

# Assessment of Knowledge, Attitudes and Practices of Food safety among food vendors engaged in Home Grown School Feeding Programme in Pankshin, Plateau State, Nigeria

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## Abstract

The study was motivated by the need to look at the level of knowledge, attitude and safety practices among food vendors engaged in Home Grown School Feeding Programme in Pankshin LGA, Plateau State. The study was cross-sectional survey design that used a proportionate convenience sampling technique. A total of 86 food vendors were selected from a population of 287 registered. Data was collected by face to face interview using a structured, standardized questionnaire and an observational check list. The questionnaires were divided into four sections which are demographic, knowledge, attitudes and safety practices. All completed questionnaires were validated. Descriptive analyses were used for the data analysis, while, Chi-square was used to test at 0.05 level. Results showed that a high level of food safety knowledge observed among respondents (71.6%), while attitude towards food safety was moderate (57.5%). Food safety practices were above average (65.5%). There was no significant difference ( $p < 0.05$ ) on food safety knowledge and practices among food vendors. The result highlighted that food safety knowledge and practices amongst food vendors improve with level of education and food safety training. Based on the finding, it was concluded that the examination and requirement for participation in the school feeding program has resulted to positive outcomes in terms of knowledge, attitude and practices of food safety. There is need to continuous refresher courses and strategies that will equip food handlers with more recent and modern food safety knowledge and skills in order to reduce the risks of food borne illnesses in schools.

**Keywords:** Food knowledge, attitude, food safety practices, food vendors, home grown school feeding program

## Introduction

Food safety refers to the conditions and practices that preserve the quality of food to prevent contamination and food borne illnesses that may occur along the food continuum (WHO, 2007). Unsafe food creates a vicious cycle of disease, diarrhea and malnutrition which significantly impedes public health and socio-economic development. The risk of food borne illnesses is more prevalent due to challenges in food safety especially in regions where adequate resources have not been allocated for food safety control and intervention efforts. This results in consumption of unwholesome food from

poor handling behaviour (WHO, 2015). Food handlers who have good knowledge of proper food handling practices could help to control food poisoning cases, particularly ready-to-eat foods. Lack of basic knowledge and formal training of food handlers in food hygiene and safety have been demonstrated by Faremi, Olatubi, Nnabuife (2018) to pose a health risk to consumers in terms of food borne diseases. According to World Health Organization (WHO, 2007), food contamination is common not only in developing countries but also in

developed countries of the world; hence pointing out that food safety is a major global problem.

A number of food borne diseases triggered by improper food handling practices have affected the Nigerian population over the years despite adoption of measures to curb food-related illnesses. This has been exacerbated by the peoples' ignorance of food hygiene, government's uncoordinated approach to food safety and enforcement of food safety legislation and regulations (Omojokun, 2013). World Health Organization (WHO, 2017) reported that an estimation of more than two hundred thousand (200,000) people die of food poisoning in Nigeria from food-borne pathogens (especially *E. coli* and *Salmonella*). The deaths are caused by contaminated foods through improper processing, preservation and service (WHO, 2007). The knowledge of food handlers about food borne infection and their practices is an important issue in the outbreak of food borne diseases (Akanbande, Hlorts and Owusu-Kwarteng, 2017). Oladoyinbo, Kinbule & Awosika (2015) reported poor correlation between knowledge of food borne infection and food safety practices among local food handlers in Ijebu-Ode Local Government Area of Ogun state, while educational qualifications of participants relate significantly to their knowledge of food borne illness and safety practices. Food vendors play an important role in ensuring food safety throughout the chain of food production and storage (Adewunmi, Ajayi and Omotoso, 2014).

Several researches such as on school feeding program from around the world show that school feeding is a safety net for children, especially in poor and food insecure areas; it has the ability to improve the education, health and offset lost income for struggling families (Drake, Woolnough, Burbano and Bundy 2016;

Bundy, Burbano; Grosh, Gelli, Jakes and Drake, 2009). School feeding program involves preparation of food, transportation, serving, cleanliness of personnel and environment are of importance in ensuring that food is safe for consumption. The Federal Government in 2016 launched National Home Grown School Feeding Programme (NHGSFP) in Nigeria to tackle poverty and improve the health and education of children and other vulnerable groups. This social investment program is a Federal government program in collaboration with the State and Local government, aimed at feeding pupils in public schools from classes one to three every school going day. The scheme engaged the services of caterers to prepare meals off school premises for the school children procured from small-holder farmers to increase school enrolment, improve child's nutrition and health, strengthen local agriculture economies and create employment opportunities with jobs in catering, processing and farming. Food handlers working in school feeding program can play important role in prevention of outbreak of food borne diseases in schools and therefore, any lack of its understanding poses serious challenge to food safety.

Food poisoning is on the increase as a result of consumption of unwholesome food. Ensuring the safe handling of food remains a big challenge considering the fact that many people consider the home grown school feeding program as poverty and hunger alleviation initiatives. Mass feeding program such as the Home Grown School Feeding Programme (HGSFP) stand a higher risk of microbiological contamination than foods prepared on small scale probably owing to engagement of food handlers with inadequate food handling practices.

Since the introduction of the scheme in Nigeria, it seems not much work has been done on the safety issues in the program and very little is known about food handlers knowledge, attitude and practices of food safety for HGSFP in Pankshin Local Government Area.

### **Objective of the study**

The main objective of the study was to assess the food safety knowledge, attitude and practices amongst food vendors engaged for home grown school feeding program in Pankshin LGA. Specifically to:

1. Assess the level of knowledge, attitude and practices of food safety amongst food vendors in Pankshin LGA.
2. Determine the relationship between educational status and food safety training, and practices of food safety amongst food vendors in Pankshin LGA.
3. Compare practices of food safety in relation to knowledge and attitude amongst food vendors.

### **Methodology**

**Research design:** The study utilized a descriptive cross-sectional survey design.

**Study area:** The study was conducted in Pankshin Local Government Area (LGA). Pankshin Local Government Education Department (LGED) has a projected population of 178 primary schools and a total of 278 accredited food vendors. The study population comprised all accredited food vendors engaged for the state home grown school feeding program in all public primary schools in Pankshin LGA. A minimum sample size of 86 was calculated using the Cochran formula used for descriptive studies (Cochran, 1977).

**Sample and Sampling Technique:** A proportionate convenience sampling

technique was used in selecting twelve schools (two schools selected from each of the six supervisory zones in Pankshin LGA) from the total of (14) supervisory zones of public primary schools in Pankshin LGA as at the time of the study. In each of the selected schools, all the accredited food vendors were recruited consecutively to participate in the study.

**Instrument design and data collection:** A structured, interviewer-administered questionnaire and an observational checklist comprised of 54 items developed based on previous method (Stratev, Odeyemi, Pavlov, Kyuchukova, Fateh and Bamidele, 2017). Appropriate modifications were made on the questionnaire to fit the popular habits and traditions of local food handlers. The items were rated "yes", "I don't know" and "no". Ethical approval was obtained from Local Government Education Department (LGED) Pankshin and verbal consent was given by the respondents. Qualitative information on socio-demographic characteristics, knowledge on food safety, attitudes towards food safety and food safety practices of the food vendors, were collected by face to face interview using validated structured questionnaires. The observational checklist was used to assess the general conditions and environments in which the food vendors prepare their meals and to corroborate the information given by them on food safety practices. Three briefed research assistants participated in the data collection after a detailed explanation as to the objective of the study.

**Data analysis:** Completed questionnaires were analyzed using frequencies and percentages. Chi-square was used to test the significant relationship and p value was set at 0.05 level.

## Results and discussion

The result of demographic variables showed that the age range of the respondents was 15-55 years with more than half (53.5%) within the age group 35-45 years. All respondents were females and 80.2% of them were married, 8% - single, 6% - widowed and 4% - separated. Educationally, 72.1% of the respondents completed secondary education, 20.1% attended Primary education while 4.6% had tertiary education and 2% had none. 26% of them had food safety training once before this study while sixty three per cent 63% had no training in food safety at all.

The assessment of food safety

knowledge as shown in Table 1 revealed that 90.6% of the respondents were aware that poor standard of food hygiene can cause food borne illness while 93.1% affirmed that personal hygiene can prevent food contamination. Similarly, 91.8% of the respondents always wash their hands before cooking and used gloves while handling food respectively reduces the risk of food contamination. 81.3% of the respondents believed that food handlers having diarrhea, flu and sore throat can pose risk of food contamination. Majority of respondents 88.3% affirmed that opened scratches or cuts on fingers and body can cause.

**Table 1A: Percentage (%) Responses on Knowledge of Food Safety possessed by Food Vendors (n=86)**

| Parameters |                                                                                   | Yes<br>N (%) | No<br>N (%) | I do not<br>know<br>N (%) |
|------------|-----------------------------------------------------------------------------------|--------------|-------------|---------------------------|
| 1          | Poor standard of food hygiene can cause food borne illness.                       | 78(90.6)     | 2(2.4)      | 6(6.9)                    |
| 2          | Personal hygiene can prevent food contamination.                                  | 80(93.0)     | 1(1.1)      | 5(5.8)                    |
| 3          | Contaminated water can be a vehicle for food borne disease transmission.          | 61(70.9)     | 17(19.7)    | 8(9.3)                    |
| 4          | Hand washing before cooking reduces the risk of food contamination.               | 79(91.8)     | 2(2.3)      | 5(5.8)                    |
| 5          | Use of gloves while handling food reduces the risk of contamination.              | 57(66.2)     | 9(10.4)     | 20(23.2)                  |
| 6          | Children are more at risk of food poisoning.                                      | 60(69.7)     | 8(9.3)      | 18(20.9)                  |
| 7          | Food handler having diarrhea, flu and sore throat can pose risk of contamination. | 70(81.3)     | 10(11.6)    | 6(6.9)                    |
| 8          | Storing raw and cooked food together can cause contamination of food.             | 65(75.5)     | 4(4.6)      | 16(18.6)                  |
| 9          | Contaminated food can have health and economic effect on the society.             | 67(77.9)     | 2(2.3)      | 17(19.7)                  |
| 10         | Open scratches or cuts on fingers and body can cause contamination of food.       | 76(88.3)     | 1(1.1)      | 9(10.4)                   |
| 11         | Untidy and dirty nails can harbor and spread bacteria.                            | 78(90.6)     | 3(3.4)      | 5(5.8)                    |

**Table 1B: Percentage (%) Responses on Knowledge of Food Safety possessed by Food Vendors (n=86)**

|    |                                                                                              |          |        |          |
|----|----------------------------------------------------------------------------------------------|----------|--------|----------|
| 12 | Serving out and testing food with unprotected hands can contaminate food.                    | 54(62.7) | 4(4.6) | 28(32.5) |
| 13 | Washing of hands after handling raw food prevents food borne disease.                        | 70(81.3) | 4(4.6) | 12(13.9) |
| 14 | Food/utensils should not come in contact with human/animal faeces.                           | 83(96.5) | 2(2.3) | 1(1.1)   |
| 15 | Insufficient cooking of raw food like meat, and vegetables can cause outbreak of food borne. | 78(90.6) | 3(3.4) | 5(5.8)   |

Contamination of food while 90.6% believed that untidy and dirty nails can harbor and spread bacteria. The proportion of respondents who admitted that children are more at risk of food poisoning was 69.7% and also affirmed that serving out and testing food with unprotected hands can contaminate food. A very large proportion of the respondents 77.9% affirmed that contaminated food can have health and economic effects on the

society while almost three quarter of the respondents believed that storing raw and cooked food together can cause contamination in food. More than half of the respondents 70.9% believed that contaminated water can be a vehicle for food borne transmission while washing of hands after handling raw and cooking of raw food like meat, and vegetables respectively can prevent outbreak of borne disease.

**Table 2A: Percentage (%) Responses on Attitude to Food Safety Possessed by Food Vendors (n=86)**

| S/n |                                                                                       | Yes      | No       | I do not know |
|-----|---------------------------------------------------------------------------------------|----------|----------|---------------|
|     |                                                                                       | N (%)    | N (%)    | N (%)         |
| 1   | Believe in the importance of food hygiene                                             | 43(50.0) | 11(12.7) | 32(37.2)      |
| 2   | I'm not satisfied with the surrounding environmental condition where food is prepared | 78(87.0) | 8(9.3)   | 0(0)          |
| 3   | Water used in washing utensils should only be changed when water colour changes       | 15(17.4) | 66(79.0) | 3(3.4)        |
| 4   | Hands washing after going to toilet before touching food                              | 85(98.8) | 1(1.1)   | 0(0)          |
| 5   | Towel used to clean food contact surfaces should be used to clean hands               | 48(55.8) | 38(44.1) | 0(0)          |
| 6   | It is not safe to store raw and cooked food together                                  | 76(85.3) | 10(11.6) | 0(0)          |
| 7   | Cooking cutlery should be properly sanitized to prevent cross contamination           | 78(90.6) | 5(5.8)   | 3(3.4)        |
| 8   | Clean hand towel should be used to wipe hands after washing                           | 54(62.7) | 26(30.1) | 6(6.9)        |

**Table 2B: Percentage (%) Responses on Attitude to Food Safety Possessed by Food Vendors (n=86)**

|    |                                                                       |          |          |          |
|----|-----------------------------------------------------------------------|----------|----------|----------|
| 9  | Proper cooking of food could prevent contamination                    | 79(91.8) | 7(8.3)   | 0(0)     |
| 10 | Reheating food could cause cross contamination                        | 3(3.4)   | 81(94.1) | 2(2.3)   |
| 11 | Eggs should be properly washed before cooking and frying              | 25(29.3) | 10(11.1) | 51(59.3) |
| 12 | Frequent hand washing help to prevent food borne diseases             | 80(93.0) | 2(2.3)   | 4(4.6)   |
| 13 | Food preparation area must be cleaned before and after preparing food | 81(94.1) | 4(4.6)   | 1(1.1)   |
| 14 | Towel used in the toilet can be used in the kitchen                   | 2(2.3)   | 84(97.6) | 0(0)     |
| 15 | Food poison is most common in rural areas                             | 28(32.5) | 46(53.6) | 12(13.9) |

Possible attitude toward food safety and related issues have responses presented in Table 2. 87.0% of the respondents were not satisfied with the surrounding environmental condition where food was prepared and also disagree with the fact that water used in washing utensils should only be changed when the colour changes. Majority of the respondents 98.8% concurred that proper hand washing after going to toilet before touching food and towel used in the toilet should never be used in the kitchen would reduce risk of contamination. Most of the respondents 85.1% affirmed that raw and cooked foods should not be stored together for fear of contamination.

More than three quarter of the respondents 90.6% concurred that cooking cutlery must be properly sanitized and proper cooking of food be done to prevent contamination. 94.1% of the respondents affirmed that reheating of food could not cause contamination. More than half of the respondents 59.3% were not aware that eggs should be properly washed before cooking and believed that towel used to clean food contact surfaces should not be used to clean hands. A high proportion of the respondents 90.3% believed that frequent hand washing could help prevent food borne diseases while 53.4% did not agree that food poisoning is most common in rural areas.

**Table 3A. Percentage (%) Responses on Practices of food Safety Possessed by Food Vendors (n=86)**

| S/N |                                                       | Yes      | No       | I do not know |
|-----|-------------------------------------------------------|----------|----------|---------------|
|     |                                                       | N(%)     | N(%)     | N(%)          |
| 1   | Wash hands before and after cooking                   | 84(97.6) | 2(2.3)   | 0(0)          |
| 2   | Keep food to be consumed at room temperature for long | 48(55.8) | 22(25.5) | 16(18.6)      |
| 3   | Cover mouth with hand while coughing or sneezing      | 81(94.1) | 2(2.3)   | 0(0)          |
| 4   | Taste and dish out food with unprotected hands        | 68(78.0) | 12(13.9) | 6(6.9)        |

**Table 3B. Percentage (%) Responses on Practices of food Safety Possessed by Food Vendors (n=86)**

|    |                                                                                    |          |          |          |
|----|------------------------------------------------------------------------------------|----------|----------|----------|
| 5  | Wash fruits and vegetables before eating                                           | 85(98.8) | 1(1.1)   | 0(0)     |
| 6  | Wash eggs before cooking or frying them                                            | 15(17.4) | 45(52.3) | 26(30.2) |
| 7  | Wash and rinse cutting boards, knives and plates before using them for other foods | 78(90.6) | 4(4.6)   | 4(4.6)   |
| 8  | Wear accessories like rings, bracelets when cooking food                           | 58(67.4) | 20(23.2) | 10(11.6) |
| 9  | Use an apron when cooking                                                          | 15(17.4) | 64(79.0) | 3(3.4)   |
| 10 | Wash dishes with detergent and warm water before rinsing                           | 30(43.8) | 56(65.1) | 0(0)     |
| 11 | Wash hands before and after handling raw food products                             | 45(52.3) | 21(24.4) | 20(25.2) |
| 12 | Cover cuts with bandage and use gloves                                             | 64(74.6) | 20(23.2) | 2(2.3)   |
| 13 | Protect raw and cooked food from insects and rodents                               | 83(96.5) | 1(1.1)   | 2(2.3)   |
| 14 | human/animal faece                                                                 | 65(75.5) | 21(24.4) | 0(0)     |
| 15 | Prepare food under clean and opened environment                                    | 27(31.3) | 59(68.6) | 0(0)     |

As shown in Table 3, majority of the respondents 97.6% believed that hand washing before and after cooking and frequent washing of fruits and vegetables before eating are critical. An overwhelming majority of the respondents 94.1% concurred that mouth must always be covered with hands while coughing or sneezing, and 68.4% affirmed that they frequently taste and serve out food with unprotected hands. More than half of the respondents 52.3% declared that they were not aware that eggs could be washed before cooking while 79.5% do not use apron. 65.7% did not believed that washing dishes with detergent and warm water alone before rinsing could prevent

cross contamination. 90.6% of the respondents frequently washed and rinsed cutting boards, knives and plates before using for other foods, and 58.1% affirmed that accessories like rings, bracelets were not worn when cooking. 74.4% of the respondents frequently cover their cuts with bandage and use gloves, and the greater part (96.5%) of the respondents frequently protect raw and cooked food from insects and rodents. About three quarters of the respondents 75.5% protect food/utensils from coming in contact with human/animal faeces; while 68.6% frequently prepare food under unclean and opened environment.

**Table 4. Summary table for  $\chi^2$  test on practices of food safety in relation to knowledge and attitude amongst food vendors**

| Items | Responses on practices of food safety |                |    |      | Practices of food safety and attitude |                |    |      |
|-------|---------------------------------------|----------------|----|------|---------------------------------------|----------------|----|------|
|       | O (E)                                 | $\chi^2_{cal}$ | df | 0.05 | O(E)                                  | $\chi^2_{cal}$ | df | 0.05 |
| 1     | 3168(3003.6)                          | 318.13         | 2  |      | 3168(3072.06)                         | 232.83         | 2  |      |
| 2     | 322(300.75)                           |                |    |      | 322(262.73)                           |                |    |      |
| 3     | 72(257.55)                            |                |    |      | 72(213.48)                            |                |    |      |
| 4     | 2325(2490.24)                         |                |    |      | 2525(2533.93)                         |                |    |      |
| 5     | 228(249.24)                           |                |    |      | 166(225.26)                           |                |    |      |
| 6     | 399(213.44)                           |                |    |      | 350(194.79)                           |                |    |      |

$P < 0.05$ ; O=Observed Frequency, E=Expected Frequency.

The results of the Chi square showed statistically significant evidence at 0.05 that food safety knowledge is different from practices of food safety among food vendors.  $\chi^2_{cal} = 318.13 > \chi^2_{crit} = 23.45$ .

Similarly, the statistical test showed significant difference in attitude and practices of food safety among food vendors  $\chi^2_{cal} = 232.83 > \chi^2_{crit} = 20.67$  (Table 4).

**Table 5. Relationship between Respondents Socio-Demographic Characteristics and Practices of Food Safety**

| Variables                   | Practices of food safety |                       |            | Chi square values |    |         |
|-----------------------------|--------------------------|-----------------------|------------|-------------------|----|---------|
|                             | Yes<br>O(E)              | I do not know<br>O(E) | No<br>O(E) | $\chi^2$          | df | P-value |
| <b>Educational status</b>   |                          |                       |            |                   |    |         |
| Non formal education        | 3(2.439)                 | 0(0.307)              | 1(0.652)   | 60.739            | 6  | 0.05    |
| Primary education           | 45(23.886)               | 2(11.12)              | 2(7.390)   |                   |    |         |
| Secondary education         | 26(46.350)               | 30(17.241)            | 20(12.397) |                   |    |         |
| Tertiary education          | 4(7.318)                 | 0(2.713)              | 0(1.331)   |                   |    |         |
| <b>Food safety training</b> |                          |                       |            |                   |    |         |
| Attended                    | 46(35.492)               | 0(7.98)               | 0(2.52)    | 17.235            | 2  | P= 0.05 |
| Non attended                | 123(133.502)             | 38(30.016)            | 12(9.495)  |                   |    |         |

O=observed frequency E= expected frequency

Educational level of food vendors was found to be significantly related to food safety practices of food vendors  $\chi^2 = 60.739$ ,  $\chi^2_{crit} = 12.592$ ,  $p = 0.05$ . Also, previous training in food safety and handling was found to be significantly related to safety practices among the participants  $\chi^2_{cal} = 17.235$ ,  $\chi^2_{crit} = 5.991$ ,  $p = 0.05$  (Table 5). Therefore, there was significant relationship between educational status and food safety training, and practices of food safety amongst food vendors.

## Discussion

Results from the study revealed that knowledge, attitude and training were significantly associated with level of practice of food safety. This trend is slightly similarly observed in previous studies (Iwu, Uwakwe, Duru et al. 2017; Nurudeen, Lawal and Ajayi, 2014; Monney, Agyei and Owusu, 2013) who observed that majority of the respondents were females having either a secondary education providing informal food

vending services. The finding corroborate with Ayaz, Priyadarshini and Jaiswal (2018) who reported that mothers between the ages of 36 -50 years were better with food safety knowledge and practice among Saudi mothers.

The overall percentage of food vendor's level of knowledge of food safety irrespective of level of education was  $81.78 \pm 2.79$  which implies that the knowledge of food safety was good for majority of the respondents in the present study, and this observation was similar to other studies done in Nigeria (Iwu et al. 2017; Oladoyindo et al., 2015; Bamidele, Adebimpe, Oladele and Adeoye, 2015) who found that majority of the respondents had either a secondary or primary level of education which have formed the basis for increased comprehension of food safety information and therefore improved knowledge. Knowledge positively influences attitude formation (Omemu, 2008). This could probably explain the result in this study where knowledge of food safety accompanied good level of positive attitude towards food safety. The practice of food safety by the respondents did not commensurate with the levels of knowledge and attitude in the present study. This pattern was similarly observed in some previous studies (Bamidele et al, 2015; Iwu et al, 2017). Contrary to the submission of Alkien, Carke, Cheung et al (2003) that practices refers to the ways in which people demonstrate their knowledge and attitude through their actions. The level of knowledge and attitude towards food safety were significantly associated with food safety practices. This was consistent with a number of researches (Tolulope, Zuwaira, Danjuma, Zaman, 2015), where knowledge and training were significantly associated with practice. This

is also true of the submission of Sani and Snow (2014) which corroborate findings of this study. On the contrary, a study in Ghana by Rheinlander, Olsen, Bakang, Takyi, Konrandsen, Samuelsen (2008) reported non association of knowledge to practices attributable to existence of socio-cultural context which may probably influence safety food practices, however, many of these respondents did not have training on food preparation and food handling which suggest they were not certified food handlers.

Educational status and attendance of food safety training showed a significant association with practices of food safety. In this present study only 26.7% of respondents attended formal training on food safety practices, a common phenomenon reported by several researchers in developing countries (Iwu et al., 2017, Muinde and Kutia 2005, Monney et al., 2013). This implies that among the participants, level of education and previous training on food safety affects their safety practices. The results correlate with other studies that highlights the importance of education and that of educational programs for mothers in improving their safety knowledge and practices (Ayaz et al; 2018, Angelillo, Foresta, Scozzafava, and Pavia 2010). Therefore, food handlers will benefit from regular training to ensure that food practices are improved. Not with standing, the low level of formal training observed in the present study coupled with the observational check on practices of food safety showed half of the respondents were neatly dressed and covered their heads when preparing food, 80% of prepared food in opened environment using well water, without waste disposal and no apron. Less than half of the respondents practiced hand washing with soap and water before

preparing food, reason for this poor practice may be out of negligence or ignorance.

### Conclusion

The knowledge and attitude about food safety among food vendors was good. There was no significant difference in food safety knowledge and attitude with practices amongst food vendors. Also, educational level and food safety training were significantly related to safety practices among the participants. The result showed that knowledge has direct influence on practice. Thus, food vendors need education on practices in order to ensure food safety and hygiene.

### Recommendations

Based on the findings of the study, the following recommendations were made:

1. The government should establish regular refresher courses outside of the pre-requisite standard operation procedures on food safety for the scheme. Food vendors also need regular medical checkout and their premises examined regularly.
2. There is need for practical food safety education among the participants to gain useful experience.

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