Food Safety in Informal Markets

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Overview

- **Different markets**: our focus is domestic, informal markets where most of the poor buy food and where food safety, nutrition & poverty may trade off.

- **Magnitude of problem**: what people worry about and what makes them ill are not always the same. We discuss the importance of:
  - Perishable foods
  - Aflatoxins
  - Water associated diseases

- **Successes**: food safety interventions can be feasible, effective and affordable.
Africa: one billion consumers with high potential to consume more livestock products

Europe - 2000
- Meat: 37%
- Dairy: 11%
- Fruit & Vegetables: 10%
- Cereals: 31%
- Roots & Tubers: 5%
- Dryland crops: 5%
- Others: 1%

SSA - 2000
- Meat: 47%
- Dairy: 4%
- Fruit & Vegetables: 3%
- Cereals: 24%
- Roots & Tubers: 3%
- Dryland crops: 3%
- Others: 16%

Europe: ASF 21% of diet
SS Africa: ASF 6% of diet

By 2050: 2 billion consumers

Source: Herrero et al 2008
More than 80% of perishables bought from informal markets

**Characteristics**

- No effective health and safety regulations;
- Many actors;
- Pay no tax;
- Traditional processing & retail practices;
- Poor infrastructure;
- Little support from public sector or NGO.

**Benefits**

- Cheap;
- Fresh;
- Local breeds;
- Taste;
- Trust vendors;
- Credit.
Increasing concerns over food safety

In 7 developing countries studied
- Many/most reported concern over food safety (40-97%)
- Willing to pay 5-10% premium for food safety
- Younger, wealthier, town-residing, supermarket-shoppers willing to pay more for safety
- Buy 20-40% less during animal health scares

Demand for livestock products in developing countries with a focus on quality and safety attributes: Evidence from case studies

Jabar et al, Lapar et al
Aflatoxin contamination

- 2004 largest reported outbreak of aflatoxicosis in Kenya: 317 cases and 125 deaths. Every year, 1-50,000 Kenyans die from liver cancer attributable to aflatoxins.

- 2007 – 78% of Kenyans had detectable aflatoxins in their serum: age, gender and wealth had no affect.

- 2010 – 2.3 million bags of maize condemned and trade of maize prohibited in 31 districts in eastern Kenya.

- 2014 – 46% of milk sampled in Nairobi had aflatoxins above the legal limits.

Aflatoxins are produced by fungi which infest maize and groundnuts.
High levels of hazards across different settings and value chains

- First reported Trichinella in **pork** in Uganda; Listeria in **milk and fish** in Ghana
- Faecal bacteria unacceptable in **88% of pork samples** in Nagaland
- **98% of meat** in Ibadan unacceptable by one or more of 3 standards (TAC, EB, col)
- Unacceptable *B. cereus* in **24% of boiled milk** in Abidjan
- Commercial broilers: **30% of chicken** sold in South Africa unacceptable for *S. aureus*
- Farmed fish: **77% unacceptable** TAC; **69% unacceptable** for *S. aureus* in Egypt
Variable levels of risks and risk factors

- **4% consumers in Vietnam report GIT illness in last 2 weeks**
  - *No* relation to pork or meat consumption, *strong* relation to vegetable consumption

- **9% consumers in Nigeria report GIT illness in last 2 weeks**
  - *Strong* relation to meat consumption

- **23% consumers in Nagaland report GIT illness in last 2 weeks**
  - *No* relation to pork, meat or vegetable consumption, *strong* relation to hygiene
Importance of social, economic & environmental factors

- The meat of women butchers in Nigeria had less microbial contamination than meat of men butchers in the same market.

- Urban dairies in Uganda that experienced harassment from authorities had fewer good practices than those who didn’t.

- Food in informal markets is more affordable:

<table>
<thead>
<tr>
<th>Most common price of raw milk</th>
<th>Most common price processed milk</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 KSH a litre</td>
<td>90 KSH a litre</td>
</tr>
</tbody>
</table>

Survey in Dagoretti, Nairobi, 2013
<table>
<thead>
<tr>
<th>Category</th>
<th>Supermarket</th>
<th>Wet market</th>
<th>Village</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor total bacteria</td>
<td>80</td>
<td>80</td>
<td>60</td>
</tr>
<tr>
<td>Unacceptable total bacteria</td>
<td>50</td>
<td>60</td>
<td>30</td>
</tr>
<tr>
<td>Unacceptable faecal bacteria</td>
<td>30</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Unacceptable Staph</td>
<td>20</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Unacceptable listeria</td>
<td>10</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Any unacceptable</td>
<td>10</td>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>

3. **Findings are often counter-intuitive:**

- Poor total bacteria: Supermarket (80), Wet market (80), Village (60)
- Unacceptable total bacteria: Supermarket (50), Wet market (60), Village (30)
- Unacceptable faecal bacteria: Supermarket (30), Wet market (20), Village (20)
- Unacceptable Staph: Supermarket (20), Wet market (20), Village (10)
- Unacceptable listeria: Supermarket (10), Wet market (10), Village (0)
- Any unacceptable: Supermarket (10), Wet market (10), Village (0)
Improvements are feasible, effective, affordable

- Branding & certification of milk vendors in Kenya
  - Led to improved milk safety & saved economy $33 million

- Peer training, branding, innovation for Nigerian butchers
  - Led to 20% more meat samples meeting standards
  - Intervention cost $9/butcher, but resulted in savings of $780/butcher/year from reduced cost of human illness

- Providing information on rational drug use to farmers
  - Led to fourfold knowledge increase, twofold better practice, and halving of disease in animals