



Risk factors in street food practices in developing countries: A review

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Abstract

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. 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. This review paper, a summary of literature reports on risk factors in street food trade in developing countries and recommended safety intervention, is written with the hope of providing global baseline for intervention to ensure safe food practices. 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.

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Keywords: Street food; Risks; Safe practices; Public health policies; Vendors and consumers

Contents

1. Introduction.....	141
2. Risk factors.....	142
2.1. Agricultural practices.....	142
2.2. Sources and quality of raw foods and ingredients.....	142
2.3. Food preparation, handling and vending.....	143
2.4. Vending environments.....	145
2.5. Hygiene practices.....	145
2.6. Knowledge and attitude of street food vendors to food safety practices.....	145
2.7. Attitude of consumers to the hazards of street food.....	146
3. Recommended approaches to ensure safe street food practice.....	146
4. Conclusions.....	147
References.....	147

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1. Introduction

Street foods are enjoying increasing patronage due to industrialization which is forcing many city dwellers to eat their major daily meals out of home [1]. Street food vending is a common feature of most cities and towns in developing countries [2]. Aside provision of ready-made instant meals at relatively



inexpensive prices, teeming urban dwellers are attached to street foods because of its gustatory attributes. These attributes are linked to the culinary prowess of the vendors [3,4]. Akinyele [5] reported the significant contribution of street foods to nutrition and food security for millions of practitioners along the chain. Draper [6] also identified them as potential vehicles for micronutrient fortification.

Street food vending activities in most developing countries are mostly outside the regulation and protection of the governments. The economic importance of the activities is not well appreciated due to the informal nature of the enterprise and lack of official data on volume of trade involved [7]. Street food vending makes up the significant proportion of informal sector of the economy of most developing countries. About 28.5% labor force in Mexico were reportedly employed in the informal sector, 30.8% of the activities in this sector were in the street food which employed over 120,000 vendors in Mexico city alone in 1998 [8]. Dawson and Canet [9] reported that street food vending in Malaysia is a multi-million US dollar trade providing direct employment for over 100,000 vendors with gross annual sales volume of about 2 billion US dollars. Hiemstra et al. [10] also mentioned the significant contribution of microbusinesses made up largely of street food sector to the economy of Vietnam.

However, the sector is fraught with unwholesome activities which have been reported to pose serious concerns over the safety of the practitioners, especially the health of the consumers [11]. These unwholesome activities traversed the whole chain of street food business from agricultural raw materials to the final retail street foods and have been fingered in the outbreak of diseases and illnesses [12]. The prevention, maintenance and treatment of diseases from street food borne illnesses were reported to result in heavy drain on the purse of individuals and governments in the developing countries due to huge spending involved [2]. The meager resources that could have been used for infrastructural development are being channeled to treatment of preventable diseases outbreak due to the unwholesome activities mentioned above. This review aims to provide exposition on the sources of risks of significant health importance to the consumers and safety of the practitioners along the chain of street foods reported in the literature and the safety intervention proposed. This could assist to provide holistic intervention baseline to safeguard the health and safety of all along the entire chain.

2. Risk factors

Several factors which predispose street foods to public health risks were mentioned in the literature. They were described as possible areas of control to improve on the safety of street foods [7]. The risks reported in the literature were classified into three major categories, namely: environmental, chemical and microbiological [13]. However, the risk concerns mostly expressed were majorly health and spoilage/microbial related [14,15]. The risk factors, also referred to as points of hazards, permeate the whole chain of street food business and are discussed below.

2.1. Agricultural practices

Growing world population is putting tremendous pressure on food production. The attendant effect is the increasing need to maximize available resources for improved farm yield to feed the growing population. Farmers use inorganic agrochemicals and organic manure to improve the yield of farm produce, prevent competition with weeds and maintain the quality by preventing infestation by insects and spoilage by microorganisms on the field and during storage. The use of these chemicals is well regulated in developed countries through the enactment and enforcement of acts and laws which control and limit their usage for agricultural practices. These laws are to prevent the residual effect of these chemicals on consumers [16]. However, opposite is the case in developing countries where farmers use excessive chemicals to achieve bumper yields. Farmers in developing countries often patronize easily synthesized, cheap and patent expired chemicals [17]. Residues from excessive chemical applications to boost farming operations have been reported in high concentrations in soils, livestock and aquatic animals [17,18]. Significant relationship has been established between residual chemical accumulation in the soil and uptake by crops during growth [19]. These chemicals are stored in the edible parts of crops, livestock and aquatic animals [17,20]. Scientific research has proven that the presence of the residual agro-chemicals in foods is detrimental to human health. The accumulation of foreign chemicals such as lead (Pb), arsenic (As), cadmium (Cd), copper (Cu) and mercury (Hg) in human system has been linked to immune-suppression, hypersensitivity to chemical agents, breast cancer, reduced sperm count and infertility [21,22].

2.2. Sources and quality of raw foods and ingredients

Quest for profit maximization by the vendors or the need to make street foods affordable for the consumers make some vendors patronize cheap and unsafe ingredients that may be detrimental to the health of the consumers. Results of survey conducted by Omemu and Aderoju [23] showed that vendors of street foods in Nigeria considered the volume (94%) and the price (93%) than the freshness and cleanliness when buying raw foods to be cooked or vended. In the study conducted in India, Choudhury et al. [3] observed that procurement habits of food items by street vendors differ according to the size of the establishments and was significantly ($p < 0.05$) influenced by the type of vendors, ownership and average monthly income. The study reported that all the mobile vendors and owners of small restaurant procure unlabeled and unpacked food grains and semi-processed ingredients from grocery shops. While majority (87%) of owners of small restaurants procures labeled and packed condiments, dry fruits and spices from grocery, most (44%) of the mobile food vendors purchase condiments and spices, nuts and dry fruits from traditional weekly or daily markets with 37% of them prepared, dried and powdered their own ingredients at home. Close to 56% of mobile vendors used unlabeled and unpacked condiments and spices. Studies have shown that home-made cereal flour and condiments used in street foods preparations are contaminated with *Bacillus cereus* [14,24,25]

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