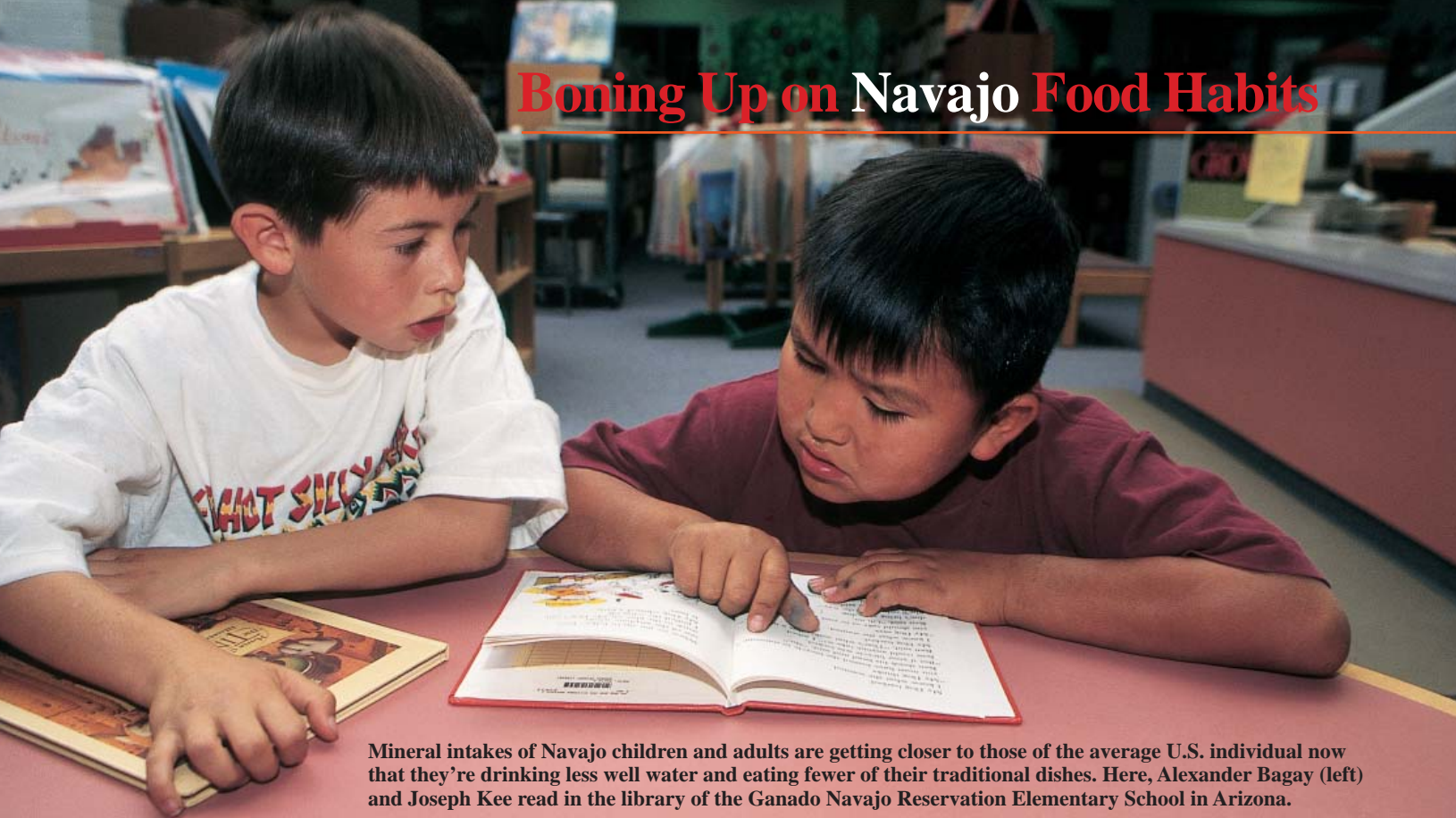


Boning Up on Navajo Food Habits



Mineral intakes of Navajo children and adults are getting closer to those of the average U.S. individual now that they're drinking less well water and eating fewer of their traditional dishes. Here, Alexander Bagay (left) and Joseph Kee read in the library of the Ganado Navajo Reservation Elementary School in Arizona.

KEN HAMMOND, USDA (97CS-3491)

An unusual phenomenon draws the attention of ARS nutritionist Judith G. Hallfrisch. A recent study, published in the *Journal of the American Geriatrics Society*, found Native Americans have denser bones than Caucasians, yet they don't eat a lot of dairy foods. Hip and other bone fractures are often the result of weak bones, caused by osteoporosis, a degenerative bone disease. Nearly 10 million Americans suffer from osteoporosis, which is responsible for 1.5 million fractures annually, according to the National Institutes of Health.

"Osteoporosis is usually prevented by a combination of things, including eating foods—particularly dairy foods—high in calcium and vitamin D," says Hallfrisch, who is with the ARS Beltsville Human Nutrition Research Center, in Beltsville, Maryland.

Genetic differences have been cited as an explanation for low fracture rates among the largest group of North American Indians, the Navajo. "Environmental and cultural practices may also play a role in the sturdy bone structure of Navajo people," says Hallfrisch. "We think there's something in their drinking

water or food that's contributing to this unusual occurrence. So, we're collaborating on a study with investigators at Utah State University to assess how overall mineral intake is related to bone health and other conditions in Navajos."

On the reservation, Navajos get their water from wells, springs, and taps, and store it in barrels. After several trips to Navajo reservations in Utah, Arizona, and New Mexico, Hallfrisch analyzed more than 100 water samples for minerals. She found the average water intake of 2 liters a day can provide up to 212 milligrams of calcium, 150 milligrams of magnesium, and 8 milligrams of zinc.

"The water is high in minerals because the ground is alkaline and has lots of minerals. Although the Navajos don't eat much dairy, they are still getting good nutrient amounts from their water," she says.

In addition, a colleague of Hallfrisch's at Utah State University analyzed the contribution of juniper ash—a gray, finely ground powder traditionally added to native dishes—to overall mineral intakes in Navajo people. Navajos burn juniper branches and grind them into a powder,

which they add to breads and traditional corn dishes.

"Juniper ash is rich in minerals that may also contribute to decreased bone-related injuries," Hallfrisch says. "Total intake of these minerals, which strengthen bones, including the amounts in water and juniper ash, are much closer to dietary recommendations than diet surveys suggest, and may partially explain low fracture rates."

As part of this study, Hallfrisch has been collecting samples of Native American foods to evaluate their nutrient content. Unfortunately, she says, intakes of younger Navajos are becoming closer to average U.S. diets, with high soda intakes and few traditional dishes or dairy products.—By **Tara Weaver-Missick**, ARS.

This research is part of Human Nutrition, an ARS National Program (#307) described on the World Wide Web at <http://www.nps.ars.usda.gov>.

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