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## **Diet is the number one killer in Mongolia**

Though nutrition has its biological and medical aspects, what a people eats is also central to its culture and history. Friends and families bond as they eat together. Recipes are handed down from generation to generation. The tastes and smells of mother's cooking evoke memories of childhood, and deep feelings of safety. Mongolia's culture is thousands of years old, and while eating a diet quite similar to the one people in the countryside eat today, Mongolians developed the largest contiguous land empire in human history. The Mongol empire was built upon meat and milk. So, what is wrong with the Mongolian diet?

The problems with the Mongolian diet arise in the context of longer lifespans. Most of your ancestors did not live long enough to die from the diseases that kill most Mongolians today. If you are reading this, you probably are, or will be at some point, over the age of 40. You will probably not die of starvation, the wounds of war, or infectious disease, but of cardiovascular disease, cancer, or complications of type II diabetes. Cardiovascular disease currently accounts for approximately 37% of total mortality in Mongolia. Improved diet could prevent about 76% of these deaths, which gives Mongolia the distinction of having the highest diet-preventable cardiovascular death rate in the world.

What exactly needs improvement? Of all the world's countries, Mongolia's food supply contains the second highest fraction of total calories per capita from meat, and the 11th highest from whole milk. Red meat and whole milk are good sources of calories and protein, but they're also high in saturated fat, which raises LDL cholesterol and contributes to heart disease. Many Mongolians also consume excessive salt, sweets, and alcohol, and insufficient whole grains, lean protein sources like fish, and fruits and non-tuberous vegetables. In Mongolia, more age-standardized mortality is attributable to high sodium, low fruit, and low vegetable intake than any other country in the world.

I first came to Mongolia in 2012, to study the country's diet with colleagues from the former Health Sciences University of Mongolia and Harvard University. For four summers and winters, we travelled to eight national provinces and trained over 200 medical students to study what hundreds of men and women, office workers and nomads ate on a day-to-day basis. At the end of our travels, we found an interesting thing: for the most part, Mongolians everywhere eat pretty much the same thing – red meat, whole milk, and unfortified flour, just as they have for hundreds of years. This lack of dietary diversity is at the root of a collection of widespread vitamin and mineral deficiencies.

Incidentally, meat, milk, and flour are also the basic ingredients of the cheeseburger (patty, cheese, and bun), pepperoni pizza (sausage, cheese, and dough), and taco (ground beef, cheese, and tortilla). The first time I came to Mongolia, there was no Burger King, Pizza Hut, Taco Bell, or KFC. That was only four years ago. Now, all of these businesses are in Mongolia, ultimately because Mongolians want them to be here. The rise of unhealthy, obesity-causing fast foods in Mongolia comes at a time when more and more Mongolians are adopting a less active urban lifestyle, increasing the risks of lifestyle-related diseases, which kill more and more Mongolians every year.

Though everyone in Mongolia incurs a risk due to poor diet, the greatest burden is borne by children. Poor nutrition during growth – in pregnancy, while breastfeeding, after weaning, or later in childhood – may permanently impair a child's physical and cognitive development. In part due to multiple vitamin and mineral deficiencies, 11% of Mongolian children under 5 are still nutritionally-stunted, a condition associated with poorer performance in school, and decreased earnings, productivity, and social mobility. At the same time 11% of young children in Mongolia are overweight or obese – childhood overweight increases the risk of several diseases later in life, including cardiovascular disease, type II diabetes, and certain cancers.

To put it simply, the Mongolian diet has always been unhealthy, but its effects on health are now being exacerbated by increases in lifespan, deterioration of the food supply, and an increase in urban sedentary

lifestyles. At the moment, poor diet is the number one killer in Mongolia. To improve the nutrition situation, Mongolians must stay active, avoid unhealthy foods and overeating, and get enough vitamins, minerals, and dietary fiber.

The solution is not straightforward, however. Mongolians should be eating more fruits and non-tuberous vegetables, but that's easier said than done – Mongolia has a smaller fraction of land devoted to permanent crops than any other country. Mongolian women have among the world's lowest vitamin D levels observed in any population, but sources of vitamin D in Mongolia are hard to come by. The government recently made the admirable move of banning soft drinks in school lunch-rooms, but what is to stop children from buying them after school? Even exercise can be difficult – how can one run around the park when Ulaanbaatar was once cited as the second most air-polluted city in the world?

Addressing these questions will take time, and a range of nutritional, agricultural, and economic policies and programs. Most importantly, there must be a change in the way that Mongolian consumers think about their diet and the foods that they demand. Mongolians have always had a proud tradition of athleticism and sports, but physical activity must be consciously increased in an urban landscape. Prosperity and development have brought unprecedented food security and access, but they have also brought unhealthy influences that threaten to erode the future of public nutrition. The traditional Mongolian diet is a national treasure, but it must be improved in order to sustain life in modern Mongolia.

Women must play a central role in improving nutrition in Mongolia. Most women know that if they smoke or drink during pregnancy, or if others smoke around them, their baby may be harmed. Most also know that maintaining a healthy diet during pregnancy and breastfeeding is important to ensure the baby's healthy growth and development. Fewer women know that some nutrients, such as folic acid, must be present at sufficient levels even before conception, or that obesity and uncontrolled diabetes during pregnancy increase the risk of pregnancy complications, which may harm the baby, and also make it more likely that the baby will develop metabolic disease later in life. Men must be equally conscious of these issues, so as to support healthy nutrition decisions by women.

In urban Mongolia, women are largely in charge of household food decisions. Research has shown that if one buys unhealthy foods for their household, their children will become more accustomed to eating unhealthy foods, creating habits that are difficult to break later in life. If a man or woman frequently eats fast foods or unhealthy snacks, or lets themselves become obese or inactive, then their children, spouse, and other family members will tend to follow their example. By making healthier nutrition decisions for oneself, one can engender healthier nutrition decisions in one's family and community. Over time, small steps will help to increase popular demand for a healthier food environment and food supply, ultimately leading to a healthier future for all Mongolians.

*This article was informed by results of ongoing data analysis from the "Nationwide micronutrient assessment of vitamin D and other micronutrients' status among Mongolian adults", led by the Mongolian Health Initiative (MHI), a nongovernmental organization devoted to health science research and capacity building in Mongolia. In addition, statistics were drawn from the following sources:*

1. Mortality rate attributable to dietary risks: 2013 Global Burden of Disease Study (<http://vizhub.healthdata.org/gbd-compare>)
2. Per-capita food supply estimates: Food and Agriculture Organization of the United Nations (<http://faostat3.fao.org/download/FB/CL/E>)
3. Percent of arable land devoted to permanent crops: World Bank (<http://data.worldbank.org/indicator/AG.LND.CROP.ZS>)
4. Vitamin D status of Mongolian women: J Steroid Biochem Mol Biol. 2014 Jan;139:1-6 (<http://www.sciencedirect.com/science/article/pii/S0960076013001854>)
5. Statistics on child stunting, overweight, and air pollution: WHO Global Health Observatory Data Repository (<http://apps.who.int/gho/data/node.home>)