The average age of respondents is 25years with 152 (76%) women and 24% (48) of men participating.

Table 1: Distribution of Respondents by age and gender.

Gender	Frequency (N=200)	Percentage (%)
Males	48	24.0
Females	152	76.0
Age		
10-19	5	2.5
20-29	101	50.5
30-39	16	8.0
40-49	76	38.0
50-59	2	1.0

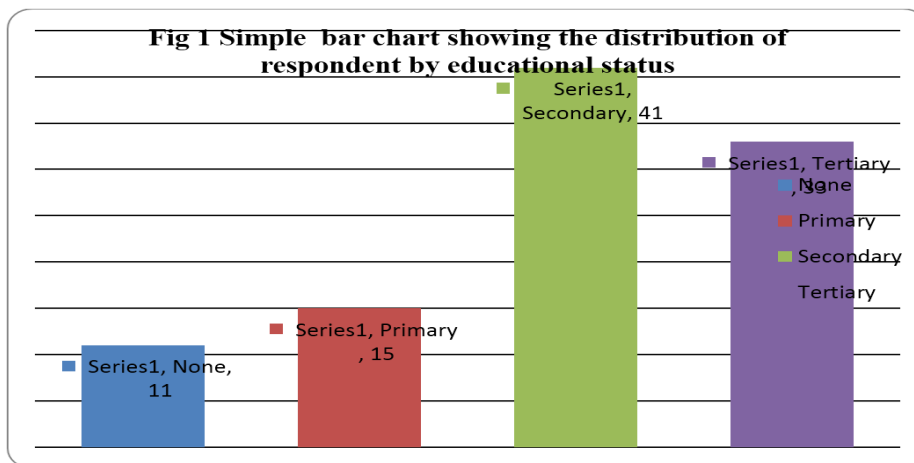


Fig 1: reveals that 89% of the respondents have primary, secondary or tertiary education. A few (11%) had no formal education.

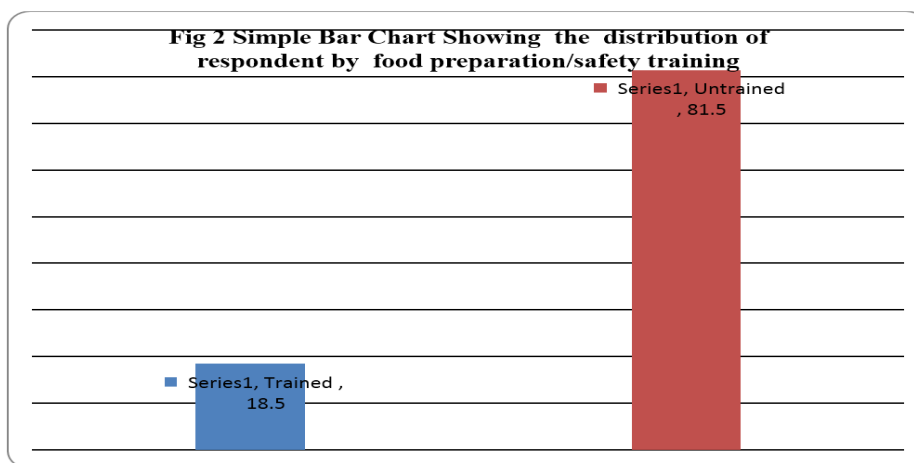


Fig 2: reveal that 81.5% never receive any training on food handling while only 18.5% claim to have been trained.

Figure 3 shows that 24% practice food safety and hygiene while the remaining 76% do not.

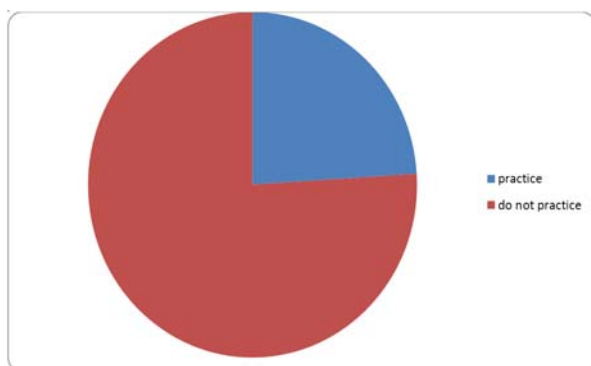


Fig 3: Distribution of respondent by practice of food safety and hygiene.

Table 2 reveal that 75% of the untrained food vendors do not practice food hygiene while only 1% of the trained vendor did not practice food hygiene. There is a significant relationship between training on food preparation and practice of food hygiene because the calculated chi-square is greater than the critical value. This means that the relationship between practice of food safety and hygiene and training is statistically significant.

Table 2: Practice of Food Safety and Hygiene Measures among Respondents by food Preparation Training.

Food Preparation Training	Practice	Don't practice	Total
Trained	35(17.5%)	2(1%)	37 (18.5%)
Untrained	13(6.5%)	150 (75%)	163 (81.5%)
Total	48 (24%)	152(76%)	200(100%)

$X^2= 25.06$ d f=1, $p<0.05$, Table value=3.84

Discussion

Findings in this survey reveal that the average age of food vendors is 25 years and most of them have had formal education. This finding is consistent with a similar study in Edo state, Nigeria^[19] but inconsistent with a study conducted in Ilorin, Nigeria^[18] where it was reported that most food handlers were not formally educated. Furthermore, majority (79) were female. This finding is expected because food vending is commonly seen as a female occupation in this setting and aligns with the position of Tessema *et al*^[4] in Ethiopia.

Findings further reveal that most (81.5%) food vendors claim that they had never been trained on food handling and preparation. The large proportion of respondents that reported not having any form of training about food handling is a great concern because of the risk associated with poor food handling. There is an urgent need for training of food handlers in Plateau state. This finding is contrary to report of a study in Ilorin in which most food handlers were trained on food hygiene^[18]. The practice of food hygiene was low (24%) in the current study and may be attributed to inadequate or lack of training of food handlers. This is consistent with a study in Nigeria's Federal Capital Territory^[20]. Contrary to the findings of the current study, high proportion of food handlers in Ethiopia, Ghana, and Edo, practice good food hygiene^[4, 19, 21]. The trained respondents showed better practice, compared to the untrained street food vendors. The chi-square analysis between training and practice of food hygiene and safety indicated a significant association between training on food handling and practice of food safety and hygiene among food vendors. This implies that training of food handlers on basic food handling principles could significantly improve practice of food safety and hygiene.

Conclusion

Knowledge and practice of food hygiene and safety in Jos by Food vendors is low and a significant proportion of them are not trained in food handling and preparation. Government should urgently ensure adequate and regular training of food handlers and also institute a modality for regular monitoring of food vendors. Further, Government should enforce the use of aprons, head covers as well as provide adequate water supply and regular health checks for workers in these establishments.

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