DEVELOPMENT OF A SEMI-QUANTITATIVE FOOD FREQUENCY QUESTIONNAIRE FOR A COMMUNITY-BASED COHORT STUDY IN KOREA. YJ Ahn*, JE Lee, HY Park, NH Cho, C Shin, KC Kim, IH Jo, HK Lee (Central Genome Institute, Korea National Institute of Health, Seoul, Korea)

Semi-quantitative food frequency questionnaire (SFFQ) has been used to estimate dietary intake, an effector of life style-related diseases. To develop a SFFQ for the assessment of general diet of a cohort, dietary data from 1998 Korea Health and Nutrition Examination Survey were analyzed, which it was executed nation-wide over a period of two months from Nov. 1st through Dec. 30th in 1998. Food consumption of 11,525 age distribution-matched and randomly selected subjects who were 1 year of age or older was evaluated with 24-hour recall method and target subjects were 2714 adults aged over 40 living in urban area. The number of reported foods totaled 990. The cumulative percent contribution (CPC) and cumulative multiple regression coefficients (CMRC) of food intake representing each of 17 nutrients were computed. Three hundred ninety one items by 0.9 CPC, and 240 by 0.8 CMRC were selected, respectively. They were then combined and re-grouped into 97 items based on their similarities of nutrient contents. A small number of frequently consumed foods for Koreans but missing among the selected probably due to seasonal dietary variations were added. The portion size was calculated from the 24-hour recall data. One hundred and three items were finalized in the questionnaire. This FFQ has been used for a community-based cohort. A study for validity and reproducibility assessment of the FFQ is ongoing.

ENERGY RESTRICTION EARLY IN LIFE AND COLON CANCER RISK: RESULTS OF THE NETHERLANDS COHORT STUDY AFTER 7.3 YEARS OF FOLLOW-UP. *JM Dirx, PA van den Brandt, RA Goldbohm, LH Lumeij (Maastricht University, Maastricht, The Netherlands)

This study evaluated the effects of severe undernutrition during adolescence and subsequent colon cancer risk. The hypothesis was examined in the Netherlands Cohort Study on Diet and Cancer (NLCS), among 62,573 women and 58,279 men aged 55-69 years at baseline. Information on diet and other risk factors was collected by questionnaire in 1986. Additional information was collected on residence during the Hunger winter (1944-1945), the World War II years (1940-1944) and father's employment status during the economic depression of 1932-1940, used as indicators of exposure. After 7.3 years of follow-up, 807 colon cancer cases were available for analysis. Multivariate analysis showed that persons who had lived in a Western city in 1944-1945 had a nonsignificantly decreased colon cancer risk (men: Risk Ratio (RR)=0.85, 95% CI 0.62–1.16; women RR=0.80, 95%CI 0.59–1.09). For the war years (1940-1944) we found no association between colon cancer risk and urban vs. rural residence. Having an unemployed father during the Economic Depression years was associated with a small, but not significant decrease in colon cancer risk both for men (RR=0.90, 95% CI 0.62–1.31) and women (RR=0.75, 95% CI 0.49–1.14). In subgroup analyses, a decreased colon cancer risk for men and women who were in their adolescent growth spurt and living in a Western city during the Hunger winter of 1944–1945 was seen (men: RR=0.72, 95% CI 0.31–1.65; women RR=0.88, 95% CI 0.40–1.96). We found in our study an indication for a small inverse relation between energy restriction early in life and subsequent colon cancer risk.

TRENDS IN FRUIT AND VEGETABLE INTAKE AMONG WHITE, BLACK AND HISPANICS BY BODY MASS INDEX, 1996–2000. *WN Nemethard, RR Collins, Y. Liu, and SK Davis (Morehouse School of Medicine, Atlanta, GA 30310)

The US Surgeon General recommends that Americans eat at least five daily servings of fruits/vegetables for the prevention of chronic disease. However, it is unclear whether national strategies to increase intake have reached minority populations. Furthermore, patterns of fruit/vegetable intake among overweight/obese Americans by race/ethnicity has not been adequately described. Therefore, the purpose of this study was to determine the prevalence and trend of daily intake of at least five servings of fruits/vegetables among Whites, Blacks and Hispanics by body mass index (BMI). White, Black and Hispanic adults, 18 years from the national Behavioral Risk Factor Surveillance System, 1996–2000 comprised the study sample. Weighted prevalence was calculated using SUDCAN software. BMI was defined as normal weight (18.5–24.9 kg/m²), overweight (25.0–29.9 kg/m²) and obesity ≥30.0 kg/m². Separate analyses were conducted for each race/ethnicity and by BMI. From 1996 to 2000, there was a 10.6% increase (p=0.019) in daily intake of five servings of fruits/vegetables among Blacks, in contrast to a 1.6% decrease (p=0.53) among Whites and a 1.7% decrease (p=0.0011) among Hispanics. When stratified by BMI, the largest increases in the daily intake of five fruits/vegetables were also seen among Blacks. In this five-year period, there was a 14.4% increase (p=0.015) among Blacks of normal weight, a 4.2% increase among overweight (p=0.07) and an 18.7% increase (p=0.023) among obese Blacks. Conversely, there were decreases (range 0.0% to 11.0%) in the prevalence of daily intake of at least five servings of fruits/vegetables among Whites and Hispanics by BMI. Although public health messages have encouraged daily intake of at least five servings of fruits/vegetables, the prevalence of daily intake has only slightly increased among Blacks but decreased among Whites and Hispanics.

PLASMA ANTIOXIDANTS AND RISK OF CATARACT EXTRACTION. *JM Weintrob, WC Willett, B Rosner, JM Seddon, GA Colditz, H Campos, SE Hankinson. (Harvard University, Boston MA 02115)

To investigate the relation between plasma antioxidant levels and risk of cataract extraction, we conducted a nested case control study of participants in the Nurses’ Health Study. Blood samples were collected and archived from a subset of the cohort in 1980–90. Cases were women who had a physician-confirmed cataract extraction with a date of diagnosis anytime after blood collection up to 1996. There were 494 cases matched to 494 controls by age, month and time of blood collection, and fasting status at the time of blood sample. In conditional logistic regression adjusted for body mass index, pack years of smoking, diabetes, and cholesterol, women whose plasma α-tocopherol level was in the highest quintile (more than 16,589 mg/dl) had a 32% decreased risk of cataract extraction compared to those in the lowest quintile (less than 9,400 mg/dl) (multivariate relative risk (RR) 0.68, 95% confidence interval (CI) (0.44, 0.95), p-trend 0.04). In unconditional multivariate analyses stratified by smoking status, the carotenoids tended to be protective among never smokers but not among ever smokers. For never smokers with higher plasma concentrations of α-carotene, β-carotene and lycopene compared to those in the lowest quintile, the multivariate RR were: (α-carotene: 0.71, 95% CI (0.39, 1.31) p-trend 0.22; total β-carotene: 0.51, 95% CI (0.27, 0.95) p-trend 0.07; total lycopene: 0.57, 95% CI (0.31, 1.09) p-trend 0.04). No significant association of trends were seen for lutein/zeaxanthin, β-cryptoxanthin, or the tocopherols in the smoking-stratified analysis. This study provides evidence for the role of some plasma antioxidants in decreasing risk of cataract extraction.