

Original Research Paper

Management

Food safety in street food in developing countries

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The advent of urbanization and its concomitant increase in urban population has catapulted the street food industry into a crucial role in meeting the food demands of urban residents. Street food trading solves major social and economic problems in developing countries through the provision of ready-made meals at relatively inexpensive prices and employment for teeming rural and urban populace along its value chain. Health experts however, have continued with the argument that numerous health hazards are associated with these street vended foods. This paper explores safety and hygiene status of urban street vended foods. Poor construction and location of vending sites, inadequate sanitary facilities, poor personal hygiene, temperature abuses and sub-standard packaging were identified as the main variables responsible for the low safety and quality of the street foods. However, due to informal nature of the enterprise, the activities of the practitioners are not regulated. This gives ample room for unwholesome practices. The results are the risks such activities pose to the health and safety of practitioners along the value chain. Adoption of safety approaches that permeates the entire chain of street food business from good agricultural practices through hazard analysis critical control points strategy to good hygiene practices by farmers, vendors and consumers would significantly reduce risks in street food consumption. Above all, active collaboration of all stakeholders toward the strengthening and proper enforcement of public health policies to ensure safe practices and engender safer and healthier society is recommended.

KEYWORDS

street food; hygienic; food safety

Introduction:

Street foods are ready -to-eat foods and beverages prepared and/or sold by vendors, especially on streets and other public places (Muleta and Ashenafi, 2001). Types of vending sites encompass stalls, a variety of push-carts, roadside stands, and hawkers depending upon the ingenuity of the individual, resources available, type of food sold and the availability of other facilities (FAO, 1990). In spite of numerous advantages offered by street foods, there are also several health hazards associated with this sector of the economy. Multiple lines of evidence reveal that foods exposed for sale on the roadsides may become contaminated either by spoilage or pathogenic micro-organisms (Bryan et al. 1992; Ashenafi, 1995; WHO, 1984). Evidently, street vended foods have shown epidemiological links with illness (El-Sherbeeny et al. 1985; Saddik et al., 1985; Abdussalam and Kafertein 1993). FAO (1997) further stipulates that street foods raise concern with respect to their potential for serious food poisoning outbreaks. The rise of street food vending has created health problems like improper and unhygienic handling of food. This paper sought to address various aspects of hygienic practices like preparation skills, place of preparation of food, environment and location of street food vendors, handling and storage of food; personal hygiene and storage of leftovers.

Food safety factors:

Hazard Analysis of Street Vended Foods From the initial contamination of raw foods with pathogenic bacteria to subsequent contamination by vendors during preparation [Bryan et al. 1988, Mankee et al. 2003], the factors that should be considered for the analyzing the hazards due to street foods are many (Table 1).

The conditions under which some street vendors operate are reported to be unsuitable for the preparation and selling of food [Barro et al. 2006, Bryan et al. 1981]. The food is prepared either at home or at stalls, which are located on the street side and are made up of wood, polythene bags, tin, etc. The place of preparation is not always clean, well lit and not far from source of contamination. Preparation surfaces used by some vendors have remains of foods prepared earlier that can promote cross contamination. Most of these foods are not covered and are exposed to flies and dust, which may harbor food borne pathogens. In 70–90% of the cases, presence of animals, insects and liquid wastes in food preparation areas have been reported (FAO, 1988).

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S. No	Source	Hazard	Risk involved
01	Agricultural practices	Farmers use inorganic agrochemic als and organic manure	Residues from excessive chemical applications,
02	Vendor environmen t or location	Improper food handling	Transfer of pathogens like Salmonella and E. coli, S. aureus from human body and environment into foods
		Improper waste disposal	Transmission of enteric pathogens like Salmonella, Shigella and E. coli via vectors
03	Raw materials	Water	Passage of pathogens like E. coli, fecal streptococci, Salmonella and Vibrio cholerae
		Vegetables and spices	Introduction spore formers like Bacilli and Clostridium and pathogens like L. monocytogenes, Shigella, Salmonella, etc.
04	Utensils and equipments	Chemical contaminan ts	Leaching of chemical leading to poisoning
		Microbial contaminan ts	Cross contamination of food with Staphylococcus aureus, E. coli and Shigella due to contaminated water, dish cloth, handler
05	Storage and reheating	Improper storage temperatur e and reheating of food	Likelihood of heat stable toxins produced by pathogens like C. perfringens and B. cereus
06	Personal hygiene of vendors	Biological hazards	Introduction of Staphylococcus, Salmonella and Shigella via carriers

Table 1 Source and type of hazard and the microbial risk

07	Knowledge and attitude of street food vendors to food safety practices	Unsafe product	Majority of disease outbreaks related to street foods were linked to negligence of food handlers (WHO, 2002).
08	Attitude of consumers to the hazards of street food	Unsafe product and health hazard	Consumers' attitude and perception of hazards in street foods is often driven by their level of education, income, knowledge of food safety, age and gender. Literature reported varied effect of these factors on the attitude of consumers to safety of street food and their perception of hazards inherent in its consumption

Ensuring safe street food practice: Recommendations, Control Measures and Initiatives to Improve Street Food

Street food vending is an important component of socioeconomic activities in developing countries. Its significance is appreciated by the volume of trade involved, provision of readymade meals and employment for the teeming populace along the chain of the business. The benefits and contribution of street food trade to the economy of developing countries elicited recommendations from researchers on ways to mitigate the hazards in its consumption and safeguard the health of consumers. Alimi et al. [2016] recommended that safety approach to hazards of street foods should start from good agricultural practices and permeate the whole chain of the business. It was recognized that policies and regulations for safe street food trade are very weak and poorly enforced in most developing countries [Liu et al. 2014] and even non-existent in some countries [Samapundo, et al. 2015]. Therefore, strengthening of the policies and proper enforcement would undoubtedly ensure significant reduction in the hazards of street food consumption [Alimi et al. 2016]. These would involve active participation of all stakeholders in street food trade such as governments, street food vendors, consumers' associations, civil society groups and development partners. Raising the awareness on the treat of unwholesome practices in street food trading through dissemination of information in mass media and audience participatory programs was further recommended. Engagement of professionals in food and health related disciplines to draw-up guidelines for the management of street food practices, implementation of Hazard Analysis Critical Control Points concept along the entire chain of the business, education of vendors and consumers on hygiene and safe food practices were canvassed by Alimi et al. [2016], Liu et al. [2014], Badrie et al. [2006] and WHO [2002].

A logical step towards reducing the risks of food borne illness from street foods would be controlling the steps in food preparation and sale that may contribute to the contamination, growth and survival of the microbes responsible for food borne illness. The efforts made should focus on (a) educating the food handlers (b) improving the environmental conditions under which the trade is carried out (c) providing essential services to the vendors to ensure safety of their commodities [WHO, 1996].

To enable official recognition and control of the street food industry as an integral part of the food supply, appropriate regulations should be prepared, and incorporated into existing food regulations. FAO has implemented and supported several projects which aimed at improving various aspects of the street food sector in countries like Bolivia, Colombia, Ecuador, India, Zaire, etc.

Malaysia, Philippines and India are the three countries which have regulations for protecting street vendors. Malaysia is the only country where licensed street vendors are provided facilities for conducting their trade. An initiative has been taken in Africa, where a coalition between local and national authorities, explored the food laws associated with street vending and developed strategies that could be used to control identified food hazards [Natural Resources Institute (NRI) UK, 2004, 1st February 2003–31st December].

Another policy was framed in Durban, Africa, where the street vendors were allocated specific areas to operate, issued certificate of acceptability and were also given training on essential food hygiene practices [Holy AV, 2006]. In India, CII Institute of Quality's Food Safety and Quality (FSQ), has taken an initiative to create awareness among the consumers and street food vendors and it has issued a simple informative checklist of hygienic practices, called the ''CII-14 point checklist on food safety for street vended food" which emphasizes on implementation of good hygiene standards by the street vendors [CII, 2008]. The scheme to upgrade hygiene and quality of street food has also been undertaken by the Ministry of Food Processing Industries, India. Under the proposed programme, 10,000 street food vendors will be identified, and the majority of stake-holders will be upgraded in terms of quality and hygiene and efforts would be made to make it mandatory for the vendors to register with the local authorities [MFPOI, 2009].

Conclusions:

There is no doubt that street food trade is very important to the socio-economy of developing countries. However, informal nature of the trade gives room for unwholesome activities which could pose serious hazards to the health and safety of the practitioners along the chain. Several points of hazards also called risk factors were identified. The risk factors permeate the entire system and are mostly health and microbial/spoilage related. Health hazards from street food vending may be minimized by avoiding poor handling and awareness of need for personal hygiene and care in preparation, storage and dispensing of street foods. It has become necessary that systems should be put in place to ensure that food handlers remain aware of all procedures necessary to maintain the safety and suitability of food. Basic training in food hygiene is recommended to ensure that food vendors follow the required rules for proper hygiene and sanitation Training on hygiene and sanitation; provision of continuous food safety education; the establishment of code of practice for the street food industry; and provision of basic water and waste management utilities are recommended to diminish the gap between knowledge and practices of safe street food vending. Proper management of the trade by all the stakeholders (farmers, vendors, consumers, governments, food and health professionals in academics and development partners) would ensure safe practices and engender safer and healthier society

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