

# **food-vendors.org Briefing Papers**



## **Briefing Paper #4: Food vendors and food safety**

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*This Briefing Paper aims to help guide the design of supportive policy and regulation of food vendors in Low- and Lower-Middle Income Countries*

Food vendors in Low- and Lower-Middle Income Countries (L(M)ICs) who operate outside modern retail settings are rarely praised for their contributions in providing access to cheap, nutritious, and culturally appropriate foods. More commonly, they are singled out as a risk because they struggle to manage food safety hazards which can endanger the health of the communities they serve. This briefing paper summarises what is known about the main nature of those hazards (what it is that causes disease), why they are so prevalent among food vendors, and what is known about the differential risks of diverse retail food outlets.

### **The nature of food safety hazards in food markets in Low- and Lower-Middle Income Countries**

Grace (1) notes that, as far as can be established, most food-borne disease results from consuming fresh animal-source foods (meat, milk, eggs, and aquatic animals) and produce (fresh fruits and vegetables). Likely, this is also the case in L(M)ICs. Fongar and Aberman (2) have shown that in L(M)ICs, these same foods are mostly purchased in: traditional markets, specialised stores, general stores, and kiosks. It is therefore important that measures are taken to ensure food safety in these food vending outlets.

Gizaw (3) conducted a systematic review to identify common food-safety related public health risks in food markets by type of hazard. Although his review is not limited to L(M)ICs, he notes the proportion of papers from L(M)ICs under each category. His general findings include:

- **Microbial contamination.** A variety of bacterial as well as fungal contaminants are reported in the papers reviewed, with some—but not all—being more common in L(M)ICs. Parasites also cause disease, with rates being high in L(M)ICs.
- **Chemical contamination.** Including heavy metals, pesticide residues, persistent organic pollutants and organic compounds, volatile organic compounds, and hydrocarbons.
- **Food adulteration.** Including with chemicals, with items which are not genuine components of the foods being marketed, and inert or physical agents.
- **Misuse of food additives.** Especially colourings and sweeteners which are either banned or used in quantities exceeding those allowed locally.

The author also notes risks from **mislabelling** and **foods past their use-by date**. These risks would be most relevant to small shop keepers in L(M)ICs, since market traders and street food sellers in these settings would not typically provide any labels or use-by dates, automatically placing them in the highest risk category.

### **Food vendor practices which increase food safety risks in L(M)ICs**

Contaminants can enter the supply chain of foods sold by L(M)IC food vendors at any stage from production through to final consumption, but there are well-known food safety practices which can mitigate these risks (the World Health Organisation, for example, has identified Five Keys for Safer Traditional Food Markets (4)). Whether or not these practices are actually implemented depends on the daily behaviour of the vendor, itself shaped by multiple determinants. A scoping review of these determinants is currently underway but is not yet finalised (5). The protocol states that the review will be organised in accordance with Behaviour Centred Design principles; the same framework is adopted to organise the following sections, with content from other less comprehensive reviews as available:

#### Environmental determinants

Maintaining food hygiene is difficult in the absence of materials like clean water, handwashing stations, waste disposal facilities, and protected food storage facilities. Many descriptive studies from a variety of countries illustrate how these elements tend to be absent in a variety of food vending settings. *For example, in a study that collected data from five groups of individual fish vendors in Mzuzu City in Malawi (6), the vendors did not have access to cooling and less than half had access to potable water. Working sanitation facilities were also not available at all sites, and waste disposal was absent or an open site. Nearly all fish skins tested were found to be contaminated with pathogens.*

A conducive regulatory environment is expected to improve food safety through mechanisms including inspections and/or market committees. A systematic review of the effectiveness of interventions to improve compliance with food safety standards and/or reduce the incidence of foodborne disease focused on L(M)ICs (7) indicates that Hazard Analysis and Critical Control Points (HACCP) implementation leads to a 35% reduction in foodborne disease and that regulatory enforcement more than doubles adherence with food safety standards. However, other authors have noted that inspection agencies are often severely under-resourced (8).

Workload and time pressure are also frequently mentioned as constraints to adoption of food safety practices. *A qualitative study of ready-to-eat chicken sellers in Ouagadougou, Burkina Faso (9) found that safe chicken preparation increased time and vendors sometimes compromised safety to satisfy impatient clients and avoid losing business.*

## Drive and reinforcement

Briefing Paper #3 in this series (10) emphasised that food vendors rely on establishing relationships of trust with their customers and capitalise on their social standing to ensure competitive advantage in a highly competitive business environment. In an integrative review of health and safety practices as drivers of business performance, Sepadi and Hutton (11) analysed 76 studies from L(M)ICs and found that a majority of studies reported positive business or operational benefits associated with hygiene compliance. However, they also find that vendors operate with razor-thin margins and “for many, even minimal hygiene-related costs are perceived as unaffordable”.

## Procedural knowledge and conscious control

A systematic review and meta-analysis of 62 studies (not limited to L(M)ICs) (12) found that increased knowledge was consistently associated with safe food handling behaviours. Unfortunately, this and other studies do not clearly distinguish between ‘declarative knowledge’ (knowing that something is true) and ‘procedural knowledge’ (knowing *how* to do something). A more detailed review of vendor knowledge in L(M)ICs is undertaken by Wallace and colleagues (13); they find that only 9/45 relevant articles reported vendors as having adequate food safety knowledge.

Perceived Behavioural Control (or Self Efficacy) is cited as important in theoretical papers, but empirical studies of food vendors in L(M)ICs appear sparse. *In a representative study of food workers in China during the Covid-19 pandemic* (14), *self-efficacy was found to have the largest impact on food safety practice adherence of all variables studied.*

## Differential risks by type of outlet

In L(M)ICs, food safety challenges with hygiene and management have been found in both the formal and informal sectors, in both grocery stores and informal markets. As Roesel and co-authors (15) put it, “informal markets are not necessarily dangerous and formal markets are not necessarily safe”.

There are few direct comparisons of different types of retail outlet. Vital and co-authors (16) compared vegetables sold in open air markets and supermarkets in Luzon, Philippines. They found that both types of outlets exhibited high rates of enteric pathogens, with no statistical difference between open air vendors and supermarkets. They point to shared supply chains and infer that much contamination likely occurs during production and/or distribution.

Paudyal and co-authors (17) conducted a meta-analysis of 66 papers on contamination with common disease-causing bacteria in sub-Saharan Africa and found that the major pathogens were almost as common in Ready-to-Eat Foods as in raw foods. Overall, the average prevalence of foodborne pathogens was 34%,

Within all retail outlet classes, there is considerable heterogeneity of food safety practice and outcomes. For example, in a meta-analysis of fourteen studies from L(M)ICs, Desye and co-authors (18) found that vendors with secondary education exhibited better food safety practices than those with no or only primary education.

## **Conclusions**

- There is a high burden of foodborne illness in Low and Lower-Middle Income Countries. Most of the known biological, chemical, and physical hazards are found in animal source foods and fresh produce. As these food groups are predominantly bought from small food vendors (market traders, small shops, and street food sellers) in these settings, a large portion of the foodborne illnesses must be coming from contaminated foods sold by these categories of vendors.
- Food vendors in L(M)ICs frequently do not have sufficient resources needed to ensure food safety including clean water and adequate food storage. This makes it challenging for them to control food safety hazards.
- Other issues that particularly affect the food safety practices of vendors outside modern formal settings in L(M)ICs include: pressure to cut costs, time pressure, limited self-efficacy, and limited procedural knowledge about food safety.
- Often in L(M)ICs, the supply chains of small vendors of different types, as well as those of modern, formal retail outlets, converge on the same primary producers. Different types of outlet also share issues with poor or misleading labelling and poor management of food that has passed its use-by dates. These shared issues mean that differentials in food safety between modern, formal retail outlets and other categories of vendors is not as consistent as might have been expected.

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