Food and Nutrition

Food safety in primary health care
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Efforts to ensure food safety through legislation have been only partially successful, and the prevalence of foodborne disease is increasing in most countries. Health education on a large scale is needed to raise the level of public awareness of the factors leading to the spread of these diseases. The best way to do this is through the primary health care system, basing activities on both scientific knowledge and local food-related customs and behaviour.

Contaminated food and water have been known to be sources of illness in human societies since antiquity. The contaminants consist of a large variety of biological and chemical agents of disease, some of which can multiply in food, thus increasing their disease-producing potential. Although chemicals such as pesticides, additives and heavy metals loom large in the eyes of the general public, they are actually less important as causes of foodborne illness than biological agents such as bacteria, viruses, fungi, animal parasites and biotoxins. Foodborne diseases, especially those caused by bacteria, remain a serious problem in all countries. Most of these diseases can cause diarrhoea and up to 70% of all episodes of diarrhoea may result from the ingestion of contaminated food or water (1).

A neglected source of disease

In spite of the common occurrence of diarrhoea and other foodborne diseases, the extent of their real impact on community health remains unknown because only a small proportion of cases come to the notice of health services and even fewer are investigated. Reliable quantitative data (or even estimates) are not available from most of the developing countries. In developed countries, only about 1–10% of actual cases may be reported. This underreporting and lack of knowledge of the health impact of these diseases is a serious problem and may be responsible for the current low priority given to food safety in the health care systems of many countries. Only dramatic episodes such as outbreaks of cholera, typhoid or so-called “food poisoning” (an unsuitable but common term) receive attention. For the rest, foodborne diseases continue – more or less unnoticed – to cause morbidity, mortality and serious economic losses in both developed and developing countries (2).
Industrialized countries, with their well-developed health care systems and strong infrastructure of legislation, standards and enforcement mechanisms, have tried to control foodborne infections and intoxications. Their efforts have been helped by improved sanitation, safe piped water, better facilities for personal hygiene and wide application of food safety technologies such as pasteurization and, to some extent, irradiation. These measures have been successful in eliminating or reducing some diseases such as cholera, typhoid fever and bacterial dysentery, but have failed to reduce the overall incidence of foodborne disease. Indeed, some of them such as non-typhoid salmonellosis and campylobacter enteritis have been steadily increasing in almost all countries which carry out surveillance and reporting on these diseases.

The WHO Commission on Health and Environment has analysed this situation and pointed out that a large part of the increase of foodborne infections may actually be linked to recent progress in animal husbandry (3). For example, it states that “intensive methods of livestock production have enabled salmonella organisms to spread and become ubiquitous in poultry-raising and pig-raising establishments. This has led to a large number of animals becoming subclinically infected carriers, either from contaminated feed or from intensive breeding and fattening procedures…” In various countries, hens’ eggs have been identified as the main source of Salmonella enteritidis, often causing severe gastro-intestinal disorders. Among other pathogens which have come into prominence is Campylobacter jejuni, for which poultry meat and unpasteurized milk are the main vehicles of transmission.

Scanty information from developing countries indicates that some of the foregoing changes have been taking place there also. However, the situation there is much more serious because of deteriorating sanitary conditions in the rapidly expanding towns and cities, where very large numbers of poor and destitute persons have been arriving from rural areas. The recent spread of cholera in Latin America and Africa, and the difficulties encountered in its control, illustrate very well the immensity of the task of combating foodborne and waterborne infections in developing countries. Another well-known and serious problem in this field is diarrhoea, which is largely foodborne and is particularly prevalent among under-five-year-olds and travellers. Although mortality from diarrhoea has been markedly reduced by the use of oral rehydration, its prevention and control have not been equally successful and it remains a serious and common disease.

**Using the primary health care approach**

Evidently, much of the foodborne illness which now occurs in both developed and developing countries remains unaffected by the current approaches to food safety. Too much reliance appears to have been placed on legislation, regulations and standards enforced through inspection. Furthermore, this approach is applied only to food which passes through commercial channels, and does not affect the domestic handling of food. Much of the food consumed in rural areas and sold on the streets in towns also escapes official inspection. There has not been enough health education for food handlers, community organizations and consumers in the efforts to control these diseases.
The WHO Golden Rules for Safe Food Preparation

1. Choose foods processed for safety
2. Cook food thoroughly
3. Eat cooked foods immediately
4. Store cooked foods carefully
5. Reheat cooked foods thoroughly
6. Avoid contact between raw foods and cooked foods
7. Wash hands repeatedly
8. Keep all kitchen surfaces meticulously clean
9. Protect foods from insects, rodents, and other animals
10. Use safe water

For explanatory notes, see World Health Forum, 1991, 12: 404-405

The FAO/WHO Expert Committee on Food Safety (2) and a subsequent WHO Task Force (4) have proposed a collaborative and intersectoral approach based on cooperation between the government, the food industries and consumers. In this approach, consumer education and involvement play a major role, as the most effective control measures are those which can be applied in the final stages of food preparation before consumption. The consumer should demand safe food and follow recommendations such as WHO’s Ten Golden Rules for Safe Food Preparation (see box) on handling and maintaining food in a safe condition until consumed. The efforts of governments and businesses to provide safe food would be wasted if food is mishandled by consumers. Governments can best assure the education and involvement of food handlers and consumers through the primary health care (PHC) system. Primary health care workers are close to the community, which includes people in the rural areas and the urban poor, and they are trained to provide health education and promote compliance and community involvement.

Contrary to what some people think, PHC does not stand for “primitive” health care, and its use is not restricted to poor communities or countries; it is universally applicable in developed as well as developing countries. Furthermore, it is not restricted to care of the sick. Providing education on prevailing health problems and assuring basic sanitation, proper nutrition, safe food and safe water are among its essential elements. In the words of the Alma-Ata Declaration (5), “Primary health care is essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination… It is the first level of contact of individuals, the family and community with the national health system, bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process.”

So far, primary health care systems, especially in developing countries, have paid scant attention to the problem of food safety and, in the absence of reporting, the real extent of the problem is not known to health policymakers or senior administrators. In some countries primary health care workers have been giving guidance on diarrhoeal disease control, for instance with regard to hand-washing, protection from flies and rodents, latrine use and safe storage of water. Such advice has not always been effective in preventing foodborne illness which may result
from insufficient cooking, faulty storage and reuse of left-overs, and other such factors, all of which favour the entry, survival and multiplication of pathogens in food (2).

**Food safety at the local level**

Although the legislative approach to food safety through standardization and inspection is essential, it cannot control or reduce the prevalence of foodborne disease on its own, especially in developing countries. It should be supplemented by action aimed at achieving the following objectives:

- Identification of specific food-related practices and behaviour relevant to risk factors as determined by epidemiological and other observations made in the area, such as hazard analysis critical control point (HACCP) data.

- Change of risky behaviour and practices through health education for the food handlers, food establishment managers, street vendors and consumers, using socially and culturally appropriate messages and means of communication (preferably involving dialogue).

- Community involvement in making these and other improvements related to food safety (such as safe water, waste disposal and pest control) through community leaders and organizations such as women’s and youth associations, social and religious bodies, and other welfare associations.

- Mobilization and coordination of the activities of other sectors (especially agriculture, industry, education and the media) relevant to food safety at the local level.

- Efficient reporting of foodborne illnesses, as well as first-level treatment and referral to hospital and laboratory where required.

- A strong public demand for food safety.

- Research not only on diseases but also on beliefs, customs and practices related to food, social and economic implications of food safety and evaluation of educational and other interventions.

**Training primary health care workers**

To help reach these objectives, primary health care workers should know about the epidemiology of the principal foodborne diseases and the sociocultural characteristics of the area. Their training in health education and community involvement should include a special focus on local food safety issues. They should also receive some training in research methodology, especially for hazard analysis and related sociocultural investigations, and for health-systems research on operational aspects of food safety.

**Health education**

The design, conduct and evaluation of health education activities in food safety has been discussed in detail in a WHO paper (6) which should be referred to in planning this component of primary health care programmes.

It is, however, important that educational messages should be formulated on the basis of

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information gathered or at least verified locally. The following three types of information are especially important.

- Epidemiological factors that have led to episodes of foodborne illness. Such investigations have not been carried out on all
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Foodborne diseases, and very few have been made in developing countries. However, it is becoming clear that for the more important foodborne infections, which are bacterial, these factors are similar all over the globe and consist of the following:

- preparation of food too far ahead of consumption;
- prepared food left too long at a temperature permitting bacterial proliferation;
- inadequate cooking and reheating; and
- cross-contamination generally from raw to cooked foods.

Hazards in the chain of food preparation and storage in the home, food service and street food establishments and cottage industries, identified by HACCP evaluation. This method provides information on mishandling and other faulty procedures quickly, relatively cheaply, and in the context of local habits and culture. It has great potential for promoting food safety in developing countries but has not been exploited fully.

Relevant sociocultural aspects of the local economy and eating habits. This kind of information is essential if the disease control message is to effect behavioural change and community involvement. To obtain such knowledge, the help of specialists in other disciplines, such as anthropology and sociology, is often indispensable.

In general, the training of primary health care workers should include recognition of food mishandling and educational approaches to correcting the faults. Family health visitors, nutrition advisers and disease control workers are well placed to carry out food safety education.

References


Food safety evaluation

A relatively new approach to the prevention and control of foodborne diseases is the hazard analysis critical control point (HACCP) system. This system seeks to identify the hazards associated with any stage of food production, processing, or preparation, assess the related risks, and determine the operations where control procedures will be effective. Thus, control procedures are directed at specific operations that are crucial in ensuring the safety of foods.

Hygiene in Mass Catering
Important rules to prevent foodborne disease ("Food poisoning")

Personal hygiene

- **Wear clean clothes!**
  *Why?* To avoid contaminating food with microorganisms and any foreign objects. The cleaner the clothes, the smaller the risk of contamination.

- **Remove jewelry (rings, watches) before starting work!**
  *Why?* Jewelry makes handwashing less effective.

- **Always cover your hair while working in the kitchen!** (Use headgear provided!)
  *Why?* Because this prevents hair from falling into food.

- **Refrain from smoking!**
  *Why?* Cigarette ash and butts can fall into food.

- **Hands should always be washed before work and especially after visiting the toilet!**
  *Why?* Hands can be contaminated with disease-causing microorganisms, particularly after visiting the toilet. In some cases, use of gloves is advisable.

- **If suffering from an illness involving any of the following, report to the employer before commencing work!**
  Jaundice, diarrhoea, vomiting, fever, sore throat, skin rash, or other skin lesions (boils, cuts, etc., however small).
  *Why?* It may be necessary to be temporarily assigned to another task.

- **Wounds on hands and arms should be carefully bandaged with impermeable material!**
  *Why?* Wounds may be infected with microorganisms which cause diseases.

- **Cover your nose and mouth when sneezing/ coughing!**
  *Why?* Even healthy people have microorganisms in their nose and throat. Use a paper handkerchief which should then be thrown away. Hands should be washed afterwards.

Hygienic handling of food

- **Perishable food should be refrigerated!**
  *Why?* Multiplication of most microorganisms is reduced by chilling to a temperature of 10°C, preferably lower.

- **Thoroughly defrost frozen meat and poultry before cooking!**
  *Why?* If all parts are not completely defrosted, the temperature increase in some thicker parts, e.g. chicken breast, may not be sufficient to kill all microorganisms during cooking.

- **Discard all liquid accumulated during defrosting of meat and poultry, and if refrigerator shelves, table tops or utensils are soiled with it, they should be thoroughly washed.**
  *Why?* These liquids may contain disease-causing microorganisms.

- **Cook food thoroughly!**
  *Why?* Thorough cooking will kill microorganisms. But remember that thorough cooking means that all parts of the food must reach a temperature of at least 70°C. (Use special thermometers if in doubt!)

- **Keep cooked food hot—at a temperature of at least 60°C!**
  *Why?* Microorganisms multiply at temperatures below 60°C. Therefore, food which is ready for consumption should be kept either hot or be cooled quickly.

- **Reheat cooked food to at least 70°C!**
  *Why?* Proper reheating kills microorganisms which may have developed during storage. This rule also applies when freshly cooked food is added to left-overs.
Perishable food should not be stored too long, even at refrigeration temperature!
Why? Chilling prevents the growth of many microorganisms. For others chilling only slows down the growth, and some microorganisms may even multiply at low temperatures.

Keep cooked food separate from raw food!
Why? This reduces the risk of cross-contamination.

Cooked food should not be touched by hand!
Why? Microorganisms are present even on a clean hand and may be transferred to food.

Protect kitchen and storage area from insects and other vermin!
Why? These pests may carry disease-causing organisms.

Keep dangerous/poisonous substances, e.g. detergents, disinfectants and insecticides, outside the kitchen area in labelled and closed containers!
Why? Accidents can easily occur when food and poisonous substances are confused.

When preparing mixed dishes, e.g. potato or noodle salads, always cool the cooked component before adding other ingredients!
Why? Large amounts of hot food cool down very slowly, and during that period microorganisms from other components may multiply.

Avoid overcharging the cold-storage equipment!
Why? This leads to a slow and ineffective chilling of the food, which may promote an increase of microorganisms.

Refrigerate cooked food in shallow containers!
Why? Shallow containers allow faster cooling than do deeper pans.

All work with perishable food must be carried out quickly!
Why? The longer the food is exposed to the warmth of the kitchen, the higher the risk of an increase of microorganisms to disease-causing levels.

Do not change dishwasher timings/techniques/temperatures!
Why? Food particles may stick to objects in dishwashers, and bacteria may survive if the temperature is not correct or the specified amount of detergent is not used or the timing is inadequate. The manufacturers’ guidelines must be followed when using equipment.

Premises and kitchen utensils

Keep kitchen area and adjoining rooms clean!
Why? Every food scrap, crumb or spot is a potential reservoir of germs.

Frequent cleaning up as you go along ensures hygienic kitchens!
Why? Dried and encrusted left-overs are hard to remove from surfaces and utensils. The working area must therefore be cleaned thoroughly after each process of production.

Cloths and drying towels that come into contact with dishes and utensils should be changed every day!
Why? Thorough washing at higher temperatures removes dirt and kills microorganisms. Separate cloths should be used for cleaning the floors, and these also require frequent washing.

Keep kitchens tidy!
Why? Tidy kitchens are more easily kept hygienically clean. Personal belongings, for example, should be left in the cloakrooms provided.

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