

Prevention of Food Borne Diseases through Focused Environmental Sanitation in the Food Market and Abattoir

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Abstract

The overwhelming drift to the cities in search of white collar- jobs have greatly increased the economic activities in the market place which in turn results in much waste accumulation without adequate and prompt disposal. Such accumulated refuse dumps in the markets constitute breeding spots for micro-organisms responsible for food borne- diseases such as cholera, typhoid fever and helminthic infections. These diseases account for much morbidity and mortality in developing countries like Nigeria. The paper focused on the need to give the market place, especially the food- markets and abattoirs adequate environmental sanitation attention by all concerned from the policy makers to the market authorities. The paper addressed the concepts of health promotion, food-borne disease and the market place, environmental sanitation in the market place/abattoirs, focused environmental sanitation in the market place progress made in the environmental sanitation in the markets and the challenges in maintaining a healthy food-markets/abattoirs. The paper concluded that if relevant stakeholders should come together with the aim of finding a lasting solution, environmental sanitation problem in the markets/abattoirs would be a thing of the past. It recommended among others that, environmental health unit should be established in the market place to ensure compliance with environmental law; there should be fortnight environmental sanitation. Again, refuse dumps around the market areas and the use of chemicals in food preservation should be banned by the government.

Key words: Food-borne diseases, environmental sanitation, market place, abattoir.

Introduction

Environmental condition has contributed significantly to the high prevalence of diseases like malaria, cholera, typhoid, diarrhoea, acute respiratory infections, tuberculosis and helminthic infections. These diseases account for a significant percentage of morbidity and mortality (Amadi, 2015). However, despite increased efforts by various successive Governments at improving public health and quality of life, basic health indicators have remained poor since these sanitation related diseases are still indicted in ill health and poverty (Federal Ministry of Health- FMO, 2005). The market place is the focus here because of its important role in food-borne diseases. The market particularly the food- market/abattoir is a major link in food passage from the producer to the consumer. Half of the world's population now live in urban areas, making food markets important sources of affordable food for many millions of people; however, such markets have been associated with major outbreaks of diseases, including cholera, severe acute respiratory syndrome (SARS) and avian influenza (bird-flu) (Moy, 2001). In our setting, the market place conjures a dirty and unorganized environment especially the food markets/abattoir (Mohammed, 2011).

Food-Borne Diseases

Food- borne diseases are diseases which affect people after consuming contaminated food. According to Briggs (2010), if a person becomes sick after eating, it could be that the food may have been the carrier of the disease or have in other ways been responsible for the illness. Food may be contaminated either during production, marketing or preparation. It is sad to note that a large percentage of the poor go hungry and for the percentage of those that have food, its wholesomeness is questionable. Oftentimes, food meant for sale and human consumption are displayed in open containers, thereby exposing the food to the ever-ready opportunity of contamination by dust, flies, bacteria, viruses and other microorganisms. Most food handlers are not aware of the sound public health advice of routinely washing their hands before handling food and after using the toilet. Routine screening of food handlers for certain serious communicable infections, which can be easily transmitted through contamination of

the food they prepare for sale and human consumption are not done. The public is totally unaware of the risks that the consumption of contaminated food poses to their health and well-being. The activities of the municipal food vendors contribute significantly to the filthy environment as they discard wastes indiscriminately. These and many more unhealthy activities predispose the populace to various food-borne diseases with their lethal effects including deaths (Fakere, Joseph & Fadamiro, 2012).

The poor state of food sanitation in the country has been shown to play a significant role in the aetiology of food-borne diseases. Records from the Federal Ministry of Health show that every year, about six hundred thousand (600,000) episodes of diarrhoea occur in children under the age of five. Similarly, there has been an increasing number of cases of food-borne diseases over the years. In 1994, there were 3,173; 12,716; and 22,525 cases of cholera; food poisoning and typhoid/paratyphoid fevers respectively. In 1998, the cases were 9,254; 32,411 and 68,846 respectively and by 2001, cholera and typhoid cases have further increased to 10,294 and 73,949 cases respectively (FMO, 2005). Food-borne diseases are the diseases that are linked to ingestion of contaminated food which may be direct or indirect faecal contamination. Briggs (2010) asserted that food may contain disease-producing bacteria or toxins or may be contaminated with harmful chemicals accidentally or through carelessness. Food transmission of disease depends on several factors including: the presence of food that permits the growth of micro-organisms; inoculation of the food with a sufficient number of organisms which may be from humans or from contaminated environment; keeping food at temperature suitable and long enough to enhance the growth of micro-organism; absence of suitable temperature of food processing to inactivate the micro-organism or toxin and ingestion of the food by the host.

Some of the food-borne diseases are, cholera, salmonellosis, typhoid fever, paratyphoid, shigellosis (bacillary dysentery), clostridium food poisoning and staphylococcal intoxication (Briggs, 2010).

Characteristics of some food-borne diseases

Cholera: The causative agents are *Vibrio cholerae* and *V. cholerae* biotype EI Tor. These disease agents could be transmitted through raw vegetables and shellfish, foods handled and eaten without further treatment.

Salmonellosis: The causative organism is *Salmonella*, which could be spread through meat, poultry, eggs, and their products. Other incriminated foods include coconut, yeast, smoked fish, dried milk.

Typhoid fever: The disease agent is *Salmonella typhi*, found in such foods that have been handled and then eaten without further heat treatment, raw salads, milk, and shellfish.

Paratyphoid fever: Paratyphoid fever is caused by *Salmonella paratyphi* in milk, shellfish, raw salads, eggs.

Shigellosis (bacillary dysentery): This is caused by *Shigella flexneri*, dysenteriae present in moist foods, milk, beans, potato, tuna, shrimps, salad.

Clostridium food poisoning: Caused by enterotoxin type A, C, D and F which may be spread through cooked meat and poultry that has stayed at room temperature for several hours or cooked slowly, improperly canned meat, poultry, and fish products, pork, gravy and moi-moi.

Staphylococcal intoxication: Causative agents include enterotoxin A, B, E or F of *Staphylococcus aureus* found in meat and poultry products, cream-filled pastry, milk, cheese, sauces, puddings, protein left-over foods. The list and characteristics of these diseases imply that virtually all foods could transmit them if not properly handled, hence the importance of preventing the diseases in the market place.

The Concept of the Market Place

A marketplace is regular gathering of people for the purchase and sale of provisions, livestock, and other goods; a place where buying and selling occurs (International Union for Health Promotion and Education –IUHPE, 2002). In different parts of the world they may be referred to as a souk (from the Arabic), bazaar (from the Persian), a fixed mercado (Spanish) or itinerant tianguis (Mexico), or palengke (Philippines). Markets may be retail or wholesale markets and include the food market and abattoir. The market place is a setting of primary importance in society being a hallmark of economic activities. These activities give rise to waste products which if not well managed contaminate food products, pollute the market environment, and adversely affect the health of both the sellers, buyers and residents around such market areas.

A healthy food market is a setting in which all stakeholders collaborate to provide safe and nutritious food for the community. The picture of the market and abattoir environment in developing countries like Nigeria, including the increase in food-borne diseases inspired the writing of this paper. Markets, including the food markets/abattoirs are built without proper layouts, and where such layouts exist, they have been distorted. Besides, provision of adequate water supply, proper drainage, and waste disposal facilities are lacking. The lack or shortage of these basic amenities gives room for pollution and its attendant consequences including communicable diseases. Transportation of animal meat from the abattoirs in passenger vehicles or motorcycles is a common practice in most towns and cities. Contamination can occur during transportation especially while using passenger vehicles. It is also a common practice to see animal meat hawked on the streets. Food may be contaminated or expire in the

market during storage. Some traders may intentionally spray chemicals on foods like grains and dry fish, stock fish and crayfish to prevent weevil infestation or spoilage (Mohammed, 2011). These practices expose the animal meat and food to contaminants such as dust, flies and other pathogens in the environment (IUPHE, 2002).

Food markets vary greatly from country to country and even from province to province, depending on the local culture, socioeconomic conditions, food varieties and dietary preferences. Irrespective of such variations, all food markets should provide the communities of their domain with safe and nutritious food. The home, the school, the workplace and the food market are examples of settings where people carry out their daily activities and the health status of the population is determined by the conditions in these settings and also by the availability of health care services (Moy, 2001).

Environmental Sanitation of the Market Place

Environmental Sanitation is defined as the principles and practice of effecting healthful and hygienic conditions in the environment to promote public health and welfare improve quality of life and ensure a sustainable environment (Mohammed, 2011). Unplanned and overcrowded market places and abattoirs especially in developing countries usually grapple with sanitation problems. This situation poses threats such as pollution of the environment and deterioration of city landscape (Fakere, Joseph & Fadamiro, 2012). With an estimated population of about 170 million people, Nigeria has had a great leap in human population. This rapid population growth without commensurate provision of infrastructure and services has led to poor environmental sanitation characterized by increased urban slums, overstretched sanitary facilities, enormous waste generation and general reduction in the in the quality of people's lives (FMOH, 2005).

Progress made in Environmental Sanitation in the Markets/Abattoir

In view of the projected trends of increasing urbanization and deteriorating physical and social environments, World Health Organization (WHO) developed the concept of Healthy Cities in 1986 as a vital tool for assuring that health is explicitly considered in urban management and development planning through community empowerment. The objective of the Healthy Cities initiative is to improve the health of urban dwellers, especially those with low incomes, through improved environmental conditions and better public health services. The initiative operates by raising awareness of unsatisfactory environmental and health conditions and by mobilizing community participation through partnerships with local agencies and institutions. In addition to schools and workplaces, one of the most important settings in cities is the food market. Access to safe and nutritious food is essential for life and is indeed the foundation for health. The food market often serves as the commercial and social centre of communities, reflecting local culture and traditions of the people. WHO began the promotion of Healthy Food Markets initiative, as an approach for promoting food safety and related environmental health issues. Interest in Healthy Food Markets has been substantial in recent years, with pilot projects being planned or implemented in all WHO Regions, (WHO, 2006). Healthy Food Markets are valuable settings that can effectively improve food safety, nutritional status and environmental health in even the least developed countries (Amadi, 2015). In Nigeria, a National Environmental Sanitation Policy which includes the market place/abattoirs is in place to serve as a veritable instrument for securing quality environment for good health and social wellbeing of present and future generations.

Challenges in Maintaining Healthy Food Markets/Abattoir

Health problems in many cities are aggravated because urban growth is often unplanned, uncontrolled, and under-financed. This situation has overwhelmed the capacity of many municipal authorities to provide basic health and environmental services and infrastructure, which are basic requirements for a healthy population. Many people in cities, particularly the poor, are experiencing stresses and exposures that result in health problems ranging from communicable diseases to chronic malnutrition (Amadi, 2015).

Nigeria is cumbered with many environmental based diseases and other environmental problems like environmental pollution and oil spillage which can be prevented and controlled through effective utilization of environmental health practitioners at all levels of government. However, this is not obtainable due to the emphasis on curative health services by our leaders, hence the state of our environmental health problems. In addition, the number of adequate, qualified and employed environmental health practitioners in the country is low (Amadi, 2015). Again, corruption has eaten deep among Nigerians including stake holders in the health sector. Corruption has been a problem in environmental sanitation in Nigeria from the time of sanitary inspectors. The sanitation officers appear to be more interested in collecting money on environmental sanitation days than enforcing cleanliness on the environment (Iwugo, 1981). Though the National Environmental Sanitation Policy is in place to adequately address the sanitary conditions of the environment including the market and abattoir places, noncompliance is still imposing serious challenge in most states of the federation. In Ogun State, weekly sanitation in markets by the market women was introduced across the state. However, this measure was flouted as the market

women failed to comply (Fakere, & Fadamiro, 2012). In most states of the Federation, the house-to-house collection of refuse by environmental officers is only momentary including other measures which have been adopted in the past to enhance the health condition of the environment including the market places.

For many years, poor environmental sanitation condition has contributed significantly to the high prevalence of communicable diseases in Nigeria. Despite increased efforts by various successive Governments at improving public health and quality of life, basic health indicators have remained poor since these sanitation related diseases still play a large role in creating ill health and poverty (Fakere, Joseph & Fadamiro, 2012). Market and abattoir sanitation is a component of environmental sanitation. It is important that the market and abattoir environmental sanitation gets the needed attention because, everybody including the policy makers, health educators, health- practitioners, economists and the general public buy from the markets. The traders also spend all the daytime in the markets having their daily activities including eating, urinating and toileting. Market/abattoir environmental sanitation therefore, needs a conscious, pragmatic and practical effort of market traders and various stakeholders in health, environment and town planning including architects and engineers for the maintenance of healthy food markets/abattoirs. These practical steps aimed at sanitizing the market environment are discussed below as focused environmental sanitation in the market place (Mohammed, 2011).

Focused Environmental Sanitation of the Market Place

Focused environmental sanitation in the market place in the context of this paper means practical demonstration of environmental sanitation approach in the market place. This approach involves the government, environmental sanitation officers and the market traders. The government should involve the Environmental Health Officers and the market authorities in decisions concerning market issues. The government should provide adequate water supply in the markets, distributed in such a way that each line of shades has a point (tap) for collection. These taps should be positioned in each market entrance and at the Centre. This measure will help in adequate hand washing and keeping toilet facilities clean. The market ground should be asphalted and adequate drainages provided in places prone to water- logging. Provision of adequate toilet facilities in the market place will go a long way in sanitizing the environment. Two portable dust- bins (each for biodegradable and non-biodegradable materials) should be provided for each trader at subsidized rates by the government for daily collection of these refuse. The refuse should be emptied into bigger dust-bins to be situated at strategic positions in the market. For this to be more effective, government should recruit people to be in charge of collecting these refuse daily. These bigger collecting centres are to be evacuated by a standby truck at the close of each day into designated dump sites which should be outside the market environment. Different dump sites should be for bio-degradable materials like leaves, fruit peels and spoiled foods and others for non-bio-degradable materials like cans, bottles and cellophane bags. Separation of animal market from food markets will limit food contamination by dirt and animal dung.

Creation of environmental health unit in the markets would be necessary in ensuring that the provided sanitary facilities are being adequately utilized and strict adherence to environmental health laws and practices by traders. Environmental health officers posted to these units would be educating the traders in clusters weekly on the need of maintaining clean environment in the market. They are to be monitoring the daily activities of traders, including discouraging the use of pesticides in food storage, selling of expired foods. The environmental health officers should be organizing weekly environmental sanitation and this should involve every trader in the market. Their schedule should also include monitoring food vendors for screening against disease agents and ensuring that offenders of environmental sanitation laws are punished accordingly.

Conclusion

The market place is of much economic importance and the activities involved when performed in unhygienic ways could lead to the spread of environmental related diseases such as cholera, typhoid, dysentery and tuberculosis. These diseases are mostly spread through the food sold in the markets which are exposed to dust, chemicals, flies and humans who are carriers of the micro- organisms causing the diseases. Though much has been done to improve the health condition of the market environment, more effort is still needed to have a cleaner and more organized setting for selling healthy and safe food for the teeming population. This calls for a multilevel approach of the government, various stake holders in health, environmental law, town planners and the heads of market unions. If these interest groups come together with a common front of finding a lasting solution of environmental sanitation problems in the market place, food borne diseases would be greatly reduced. Based on the above discussions on the prevention of food borne diseases through focused environmental sanitation in the market and abattoir, the following recommendations were made:

1. All stakeholders, including local authorities, market managers, suppliers, vendors, other food market workers and consumers themselves must share a common vision of a health-promoting food market that continuously seeks to better serve the health and well-being of the community.

2. There should be provision of adequate and sustainable sanitary facilities including dust- bins in and around markets and abattoirs.
3. There should be daily evacuation of refuse bins by stand-by trucks in the markets.
4. Minimum standards of sanitary facilities requirement should be defined in the markets and abattoirs.
5. Government should ensure that the siting of new markets and abattoirs are subject to Environmental Impact Assessment (EIA) certification.
6. Adequate number of Environmental Health Officers and Veterinary Practitioners should be recruited, trained and retrained to cover the entire country.
7. Frequent health education on environmental health should be carried out in the market place since majority of the traders are ignorant of the consequences of an unhealthy behavior or environment.
8. There should be creation of environmental health unit in the market to monitor daily activities in the market and ensure strict compliance to environmental practices and laws.
9. There should be a defined sanction on the offenders of environmental practices and laws.
10. Food markets should be separated from animal markets.
11. There should be two weekly environmental sanitation
12. Siting of refuse dump around the markets/abattoirs should be prohibited
13. The use of chemicals in food storage should be banned by the government.
14. Research should be conducted into the various aspects of Market and Abattoir Sanitation in the markets/abattoirs.

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