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Stakeholders' Perspectives on Food Safety in Kebbi State, Nigeria

Okoruwa A. E*; Onuigbo-Chatta, N.O. and Elere, S. O.

ABSTRACT

In Nigeria, consumption of unsafe food results in an estimated 173 million cases of diarrhea due to foodborne illness and about 33,000 deaths annually. Perspectives on food safety by stakeholders in Kebbi State were obtained through a stakeholder mapping exercise by the EatSafe: Evidence and Action Towards Safe, Nutritious Food program funded by United States Agency for International Development (USAID) and implemented by the Global Alliance for Improved Nutrition (GAIN) in Kebbi State, Nigeria. Key objectives of the study were to identify stakeholders according to their influence and interest in food safety and understand their perspectives on food safety. Using purposive sampling, data were collected by administering questionnaires to relevant stakeholders. The methodology employed the three stages of stakeholder identification, analysis and mapping. Findings showed that food safety issues of most concern were a) aflatoxicosis, mycotoxins and bacterial contamination of rice and other grains, b) pesticides residue in commodities due to use of toxic chemicals for grain storage, c) use of chemicals to force artificial ripening of fruits, d) lack of proper storage and transportation facilities for perishables, e) use of chemicals for harvesting fish; f) abuse of antibiotics used in livestock production and g) poor food hygienic practices by food handlers. Stakeholders identified gender-related barriers to food safety such as low level of education of women, cultural norms, and religious restrictions; suggesting that women should be empowered in the food safety space based on the important role they play in the food supply chain; including informal markets where majority of households purchase their food items.

Keywords: Unsafe food, hazards, gender, informal markets, EatSafe.

1.0 Introduction

Globally, unsafe food causes 600 million cases of foodborne diseases and 420,000 deaths yearly (WHO, 2015). In Nigeria, unsafe food results in an estimated 173 million cases of diarrhea due to foodborne illness and about 33,000 deaths (Grace et al., 2018). In addition, the World Health Organization (WHO) estimates that worldwide, 33 million years of healthy lives are lost per annum due to eating contaminated food (WHO, 2015). The Food and Agriculture Organization (FAO) of the United Nations has said, "if it isn't safe, it isn't food", denoting that unsafe food is not an option for consumers. For this reason, the Global Alliance for Improved Nutrition (GAIN) in partnership with the Feed the Future Initiative of the U.S. Agency for International Development (USAID) has developed EatSafe: Evidence and Action Towards Safe, Nutritious Food, which will improve the safety of nutritious foods by focusing on the consumer. EatSafe has demonstrated clear linkages between the need for a healthy diet with nutrient-rich food that is also safe, as unsafe food cannot nourish. Food safety refers to the proper handling, storage and preparation of food to prevent infection and ensure that food retains enough nutrients for a healthy diet. Unsafe food includes food that has been exposed to pathogenic bacteria, viruses, parasites, chemicals and other contaminants, allergens and other hazards. Those hazards in

EatSafe: Evidence and Action Towards Safe, Nutritious Food, Global Alliance for Improved Nutrition (GAIN), Abuja, Nigeria.
*Address for Correspondence. E-mail: aokoruwa@gainhealth.org

food can lead to illnesses such as diarrhea, meningitis, etc. (FAO, 2020). Food must also be produced and handled under sanitary conditions, by avoiding exposure to dirt, filth or conditions that lead to spoilage. Foodborne illness is a public health concern in Nigeria. The EatSafe program, funded by USAID and led by GAIN, includes implementing partners namely, International Livestock Research Institute (ILRI), Pierce Mill Entertainment and Education and the Busara Center for Behavioral Economics. EatSafe's focus in Nigeria is along the following value chain commodities – rice, maize, cowpea, soya bean, beef, fish (aquaculture) and green leafy vegetables (GLV). The program uses an investigative approach to understand consumers' and food vendors' values, perceptions, and demand for safe, nutritious foods and the gendered roles that govern food safety-related behaviors. Subsequently, information gathered about the safety and food environment surrounding these commodities is channeled into the design of interventions that target consumers and vendors in traditional markets in Kebbi State, Nigeria. In Nigeria, the challenge of unsafe food and its implications is real. Kebbi State, an agrarian state with diverse animal and plant food products, battles high level of malnutrition, food insecurity and foodborne diseases. About 66% of children in the State suffer from malnutrition (NPC and ICF, 2019). Also, studies have shown high level of bacterial contamination of meat and meat products from markets in Kebbi State (Yusuf et al., 2019). The problem of malnutrition in Northern Nigeria is infamous globally with approximately 50% of children under five in the Northeast and Northwest (of which Kebbi belongs) regions found to be stunted in 2013, compared to 22% in other regions of Nigeria (Benson et al., 2017). Kebbi State was chosen because it is a focus state of USAID's Feed the Future to combat global hunger and poverty. Specifically, stunting is highest in Kebbi - 66% unlike in Anambra State which has the lowest prevalence at 14% (NPC and ICF, 2019).

According to Blench (2020), health and safety are not regarded as the foremost issues for traditional wet markets in Nigeria. Some of the associated issues include poor adoption and enforcement of sanitation practices, poor personal hygiene of vendors, not covering food commodities, increasing exposure to physical, biological and other contaminants; and poor handling/storage of food leading to cross contamination especially of nutritious foods like vegetables, fruits and animal source foods (ASFs) like fish, meat and dairy. Despite the poor food safety practices, few studies embarked on improving the safety of food in the region due to the lack of data/evidence to support assertions of contamination. This can be attributed to food security being of more concern in Kebbi State than food safety due to irregular rainfall, rising input prices and seasonal flooding. In addition, a cogent issue is that food safety is not a primary concern for vendors as they believe attention to food safety will result in increased costs without the corresponding benefit (Blench, 2020). Studies undertaken on food safety in the region found high levels of infection such as fungi and mycotoxin contamination of stored maize in Kebbi (Shehu et al., 2020); prevalence of Cryptosporidiosis due to unhygienic practices (Kanya et al., 2015); prevalence of zoonotic helminths (Magaji et al., 2012); and poor food handling and environmental hygiene practices at abattoirs and retail shops in the State. These areas have shown high levels of pathogens of public health importance like E. coli, Staphylococcus aureus, Salmonella typhyimurium and Klebsiella pneumonia (Famubo et al., 2020). Even fish value chain production is incriminated as reported by Grema et al., 2020 where a study in North-Western Nigeria showed that fish production was characterized by poor structural and sanitary support for food safety and hygiene measures along the value chain from fish producers, transporters to the fish sellers (both raw and processed).

For the purposes of this study, a stakeholder is defined as an individual, group or organization

who may affect, be affected by, or perceive itself to be affected by, a decision, activity, or outcome (Study.com, 2020) of EatSafe and by extension food safety. As part of EatSafe Nigeria's implementation, a stakeholder mapping was conducted to identify the different groups/individuals who have an interest in improving food safety in Kebbi State and by extension, Nigeria. The mapping was designed to identify stakeholders in Kebbi State; group them according to their potential levels of participation, interest, and influence in food safety strengthening and EatSafe; and determine how best to involve and communicate with each of these stakeholder groups throughout EatSafe's implementation period. As part of the stakeholder mapping, several themes including influence and perspectives of the different stakeholders on food safety were identified and elicited. This study is very important because it fills a knowledge gap when it comes to stakeholders' perspective on food safety (including influence) with a focus on Kebbi State, where EatSafe is being implemented. This is key because solving the problems of food safety and foodborne illnesses will have to start from understanding the perspectives of the relevant stakeholders who have the power to effect change before it trickles down to the general populace.

The aim of this research was to map stakeholders in relevant sectors (agriculture), determine their influence on and perspective of food safety in a bid to implement EatSafe and improve food safety in Kebbi State. The objectives of this research were to: (i) identify the roles of the respective stakeholders, classify and categorize them by understanding what groups they belong, (ii) determine the amount of influence the stakeholders hold in the food safety space and the interests they represent, (iii) know the stakeholders' perspective of food safety including drivers, incentives and barriers, (iv) identify individuals and organizations with interest in engaging in EatSafe to achieve the common goal of improvements in food safety, and (v) identify opportunities for future citizen engagements during the program implementation.

2.0 Materials and Methods

2.1 *Research questions*

Five research questions were formulated and answered through the mapping study as follows:

- What are the roles of the respective stakeholders in the area of food safety, classified according to the groups they belong?
- What amount of influence do (including the interests they represent) stakeholders hold in the food safety space?
- What are the stakeholders' perspectives of food safety including drivers, incentives and barriers?
- Who are the stakeholders (individuals and organizations) with an interest in engaging in EatSafe to achieve the common goal of improvements in food safety?
- What are the opportunities for future citizen engagements during the program implementation?

Purposive sampling was used for data collection. Questionnaires were administered to 77 stakeholders in food safety and related areas such as agriculture, health, nutrition, food processing, policymaking and legislation. The questionnaires were in English language and so most respondents completed them themselves using Google Forms. However, for stakeholders like the farmers and traders who could not communicate in English, it was administered to them in Hausa. This was conducted in Kebbi State and at the national level where responses were obtained from key stakeholders whose activities have influence in Kebbi State but worked in other states. EatSafe used stakeholder mapping exercise to identify and assess the

importance of key people, groups or organizations that may significantly influence the success of the program. The stakeholder mapping was conducted in the present study remotely due to the physical movement restrictions brought about by the COVID-19 pandemic. The methodology employed followed the three stages of stakeholder identification, analysis and mapping as described by Zhakenova (2017). This ensured that the stakeholders on the list are those with high potential to collaborate with the EatSafe program.

2.2 Steps involved in the stakeholder mapping

2.2.1 *Identification*

This stage involved brainstorming on all the potential stakeholders without screening. Contacts were made within and outside GAIN (Global Alliance for Improved Nutrition) to obtain information about food safety stakeholder contacts, which were followed up. These contacts included all those who have roles in or are affected by food safety and related areas (i.e. agriculture, nutrition, health, environment, etc.) in Kebbi State or at the national level. In addition, EatSafe and other related program documents were reviewed to identify relevant stakeholders from which a database was created for stakeholders in the different categories (groupings). This was used in the next steps of the study.

2.2.2 *Analysis and prioritization*

To better understand stakeholders' relevance, perspectives and interest in the program, analysis and prioritization was done through emails, meetings, phone calls and questionnaires (Appendix 1) uploaded on Google forms. These questionnaires were used to evaluate stakeholders' roles, interest, influence, awareness about food safety and gender issues among others. The introductory stakeholder meetings were held online to introduce the program to key stakeholders in related Ministries, Departments and Agencies (MDAs) in Kebbi State, academic and research institutions, and food processors, USAID's Feed the Future and other activities, implementing partners, etc. Those who had email addresses were sent emails that had introductory letters, program overview brochure and links to the questionnaire for their responses to the questions. Those that had no email addresses were consulted through phone interviews. In addition, those who could not speak English were interviewed in Hausa, their local language, and translated to English. Analysis was done bearing in mind the major criteria of interest and influence from responses to the questionnaires. Based on the results, all stakeholders were placed on the Power/Interest Grid Tool (Figure 5) and a stakeholders list was generated.

2.2.3 *Mapping*

This was the final step of the study. In this context, mapping refers to stakeholders being put in the list and grouping them according to their level of influence. The result of such mapping was the Stakeholder List.

2.2.4 *Main Stakeholder Grouping (National and Kebbi State-Based)*

2.2.4.1 *Government Stakeholders*

These were the Federal, State and Local Government MDAs. They included Ministry of Health, Agriculture, Environment, Industry Trade and Investment, Science and Technology; and the Departments and Agencies under them.

2.2.4.2 *Consumer and Market Associations*

These represent the interest of the consumers and vendors who are the main target beneficiaries of EatSafe. They included the market managers and vendor (trader) associations as no functional consumer groups were found.

2.2.4.3 *Non-Governmental Organizations (NGOs)*

These included Community Based Organization (CBO), Civil Society

Organization (CSO) and Faith Based Organization (FBO).

2.2.4.4 *Private Sector*

These included the farmer associations, food processors/manufacturers, Food Produce Transporters/Nigerian Union of Road Transport Workers (NURTW) and the Hotels, Restaurants and Caterers (HORECA) category.

2.2.4.5 *Research and Academia*

These included research institutes/organizations, universities, colleges of education and polytechnics.

2.2.4.6 *Professional Associations*

These provided the input of technical experts and professionals.

2.2.4.7 *Women Groups*

These are an important category as gender is an important aspect of the program.

2.2.4.8 *Development Partners*

These include International NGOs and other USAID-Funded Feed the Future Activities in Kebbi State.

2.3 *Stakeholder Mapping Questionnaire*

The questionnaire was designed as a tool to identify and categorize the stakeholders. Consent and confidentiality were emphasized in the questionnaire. It was made mandatory that without agreeing to participate the respondent cannot proceed with the questionnaire. The questionnaire used consisted of seven sections. The first section introduced the program, talked about confidentiality and consent. The next five sections were the questions on introduction, influence, resource, intervention and gender. The seventh section requested personal details for those interested in participating or collaborating on EatSafe.

2.4 *Data Analysis*

Data was generated and analysed using Google forms. After respondents had filled the google forms, the responses were downloaded in Google sheets. The percentages based on number of respondents to each question were then calculated and charts created using MS Excel.

3.0 Results and Discussion

3.1 Profiling the responses

Seventy-seven people responded out of 100 people who received the questionnaires. Almost all the respondents (98.7%) gave their consent on filling the questionnaires, which reflected their interest to collaborate on the EatSafe program. Only one person was not willing to participate in the program. However, the person still filled the questionnaires. The analyses of the responses to all the questions are presented as:

3.1.1 *Introductory Section*

This section had seven questions. Most of the respondents were resident in Kebbi State while the rest were in Abuja with few in Lagos and Oyo states as some organizations like the professional associations and development partners were located outside Kebbi State. Most of the respondents were male (73.3%) and more than a quarter (26.7%) were female. On their years of work experience on food safety and related matters, the majority had 10 to 19 years of experience while some had 40 and above years of experience. The 40 years of experience reported by some respondents was quite high and was not expected. It is likely so, because most of them are farmers and vendors and could have started work at an early age. This showed that the responses received were not from novices but from people with experience in food safety and related areas. This implies that their perspectives on food safety would to a large extent reflect their individual and group level of knowledge and understanding of food safety and the related outcomes.

Most of the respondents (89.6%) understood the importance of proper handling of foods to food safety (Figure 1) while some mentioned proper processing, nutritional legislation and safe food

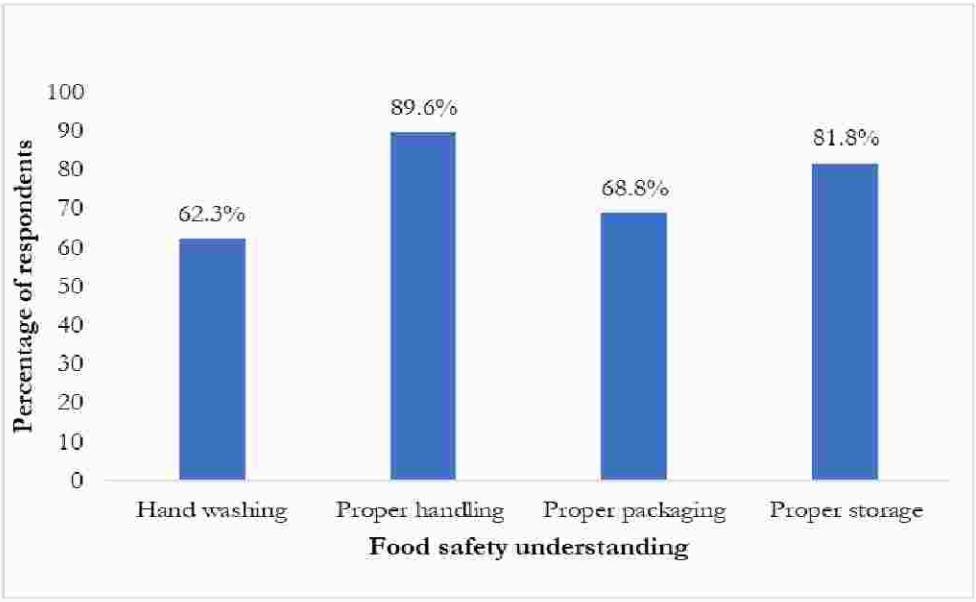

Figure 1: Understanding of Food Safety

preparation as "other" important food safety issues which is in tandem with other previous reports (Omojokun, 2013; Ezirigwe 2018; Grace et al., 2018; Yusuf et al., 2019; Shehu, Salau and. Salisu, 2020). This supports the EatSafe's work that target vendors and consumers as potential change agents whose handling of food may affect food safety outcomes.

Fig. 2 shows that the highest proportion of respondents (33.8%) belong to the private sector, most of which comprised the farmers' association. This was followed by Government MDAs with 24.7%; and consumer and market associations with 11.7%. The government, farmers, consumer and market associations form a critical stakeholder group as they represent the regulatory, private sectors and target beneficiaries. These groups are very important to the success of EatSafe Program. Most respondents have leadership and/or managerial roles. The roles of the different stakeholders were along the nutrition, agriculture, food and health sectors as they were purposively sampled. Those that had roles that were specific to food safety were: consumer sensitization and enforcement Federal Competition and Consumer Protection Commission (FCCPC); safety and quality of packaged food National Agency for Food and Drug Administration and Control (NAFDAC); food handlers test (Ministry of Environment); food safety and quality in processing factories through MANCAP - Mandatory Conformity Assessment Program (SON – Standards Organisation of Nigeria); ensuring food safety and hygiene from Environmental Health Officers Association of Nigeria (EHOAN); abattoir management by Veterinary Public Health – Animal Health; and food quality and hygiene by All Farmers Association, Kebbi State; other farmers groups, and vendor associations.

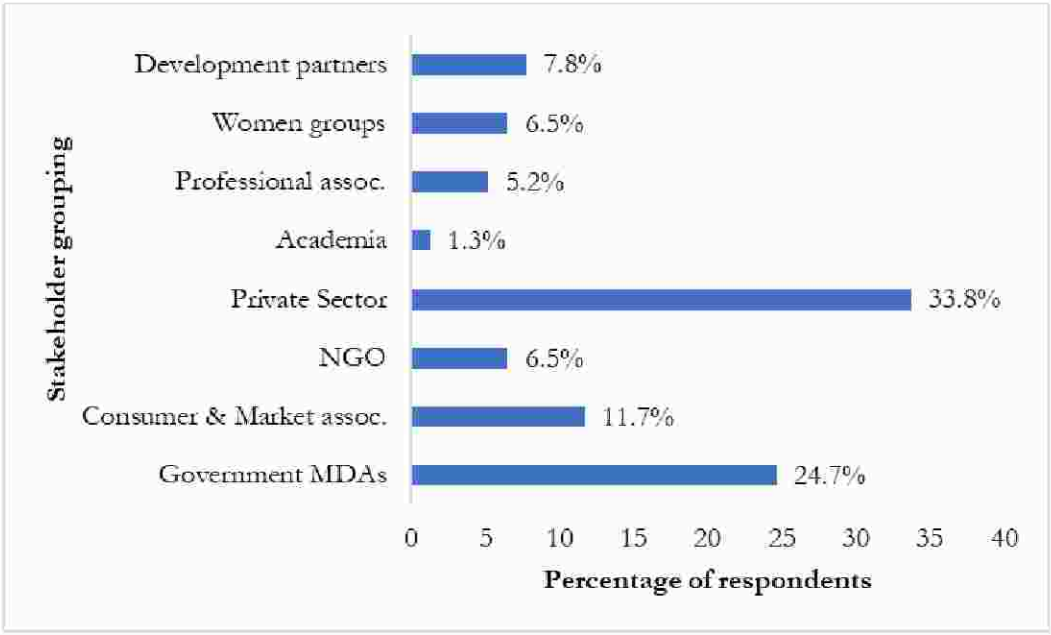

Figure 1: **Area of Primary Engagement**

The last two questions in this section focused on the organization's role as it relates to food safety and steps the organization has taken to improve food safety. The responses for both questions spread along the area of food safety, agriculture, health and nutrition.

3.1.2 Influence held by stakeholders

The six questions on influence covered interactions among stakeholders; how they influence each other; influential people or organizations; motivations and levels of influence and lastly the importance of consumers. Fig. 3 showed that most of the respondents interact with the government (53.9%) and the farmers (52.6%). On the level of influence organizations have on food safety, the area having the greatest influence was implementation while that with the least level of influence was Research and Development (R&D). This is not surprising because R&D institutions in both the private and public sectors do not have direct mandate on food safety regulation in Nigeria apart from their contributions to the knowledge and evidence base required for informed decision and policy making and the accompanying legislation efforts.

The most influential people on food safety were those in government or government MDAs as most people interact with the government (53.9%) followed by the farmers (52.6%). This is understandable because the food safety mandate in Nigeria is vested mostly in government Ministries, Departments and Agencies (MDAs) at the Federal and State level (Omojokun, 2013; Ezirigwe,2018; Okoruwa and Onuigbo-Chatta, 2021). Additionally, at the local government level, the Local Government Departments of Health and Agriculture are responsible for enforcing food safety acts and regulating the traditional food markets and informal food vendors (Omojokun, 2013).

On the level of influence organizations have in food safety, the area seen as having the greatest influence was implementation activities while that with the least level of influence was Research and Development (R&D). Notable influencers on food safety among the private sector other than the small holder farmers in Kebbi State were Labana Rice Mills Limited and WACOT Industries Limited.

Most of the respondents said there was no motivation against food safety. Some respondents cited concerns like expensive food safety process, non-compliance and substandard products, weak legislation and policy and ignorance of food handling measures in the community. Consumers' role and influence in food safety was recognized by almost half (47%) of the respondents. The respondents reported that they interact with a wide range of organizations, mostly government MDAs and among themselves, while the way they influence themselves is based on their mandate and roles.

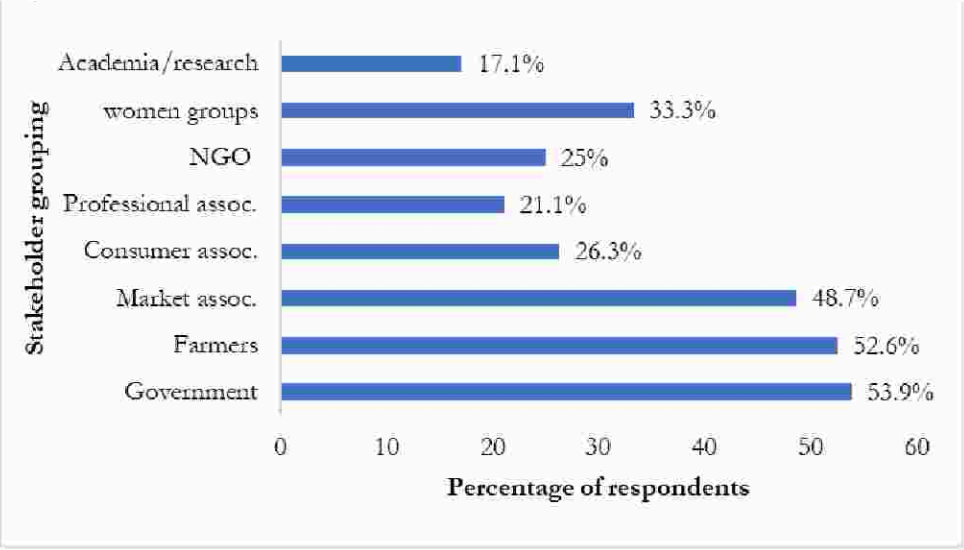

Figure 1: **Interaction with Food Safety Stakeholders**

3.1.3 Resources for food safety

The three questions in this section included questions on access to food safety resources, connection of food safety with pricing and economic costs of food safety hazards. Most respondents (83.6%) said that financial resources for food safety investments were the greatest challenge followed by training needs (74%). Access to Information and Communications Technology (ICT) by 21.9%, was regarded as the least problem.

On the relationship between food safety and food prices, 38% of the respondents agreed there was a linkage where expenses incurred in improving food safety led to price increases. They asserted that there is always a premium put on products where value has been added from cleaning, processing and packaging to storage. Lastly, 27% of respondents stated that they were not aware of the economic consequences of food safety hazards in Kebbi State. However, those (21%) that said they were aware, mentioned examples like flood, use of chemicals in beans storage and challenges during utilization of iodized salt for cooking.

3.2 Perspectives on food safety

Most respondents understand proper handling of foods is important to food safety outcomes. Some respondents cited proper processing, nutrition and legislation as a driver for food safety, and safe food preparation as "other" important food safety issues. On the current situation of food safety in local markets in Kebbi State, most respondents said it was poor and needed improvement. On awareness about FBD in Kebbi, the majority were unaware although some mentioned diarrhea, typhoid and cases of food poisoning in a school and community due to ingestion of cowpea (beans) which was stored

with toxic chemicals.

Concerning barriers to food safety, some mentioned expensive food safety process, non-compliance and substandard products, weak legislation and policy, ignorance of food handling measures in the community and access to ICT. They added that expenses incurred in improving food safety (cleaning, preservation, processing, and packaging) would lead to price increases.

3.3 Intervention issues

The section on interventions had seven questions on respondents' willingness to collaborate and support EatSafe and their motivations; their opinion of food safety situation in Kebbi; awareness of Foodborne Diseases (FBDs) in Kebbi State; major food safety gaps along the commodity value chains; creation of food safety awareness; focus for interventions and awareness of interventions.

The majority of the respondents (90.8%) said they would like to be involved in relevant planning and design of the EatSafe programs and other stakeholder engagement activities planned. This showed willingness to engage as stakeholders during the municipal meetings to design interventions. Most respondents said their motivation for collaborating with EatSafe is to learn more about (88.2%) and improve food safety (86.8%) in Kebbi State. On the current situation of food safety in local markets in Kebbi State, most of the respondents said that it was poor and needed improvement. Almost half of the respondents (48%) were not aware of occurrence of FBDs in Kebbi State. However, those that were aware, mentioned diarrhea, typhoid and cases of food poisoning in schools and the community due to ingestion of cowpea (beans) which was stored with toxic chemicals. The misuse of agrochemicals including herbicides and pesticides has been previously reported as a food safety risk of public health importance in Nigeria (Omojokun, 2013; Ezirigwe, 2018; Grace et al., 2018; Yusuf et al., 2019; Shehu, Salau and Salisu, 2020).

On food safety issues encountered among the seven EatSafe focus food value chains in Kebbi State, the following were reported:

i. Aflatoxicosis, mycotoxins and bacterial contamination of rice and other grains.
ii. Pesticides residue in commodities due to use of toxic chemicals for grain storage.
iii. Use of chemicals to force artificial ripening of fruits.
iv. Lack of proper storage and transportation facilities.
v. Use of chemicals for harvesting fish (aquaculture).
vi. Abuse of antibiotics in livestock production.
vii. Poor food hygienic practices.

When asked about what should be done to create more awareness about food safety, the following suggestions were made by the respondents:

i. Advocacy and grass-root campaign at the community or informal market level.
ii. Sensitization of the public through campaigns, radio jingles, tv shows and other mass media.
iii. Women's empowerment.
iv. Collaboration and involvement of stakeholders.
v. Trainings in the form of workshops and seminars.
vi. Use of cultural/religious avenues to disseminate information.

When asked about suggestions for the focus of EatSafe interventions to improve food safety, the suggestions were similar to the preceding ones. However, the respondents also made the following suggestions:

i. Raising awareness.
ii. Capacity building of stakeholders.
iii. Behaviour Change Communication (BCC) activities.
iv. Focusing on women and policy.

Most of the respondents stated that they were

not aware of food safety interventions in the State. Those who said they were aware, mentioned completed and/or ongoing programs and others as listed below:

Strengthening Partnerships, Results and Innovations in Nutrition Globally (SPRING) project by USAID.

i. Anchor Borrowers Program (ABP) by the Central Bank of Nigeria (CBN).
ii. Mandatory Conformity Assessment Program (MANCAP) by Standards Organization of Nigeria (SON).
iii. Africa Agri-Food Development Program (AADP) by CBN.
iv. Proact Project by Oxfam and implemented in Birnin Kebbi, Jega and Danko/Wasagu Local Government Areas (LGA) in Kebbi State.
v. Accelerated Agricultural Development Scheme (AADS) by CBN.
vi. Kebbi Agricultural Transformation and Self-Help Initiative (KATASHI) by World Bank.
vii. Fadama II program by the World Bank.

Although, some of the above projects and programs are on food security and not on food safety interventions, there are still lessons to be learned on food safety.

3.4 Gender-related issues

There were four questions addressing organizational

gender breakdown; importance of gender in decision making; relationship between gender and value chains/markets; and gender-related barriers to food safety. The majority of respondents (78.4%) said that gender did not matter in decision-making (Figure 4). This view was likely influenced by the cultural, religious, and social norms practiced in Northern Nigeria.

Some respondents suggested the need to involve women because they play a major role in determining the nutritional status of the family. Therefore, empowering women by providing knowledge of nutrition and food safety will add value to national and global food safety. Gender breakdown or composition of workforce varied among the respondents. The respondents said that most organizations are aware of the need for and are trying to achieve gender balance.

On how gender roles affect the way the local food value chains and markets work, most respondents said religious belief, culture, and traditions also affect it. For example, men sell meat in Kebbi State while women are in control of the rice and maize value chains. They added that the low level of education of women, patriarchal systems, cultural norms, and religious restriction were identified as critical barriers. The respondents stated that women do less strenuous work than men throughout the value chain. They said men tend to dominate production, transportation, processing, marketing, and policymaking in Kebbi State This dominance affects how the local value chains and market work. Also, gender plays a vital role in the local markets because men are the dominant forces in most commodities. However, in some parts of the State, women freely participate in all aspect of market operations. On views of the relevance of gender-related barriers to food safety, the low level of education of women, cultural norms, and religious restriction were identified as most critical barriers. Since women play a critical role as processors and in food preparation in the household, recognizing these gender-related barriers and remediating them is key to improving food safety. If gender barriers are not overcome, food safety actions will be skewed towards a single direction, which will not be good for food safety consciousness and action. Thus, more efforts should be made for gender equality.

The key barriers to food safety reported by the respondents included:

- Women in seclusion on religious grounds have limited access to engage with their peers in the market.
- Women-owned businesses are not supported in some parts of the State due to patriarchal system thus, limiting their contribution to food safety.

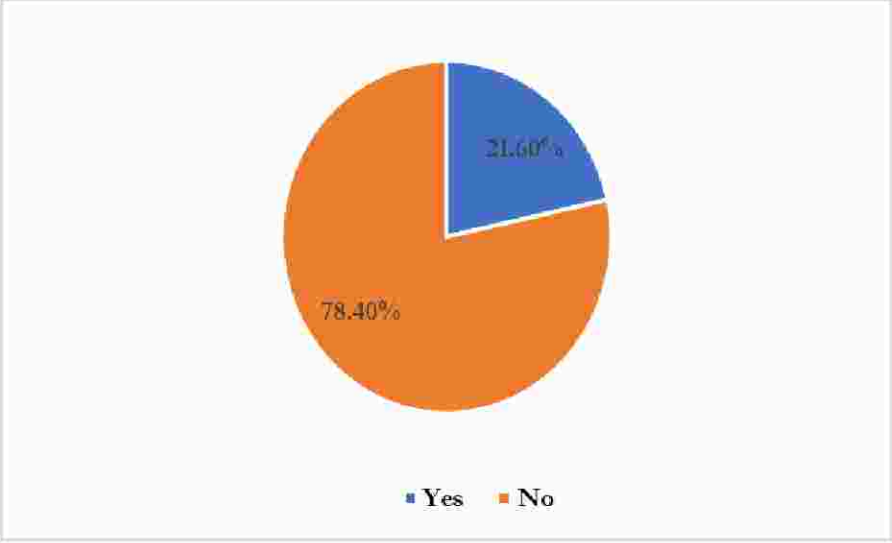

Figure 4: **Importance of Gender in Decision Making**

- Women are left out of decision-making processes, which hinders their opportunity to discuss and air their views on food safety issues.

Women's low level of education limits their access to equal opportunities.

3.5 Stakeholder mapping summary

By analysis of the questionnaires, stakeholders were classified according to their power and interest in food safety (Figure 5). The Power/Interest Grid tool provides the basis for identification of communication, engagement and capacity building activities. However, figure 5 was adapted to meet the design of our stakeholder mapping and so table 1 below was generated. Table 1 therefore more specifically informed the classification of our stakeholders into key, influential and interested players.

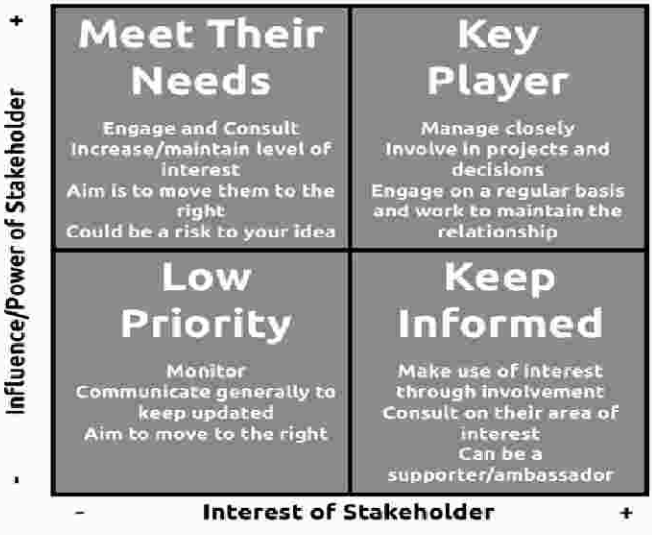

Fig 5: **Stakeholder Power/Interest Grid** (Zhakenova, 2017)

On the Stakeholder Power/Interest Grid, those with the highest influence and interest in the program are the key players. EatSafe will engage them through frequent contact and activities designed to facilitate collaboration. Active engagement includes social media posts (by tagging, provoking their comments, etc.) program launch, stakeholder engagement and municipal round tables. The goal is to keep these stakeholders interested and actively involved in EatSafe activities.

For the influential players ("meet their needs" quadrant), the goal is to move those stakeholders to 'high influence/high interest' part of the Matrix, therefore securing more and more actively engaged stakeholders who can exercise their influence to benefit the program. The Program Consortium will facilitate this through better informing these stakeholders and increasing their curiosity about the program and its benefits to them.

For the interested players ("keep informed" quadrant), they will be kept informed and consulted, based on their interest. For the last group, passive players ("low priority" quadrant), the least effort will be applied to engage them, given their low interest and low influence. They might still benefit through generic communication channels (e.g., program website, social media, etc.), and some of them might move towards becoming interested stakeholders. However, no passive players were identified in our mapping. This is expected because every stakeholder in the food value chain from farm to table continuum has a responsibility in assuring food safety (Omojokun, 2013; Ezirigwe, 2018; Grace et al., 201).

Table 1: **Stakeholders Power/Interest Table**

	Key Players	**Influential Players**	**Interested Players**	**Passive Players**
Stakeholder	-Government. -Development Partners.	-Market and consumer associations. - Private sector. -Women groups.	-Research and academia. - NGOs. -Professional associations.	None identified during the mapping.
Description	-High influence and high interest.	-High influence but low interest. -Meet their Needs.	-Low influence but high interest.	-Low influence and low interest. -Low Priority.
Key Actions	-Engage and consult.	-Increase their interest and communicate.	-Keep informed. -Satisfy their needs and communicate.	-Keep informed with minimal effort.

The different groups in Table 1 have been identified as stakeholders with whom the EatSafe program needs to engage/who are important in improving the indices of food safety in Kebbi State.

3.6 Highlights of stakeholder analysis

Based on the findings of the stakeholder analysis, the following are highlighted:

I. For any food safety intervention to make strides in food safety, representatives of all relevant stakeholder groups should be engaged, consulted, and invited to participate at the program planning, launch and design of interventions, regular citizen engagements, training workshops/ webinars and information dissemination, etc.

ii. Gender roles in food safety practices as identified are highly relevant to food safety program implementation in Kebbi State. Women could be empowered through trainings on food safety and hygiene to raise their awareness on the public health risks

associated with unsafe food, especially those arising from poor practices along the food value chains of focus.

iii. Capacity building in food safety and hygiene knowledge, along with behavior change communication at the community level and in informal markets could be conducted. Most of the respondents indicated interest and willingness to learn more about food safety and admitted to having a generally poor knowledge of food safety.

iv. Several stakeholders in Kebbi State expressed their concern over the use of toxic chemicals for storing cowpea (beans) and hazardous chemicals for harvesting fish by some aquaculture farmers posing a public health hazard to consumers-adults and children.

4.0 Conclusion

Through Stakeholder mapping, EatSafe Nigeria elicited Stakeholders' Perspectives on Food Safety in Kebbi State. Findings showed that the key players in the food, agriculture, nutrition and food safety space are the Government MDAs. Even though we found that stakeholders specifically working on food safety are few, the respondents believe that improving food safety will have cost implications and that there are gender barriers to food safety to be addressed. It is recommended that food safety programs and interventions, like EatSafe, should regularly engage the key stakeholders, and the influential/interested players during the program planning and implementation. In addition, a needs assessment should be carried out to ascertain food safety knowledge gaps before subsequent capacity building activities are undertaken. Women constitute a significant proportion of the workforce in Nigeria and are equally susceptible to the adverse effects of food safety. Recognizing these gender-related barriers and remediating them is key to improving food safety outcome in traditional markets in Kebbi State. If gender barriers are not overcome, food safety actions will be skewed towards a single direction, which will not be good for food safety consciousness and action. In this regard, more efforts should be made for gender equality. Further research should integrate the cost implications of food safety measures implemented in traditional market settings.

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Conflict of Interest

The authors declare no conflict of interest.

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