Risk Perception and Risk Communication Associated with Food Safety

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"I feel ill Mum. I think it's the pesticides in the veges. From now on I'm going to have to eat chips, burgers and pizzas."
The fundamental dilemma of health risk communication

The risks that kill people and the risks that alarm people are completely different


Most important tool over looked for improving Public health
Food Risk Perception

Perceptions about food safety risk are what the individuals believe would be the amount of health risk, if any, they would face from consuming a food product.

“People are disturbed, not by things, but by the view they take of them.” Epictetus
Risk perception and food choice

Physical properties

Psychological factors

Food choice

Food Preparers

90% of them are women in India*

* KABP report, 2006
To understand Risk Perception, we must answer the following questions:

1. What kind of individuals is *the public* made up of?
2. What factors determine risk perceptions and attitudes?
3. How are risk perceptions and attitudes manifested?
4. What can be done to soften attitudes regarding the risk?
Perception of risk assessment

**Experts**
- Rely on risk assessment
- Objective
- Analytic
- Wise
- Rational
- Based on the real risk

**Public**
- Based on perceptions of risk
- Subjective
- Hypothetical
- Emotional
- Irrational

Source: Canadian Food Inspection Agency
Public Perception of Risk

Expert decision making
- Risk Assessment
- Risk Guidelines
- Risk Interventions

Public decision making
- Risk Perception
- Risk Acceptability
- Risk Behaviours
Centuries old traditions vs Developments in food production, processing, distribution and consumption

- Increased consumer awareness on food safety
- Rising middle class
- Higher literacy levels
- Clearer food packaging
- Modernising retail (supermarkets)
- Media campaigns, advertisements

> 50% Traditional channels of food supply
Outside Restaurant Street food etc

Processed foods

Home cooked

Cereals, pulses, oils, milk, spices etc

Adulteration

Hygiene

Industrially processed tertiary products

Chemicals
## Comparison of Food Risk Perceptions

<table>
<thead>
<tr>
<th>India*</th>
<th>Europe**</th>
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<tbody>
<tr>
<td>Adulteration - Major</td>
<td>Chemical contamination</td>
</tr>
<tr>
<td>Pesticide residues-fruits and vegetables</td>
<td>Pesticide residues</td>
</tr>
<tr>
<td>Chemicals-Fruits</td>
<td>Dioxins</td>
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*Swetha et al, EJNFS, 2014  ** Eurobarometer survey, 2010
Health hazards perceived due to adulteration
“Health Loss, Taste loss Lifestyle loss, Time loss”

No significant co-relation Income, habitat(Urban & Rural)& Education (Swetha et al, EJNFS, 2014)

What Europeans do when they hear about food risks?

>40% ignore the stories or do nothing despite worried
37% temporarily changed their eating habit
16% permanently changed their eating habit
(Eurobarometer survey, 2010)
Consumers prefer fresh milk (unpasteurized)

Consumed only after boiling - Risk of Typhoid or any other disease is not perceived not real also
Complete food

Milk protein has high biological value (Eggs, Meat)

Rich source of bio available calcium

Milk fat important vehicle for Vitamin A, D & K

Most adulterated commodity in India
Type of adulteration found in milk in snap survey

<table>
<thead>
<tr>
<th>Type of adulteration</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Abstraction of fat &amp; SNF</td>
<td>46.8 (574 including 147 with detergent)</td>
</tr>
<tr>
<td>Addition of skim milk powder</td>
<td>44.69 (548 including 477 with glucose)</td>
</tr>
<tr>
<td>Detergent</td>
<td>8.4%</td>
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</table>
### Implications for health of consumers on account of abstraction of fat and addition of water

<table>
<thead>
<tr>
<th>Recommended for children</th>
<th>500ml of “Top milk”</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>21.5g protein</td>
</tr>
<tr>
<td></td>
<td>32.5g fat</td>
</tr>
<tr>
<td></td>
<td>1050 mg of Ca</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>At 20% addition of water and 50% abstraction of fat</th>
<th>Protein</th>
<th>Fat</th>
<th>Calcium</th>
<th>Calories</th>
</tr>
</thead>
</table>

No risk assessment is done for other adulterants

**Traditional compromise**
BANNED DRUG INJECTED INTO CATTLE IS POISONING YOUR MILK

A two-month-long investigation by MID DAY has exposed how cattle in Tabelas are injected with a hormone called oxytocin every day, in violation of a government ban. While the drug forces the cattle to expel a few extra litres of milk; drinking it may severely harm young children. Vinod Kumar Menon and Rangan Jadhav report on PG-6.
Perception VS Reality

Oxytocin -Peptide hormone-
Naturally present in Milk

* Gets digested in the intestine*
  No hormonal action

Risk Communication or miscommunication ?

(* Raghu et al IJMR, 2014)
Food Risk Perception - Impact on food consumption

Kerala
Bird flu scare: Chicken prices fall in TN as consumption dips

TIMES NEWS NETWORK

Chennai/Madurai: The bird flu that has hit Kerala may not have crossed the border, but fears have. A sudden fall in consumption of chicken and the accompanying plunge in prices across the state are signs.

In Chennai, the price of one kilogram of dressed chicken has fallen from ₹160 to ₹120 over the last one week, while the cost of a live chicken has dropped to ₹90 from ₹110. Some retailers are offering chicken for as low as ₹90 a kg.

Traders attribute the plunge to a drop in consumption following the outbreak of bird flu in duck farms in Kerala. “Also, ever since the movement of chicken to and from Kerala was stopped, we have a pileup of stock in Namakkal and Palladam. We are now selling them within the state,” said P Mannivalan of Chennai Poultry Wholesale Dealers Association. Namakkal and Palladam are hubs for broiler trade in Tamil Nadu. Traders are now hoping the culling of birds in Kerala would stabilize the market.

R Kirubakaran, a retailer in Egmore, said consumption usually falls during the ongoing Sabarimala season. “It falls by around 30%, but now there’s a further dip. We are selling around 60 kg a day, when we usually sell 150 kg on a day,” said Kirubakaran.

In Madurai, consumption fell by half on Sunday, which is usually a big day for traders. Around 3 lakh kg of chicken is consumed on an average.

SLOW SALES

- In Chennai, 1 kg dressed chicken fell from ₹160 to ₹120
- A live chicken costs ₹90 per kg now from ₹110 earlier
- In Madurai, retail prices fell to ₹90 per kg
- Farmers slashed wholesale price of chicken from ₹68 to ₹60

Few takers for chicken, P 4
Factors to be considered for risk communication

- Back yard poultry
- Organized poultry Industry
- Live birds
- Retailing – Fresh meat vs Processed meat
- Traditional cooking methods
Artificial ripening
<table>
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<th>Health Hazards of Calcium Carbide</th>
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<tr>
<td>Contains traces of arsenic and phosphorus</td>
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<tr>
<td>Could cause: Cancer</td>
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<tr>
<td>Neurological Disorders: Tingling sensation, numbness, peripheral neuropathy</td>
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<tr>
<td>If consumed when pregnant, children could be born with abnormalities</td>
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<tr>
<td>For those who handle it: Short term effects: Headaches, dizziness, mood disturbances, sleepiness, mental confusion, seizures</td>
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<tr>
<td>Long-term effects: Memory loss, seizures, prolonged hypoxia, cerebral oedema</td>
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Communication or Miscommunication?
Risk means something inherently different to lay public than what it means to scientist and regulators.
If the media is paying attention, it must be bad

When in doubt, it is safer to do nothing

I have always done this way

That could not happen to me

If I am worried about, I might stop living
Roles of Risk Communication

Risk Management

Policy Debate

Communication

Media and Stakeholder Involvement

Science - Policy Interface

Public - Science Interface
Effective Risk Communication

Is aware of consumer perspective

Different approaches to defining risks

Inherent uncertainties of Risk

Highly technical communication interferes with understanding

Rule of thumb often used for decision making
Way forward

Need to initiate studies to capture Food Risk Perception

Identify Factors shaping them

Develop appropriate Risk Communication
Thank you