Extended Abstract Submission for International Union for the Scientific Study of Population

Biological Aspect of Health in Western and Asian Countries: The United States and South Korea

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Global changes in epidemiological environments, diet and nutrition, and medical advances as well as improved public and individual health practices have contributed to improved health statuses in many countries. However, these changes appear to be mediated by environmental and cultural factors and as a result, socioeconomic and behavioral gaps remain across countries. Given these factors, it is reasonable to assume that the United States and Korea likely have differential underlying biological statuses; however, research has yet to investigate possible cross-national differences between these two countries.

In this study, we compared the United States and South Korea along eight indicators of biological risk: Systolic blood pressure (SBP), diastolic blood pressure (DBP), total cholesterol, High Density Lipoprotein (HDL) cholesterol, Low Density Lipoprotein (LDL) cholesterol, triglycerides, Body Mass Index (BMI), and glycated hemoglobin. All indicators were collected from blood samples and thus provide a valid cross-country comparison of health aspects that are not possible with self-reported measures.

The data used in this study are nationally representative cross-sectional panel data: National Health and Nutrition Examination Survey (NHANES) and Korean NHANES in 2007-2010, with data centered on 2008-2009. The respondents were aged 50 and over, and all agreed to participate through blood collection and physical examination (N=5,761 for NHANES; N=11,315 for KNHANES). For each biological risk factor, we used clinical cut-offs, or widely-used research-based cut-offs, to indicate high levels of risk.

We compared cross-national prevalence rates for each individual risk factor by age and sex (Table 1). While only 3 percent of Koreans were obese, obesity was a much greater health problem among Americans (over 35%). It is noteworthy, however, that levels of other biological risk factors such as diastolic blood pressure and glycosylated hemoglobin were clearly higher in South Korea than in the United States.

Figures 1 and 2 show clinical differences between the U.S. and South Korea along high diastolic blood pressure ($\geq$90 mmHg) and obesity (BMI$\geq$30kg/m^2). While Americans had a higher prevalence of obesity, Koreans more often had high diastolic blood pressure and glycosylated hemoglobin. Americans under age 70 were more obese than those over 70, while Koreans had similar rates of obesity across ages. Diastolic blood pressure was higher among the younger populations, especially among Koreans, and this age effect was particularly profound in younger Korean men.

Table 1 shows levels of biological risks and differences between men and women in the United States and South Korea. Koreans showed significant gender differences among all biological risk indicators. Conversely, while Americans showed some gender differences, fasting triglycerides were not found to differ among men and women in the U.S. sample.

This study provides a preliminary examination into the differences in biological risk indicators between the United States and South Korea. Factors that could explain reported differences include differing health care systems, national diets, common life styles, as well as cross-cultural differences; however future studies are needed to better understand causes for the reported differences.

Table 1. Percent of having High Biological Risk by Sex: the United States and South Korea (age 50+)

	South Korea			United States		
Indicator	**Men**	**Women**	**Weight *P* value**	**men**	**Women**	**Weight *P* value**
High Diastolic blood pressure (>=90mmHg)	20.33	12.98	<.0001	6.04	3.89	.0003
High Systolic blood pressure (>=140mmHg)	21.38	24.56	<.0001	22.79	25.56	.0187
High Total cholesterol (>=240mg/dL)	7.07	14.66	<.0001	13.61	21.54	<.0001
Low HDL cholesterol	29.12	19.13	<.0001	27.74	10.55	<.0001
High Fasting LDL cholesterol	7.41	14.17	<.0001	9.62	15.09	.0001
High Fasting triglycerides	23.02	16.78	<.0001	15.50	15.02	.7156
High Body mass index (BMI≥30kg/m2)	1.93	4.71	<.0001	35.99	38.77	.0346
High Glycosylated hemoglobin	67.75	72.00	<.0001	17.14	14.27	.0041

Figure 1 Percent of Korean and American men and women with high diastolic blood pressure (≥90 mmHg) by age

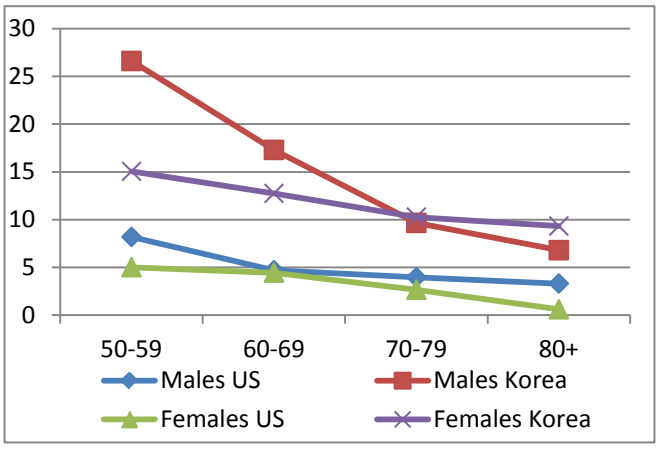

Figure 2 Percent of Korean and American men and women who are obesity (BMI≥30kg/m^2) by age