PROPER FOOD HANDLING, STORAGE, PREPARATION KEY IN GOOD NUTRITION

What children eat in their earliest years shapes survival, learning and future productivity. Yet for many families, nutrition is constrained by habits, misinformation and limited choices. As Uganda confronts persistent malnutrition, there is growing recognition that change requires informed communities and stronger policies. Through a month-long campaign from April to May, *New Vision*, in partnership with UNICEF and the Ministry of Health, is spotlighting the challenges and solutions shaping children's diets and their chances of a healthy start.

Ministry of Health

GOOD NUTRITION for all

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By Jackson Sewanyana

Food poisoning and diet-related illnesses are often blamed on what people eat. Nutrition experts warn that another critical factor is how food is handled before it reaches the plate.

Many foods contain essential nutrients but can become unsafe or lose nutritional value if poorly stored, prepared or handled. Attention must, therefore, be paid to each stage of food handling, from storage through preparation to serving.

STORAGE OF RAW FOODS

Animal foods are nutritionally important. They provide protein, vitamin B12, iron and essential minerals that support growth and overall health, according to Regina Nantege, a dietitian at Impact Nutrition Company.

However, these foods also carry potential health risks when raw. Uncooked animal foods such as meat may contain harmful bacteria including salmonella and escherichia coli, which cause diarrhoea and stomach pain, Nantege explains.

Certain animal products carry specific disease-causing organisms. Unboiled milk may contain mycobacterium bovis and raw liver can carry listeria monocytogenes, causing severe infections. In addition, campylobacter in undercooked chicken and anisakis in raw fish can cause food poisoning and worm infestations, Nantege says.

Because of these risks, correct handling and storage are essential. Raw meat, liver and chicken should be



Dietitian Regina Nantege

Nantege advises. Meat and fish can also as be salted or smoked.

However, cold storage alone does not make food safe.

"Even though refrigeration is the best way of storing raw meat, liver and chicken, it does not kill the harmful bacteria they contain, but it rather deactivates and prevents them from multiplying," Nantege says.

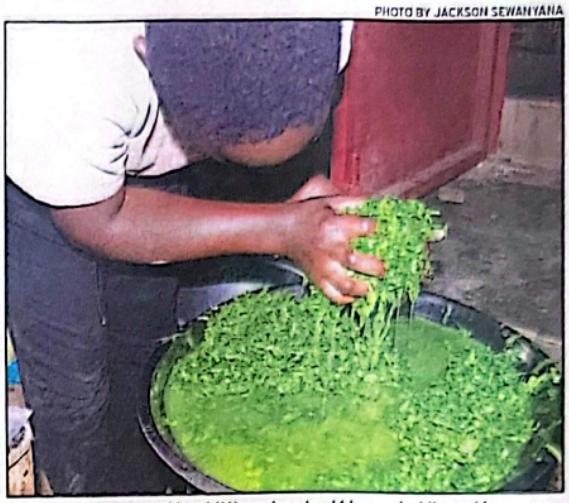
Milk handling requires extra care. Boiling milk and then storing it in the refrigerator is not safe. The better approach is to refrigerate the milk immediately after purchase and boil it only at the time of consumption, Nantege adds.

Food safety concerns also apply to plant foods. Vegetables can easily become contaminated if poorly handled.

Vegetables such as *nakati, dodo, sukuma wiki,* spinach, carrots and cabbage are rich in vitamin A and C, iron, folate and dietary fibre. However, they may carry harmful organisms such as escherichia coli and Giardia lamblia, which cause diarrhoea. To prevent their growth, vegetables should be refrigerated and kept dry, Nantege advises.

"Fruits require similar care.

PHOTO BY JACKSON SEWANYANA



A girl cleaning vegetables. Little water should be used while cooking vegetables because they lose nutrients when exposed to water and heat

FOOD PREPARATION

Regina Nantege, a dietitian at Impact Nutrition Company says cooking methods affect both food safety and nutritional value. To retain nutrients, meat, liver and chicken should not be overcooked.

"Meat should be cooked with little water and the cooking juices used in soups and stews. Chicken should preferably be prepared using broth to minimise nutrient loss," Nantege advises.

For optimal safety and nutrition, meat should be cooked for about 30 to 60 minutes, depending on the cut, says Daniel Kamara, a nutritionist at Bwindi Community Hospital. He adds that frying meat beyond 15 to 20 minutes is excessive.

Similar caution applies to organ meat and poultry. Boiling of liver beyond 30 minutes is discouraged, while chicken should be cooked for 20 to 40 minutes, Kamara says.

Fish requires gentler preparation methods. Nantege advises that steaming, boiling or light frying are the most suitable methods, while deep-frying should be avoided to protect healthy fish fats.

She says some nutrient loss during cooking is unavoidable. Exposure to heat, water, light, frying and long storage reduces certain nutrients, especially vitamin A, vitamin B12 and omega-3 fats. However, protein, iron and calcium largely remain stable.

"Perfect nutrient retention is unrealistic. To make the food safe and prevent infections, it has to be thoroughly cooked, but in the process some nutrients, especially vitamins, are lost," Nantege explains.

The most affected include vitamin C and B vitamins such as B1, B2, B3, B6, B9 and B12.

"That is why in nutrition we encourage people to eat a diverse diet, so that they can obtain nutrients that may be lost during preparation of certain foods," she adds.

Vegetables require even more careful preparation. Nakati, sukuma wiki, spinach, carrots and cabbage should be washed with clean water and cooked lightly. When cooking, little water should be used and the cooking liquid should not be discarded.



Mangoes on a plate. Fruits ought to be eaten 30 minutes to one hour after cutting

Mangoes, oranges, pineapples and yellow bananas are important sources of vitamin C and fibre but may carry fungi such as aspergillus, which produce dangerous mould toxins. Proper storage in a cool dry place reduces this risk," she says.

Nantege emphasises that while proper storage slows contamination and helps preserve nutrients, it does not guarantee safety. The final and most critical stage is food preparation, where washing, handling and adequate cooking determine whether harmful organisms are eliminated and whether nutrients are retained.

HANDLING OF PREPARED FOOD

Proper handling of cooked food is essential to prevent contamination. All leftover foods should be refrigerated as soon as possible.

Storage must be combined with proper reheating because warming leftovers is not enough. Food should be reheated to boiling point before consumption.

"Boiling kills most of the germs, but warming does not," Nantege emphasises.

Food should be cooked thoroughly and raw or undercooked animal products avoided. Leftovers should be refrigerated or reheated to temperatures above 60°C before consumption. Prof. Ivan Muzira Mukisa of Makerere University warns that cooked food should not be kept for more than two hours at temperatures below 60°C.

Fruit safety also depends on timely consumption. Fruits should be handled with clean hands and eaten fresh, advises Kamara.

Fruit storage depends on sensitivity to cold. Some fruits develop chilling injury when stored at low temperatures, explains Prof. Khadijah Nakinsige, the head of the department of food science and technology at Kyambogo University. This may appear as softening, black patches or brown discolouration.

Maintaining such conditions is difficult in tropical countries like Uganda. As a result, some fruits lose taste and texture, explains Kusasira.

Modern refrigeration can help. Some refrigerators have special compartments for temperature-sensitive fruits to extend shelf life, according to Prof. Ivan Muzira Mukisa of Makerere University. Where these are unavailable, fruits should be stored in a cool dry place and consumed soon, as shelf life is short.

Other fruits such as pineapples, apples, grapes, strawberries, oranges and pomegranates can be kept at room temperature. However, to extend shelf life, Nakinsige says they are best stored under vapourised conditions.

FOOD HYGIENE GUIDELINES

To prevent food contamination, Nakinsige recommends good hygiene practices. These include washing hands and utensils with soap and safe water, keeping fingernails short, covering hair during food preparation and keeping prepared food covered at all times.

"Good nutrition does not begin on the plate. It begins with how food is handled at every stage, from storage to preparation and finally to consumption," Nakinsige says.

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