Association of Genetic and Lifestyle Factors on Healthy Aging and Mortality in the Oldest-Old.

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Elucidating the involvement of genetic risk factors and its interaction with lifestyle and environmental factors in hypertension is crucial for their effective management in the oldest-old. Polygenic risk score (PRS) is the instrument to assess cumulative effects of multiple single nucleotide variants in evaluating genetic risk of a specific condition. This study examined the association of the PRS related to cardiovascular diseases with disability-free survival (DFS) and mortality in the oldest-old using the data from the Kawasaki Aging and Wellbeing Project (KAWP) cohort. DFS was defined to be terminated with either issuance of certification of long-term care needs or death, which come earlier. The study subjects were community-dwelling adults participating in the KAWP baseline survey (2017–2018, n=1,026). Those without blood pressure data or with close kinship were excluded. Genotyping and imputation were conducted. PRS for heart failure, arrhythmia, systolic and diastolic blood pressure were calculated based on JENGER GWAS summary statistics using PRScs. The subjects were categorized into low (0–5th percentile), intermediate (5–95th), and high (>95th) PRS groups. Cox proportional hazards models assessed an association of the PRS categories with survival after adjusting for age, sex, BMI, smoking, alcohol use, and PC1–10 derived from population stratified principal component analysis. A secondary analysis evaluated their association with DFS. DFS terminations including 280 deaths were observed by December 2024. Survival analysis showed that the PRS for systolic blood pressure was significantly associated with DFS (95% CI: 1.12–2.40, p=0.012), whereas other PRS were not significant. These findings suggest that systolic blood pressure–related genetic risk contribute to loss of independent living among the oldest-old. Further analyses are needed to explore the interaction of lifestyle factors with the genetic variations on cardiovascular risks.

Chrono-nutrition association between green tea intake and metabolic syndrome

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Background : Although green tea (GT) consumption is expected to be effective for weight loss and primary prevention of metabolic syndrome (MetS), the chrono-nutritional effects of GT intake have not yet been sufficiently researched.

Objective : Considering chrono-nutrition, this study examined the association between the risk of MetS and GT intake.

Methods : In the Shizuoka-Sakuragaoka J-MICC Study, we collected the data on GT intake timing, lifestyle, and health check-up among 1,921 men and women aged 35-79 years. MetS was defined by the criteria of National Cholesterol Education Program Adult Treatment Panel Ⅲ. Based on factor analysis, six time-patterns regarding GT intake were identified. Using their six factor scores as explanatory variables, the odds ratios for each were simultaneously calculated using a logistic regression model, both without and with stratification by two waist circumference (WC) groups.

Result : Significantly lower risk was found only in men with low-WC, particularly in the "after breakfast and lunch" and "after supper" patterns. However, while a significantly higher risk was observed in the "between meals" pattern in all women, significantly lower ones were found in the "between meals" and "after meals" patterns, respectively, among women with low-WC and high-WC.

Conclusion : Our findings showed a decreased risk in the specific time-patterns of GT intake among with low-WC male and female, even in women with high-WC. The increased risk in women is thought to be caused by a reversal of causality due to the influence of advertising promoting GT's visceral fat reduction effects.

Changes in life expectancy and age distribution of deceased individuals from 2020-23 under COVID-19

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Background : Observing a shortening of life expectancy at birth in Japan from 2021-22, the life expectancy mostly has remained constant from 2022 onwards. As the background, the underlying changes in causes of death and age distribution of deceased persons have yet to be characterized for the Japanese population.

Aim : The present study estimated the changes in life expectancy at birth from 2019-23, identifying the attributable fraction by age group and cause of death. Moreover, we evaluated the variation in the distribution of age of deceased persons.

Methods : Japan mortality database and population census were used to quantify the period life table, computing the life expectancy at birth by prefecture from 2019-23. Arriaga decomposition method was employed by age and cause of death. Life table entropy was computed to understand the change in age distribution of deceased persons.

Results : A slight extension of life expectancy was observed from 2023-24, contrasting the shortening from 2021-22. Variations in life expectancy change were smaller in 2023-24 compared with earlier year. Arriaga decomposition indicated the absence of significant contribution of specific age groups and cause of death in modifying the life expectancy. Life table entropy slightly increased in 2023 compared with 2020-22.

Conclusion : The life expectancy at birth in Japan has not yet recovered to a monotonously increasing trend. The contribution of specific ages and causes of death in 2023-24 was weaker than that from 2022-23.

Reevaluation of associations between radiation and colorectal cancer among atomic bomb survivors

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Background : In the atomic bomb survivor cohorts, radiation exposure has been clearly associated with colon cancer incidence risk. However, no association has been observed for rectal cancer, despite their histological similarities. In Japan, fecal occult blood tests were introduced for colorectal cancer screening in the 1992. This reanalysis considers competing risks by focusing on the resection of adenomatous polyps before the first primary cancer and the initial diagnosis of colon and rectal cancers.

Methods : Subjects are members of the Life Span Study, who were alive at the initiation of the Tumor and Tissue Registries in Hiroshima and Nagasaki in 1974 and followed up until 2009. Data on cancer and adenomas were collected from the Hiroshima and Nagasaki Cancer Registries and Tumor and Tissue Registries, respectively. Radiation doses were estimated using the dosimetry system DS02R1. To account for the competing risk of polyp resection, we developed a simulation-based method. For individuals who underwent polyp removal, the age at cancer diagnosis was estimated as if no polyp resection had been performed.

Results : Among the 85,088 individuals analyzed, from 1974 to 2009, 3,312 patients underwent resection of colon polyps, 644 had rectal polyps resected, 1,605 were diagnosed with colon cancer (805 proximal and 800 distal colon cancers), and 869 were diagnosed with rectal cancer. The radiation-related excess relative risk (ERR) for colon cancer increased after 1990, whereas the ERR for rectal cancer decreased. ERR estimates increased when the polyp resection was considered.

Conclusion : Our findings indicate that the long-standing discrepancy between radiation effects on colon and rectal cancer may, in part, be explained by the influence of colorectal cancer screening and polyp removal. Properly accounting for these competing risks is crucial for accurately characterizing site-specific radiation-related cancer risks in atomic-bomb survivors.

Women's Empowerment and Climate Factors Affect Acute Respiratory Infection in Indonesian Children

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Acute respiratory infection (ARI) is a leading cause of death in children under-5 worldwide. Climate change exacerbates ARI, and mothers play a crucial role in preventing ARI in children. East Java province has a higher prevalence of ARI among children under-5 than the national average. Our study aimed to analyse whether women's empowerment (WE) and climatic factors affect the incidence of ARI in children under-5 in East Java, Indonesia. This study used secondary data from a nationally representative 2023 Indonesian Health Survey sample. Data from 4,002 children under-5 and their mothers were analysed. The WE included education and employment status, health-seeking behaviours, and health insurance ownership. Climatic factors were obtained from the nearest weather observatory station. Descriptive analysis and multivariable logistic regression were used to examine the risks of contributing factors and modified effects, controlling for potential confounders. The incidence of ARI in the sample was 36.99%. Children of mothers who worked in the public sector (AOR=0.52,95%CI=0.31-0.87) and the private sector (AOR=0.74,95%CI=0.56-0.98) showed a reduced risk of ARI incidence, compared to children of mothers who do not work. In addition, every additional 1 mm of rainfall would increase the risk of ARI in children under-5 by 11% (AOR=1.11,95%CI=1.03-1.19) after controlling other variables. Poor environmental sanitation and improper waste management could significantly increase the ARI risks in the study population. The global interaction analysis showed that maternal employment status could modify the relationship between rainfall and ARI incidence(p=0.009). The study indicates that maternal employment status as part of WE can reduce ARI risks among children under-5. While increased rainfall could bring more ARI cases in the study population, this association may be mediated by maternal employment status. These findings highlight the importance of developing integrative preventive strategies to reduce ARI in Indonesian children.