Recent survey finds key nutrient inadequacies and overweight to be widespread among Mongolian adults nationwide

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Diet is one of the most important determinants of health. A high quality diet is one that includes a sufficient diversity of foods to ensure adequate provision of all the different nutrients required to maintain a healthy and active life, while also limiting certain foods whose excessive consumption can lead to health problems. Diversity and balance are essential to a healthy diet.

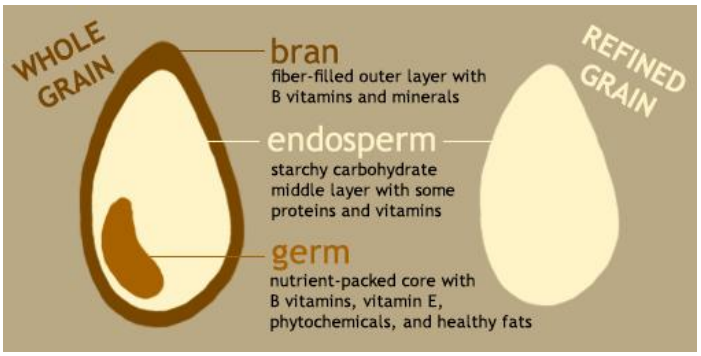
In a recent analysis of global food consumption data, researchers in the department of nutrition at Harvard T.H. Chan School of Public Health estimated that Mongolia scores lower on the Alternative Healthy Eating Index – a validated metric that evaluates diet quality based on the contributions of different foods to the risk of heart disease, stroke, type 2 diabetes, cancer, and other non-communicable diseases - than every other country in the world, based on data showing severe imbalances in the national food supply (including extremely high availability of animal-source foods and minimal plant foods) [1]. Imbalances in the food supply produce imbalances in the diet, which have consequences for the national burden of disease. However, food supply data need to be supplemented with more detailed information – including quantitative measurements of all the different foods and nutrients that people actually eat and drink – in order to fully characterize the extent and severity of dietary imbalances across Mongolia, and inform the design of effective strategies for rectifying these imbalances.

From 2011 to 2016, a team of Mongolian and international researchers studied the diets of healthy men and non-pregnant women living in the capital Ulaanbaatar and urban and rural areas of Bulgan, Dornod, Khovd, Khuvsgul, Omnogobi, Sukhbaatar, and Tuv *aimags* (provinces). The team collected weighed measurements and detailed descriptions of all of the foods and drinks that each participant consumed for several days in summer and the following winter. A total of 1,838 days of records were collected from 334 people. The team used these data to calculate nutrient intakes and determine the prevalence of nutrient inadequacies in the population. The team also measured each participant's height and weight, and their summer and winter levels of certain nutrients in their blood.

Results of the study were published in detail in the academic journal *Nutrients* in May 2020 [2]. Analyses of the data yielded the following main findings:

- ***Significant dietary imbalances:*** The researchers found extremely high levels of consumption of unprocessed red meat and refined grains (averaging 445 and 533 grams per day, respectively, in rural men in the winter), and high fat dairy (averaging 657 g/day in rural men in summer). Consumption of fruits, non-tuberous vegetables, whole grains, nuts and seeds, fish and poultry, and eggs – foods that are good sources of essential vitamins and minerals, unsaturated fats, complex carbohydrates, and/or dietary fiber – were very low. (For comparison, Japanese men ≥20 years consumed an average of 83 g/day of red meat in 2018, and approximately a quarter of caloric energy in Japan comes from fruits, non-tuberous vegetables, legumes, nuts and seeds [3].) The analysis also found a moderate or high prevalence of dietary inadequacies of many key vitamins (vitamins A, B6, C, D, E, thiamin, and folate), certain minerals (calcium and magnesium, and moderate iron inadequacy in women), and fiber in both urban and rural areas. By contrast, inadequacies of protein, zinc, riboflavin, niacin, and vitamin B12 – nutrients which are concentrated in animal-source foods – were uncommon or rare.

  Meat and dairy products are excellent sources of "complete" protein (protein made up of all 20 amino acids that the body needs) and some vitamins and minerals. However, a diverse diet – including fruits, vegetables, and whole grains – is important to ensure adequate provision of all of the nutrients that humans need for optimal health. The nutrient deficits observed in this study, attributable to a persisting lack of dietary diversity in the Mongolian population, can contribute to a wide range of health problems. Excessive consumption of red meat in particular is also associated with higher levels of lipids in the blood – including LDL ("bad") cholesterol and triglycerides – and increases the risk of cardiovascular disease, diabetes, and certain cancers. These conditions are also associated with refined grains, which, owing to the refinement process, contain lower concentrations of fiber (and vitamins and minerals) than whole grains, and their consumption is linked to weight gain, insulin sensitivity, and non-communicable diseases.



Source: https://www.hsph.harvard.edu/nutritionsource/what-should-you-eat/whole-grains/

- ***Widespread overweight:*** 61% percent of men and 51% of women in this study were overweight or obese. ("Overweight or obese" is defined as having a body mass index (BMI) – calculated by dividing bodyweight in kilograms by the square of height in meters – of 25 or more.) The high prevalence of overweight is concerning because excess bodyweight is a major risk factor for many non-communicable diseases globally. Urban study participants were more likely to be overweight than rural ones after statistically adjusting for differences in age, sex, and region (meaning that the influence of these variables on BMI was "removed" in order to isolate the independent contribution of urbanicity). Also, while urban BMIs tended to increase with age, rural ones did not, despite similar age trends in caloric intake between urban and rural areas. One important reason for these findings is likely the intensely physically-active lifestyle that many nomadic Mongolians continue to engage in even into older age, while lifestyles in urban areas have become increasingly sedentary.

- ***An "obesogenic" diet pattern:*** Diet is another evident factor behind the higher bodyweights observed in urban areas. In their analysis, the research team identified distinct urban and nomadic diet patterns (groups of foods that tend to be consumed together). It is important to emphasize that diets in both urban and rural areas were marked by significant nutritional imbalances, however, these imbalances were generally more severe in urban areas. Notably, the researchers found that adherence to the urban diet pattern – but not the nomadic one – was significantly associated with higher BMI in statistical models controlling for differences in age, sex, and region. Also, adherence to the nomadic diet pattern tended to increase with age, while the opposite was true for the urban pattern – while suggestive, this finding could mean that the nation will converge toward an increasingly obesogenic urbanized diet in future.

To decrease their risks of nutrient inadequacies, excesses, and developing non-communicable diseases, it is important that Mongolian adults stay physically active, and are advised to diversify their diets through healthy substitutions wherever possible. Specifically, Mongolian adults are advised to reduce their consumption of red and processed meats, and replace these as much as possible with fish, poultry, and eggs; substitute refined grains, flour, and flour products with whole grain versions, high fat milk and dairy products with low or reduced fat alternatives, and animal fats with liquid oils; limit consumption of potatoes, sweets, juice and sugar-sweetened beverages, fast foods and salty snacks; and increase consumption of whole fruits, vegetables, legumes, and nuts and seeds. These dietary guidelines are based on decades of rigorous epidemiologic and clinical studies conducted around the world, careful synthesis of which provide a robust base of evidence for informing healthy human diets [4]. Adhering to these guidelines would reduce mortality among Mongolians ≥25 years by an estimated 29% [1].

For most ordinary Mongolians, making these changes will be expensive, unrealistic, or unpalatable given the context of Mongolia's environmental constraints and traditional nomadic lifestyle, which limit the availability of many healthy ingredients and the public's tastes for and familiarity with using them. Tremendous work will be necessary to generate demand for healthier foods through public nutrition education, revision and promotion of evidence-based dietary guidelines, and innovations in Mongolian cuisine that transform its nutritive value while managing to preserve the richness of Mongolian food culture. While a national nutrition strategy calls for many coordinated policies and programs, in the long term, agricultural development will ultimately be critical for stimulating a healthier food supply and facilitating the kinds of large-scale diet modifications needed to produce dramatic and sustainable improvements to nutrient adequacy and non-communicable disease burden in Mongolia.

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