



School kids and street food

Snacks and meals sold to children at school in Tanzania could become "part of the solution" to alarming levels of micronutrient deficiency...

A typical day for children in and around the city of Dar es Salaam in the United Republic of Tanzania starts before sunrise, when they are woken to prepare for school. Breakfast is usually a mug of tea, sometimes with milk. By 6.30 a.m. they are boarding a public bus that will take them to school, which starts around 7 o'clock. At 10 a.m. they are allowed a recess, and the chance to consume their first real meal since the bowl of stiff maize porridge, with relish, they ate at dinner the evening before.

Most students head for the school playground to buy deep-fried cassava from on-site street vendors, whose other offerings include deep-fried potato and deep-fried banana, washed down with flavoured water. At least the food is what nutritionists call "energy dense" and filling - and, besides, most children cannot afford anything more.

"Chronic inadequate intake". That picture of child nutrition in Dar es Salaam is painted by a new study commissioned by FAO's Nutrition and Consumer Protection Division (AGN). The study, which surveyed pupils in 20 of the city's public schools, found that 22 percent of children suffered stunted growth owing to "chronic inadequate intake of food (energy and other nutrients)", placing them among the almost 220 million people in sub-Saharan Africa who are chronically undernourished.

Now AGN nutrition and food safety specialists are developing a strategy aimed at enhancing the health and nutrition of children in Dar es Salaam - and possibly elsewhere in Africa - by improving the safety and quality, and particularly the micronutrient density, of street foods sold to them at school. "Our study found that street foods make up a significant part of the dietary intake of children during the school day," says AGN's Gina Kennedy. "It also found that most of the snacks and meals they buy were high in energy and fat, and grossly deficient in micronutrients. By expanding and diversifying the types of food bought from vendors, and by ensuring their affordability, street foods could become a major part of the solution to problems of poor nutrition among school children."



The FAO study was conducted by researchers from Tanzania's Sokoine University of Agriculture in Dar es Salaam's Kinondoni municipality, a mixed urban/peri-urban area with a large number of public schools, where average class size is about 60 pupils and no school meals are provided. Survey tools comprised questionnaires targeted at 1,180 fifth and six grade students (aged 12 to 14 years) and 170 street food vendors who operated within or near school grounds. The questionnaires were followed up by focus group discussions with vendors, parents and teachers, and in-depth interviews with a sample of 40 vendors.

"We needed to identify the most commonly prepared street foods, and the factors - price, convenience, consumer preference - that determined what was purchased," said Sokoine University's Joyce Kinabo, who coordinated the study. "The survey also sought to understand both constraints and the opportunities available to improve the nutritional quality of the food."

Anthropometric measurements of all participating children showed that severe or moderate stunting affected 23 percent of boys and 15 percent of girls. Responses to the questionnaires revealed that while almost two-thirds of students normally had breakfast at home, it consisted usually of tea, "sometimes with milk added". Only a small proportion of the children brought packed lunches for their mid-morning meal.

Almost all of the school children bought food from street food vendors, two-thirds of them every day. To pay for those meals, parents or guardians gave children an average of 150 Tanzanian shillings (about 11 US cents), although children from rural areas usually got less than 100. The most important snack was fried cassava, consumed by half of school children as a mid-morning snack. "Children prefer it," says Joyce Kinabo, "because it's bulky, energy dense and satisfies them for a longer than many of the other types of snacks sold."

The vendors who provided meals and snacks were mainly women, who pay the school a small fee to operate on school grounds and offered a wide range of other products, including fried potatoes, fried rice, rice and beans, fried banana, fried tomato-and-onion pancakes, fried groundnuts with sugar, fried sweet potatoes, and sweetened and flavoured water.

Most had little formal education and no formal training at all in the preparation of food under safe, hygienic conditions. What's more, most of them were individual operators: there were no organized associations of vendors and therefore no mechanism for accessing credit, nutrition information or ingredients of better nutritional quality, or for interacting with food quality control agencies.

Small portions. Vendors obtained food ingredients and pre-made snacks mainly from wholesale markets and local retail shops, with the choice being determined "mostly by the types of foods preferred by school children, as well as cost". The survey found that very few vendors sold single food items that could constitute a significant meal. The vendors explained that most school children preferred small, energy-dense snacks rather than meals - such as beans or rice and vegetables - because they cost less and "tend to fill their stomachs quickly". Although some snacks on offer, such as fried ground cowpea balls, were richer in protein, portion sizes were very small.

"Although a wide range of vegetables were available in the area, they were rarely offered for sale, often because of difficulties in preparation," Joyce Kinabo said. "Vendors also rarely sell fruits, owing to their high cost out-of-season and their low profit margin in-season. In any case, vendors generally agreed that the one type of food that school children do not seem to purchase is fruit."

At focus group meetings, vendors said two factors prevented them from improving the

nutritional quality of the food they sold: their low levels of capital, which prevented them from buying fruit and vegetables, and children's inability to pay for higher priced foods.

While the study focused improving food quality, it recognized that poor hygiene in food preparation - leading to food-borne illnesses - could be "a significant impediment to capitalizing on the nutritional benefits gained". It found, for example, that vendors operating in school compounds "lacked adequate infrastructure that could enhance food hygiene and safety" - such as clean water and garbage disposal areas - and snacks were often exposed to dirt and dust. Most commonly food was served by hand in old newspaper. Some vendors allowed children to pick out the food items themselves with their bare hands, a practice that could easily lead to microbial contamination of the food. No school regulated the use of food flavouring and the frequency of use of cooking oil, and food colours bought in local shops were widely used by vendors, who were not aware of their potential risks.

More milk and fruit. The researchers concluded that with improvements in nutritional quality, street foods could help to meet the micronutrient needs of Dar es Salaam's school children. They suggested making a more nutritious snack from the most popular food item, cassava, by adding ingredients such as legumes and spices. Reconstituted milk could also be a nutritious new item on the menu.

There is plenty of room for more fruit in street food fare. An estimated 50 to 60 percent of fruits - such as mangoes, pineapples and tamarind - harvested in Tanzania is wasted each year during transportation or rot while waiting to be sold. The study suggested, therefore, that entrepreneurs invest in solar dryers, costing less than \$100 each, to prepare packets of micronutrient-rich dried fruits within children's price range. Above all, the study concluded, children should be educated to make healthy food choices and public information campaigns should "encourage families to ensure that children eat breakfast before they leave home".

"Ultimately," says AGN's Gina Kennedy, "we hope this research generates interest in improving the safety and quality of street food sold to schoolchildren. There is great potential for a win-win situation that improves the nutritional value of the food children consume and, at the same time, generates income for street food vendors."