ILRI RESEARCH BRIEF 20
September 2014

Food safety in informal markets in developing countries: Lessons from research by the International Livestock Research Institute

Delia Grace, Kristina Roesel and Tezira Lore

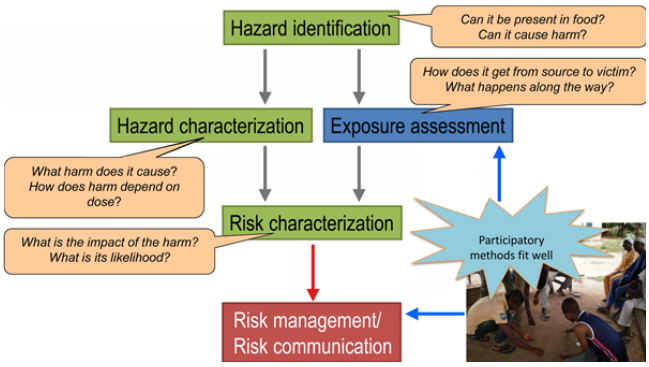
Key points

- Informal markets are highly preferred.
- Food safety matters to poor consumers.
- Hazards don't always matter, but risks do.
- Perception is a poor guide for risk managers.
- Draconian food safety policy makes things worse.
- Values and cultures are more important drivers of food safety than pathogens.
- Traditional food preparation methods can mitigate food-borne diseases.
- Risk assessment can be applied in informal markets by using participatory methods.
- Value chain mapping gives insight to product flows and dynamics and alerts to emerging problems.
- Gender-sensitive approaches add value to research on food safety.

Risk-based approaches to food safety

Risk-based approaches to food safety have the advantage of shifting policymaking from knee-jerk reactions on seeing chaotic and unclean open markets to an evidence-based approach. Structured analysis often shows that the risks of informally marketed food are not as high as they are perceived to be.

Codex Alimentarius Commission framework to assess food safety, adapted by the ILRI/BMZ Safe Food, Fair Food project (2008–11).



Another advantage is that risk-based approaches allow for the identification of critical control points along the food value chain from 'farm to fork' where interventions to reduce or eliminate risks to health would be most useful. This often allows affordable and highly effective ways of making the food bought and sold by the poor safer.

Informal markets are highly preferred

Studies by the International Livestock Research Institute (ILRI) showed that informal markets are the most important source of meat, milk and eggs for poor people in

most poor countries and will continue to be so for at least several decades. Informal markets often sell food at lower prices and they have other desired attributes including food freshness and taste, selling livestock products from local breeds, vendors who are trusted and the availability of credit or other services.

Food safety matters to poor consumers

Our studies showed that most consumers (48–97%) in informal markets say they are concerned about food safety. They also show this concern in purchasing behaviour. For example, 20–40% of consumers switch to alternative meat in the wake of animal disease epidemics. Willingness-to-pay studies indicated that consumers would pay a 5–15% premium for safety-assured products, and demand for food safety increases with economic development, rising income, urbanization, increased media coverage and education level.

The situational analyses found that decision-makers, too, are increasingly concerned about food safety. The analysis identified key problems at different parts of the farm-to-fork value chain. The analysis also prioritized brucellosis, tuberculosis, salmonellosis and toxigenic *E. coli* infection as the most important food-borne diseases, from the perspective of decision-makers and national experts.

Hazards don't always matter, but risks do

Hazards are all things that can cause harm. Bacteria, viruses, parasites, chemicals and fungal toxins in food all have potential to cause harm: they are hazards. Risk, on the other hand, is the likelihood of that harm to occur including its consequences for public health and the economy. Our studies show that food sold in the informal sector often contains hazards. Moreover, as value chains become longer and more complex, transport larger, more diversely-sourced volumes of food, and place larger distances between producers and consumers, so hazards tend to increase. Consumer and market value chain studies confirm the bulk of literature that suggests, in some contexts, a high level of disease in developing countries is associated with food.

However, a series of studies in informal milk and meat markets showed that although hazards are always common in informal markets, risk to human health is not inevitably high. Stochastic models based on data from a number of sites in East Africa showed that milk had many hazards but less risk (mainly because of consumer practices such as boiling which are effective at reducing hazards). In other studies, however, there is a clear link between consumption of foods containing hazards and increased illness. The take-home message is that risk to human health cannot be assumed for informal markets: evidence is required.

Perception is a poor guide for risk managers

Assessment is needed to understand the source of risk. Studies by ILRI in several countries came to the surprising conclusion that food sold in formal markets, though commonly perceived to be safer, may have lower compliance with standards than informally marketed food. This emphasizes that food safety policy should be based on evidence and not perception and failure to do this may be prejudicial to the poor who dominate and rely upon informal value chains.

A local pork vendor at the wet market sells her meat to two local women, Hung Yen province, Vietnam (photo credit: ILRI/Nguyen Ngoc Huyen).

Situational analyses showed that only a few of the public health problems were regularly tested and that most food in the traditional or informal sector was not inspected. Where some inspection occurred, it did not follow a farm-to-fork pathway approach, that is, inspection happened only at some points and in a sporadic fashion.

Current food safety policy and regulation is not adapted to poor countries

Even in poor countries, food safety is often good in food destined for export. However, the systems do not work in the informal markets where most poor people buy their food. In some countries, personnel have been trained in food safety and risk assessment procedures but training is more often oriented to developed-country situations and not adapted to local needs or contexts. There is a lack of systematic, risk-based surveillance and inspection either because of lack of infrastructure and laboratory facilities or lack of skilled personnel. But the underlying reason may be lack of understanding of how to address these issues under conditions of poor ability of consumers to detect unsafe food and to demand for remedies of such problems.

Draconian food safety policy makes things worse

The existence of a huge food sector that largely escapes regulation, the high level of hazards in food and the massive burden of gastrointestinal illness all suggest that current food safety policy is not working. Yet, in our situational analyses we found that stakeholders often blame insufficient legislation or lack of strict implementation for poor food safety. In recent years there have been several attempts to improve food safety but this 'command and control' method is less likely to work. Paradoxically, legislation can even increase the level of risk.

Values and cultures are more important drivers of food safety than pathogens

Food choice is not just driven by hunger, but depends on economic, social and cultural factors. A study in West Africa found that the Fulani believed that milk was in its nature pure and could not be a source of disease. They boiled the milk they sold to customers but not the milk they drank themselves. In Ethiopia, consumption on raw beef is widespread in both urban and rural areas; it has been a tradition for hundreds of years even though raw meat is a high-risk food.

Key wot (beef stew) served with injera, the Ethiopian pancake-like bread (photo credit: ILRI/Apollo Habtamu).

Traditional food preparation methods can mitigate food-borne diseases

Traditional methods for storing and preparing food are widely used but little researched. A study in Ethiopia showed the significant role of traditional fermentation in preventing staphylococcal poisoning (reducing the risk by 90%). In West Africa, anthropology studies contributed to understanding of the perception of risks related to milk. For example, if adulterated milk earns more money, women still consider the adulterated milk 'good'. On the other hand, cattle owners consider that if milk is heated, it is 'bad' and has no nutritional value. These findings have led to risk management recommendations.

Risk assessment can be applied in informal markets by using participatory methods

The lack of data is a challenge to understand risks from animal-source foods. We found that the application of participatory methods in data collection allowed the rapid and inexpensive collection of data to fill gaps in information required for conducting risk assessment. Eight stochastic risk assessments were conducted partly based on participatory data, showing this method is applicable to food safety problems in developing countries.

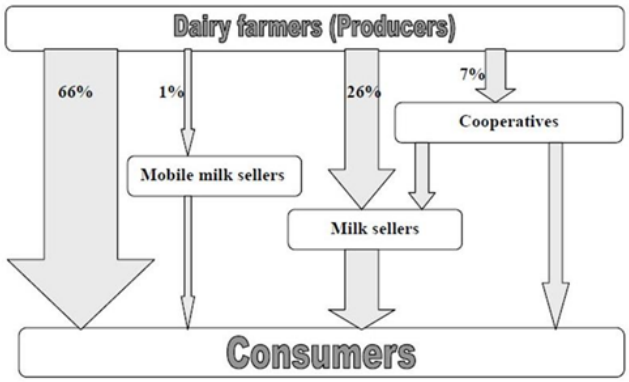
Seasonal calendars are a useful method to map seasonal patterns of disease in humans and animals or times of scarcity (photo credit: ILRI/University of Ghana/Joy Appiah).

Value chain mapping gives insight to product flows and dynamics and alerts to emerging problems

Several studies incorporated value chain mapping. This confirmed that the great majority of animal-source foods flow through informal value chains. Furthermore, several studies found value chains are lengthening in order to supply emerging urban and peri-urban markets, resulting in increased risk.

Gender-sensitive approaches add value to food safety research

Channels of smallholder milk marketing and their relative volume in Kasarani, peri-urban Nairobi, Kenya (photo credit: ILRI/Flavien Ndongo).



Food is a gendered commodity and informal food production, processing and marketing are of high importance to women's livelihoods. We used gender-sensitive approaches in conducting food safety research. Of the 25 studies supported, 11 focused on products which are mainly managed by women (poultry, smoked fish, milk in West Africa and processed meat), seven focused on issues mainly managed by men (beef and game) and the remainder on products for which men and women were equally concerned.

This brief is a product of the 'Safe Food, Fair Food' project coordinated by ILRI and financed through BMZ and GIZ. It is a contribution to the CGIAR research program on Agriculture for Nutrition and Health (http://safefoodfairfood.ilri.org).

The brief is adapted from a chapter in the book 'Food Safety and Informal Markets: Animal Products in Sub-Saharan Africa' published by Routledge (www.routledge.com/9781138818736).

Contact:
Delia Grace
Program Leader
Food Safety and Zoonoses Program
d.grace@cgiar.org
http://aghealth.wordpress.com

This brief and the work it reports resulted from the efforts of many colleagues and partners

Amos Omore (ILRI)
André Markemann, Universität Hohenheim
Anne Valle Zárate, Universität Hohenheim
Bassirou Bonfoh, CSRS, Côte d'Ivoire
Bryony Jones (ILRI)
Cheryl McCrindle, University of Pretoria, South Africa
Delia Grace (ILRI)
Derek Baker (ILRI)
Erastus Kang'ethe, University of Nairobi
Girma Zewde, Addis Ababa University
Helena Matusse, Agricultural Research Institute of Mozambique
Juliane Braeunig, Bundesinstitut für Risikobewertung
Kohei Makita (ILRI)
Kristina Roesel (ILRI)
Kwaku Tano-Debrah, University of Ghana
Lusato Kurwijila, Sokoine University of Agriculture
Marianna Siegmund-Schultze, Universität Hohenheim
Max Baumann, Freie Universität Berlin
Saskia Hendrickx (ILRI)
Siboniso Moyo (ILRI)
Solenne Costard (ILRI)

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CGIAR RESEARCH PROGRAM ON Agriculture for Nutrition and Health Led by IFPRI

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ILRI is a member of the CGIAR Consortium

Box 30709, Nairobi 00100, Kenya
Phone: + 254 20 422 3000
Fax: +254 20 422 3001
Email: ILRI-Kenya@cgiar.org

Box 5689, Addis Ababa, Ethiopia
Phone: +251 11 617 2000
Fax: +251 11 617 2001
Email: ILRI-Ethiopia@cgiar.org

September 2014