

Food Safety

Bibliography



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Introduction

With an estimated 600 million cases of foodborne illnesses annually, unsafe food is a threat to human health and economies globally. Therefore, ensuring food safety is a public health priority and an essential step to achieving food security. Effective food safety and quality control systems are key to not only safeguarding the health and well-being of people, but also to fostering economic development and improving livelihoods by promoting access to domestic, regional and international markets. (FAO, 2021)

The National Scientific & Technical Information Center (NSTIC) produces this bibliography for Food and Nutrition Department (F&N).

This bibliography highlights some of the latest publications; Journal articles for period 2020-2021 using Science Direct, Scopus, Elsevier.

Title: Animal-free strategies in food safety & nutrition: What are we waiting for? Part I: Food safety

Authors: Alrasheed, A., Connerton, P., Alshammari, G., & Connerton, I.

Journal: Trends in Food Science & Technology

DOI: <https://doi.org/10.1016/j.jksus.2021.101500>

Background

Methods and approaches that can be used in toxicology and safety assessment are changing at a faster pace than ever. Members of the International Life Sciences Institute (ILSI) Europe have formed an expert group to review possibilities, opportunities and challenges for the potential use of non-animal testing strategies in food safety and nutrition research, which can ultimately be used in support of regulatory submissions for pre-market authorisation.

Scope and approach

For the different areas of food improvement agents, genetically modified foods and novel foods, the acceptability of non-animal strategies is evaluated in comparison to legislative requirements in Europe. Current hazard and risk assessment tools that do not require additional animal testing are reviewed and emerging tools and methodologies considered, covering advanced in vitro methods, in silico and system biology approaches and high-throughput methods for mode-of-action assessment.

Conclusions

The paper highlights the great potential for research strategies to be developed that reduce or avoid the use of animal tests, with the generation of more human-relevant data from multiple sources. It also shows the discordance in current legislation: on one hand saying non-animal strategies should be used, but on the other hand not providing sufficient guidance, leading in practice to lack of use of these non-animal testing strategies. This emphasizes the need for scientific developments and acceptability to be more reflected in legislation (e.g. guidance). What are we waiting for?

Title: Reviewing chemical and biological risks in urban agriculture: A comprehensive framework for a food safety assessment of city region food systems.

Authors: Buscaroli, E., Braschi, I., Cirillo, C., Fargue-Lelièvre, A., Modarelli, G. C., Pennisi, G. . . . Orsini, F.

Journal: Food Control.

DOI: <https://doi.org/10.1016/j.foodcont.2021.108085>

Attention to urban agriculture (UA) has recently grown among practitioners, scientists, and the public, resulting in several initiatives worldwide. Despite the positive perception of modern UA

and locally grown, fresh produce, the potential food safety risks connected to these practices may be underestimated, leading to regulatory gaps. Thus, there is a need for assessment tools to evaluate the food safety risks connected to specific UA initiatives, to assist practitioners in self-evaluation and control, and to provide policy makers and scholars a means to pursue and assess food safety in city regions, avoiding either a lack or an excess of regulation that could ultimately hinder the sector. To address this aim, this paper reviews the most recent and relevant literature on UA food safety assessments. Food safety indicators were identified first. Then, a food safety assessment framework for UA initiatives was developed. The framework uses business surveys and food analyses (if available) as a data source for calculating a food safety index for single UA businesses and the whole UA landscape of a given city region. The proposed framework was designed to allow its integration into the CRFS (City Region Food System) toolkit developed by FAO (Food and Agriculture Organization of the United Nations), RUAF foundation (Resource Centers on Urban Agriculture and Food Security) and Wilfrid Laurier University.

Title: Minimum Information Required to Annotate Food Safety Risk Assessment Models (MIRARAM)

Authors: de Boer, A., Krul, L., Fehr, M., Geurts, L., Kramer, N., Taberbero Urbieto, M. . . Hepburn, P. A.

Journal: Food Research International

DOI: <https://doi.org/10.1016/j.tifs.2020.10.034>

In the last decades, mathematical models and model-based simulations became important elements not only in the area of risk assessment concerning microbiological and chemical hazards but also in modelling biological phenomena in general. Unfortunately, many of the developed models are published in non-standardized ways, which hinders efficient exchange, re-use and continuous improvement of models within the risk assessment domain. The establishment of guidelines for model annotation is an important pre-condition to overcome these obstacles. Additionally, implementation of annotation guidelines can improve transparency, quality control and even aid the clarification of intellectual property rights. Here, we address the question of “What is the minimum set of metadata that should be provided for a model in the risk assessment domain?”. The proposed guideline focuses on food safety risk assessment models and is called “Minimum Information Required to Annotate food safety Risk Assessment Models (MIRARAM)”.

MIRARAM supports the model creator during the model documentation step and could also be used as a checklist by scientific journal editors or database curators. Software developers could take up MIRARAM and develop easy-to-use software tools or new features in existing programs that can help model creators to provide proposed model annotations in harmonized file formats. Based on experiences from similar guidelines in related scientific disciplines (like systems biology), it is expected that MIRARAM could contribute to the promotion of application and re-use of models as well as to implementing more standardized quality control in the food safety modelling domain.

Title: Cohort study on the food safety knowledge among food services employees in Saudi Arabia state hospitals

Authors: Filter, M., Sundermann, E. M., Mesa-Varona, O., Buschhardt, T., Lopez de Abechuco, E., & Georgiadis, M.

Journal: Journal of King Saud University – Science

DOI: <https://doi.org/10.1016/j.foodres.2020.109952>

Hospital food safety is of paramount importance as patients are vulnerable to acquired diseases transmitted by unsafe food. The focus of this research was to critically analyze food safety and hygiene knowledge in Kingdom of Saudi Arabia (KSA) in respect of compliance with Hazard Analysis and Critical Control Points (HACCP) and International Organization for Standardization (ISO22000). Interviews of 242 randomly selected food services employees from seven KSA hospitals were carried out. Roles ranged from catering workers and catering supervisors together with Ministry of Health (MOH) supervisors. The survey was designed to evaluate their level of education, training, ethnicity, level of understanding and knowledge of food safety management systems, such as HACCP. Amongst an ethnically diverse group of catering workers, education levels were adequate but hygiene training in some of the hospitals investigated could be improved and the training should start immediately upon employment. The group of catering supervisors were well-educated but the survey identified some weaknesses in their knowledge and understanding of HACCP. The MOH supervisors group were all Saudi nationals and also showed some weakness in their knowledge and understanding of HACCP. The food policies in KSA need to be more accessible to their target audience and the format of the policies would benefit from increased consultation at all levels of the food supply chains.

Title: Exploring the relationship between gender and food safety risks in the dairy value chain in Ethiopia

Authors: Focker, M., & van der Fels-Klerx, H J

Journal: International Dairy Journal

DOI: <https://doi.org/10.1016/j.cofs.2020.10.018>

Women play an important but often unrecognized role in the safe production of milk and milk products, particularly in Ethiopia. Dairy products can be contaminated with biological chemical, and physical hazards. This article reviews literature on the microbiological and/or gendered aspects of milk handling in Ethiopia. Thirty-four articles were reviewed, many of which solely focused on either specific animal and/or foodborne hazards in milk processing or the role of gender in the dairy value chain. Contaminated farm environments put women at higher risk of exposure to milk borne, waterborne, and/or animal borne pathogens. Because of their primary role in animal husbandry, health, and milking, women play a crucial part in ensuring the safety of milk and milk

products. To reduce foodborne disease and improve overall family health, there is a need to combine food safety research with gender sensitive interventions in Ethiopia.

Title: Assessment of food safety knowledge, attitudes and practices of fish farmers and restaurants food handlers in Bangladesh

Authors: Garsow, A. V., Biondi, M. R., Kowalczyk, B. B., Vipham, J. L., Kovac, J., Amenu, K... Colverson, K. E.

Journal: Hiliyon

DOI: <https://doi.org/10.1016/j.idairyj.2021.105173>

The study was conducted to assess the present status of knowledge, attitudes and practices (KAP) concerning the food safety and hygiene issues among fish farmers and food handlers in Noakhali, Bangladesh. Data were collected from 100 respondents (50 fish farmers and 50 food handlers) through face to face interviews. All the respondents agreed that training on hygiene practices was necessary and they were interested to attend training in their spare time. Food handlers (88%) agreed that raw foods must be kept separate from prepared foods and 68% of them believed that improper preservation of foods is harmful to health. About 52% of farmers used a face mask when spreading insecticides, fertilizers, and chemicals. Food handlers were wearing protective clothing (32%) and masks (12%) when touching and distributing unwrapped foods, however no handlers used a cap. A significant strong correlation coefficient (r_s) was found between knowledge with attitudes, knowledge with practices and attitudes with practices of 0.73–0.99 among the three domains for fish farmers and food handlers. The correlation among the three levels was satisfactory, however, some food safety concepts and practices regarding hygiene were still insufficient. Therefore, an effective and appropriate training program on food safety and hygiene should be launched in a holistic approach for all fish farmers and food handlers to increase awareness and ensure safe food for consumers with a view to reducing the possibility of disease outbreak.

Title: Improving food safety on the farm: Experimental evidence from Kenya on incentives and subsidies for technology adoption.

Authors: Hashanuzzaman, M., Bhowmik, S., Rahman, M. S., Zakaria, M. U. M. Abu, Voumik, L. C., & Mamun, A.

Journal: World Development

DOI: <https://doi.org/10.1016/j.heliyon.2020.e05485>

Evidence is emerging that foodborne illness accounts for a staggering health burden in developing countries. However, standard approaches used by developed country governments to ensure food safety are not appropriate in settings where regulatory enforcement capacity is weak and most

firms are small and informal. Using a randomized field experiment, we test the impacts of subsidies and a price premium for safer produce on farmer adoption of technologies that improve food safety. We find that the food safety practices of farmers who produce maize for sale are inferior to those of farmers who produce maize only for household consumption, but that both a price incentive and technology subsidies can partially close this gap. We combine our experimental adoption results with prior evidence on the efficacy of the technologies studied to simulate the public health impacts of alternative policies. Our simulations show that interventions to reduce aflatoxin exposure are likely to be cost-effective based on averted poisoning deaths and cancer cases alone. Potential impacts on stunting, which are not as well established and more difficult to value, would imply additional health benefits. Of the policy options considered, providing training and plastic drying sheets to farmers free of charge is the most cost-effective.

Title: Big Data in food safety- A review

Authors: Hoffmann, V., & Jones, K.

Journal: Current Opinion in Food Science

DOI: <https://doi.org/10.1016/j.worlddev.2021.105406>

The massive rise of Big Data generated from smartphones, social media, Internet of Things (IoT), and multimedia, has produced an overwhelming flow of data in either structured or unstructured format. Big Data technologies are being developed and implemented in the food supply chain that gather and analyse these data. Such technologies demand new approaches in data collection, storage, processing and knowledge extraction. In this article, an overview of the recent developments in Big Data applications in food safety are presented. This review shows that the use of Big Data in food safety remains in its infancy but it is influencing the entire food supply chain. Big Data analysis is used to provide predictive insights in several steps in the food supply chain, support supply chain actors in taking real time decisions, and design the monitoring and sampling strategies. Lastly, the main research challenges that require research efforts are introduced.

Title: Food safety inspection and the adoption of traceability in aquatic wholesale markets: A game-theoretic model and empirical evidence

Authors: Jin, C., Bouzembrak, Y., Zhou, J., Liang, Q., van den Bulk, Leonieke M., Gavai, A., . . . Marvin, H. J. P.

Journal: Journal of Integrative Agriculture

DOI: <https://doi.org/10.1016/j.cofs.2020.11.006>

Supply chain traceability is key to reduce food safety risks, since it allows problems to be traced to their sources. Moreover, it allows regulatory agencies to understand where risk is introduced

into the supply chain, and offers a major disincentive for upstream agricultural businesses engaging in economically motivated adulteration. This paper focuses on the aquatic supply chain in China, and seeks to understand the adoption of traceability both through an analytical model, and empirical analysis based on data collected through an extensive (largest ever) field survey of Chinese aquatic wholesale markets. The field survey includes 76 managers and 753 vendors, covering all aquatic wholesale markets in Zhejiang and Hunan provinces. The analytical and empirical results suggest that the adoption of traceability among wholesale market vendors is significantly associated with inspection intensity, their individual history of food safety problems, and their risk awareness. The effect of inspection intensity on traceability adoption is stronger in markets which are privately owned than in markets with state/collective ownership. The analysis offers insights into the current state of traceability in China. More importantly, it suggests several hypothesized factors that might affect the adoption of traceability and could be leveraged by regulatory organizations to improve it.

Title: Evaluation of food safety knowledge, attitude, and self-reported practices of trained and newly recruited untrained workers of two baking industries in Dhaka, Bangladesh

Authors: JIN, C., LEVI, R., LIANG, Q., RENEGAR, N., & ZHOU, J.

Journal: Heliyon

DOI: [https://doi.org/10.1016/S2095-3119\(21\)63624-9](https://doi.org/10.1016/S2095-3119(21)63624-9)

In Bangladesh, with the mounting esteem of bakery products, food safety issues in bakery industries are a paramount concern nowadays. In this regard, this current study was performed to evaluate food safety knowledge, attitude, and self-reported practices of two groups (160 trained and 55 new untrained) of workers from two popular baking industries in Dhaka, Bangladesh. A self-administrated questionnaire was used to acquire the data during the study. On food safety knowledge, attitude, and self-reported practices, trained workers' scores (33.01 ± 0.09 , 14.86 ± 0.03 , 10.66 ± 0.25 , respectively) were significantly higher than the scores (9.82 ± 0.23 , 10.44 ± 0.26 , 5.91 ± 0.33 , respectively) of newly appointed untrained workers. The quality assurance department displayed better knowledge, attitude, and self-reported practices scores than the rest of the departments of the industries. However, compared to knowledge and attitude, the self-reported practice was not up to a satisfactory level. According to the study, training can be proved effective for improving knowledge and attitude but does not always translate those into self-reported practice and behaviors. The results also reinforce the importance of conducting training for untrained workers and suggest further behavior-based food safety training for all employees.

Title: A study of system dynamics modelling and optimization for food safety risk communication in China

Authors: Jubayer, M. F., Kayshar, M. S., Hossain, M. S., Uddin, M. N., Al-Emran, M., & Akter, S. S.

Journal: Alexandria Engineering Journal

DOI: <https://doi.org/10.1016/j.heliyon.2020.e05021>

Food safety risk communication (FSRC) is a very complex two-way system in China and its result strongly affects public confidence level to food safety regulation. In this study, a novel system dynamics (SD) model involving five communication organizations and 36 controlling parameters is established to investigate the interactive relationships among them and the dynamical behavior of FSRC. Subsequently, the nine optimization SD models with different objective functions are developed to investigate their capacities in producing controllable and optimal FSRC strategy. The results indicate that the proposed SD model is effective for the FSRC system to make effective risk assessment, management, and decisions.

Title: Food safety practices of food handlers at home engaged in online food businesses during COVID-19 pandemic in the Philippines

Author: Liang, L.

Journal: Current Research in Food Science

DOI: <https://doi.org/10.1016/j.aej.2020.11.039>

This study was conducted to assess the self-reported and observed food safety practices (FSP) of food handlers, who deliver food products that are prepared and cooked at home during the COVID-19 pandemic in the Philippines. 751 participated in the online survey who were selected using criterion sampling. A questionnaire developed by the researcher was used to gather data with Cronbach Alpha of 0.91. t-test, ANOVA, and Fleiss kappa were performed to treat data. There were no significant differences between self-reported FSP in four dimensions and demographic characteristics, except for age, where a significant difference exists between the FSP of the four age groups along food preparation ($F = 4.530, <0.01$). The FSP in the four dimensions obtained a weighted \bar{x} and σ of 1.72 ± 0.69 which is interpreted as Sometimes Practiced. The food handlers at home inadequately and inappropriately practiced the protocols in keeping the food safe to eat. The observed reports showed that the food handlers at home do not meet food safety standards as indicated in the weighted \bar{x} and σ in the four dimensions 1.63 ± 0.11 , with a description of Sometimes Practiced. Observed practices further show very poor adherence to guidelines. Test for inter-rater reliability yielded almost perfect agreement ($\kappa = 0.81, <0.05$). There exists a significant difference with the FSP in personal hygiene ($t = 0.964, <0.05$), cross-contamination prevention and sanitation ($t = 0.815, <0.05$), food preparation ($t = 0.753, <0.05$), and food delivery ($t = 0.794, <0.05$). Government and non-government agencies should work together towards educating the food handlers at home on effective ways to learn about food safety concepts so they could become advocates of safer food practices.

Title: Effect of food safety training on behavior change of food handlers: A case of orange-fleshed sweetpotato purée processing in Kenya

Author: Limon, M. R.

Journal: Food Control

DOI: <https://doi.org/10.1016/j.crfs.2021.01.001>

Sweetpotato purée processing is new to Kenya and a rapidly growing value addition activity among informal, small, and medium-sized food enterprises (SMEs) in sub-Saharan Africa (SSA). Inadequate knowledge of food safety and poor hygiene practices by food handlers, low level of compliance with Good Manufacturing Practices (GMPs), and microbial contamination are major food safety challenges in orange-fleshed sweetpotato (OFSP) purée processing in Kenya. The extent of food safety training in enhancing food safety in rural-based SMEs and food processing environments has not been fully investigated. This study aimed at evaluating the impact of food safety training on food safety knowledge and hygiene practices of food handlers and in control of microbial contamination in OFSP purée processing in Kenya. Pre- and post-food safety training assessments were conducted to determine food handler's (N = 14) knowledge and practices on food safety. Food, water, and swab samples (n = 62) from the processing environment were collected before and two months after the training and analyzed for food hygiene indicator microorganisms. The findings indicate a significant ($p < 0.05$) improvement in overall food safety knowledge and practices of food handlers after the training. Poor knowledge scores were exhibited on aspects of cross-contamination, cleaning, and sanitation but these significantly ($p < 0.05$) improved after the training. Similarly, microbial counts on food equipment surfaces, installations, personnel hands, and in the final product (OFSP purée) significantly ($p < 0.05$) declined to acceptable levels after the food safety training. Total counts, yeasts and molds, *S. aureus*, Enterobacteriaceae, and total coliforms counts in the packaged OFSP purée were 2.6, 1.8, 1.5, 1.9, and 1.2 LOG CFU/g respectively hence suitable for its current application as an ingredient in baked products. The findings from this study indicate food safety training as an appropriate tool for improving food handler's knowledge and hygiene practices as well as enhancing microbial safety and quality of processed foods in SMEs if necessary food safety support resources are provided.

Title: Food safety knowledge, food shopping attitude and safety kitchen practices among Romanian consumers: A structural modelling approach

Authors: Malavi, D. N., Abong', G. O., & Muzhingi, T.

Journal: Food Control

DOI: <https://doi.org/10.1016/j.foodcont.2020.107500>

This paper aimed to establish the relationship between food safety knowledge, food shopping attitude, and self-reported kitchen practices among Romanian consumers. The study used data collected in an online survey applied on 985 consumers. A knowledge, attitude and practice (KAP) model applied by structural equation modelling revealed significant correlations between knowledge and attitude ($r = 0.36$; $p < 0.001$). Also, knowledge and attitude depicted significant effects on self-reported safety kitchen practices ($\beta = 0.17$, $p < 0.001$; $\beta = 0.47$, $p < 0.001$) and explained 30% of the variance of the food safety practices applied by Romanian consumers. These findings suggest that higher levels of food safety knowledge than current ones could conduct to an improved attitude towards food shopping priorities and could incline consumers to adopt adequate food safety practices during food purchasing in shops and food manipulation in their kitchens. Case-studies from real life situations (an observational study including 15 Romanian households) support the findings of this study and urge interventions to improve consumers' food safety practices at home.

Title: Impacts of the COVID-19 pandemic on consumers' food safety knowledge and behavior in China

Authors: Mihalache, O. A., Dumitraşcu, L., Nicolau, A. I., & Borda, D.

Journal: Journal of Integrative Agriculture

DOI: <https://doi.org/10.1016/j.foodcont.2020.107545>

This study assesses the impacts of the COVID-19 pandemic on Chinese residents' food safety knowledge and behavior, and explores the possible influence mechanism, namely, focus on media information. The study is based on internet survey data of 1 373 residents in China. A series of econometric models are developed to estimate food safety knowledge and behavior of residents. Both the descriptive and econometric results indicate that the existence of COVID-19 cases in a community has a significantly positive effect on residents' food safety knowledge and behavior. Residents focusing on food safety-related information tend to have higher food safety knowledge and practice food safety behavior. When controlling the variable focused on food safety-related information, the marginal effects of the existence of COVID-19 cases in a community on residents' food safety knowledge and behavior significantly decrease. However, the decrease in consumers' food safety knowledge is quite minor. Hence, the COVID-19 pandemic indeed improves Chinese residents' food safety knowledge and behavior, while focus on food safety-related information is an important mechanism for improving food safety behavior. Moreover, the estimation results of

the simultaneous equations model reveal that consumers' food safety knowledge has a significant and positive effect on their food safety behavior. Heterogeneous impacts of the COVID-19 pandemic on residents' food safety knowledge and behavior among different regions and income groups are observed. The findings of this study provide evidence that public health events could enhance residents' safety awareness and behavior, while residents' focus on relevant information plays an important role in improving knowledge and impacting behavior.

Title: Towards a resilient food supply chain in the context of food safety

Authors: MIN, S., XIANG, C., & ZHANG, X.

Journal: Food Control

DOI: <https://doi.org/10.1016/j.foodcont.2021.107953>

Global food supply chains have been constantly challenged by various food safety incidents or crisis. Traditional approaches on enhancing robustness of the food supply chain are not sufficient to ensure a safe food supply to the society, while building resilience as a more comprehensive approach has shown to be a good alternative option. With a resilience thinking, the food supply chain is not targeting to achieve a state of zero food safety risks, but rather to pursue the capacity to adapt and manage food safety shocks. A resilient food supply chain can still be vulnerable under the constant pressure of food safety hazards and the changing food chain environment, but has the capacity to adapt to and recover from the shocks. This study aimed to 1) provide a clear definition for resilient food supply chains in the context of food safety; 2) provide a procedure to assess food safety resilience; 3) specify how a resilient food supply chain can be quantified and improved by providing a numerical example in a case study. Three dimensions of resilience factors, being time, degree of impacts caused by the food safety shocks, and degree of recovery, are suggested for assessing supply chain resilience. Results of a case study on *Salmonella* spp. in the pork supply chain show that the proposed framework and modelling allow for selecting the most effective strategies (having alternative suppliers, enhancing animal resilience as examples for the considered case) for improving the resilience of the supply chain for food safety.

Title: Adoption of food safety measures: The role of bargaining and processing producer organizations.

Journal: Journal of Life Sciences

DOI: <https://doi.org/10.1016/j.njas.2020.100337>

Increasing demand for safe food in developing countries entails meeting stringent food safety requirements. Food retailers and regulatory bodies impose food safety measures related to production and handling of farm produce. For smallholders to remain competitive in such a system, institutional arrangements are necessary. We examine the role of producer organizations (POs) in influencing safe food production behaviours among farmers. Using data from 11 expert interviews

and a quantitative survey involving 595 smallholder dairy farmers in Kenya, a propensity score matching estimation is employed to assess membership effects. We show that membership in POs positively and significantly influences smallholders' adoption of food safety measures related to milk storage and the milking area. We highlight the importance of social incentives in improving food safety adoption among farmers even when price incentives are absent. Our recommendation is that PO policies that alleviate barriers to food safety adoption among farmers will be helpful in scaling up adoption.

Title: Inclusiveness of consumer access to food safety: Evidence from certified rice in Vietnam

Authors: Nkosi, N. V., & Tabit, F. T.

Journal: Global Food Security

DOI: <https://doi.org/10.1016/j.heliyon.2021.e07640>

Food safety of staple crops such as rice is of global concern and has recently risen to the top of the policy agenda in Vietnam. Policy makers have introduced food safety certification, but little is known about the inclusiveness of consumer access to certified safe food. To address this evidence gap, we survey rice purchase behavior of urban Vietnamese consumers. We find that income largely conditions psychological determinants of certified rice purchase. Compared with the upper-middle income class, low-income consumers are 16% less likely to afford certified rice, which reveals Vietnam's challenge to render food safety inclusive for staple crops such as rice. We conclude by proposing policy guidelines for fostering inclusiveness of food safety as a basic consumer right.

Title: The food safety knowledge of street food vendors and the sanitary conditions of their street food vending environment in the Zululand District, South Africa

Authors: Nyarugwe, S. P., Linnemann, A. R., Ren, Y., Bakker, E., Kussaga, J. B., Watson, D., . . . Luning, P. A.

Journal: Heliyon

DOI: <https://doi.org/10.1016/j.foodcont.2019.107075>

This research sought to evaluate the food safety knowledge of street food vendors and the sanitary compliance status of their vending facilities, Zululand District, South Africa. Data collection was done in a face to face interview with respondents in a cross-sectional survey research design. Data was collected from 399 randomly selected street food vendors and 200 randomly selected street food vending facilities. Only a minority of the street food vendors had attended high school (47 %) and the vast majority (77 %) of them had not attended any food safety training courses. Overall, the vast majority (76 %) of the street food vendors had low food safety knowledge and only 14 % of the street food vending sites had high compliance with sanitary conditions. In conclusion, this

study demonstrates that most of vending facilities of street food vendors constitute a food safety risk to the consumers. This was primarily due to the possession of inadequate food safety knowledge of street food vendors, non-compliant street food vending infrastructure, and inadequate monitoring and controls by competent authorities. It is recommended that, authorities should implement the food stalls/caravan system in areas with adequate sanitation and use the licensing and permit tool to ensure control and adherence to food safety regulations and street food vendors and health inspectors should be trained on safe food handling principles and practice.

Title: An intercontinental analysis of food safety culture in view of food safety governance

Authors: Piira, N., Kosola, M., Hellsten, C., Fagerlund, A., & Lundén, J.

Journal: Food Control

DOI: <https://doi.org/10.1016/j.foodcont.2021.108230>

Taking food safety culture into account is a promising way to improve food safety performance in the food industry. Food safety culture (FS-culture) research is expanding from an organisational perspective to include characteristics of the internal and external company environment. In this study, the prevailing food safety culture in 17 food companies from four countries on three continents (Africa, Asia and Europe) was assessed in view of food safety governance and national values. The internal environment characteristics, i.e. food safety vision, food safety program and food production system vulnerability, were also assessed. Statistical analysis revealed little variation in FS-culture scores between the companies within the same country. Overall the FS-culture for Greek and Zambian companies was scored proactive, while for Chinese and Tanzanian companies an active score was achieved. Both the internal and external company environment seemed to influence the prevailing FS-culture. Cluster analysis showed that Tanzanian and Zambian companies exhibited similarities in the implementation of food safety programs, and in their national values and food safety governance as compared to Greece and China. Food safety governance was reflected in the food safety programs and supportiveness of the organisation to food safety and hygiene. All cultural dimensions were correlated with risk perceptions, with masculinity and long-term orientation also significantly correlated with the enabling conditions and attitude. Understanding how national values and food safety governance approaches differently influence food safety culture is expected to enable formulation of best approaches tailored for companies operating in countries with different company environments, to improve food safety performance.

Title: An intercontinental analysis of food safety culture in view of food safety governance

Authors: Shao, Y. T., Wang, Y. P., & Yuan, Y. W.

Journal: Food Control

DOI: <https://doi.org/10.1016/j.jafr.2021.100170>

Due to the negative impact of China's food scandal and people's awareness of food safety, consumers and the government are constantly looking for healthier and safer food. This paper finds that rural agricultural products (RAP) have an absolute competitive advantage in public consumption choice. However, after an in-depth investigation, there are many potential safety risks in the RAP. Serious information asymmetry exists in the consumption choices and production processes of RAP. Furthermore, there are many regulatory gaps in RAP. Consequently, it is necessary to strengthen government regulation to correct market failure and current ineffective regulation. Game theory analysis shows that increasing incentives and penalties for large family farms may be an effective regulatory policy. The findings of this paper are beneficial to the formulation of reasonable government regulation policies to ensure the safety of RAP.

Title: Consumer insights on Canada's food safety and food risk assessment system

Authors: Sutherland, C., Sim, C., Gleim, S., & Smyth, S. J.

Journal: Journal of Agriculture and Food Research

DOI: <https://doi.org/10.1016/j.jafr.2020.100038>

Canada is regarded as having one of the best food safety and risk assessment systems in the world. Canadian consumers report high confidence levels in the safety of their food and in the effectiveness of the food safety system. However, although trust in the food safety and risk assessment system is high, many consumers admit to being skeptical of some aspects of the system. To determine what areas of Canada's food safety system could be improved, an assessment of consumer perceptions was conducted through an online survey. Results show Canadians are mostly satisfied with the food safety system and trust the organizations involved, but have concerns about public communication of food risks and a lack of overall transparency.

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