

ZOONOSSES

WATCH

TRACKING HUMAN-ANIMAL INTERFACE

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Message from the Chairperson

Food safety is a crucial but neglected aspect of public health. While our street food may have all the pungent flavours that fire our taste buds, it is most certainly partaken at our own risk! India recently enforced the comprehensive Food Safety and Standards Act, 2006, to fill the regulatory gap in food safety and to secure broad-based food and nutritional safety, as foodborne illnesses like diarrhea cause the highest mortality and impairment of nutrition in young children, globally. This was a most needed and welcome move.

Exhaustive legislation, greater consumer awareness, transparency in food labelling, quality checks on readymade foods, feasibility studies on genetically modified foods and community participation are needed to achieve nutritional security. This would also make the Indian food industry more competitive, globally.

I am glad to see this issue of Zoonoses Watch take up the subject of food safety. PHFI will continue to provide support through interdisciplinary capacity building and research to influence policy and induce changes at the programmatic level in this regard.

Prof K Srinath Reddy
President, PHFI & Chairperson, RCZI

FOOD SAFETY

Unravelling India's complex food scenario

It is said that a way to a person's heart is through the stomach. Gastronomical considerations aside, food is the mainstay of mankind's survival. India is a frontrunner, in production and consumption of food products, with market size of USD 181 billion. Yet we are losing precious export revenue and are plagued with food insecurity and poor food safety standards. Effectively, what does this mean for the average Indian, used to eating out, indulging in street food and relying on convenient packaged and processed foods? Apart from disease outbreaks, globalisation of products, cross-border movement of people, livestock and resources, there is growing international transfer of risk.

Developing countries like India, lack intellectual and infrastructural preparedness for impending threats to public health, as outbreaks affect livelihoods via trade and commerce, disrupting demand. Lack of awareness, shortage of skilled manpower, absence of food safety laws, research gaps, inadequate infrastructure and unregulated street food vendors contribute to serious drop in food safety and quality standards. While these are endemic issues, we are also faced with emerging concerns such as GM foods; and debates such as organic versus natural methods. These issues have direct impact on human and environmental health and indirect bearing on national economy.

Addressing food safety issues requires multisectoral collaboration in medicine, public health, veterinary and wildlife health, agriculture and food processing. Apart from protecting from risks associated with domestic and imported products they should be in consonance with policy makers and enforcement agencies for formulating international standards based on scientific and empirical evidence and capacity building to enhance public health and food safety. As a welcome development, formalised inclusive steps towards food safety were initiated by launching Food Safety and Standards Act of India, (FSSA) 2006 and Food safety and standards authority of India (FSSAI). India has potential to emerge as a leading global food supplier, if backed by right marketing strategies and an agile, adaptive and efficient supply chain. ■



Open meat markets often flout safety standards

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WHO: Food safety risk analysis, a guide for national food safety authorities

<http://www.who.int/foodsafety/publications/micro/riskanalysis06/en/>

SPS Information System

<http://spsims.wto.org/>

RESEARCHER'S UPDATE Consumer Awareness: Key to Enhanced Food Safety



Fish sellers rarely sensitised on hygiene practices

Sources:

1. Subba Rao GM, et al. *Appetite* 2007;49:441–9.
2. Chakrabarti A. *Journal of International Development* 2012;doi: 10.1002/jid.2878.
3. Kumar S, Ali J. *Analysing factors affecting consumer awareness of organic foods in analysing factors affecting consumer awareness on organic foods in India. In: 21st Annual IFAMA World Forum and Symposium on the Road to 2050: Sustainability as a Business Opportunity. Frankfurt: 1–12.*
4. Gavaravarapu SRM, et al. *Journal of nutrition education and behavior* 2009;41:340–6.
5. Sudershan RVet al. *Food Control* 2008;19:506–13.

Foodborne diseases are a major source of morbidity. Pathogenic contamination or foodborne and waterborne diarrheal diseases taken together kill about 2.2 million people annually, as per World Health Organization (WHO). Quality of a food product includes not only nutritional value but also safety for human consumption. Consumers are directly affected by food products they are important stakeholders in food safety as the final link in the surveillance chain and can help fine-tune government policy.

Food safety awareness generation in consumers is a crucial strategy to enhance food safety, especially in developing nations like India, where improved knowledge, attitudes and practices towards food safety, can help drive demand for safer food for increasing standard compliance by food sellers, thus minimising foodborne morbidity and mortality.

Recent evidence on consumer awareness indicates:

- Gender, literacy, educational levels and access to information on food safety are variables, impacting perception of food safety in India. Though traditional wisdom and customs include a number of correct food safety practices, there still remain large gaps and variations in food safety perceptions across the country with a near absence of standardised knowledge and practices.

- Indian consumers relate food safety to hygiene practices in households processing raw foods; gaps exist in their knowledge of concept, quality and measures for ensuring safe food, consumer rights, food labelling information, reporting of malpractices, quality of prepared food bought from outside home, government regulations and their effectiveness for food safety.
- Knowledge gaps are common regarding unhygienic handling and improper storage hazards and quality of additives in street foods.
- Consumers confuse the concept of safe food with nutritious food and have lower levels of food safety concern for packaged / branded foods and their labeling.
- Even when there is food safety hazard awareness in households and improvement of sanitation and water quality, morbidity levels of foodborne and waterborne diseases reduce marginally.

It is clear that relationship between consumer awareness and its determinants is highly complex thus calling for more in-depth understanding and contextual interventions. Broad-based programmes for consumer information and education as a vital feature of the food safety regulatory mechanism must therefore be made an integral aspect of FSSA. ■

UPDATE on RCZI's Activities

RCZI Joint Working Group Meets in New Delhi

The Joint Working Group meeting of RCZI, was held on March 1, 2013. Progress of RCZI's activities was reviewed and it was decided that RCZI would organise a National Visioning Workshop to outline a roadmap for 2013-18.

National Expert Consultation on Costing of Interventions for Rabies Control Held in Chennai

Building upon its assessment of rabies control interventions in Tamil Nadu, RCZI organised a national expert consultation to validate methodology used for undertaking cost analysis for rabies control. The meeting was

held on December 7, 2012 where experts discussed policy implications associated with proposed costing.

3rd OHASA Meeting hosted by PHFI in New Delhi

A Regional Consultation on One Health was organised by EcoHealth Alliance and RCZI, on 31st July-1st August, 2012. Scientists and policymakers from public and private sectors (human, livestock, and wildlife health) from India, Bangladesh, Nepal & Pakistan outlined a roadmap for establishment of sustainable One Health Alliance of South Asia (OHASA). The meeting was funded by Rockefeller Foundation. ■

To learn more about past activities of RCZI, please visit:

<http://zoonoses.phfi.org/Resources.html>

PRACTITIONERS' FORUM

Regulations and Policies to make Street Food Safer



Street vendors: A hot favourite but how safe?

India is a paradise for delectable street food. Just how safe is it, can be seen by the nature of regulations enforced over last few decades. A 1993 survey of 100 street foods in 100 countries, conducted by WHO, revealed majority is facing serious public health threat due to raw food, infected food

handlers and inadequate hygiene measures in processing and storing such food.

How safe is your street food?

A 2011 analysis of microbiological quality of *paanipuri* (street food snack) sold in Amravati, revealed 93% samples with high load of bacterial pathogens such as *Escherichia coli* (41%), *Staphylococcus aureus* (31%), *Klebsiella spp.* (20%), *Pseudomonas sp.* (5%) and yeast (3%). Analysis of street food samples in Tirumala (2011) revealed microorganism presence indicating contamination of processing water and unhygienic condition of food stalls, especially in roadside locations. Despite being a public health threat, street food provides employment to over 1 crore people.

As part of its 'Integrated Strategy for Promotion of Business - Vision, Strategy and Action Plan for Food Processing Sector', Ministry of Food Processing Industries identified upgrading quality of street foods/streets in association with local bodies/NGOs as priority in 11th Five year plan. Subsequently, FSSAI notified Food Safety and Standards Regulation, 2011 for street food vending and Bureau of Indian Standards issued standards on street food vendors in 2012.

Replication of Gujarat Model

FSSAI has announced plans to replicate the Gujarat model in other cities. Gujarat developed a collaborative model with Gujarat Food and Drug Control Administration (FDCA) joining hands with Ahmedabad Municipal Corporation (AMC) to ensure enforcement of quality amongst street food vendors. ■

Sources:

1. World Health Organization. *Essential safety requirements for street vended foods*. Geneva; 1996
2. Tambekar DH et al. *Bioscience Discovery* 2011;2:350-4.
3. Suneetha C et al. *Asian Journal of Experimental and Biological Sciences* 2011;2:207-11.
4. Ministry of Food Processing Industry. *Annual Report 2011-12*.
5. Ministry of Food Processing Industry. *Industries Guidelines for the Scheme of "Upgradation of Quality of Street Food"*.
6. Food Safety and Standards (Licensing and registration of food businesses), *Regulations 2011*.

"Better Processing and Cold Storage Facilities Needed"

Dr. Mohamed Nadeem Fairoze, Professor and Head, Department of Livestock Products Technology, Veterinary College, Karnataka Veterinary, Animal and Fisheries Sciences University, Hebbal, Bangalore spoke to Zoonoses Watch on critical need to regulate sale of meat/meat products in India.



Q: What practices do we follow to sell meat/meat products in India?

A: Currently, sale of meat and meat products is regulated by FSSAI Act 2006, though rules are not always implemented. Most meat is sold in unorganised sector, with packaged products comprising small part of meat sales. There are large gaps in monitoring and inspection and hygienic practices. Sellers do not always procure compulsory license/ renew/display them in shops.

Q: What is the risk of spread of zoonotic diseases via meat/meat-based products in meat markets?

A: Meat consumption carries least risk of spreading zoonotic diseases where meat is thoroughly cooked at temperatures comparable to sterilisation. Meat handlers in slaughter houses and open markets carry greater risk of contracting zoonotic infections from contact with raw meat, blood and fecal matter. Consumers run similar risk when handling raw meat unsafely prior to cooking or if they consume improperly cooked meat.

Q. What can be done to prevent/ control spread of Zoonoses from meat and meat products?

A. Prevention and control of meat borne zoonoses should start with safe and hygienic methods for slaughter and processing of meat and safe disposal, including keeping hands and surfaces clean, protecting kitchen areas from pests and animals; keeping raw and cooked food separate including equipment used to handle food; through cooking, maintaining food at safe temperature during storage and using safe water and raw material.

Q: Does FSSA, 2006, address regulation of meat/meat products?

A: The Act assimilates domestic food laws under one umbrella and constitutes an administrative body responsible for implementing food safety. But with archaic practices and underpreparedness of meat producers, it needs to evolve in tandem with a growing food industry. Regulation must be prioritised to avoid pressure on trader community and meat producers.

Q: Besides regulatory frameworks, how can healthy practices related to sale of meat/meat products be promoted?

A: Government regulation need to be backed by people's participation, based on awareness of rights and demand for safer food. Safety of meat products, food labeling and packaged food products marketed on health and nutrition, for children should be enhanced through PPPs.

POLICY FOCUS

Are we Ready for Genetically Modified Foods?

The safety concerns of GM foods arise from questionable adverse effects of unintended properties including toxicity, allergenicity, specific ingredients with potential to cause nutritional or toxic damage, stability of the inserted gene and nutritional effects associated with genetic modification, which may be caused by gene insertion. The US leads in the amount of area dedicated to GM crop cultivation, followed by Argentina and Brazil, followed by India in 5th place.

Many regions of the world including UK, parts of Australia, and states in the US have rejected GM crops citing concerns of hazard for human health and environment, as studies have suggested that GM crops could have adverse health effects, and lower productivity. BT cotton was introduced in India in 2002 in six states and has been a subject of controversy with conflicting evidence to support its utility, as has been the provisions

of the recently introduced Biotechnology Regulatory Authority of India Bill, 2013.

The Genetic Engineering Approval Committee (GAEC) under Ministry of Environment and Forests (MoEF) is the apex body for regulating biotechnology in India as there are no separate laws that govern GM foods. The Food Safety and Standards Act, 2006, empowers Food Safety and Standards Authority of India to implement an interim safety assessment and approval process to regulate GM foods, under a proposed GM Food Safety Assessment Unit (GMFSAU) that leverages existing regulatory capacity within Government of India.

Given the uncertainty of evidence and widespread debate, there is need to generate more credible evidence and to allay apprehensions of the society through public participation and broad-based expert opinion before opening the country to GM foods. ■

Sources:

Worldwatch Institute. *Genetically Modified Crops Only a Fraction of Primary Global Crop Production*. <http://www.worldwatch.org/node/5950> (accessed 28 May 2013).
de Vendômois JSet al. *International Journal of Biological Sciences* 2010;6:590–8.
Kuiper HAet al. *The Plant Journal* 2001;27:503–28.
Biotechnology Regulatory Authority of India Bill, 2009.
Operationalising Regulation of Genetically Modified Foods in India. New Delhi
Committee on Agriculture. 15th Lok Sabha. *Cultivation of genetically modified food crops - prospects and effects*. 37th Report. New Delhi: 2012.

INFO CORNER

FOOD SAFETY: FAQs

Q: What causes spread of foodborne diseases?

While most microorganisms do not cause disease, dangerous microorganisms are found in soil, water, animals, and people. These are carried on hands, wiping cloths and utensils, especially cutting boards. The slightest contact can transfer them to food and cause foodborne diseases.

Q: What risks of foodborne diseases are transmitted via meat and poultry products?

Raw food, especially meat, poultry and seafood and their juices, can contain dangerous microorganisms which may be transferred to other foods during food preparation/storage. Separate raw meat, poultry and seafood from other foods; use separate equipment and utensils for handling raw food; and store food in separate containers.

Q: How can I remove disease-causing microorganisms from my family's food?

In addition to safe handling of raw food, cooking food at 70°C makes it safe for consumption. Minced meats, rolled roasts, large joints of meat

and whole poultry need special attention. Cook meat, poultry, eggs, and seafood thoroughly; bring soups and stews to boiling temperature of 70° C and reheat cooked food. Wash hands before handling food; before going to toilet; sanitise kitchen surfaces/utensils; and protect food areas from insects and pests.

Q: Is it safe to eat leftover food stored at room temperature?

Microorganisms multiply quickly if food is stored at room temperature. By storing food at temperatures below 5° C or above 60° C, growth of microorganisms slows or stops. Avoid keeping cooked food at room temperature for more than two hours; refrigerate all cooked and perishable food; keep cooked food piping hot prior to serving; and do not store food for long in refrigerator.

Q: Can one observe safe food practices and still have a food borne illness?

Not only raw food but raw materials may be contaminated with microorganisms and chemicals. Toxic chemicals may be formed in damaged and mouldy foods. Select them carefully and wash, peel and check ingredients and expiry on food labels to reduce risk. ■

Useful links

World Health Organization. **Food Safety**: (<http://www.who.int/foodsafety/en/>)

Food and Agriculture Organization of the United Nations. **Food Safety and Quality**: (<http://www.fao.org/food/food-safety-quality/en/>)

OIE-World Organization for Animal Health. **Animal production food safety**: (<http://www.fao.org/food/food-safety-quality/en/>)

Department for Environment, Food and Rural Affairs: (<https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs>)

USDA: (http://www.fsis.usda.gov/Food_safety_education/index.asp)

'Consumers International' **The Global Voice for Consumers** (<http://www.consumersinternational.org/>)

Codex Alimentarius: (<http://www.codexalimentarius.net/web/index.en.jsp>)