The challenges for global harmonisation of food safety norms and regulations: issues for India

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Abstract

Safe and adequate food is a human right, safety being a prime quality attribute without which food is unfit for consumption. Food safety regulations are framed to exercise control over all types of food produced, processed and sold so that the customer is assured that the food consumed will not cause any harm. From the Indian perspective, global harmonisation of food regulations is needed to improve food and nutrition security, the food trade and delivery of safe ready-to-eat (RTE) foods at all places and at all times. The Millennium Development Goals (MDGs) put forward to transform developing societies incorporate many food safety issues. The success of the MDGs, including that of poverty reduction, will in part depend on an effective reduction of food-borne diseases, particularly among the vulnerable group, which includes women and children. Food- and water-borne illnesses can be a serious health hazard, being responsible for high incidences of morbidity and mortality across all age groups of people. Global harmonisation of food regulations would assist in facilitating food trade within and outside India through better compliance, ensuring the safety of RTE catered foods, as well as addressing issues related to the environment. At the same time, regulations need to be optimum, as overregulation may have undue negative effects on the food trade.

INTRODUCTION

Food quality is a multidimensional attribute that defines its excellence and fitness to eat. An individual's perception of quality may differ in terms of the preferential quality dimension, with varied priorities dictating the selection process and influencing the purchasing and consumption pattern. For example, for one consumer the visual sensory attribute of appearance and colour may be an important determinant, whereas for others the nutritional value of the product will be the deciding factor for selection. However, scientifically, in a hierarchy of priorities for food quality, safety ought to be considered foremost before any other dimension is thought of. In other words, among the many dimensions of food quality, safety is the most important dimension and should be accorded priority over all other dimensions. Food safety regulations are framed to exercise control over all types of food produced, processed and sold so that the customer is assured that the food consumed will not cause any harm within the limits of scientific knowledge available. While international regulations are available for almost all categories of products, there are variations in regulations followed by individual member nations, as they are free to adopt, modify or have their own regulations.

HARMONISING REGULATIONS FOR SAFE FOOD: A CONCEPTUAL MODEL FROM FARM TO FOLK

A simple conceptual model of harmonising food safety regulations is presented in Fig. 1. The kinds of food available to today’s consumer have a wide array, ranging from unprocessed farm fresh foods to ready-to-eat (RTE) processed or catered foods. Each may differ with respect to the degree of safety it can offer. These foods will have travelled through a food supply chain comprising farmer, seller, manufacturer and food handler, acquiring the distinction of being either very safe or unsafe. To ensure the safety of food procured from such diverse sources and subjected to different processing techniques, a conscious and comprehensive system is required. For this system to have global reach-out, harmonisation of food safety regulations is needed, as food itself goes beyond the confines of geographical boundaries. Scientists are responsible for establishing safety norms and providing the scientific basis for framing regulations. Food regulators frame the regulations and ensure compliance. Law-enforcing authorities implement the regulations and continuous surveillance monitors the compliance. Once the system is in place, there are numerous benefits to all concerned. Some of these are as follows.

- The consumer can make a better-informed choice anywhere globally, thus having a higher confidence level in the food trade.
- It will offer a higher degree of food and nutrition security to the populace, with better quality foods being made available.
thus reducing the chances of buying contaminated foods and suffering from resultant food-borne illnesses.

- It will result in less wastage of food through better food control, thus resulting in better utilisation of available resources. This is very important considering that the ever-increasing global population is straining existing resources for production of sufficient quantities of food, and a time may come when all available resources will have reached their limits, with less than adequate food for everyone.
- The inter-country food trade among nations will be facilitated and benefit from globally accepted protocols and regulations. The manufacturer will also have clear guidelines to be followed for better quality control.

From the Indian perspective, global harmonisation of food regulations poses many issues and challenges in improving the overall food and nutrition security of the population and the food trade within as well as outside the country. Further, global perspectives of food safety and training of food handlers would ensure delivery of safe RTE foods at all places and at all times, and the issue of environmental sustainability would be addressed through compliance with globally accepted regulations.

Within India, the establishment of the Food Safety and Standards Authority of India (FSSAI) under the Food Safety and Standards Act 2006 is a new initiative towards the framing and implementation of food laws and regulations for better food control. This act consolidated various other acts and orders that were previously handled under different government ministries and departments. The FSSAI has been created to lay down science-based standards for articles of food and to regulate their manufacture, storage, distribution, sale and import to ensure the availability of safe and wholesome food for human consumption. With reference to Registration and Licensing of Food Business Operators, the FSSAI has been mandated with the following key objectives.

1. Framing of regulations to lay down standards and guidelines in relation to articles of food and specifying an appropriate system of enforcing various standards thus notified.
2. Laying down mechanisms and guidelines for the accreditation of bodies engaged in the certification of food safety management systems for food businesses.

FOOD SAFETY AND FOOD AND NUTRITION SECURITY

The food needs of man have gone beyond the realm of being categorised as a basic need to being accepted as a human right. The right to adequate food was initially introduced as a part of food security; however, it was realised that the food provided should be ‘safe to eat’. Unless it is safe, the purpose of providing food to achieve minimum food and nutrition security is defeated. Rights need to be realised, respected, protected and fulfilled by governing bodies and civil societies. They imply correlative duties and obligations of community leaders. Access to and availability of safe, nutritious and adequate food is the key element of food security. Any deviation from this will lead to nutritional deficiencies.

The Millennium Development Goals (MDGs) adopted in the United Nations Millennium Declaration 2000, with a focus on committed efforts to eradicate poverty, promote human dignity and equality and achieve peace, democracy and environmental sustainability, incorporate many issues directly or indirectly related to food safety concerns. The MDGs were put forward to mitigate/improve the nutrition situation and overall health of the populace in developing countries. The provision of safe food is a part of most of the goals either directly or indirectly. While framing guidelines for achieving the goals, it was realised that the success of the MDGs, including that of poverty reduction, will in part depend on an effective reduction of foodborne diseases, particularly among the vulnerable group, which includes women and children. Alleviation of hunger is the target for MDG 1; however, to eradicate extreme hunger and poverty, the food provided should be safe in nature to avoid possible harmful effects of other contaminants. The goal of reducing child mortality by two-thirds (MDG 4) is not achievable unless the extent of infectious illnesses in children is controlled. The origin of many of these infections lies in unsafe food and water. Similarly, MDG 5 of improving maternal health to a certain extent is related to the availability of safe food to mothers. The provision of safe drinking water is elaborated further as a target in MDG 7 of ensuring environmental sustainability. The water-related problem in the Indian context is threefold.

- The presence of pathogenic organisms and toxins in water due to contamination.
- The presence of chemicals/pollutants occurring as contaminants.
- The presence of excess minerals, especially fluoride and arsenic, as contaminants in certain regions of the country.

While the presence of pathogenic organisms is related to many disease outbreaks in communities, each requiring intensive resources for treatment and causing loss of productivity time in terms of disability-adjusted life years (DALYs), or loss of lives, the contamination with chemicals and minerals results in long-term irreversible effects impairing health.

Despite marked advances in food science and technology, food-borne illnesses are a rising cause of morbidity in all countries, and the list of potential food-borne microbial pathogens keeps increasing. Food-borne diseases can be defined as those conditions that are commonly transmitted through ingested food. Food-borne diseases comprise a broad group of illnesses caused by enteric pathogens, parasites, chemical contaminants and biotoxins.

Food- and water-borne illnesses can be a serious health hazard, being responsible for high incidences of morbidity and mortality across all age groups of people. Food-borne illnesses can occur anywhere and defy national boundaries, though their incidence in unprotected environments is likely to be higher. The problem is exacerbated by the fact that reliable information on disease burden is not available and the extent of infections is not monitored owing to poor surveillance in underdeveloped and developing nations. Many cases go unreported. The extent of loss cannot be estimated and the effectiveness of any programme measure introduced cannot be evaluated owing to a lack of sufficient supportive data.

Unsafe food is a cause of high levels of food insecurity, and infections are a cause of mortality and morbidity; nearly 80% of infections come through water- and food-borne diseases in many developing countries. If food safety is prioritised, then the incidence of all such diseases can be controlled, bringing down the level of malnutrition worldwide. According to the India Health Profile published by the WHO, diarrhoeal diseases account for 13% of deaths in children under 5 years of age in India, the under 5 mortality rate is 57 per 1000 live births and the maternal mortality rate is 210 per 100 000 live births. Populations using improved drinking water sources showed a marked increase from...
69% in 1990 to 92% in 2010; however, the improvement in sanitation was abysmally low, from 18% in 1990 to 34% in 2010. Indian women and children suffer from a very high prevalence (70–75%) of iron deficiency anaemia. One of the causes of iron deficiency anaemia is the high prevalence of worm infestation in the Indian population due to unhygienic surroundings and a lack of sanitation facilities. Various studies report a prevalence of iron deficiency anaemia and worm infestation in schoolgirls, preschool children and women. Although these issues are being addressed through some governmental welfare schemes such as the Integrated Child Services Scheme, school meal programmes and social networking through non-governmental organisations (NGOs), a wider coverage is needed.

FACILITATION OF FOOD TRADE WITHIN AND OUTSIDE INDIA THROUGH BETTER COMPLIANCE OF REGULATIONS

India has a huge presence in the global market in terms of both raw agricultural produce and processed products (Table 1), the total value of exports exceeding approximately US$ 17 073 million during 2011–2012. Although within the country there are strict regulations regarding products for export, at the global level there are always fears of consignments being rejected owing to disparity between the regulations of the importing country and Indian regulations. This can lead to considerable economic loss to the exporter for the following reasons.

- The cost of transportation of products back and forth.
- Since the production cost of such products may be high (packaging), they may not find an equivalent market back home.
- The resources wasted – energy and labour cannot be recovered.

If, at the source level, regulations are harmonised and products conform to the harmonised food standards, such wastage can be reduced. Harmonised food standards will also ensure the safety of products both within and outside the country, as the presence of regulations makes people aware of what can be done. Sometimes clear guidelines are needed for adherence as the manufacturers are not aware, not because they do not want to offer/manufacture safe foods. Properly developed Hazard Analysis and Critical Control Point (HACCP) protocols would help in delivering safe products.

MANDATORY TRAINING OF FOOD HANDLERS, A MUST UNDER ALL REGULATIONS

Harmonised food regulations should apply not only to food products sold on the shelves of supermarkets but also to food handlers. Food handlers include all personnel involved in handling foods, i.e. the grower, the transporter, the manufacturer at the factory level and the seller at the retail outlet where the food is sold. They also include those involved in food preparation and distribution/delivery/service in catering facilities. This would ensure the safety of both packaged foods sold through markets and unpackaged foods distributed through vendors, hotels and
and liquid wastes generated by food processing, and packaging materials used for foods, can be a potential source of pollutants and can cause environmental degradation. The health of humans is intrinsically connected with the health of the ecosystems in which they live. However, in both industrialised and developing countries, these ecosystems are affected by rapid processes of change that profoundly alter relationships between components of the environment. Disruption of environmental integrity in turn affects patterns of human health, disease and nutritional status. A higher degree of harmonisation for the regulation of food biowaste handling is needed. All this is in line with MDG 8 of encouraging sustainable environments. Indiscriminate use of natural resources and pollution of environments, i.e. rivers, seas, other water bodies and land, are already causing problems around the world.

**OPTIMUM REGULATION, AS OVERREGULATION MAY CAUSE FOOD INSECURITY**

Lastly, it needs to be emphasised that the degree of regulation needs to be optimum, as much as required to ensure food safety by accepted and validated scientific norms. Overregulation can hamper trade between countries and may result in unnecessary rejection and wastage of foods. Overregulation may also pose an excessive burden on the food manufacturer/trader. Hence all regulations need to be based on relevant scientific literature and documentation.

### REFERENCES


### ENVIRONMENTAL ISSUES

Many food-related factors at different levels, such as pesticides and fertilisers used in crop growth, farming of animals, solid and liquid wastes generated by food processing, and packaging materials used for foods, can be a potential source of pollutants and can cause environmental degradation. The health of humans is intrinsically connected with the health of the ecosystems in which they live. However, in both industrialised and developing countries, these ecosystems are affected by rapid processes of change that profoundly alter relationships between components of the environment. Disruption of environmental integrity in turn affects patterns of human health, disease and nutritional status. A higher degree of harmonisation for the regulation of food biowaste handling is needed. All this is in line with MDG 8 of encouraging sustainable environments. Indiscriminate use of natural resources and pollution of environments, i.e. rivers, seas, other water bodies and land, are already causing problems around the world.

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