Regional and Seasonal Variations in Home Blood Pressure from Real-World Monitoring

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Background : Seasonal variation in home blood pressure (higher in winter, lower in summer) is consistently reported in Japan. However, nationwide studies examining prefecture-specific home blood pressure seasonality remain limited.

Objective : This study aimed to investigate regional differences and seasonal variations in home blood pressure across Japan.

Methods : We analyzed home blood pressure data from upper-arm monitors collected via OMRON connect (OC) between June 1, 2024, and May 31, 2025. The study included 15,083 users with recorded morning and evening blood pressures for at least 10 days monthly. Monthly average morning systolic blood pressure was calculated per user and then aggregated to determine average values.

Results : All prefectures showed annual home blood pressure variations, with the lowest values observed from June to August and the highest from December to February. The differences between highest and lowest monthly values varied appreciably: largest in Saga (6.5 mmHg) and Kochi (6.5 mmHg), and smallest in Hokkaido (3.0 mmHg) and Toyama (2.8 mmHg). No apparent correlation was observed between these differences and either average age or morning systolic blood pressure across prefectures.

Discussion : This study demonstrates that home blood pressure data from OC users show annual variations and significant prefecture-specific differences. Notably, the range of annual home blood pressure variations did not correlate with geographical latitude. Given the limited influence of user age and absolute systolic blood pressure values, dietary habits and residential thermal environments are suggested as potential underlying factors for these disparities. This study highlights prefecture-specific annual home blood pressure variations, often viewed uniformly, offering a new perspective for future blood pressure management.

Trends and regional variation in prevalence of ADHD in Japan: using two claims databases

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Objective : The prevalence of attention-deficit/hyperactivity disorder (ADHD) and its regional variation in Japan remain poorly understood. We aimed to estimate the prevalence of ADHD from 2015 to 2022 and examine differences in age, sex, insurer type, and region.

Methods : We used two claims databases: the JMDC Claims Database (JMDC-DB; employment-based health insurance) and the DeSC Database (DeSC-DB; including both employment-based and National Health Insurance claims). The prevalence was estimated cross-sectionally and stratified according to sex and age groups. The DeSC-DB was also used to assess insurer-based and regional differences. The study period was from January 2015 to December 2022.

Results : In the JMDC-DB, the age-standardized prevalence of ADHD in 2022 was 2.51% in male children (<18 years), 0.75% in female children, 0.29% in adult males (≥18 years), and 0.23% in adult females; in the DeSC-DB, it was 3.16%, 0.94%, 0.40%, and 0.32%, respectively. In both databases, the prevalence steadily increased from 2015 to 2022 for both children and adults. When stratifying children into age groups (0–5, 6–11, and 12–17 years), the prevalence peaked at 6–11 years in boys, whereas in girls, the prevalence at 6–11 and 12–17 years was similar to that at 0–5 years. ADHD prevalence tended to be higher among individuals covered by the National Health Insurance than among those covered by employment-based health insurance. In addition, regional variation was observed: among children, the age-standardized prevalence in the Chugoku region was approximately twice that in Southern Kanto; among adults, it was approximately 1.7 times higher in Hokuriku than in Kinki.

Discussion : The prevalence of ADHD in Japan has been increasing, with distinct differences by age and sex that may reflect variations in symptom presentation. Substantial regional variations may be related to disparities in access to healthcare, awareness, and diagnostic or treatment practices.

Smoking, Alcohol, and Overall Cancer: Pooled Analysis of 11 Prospective Cohort Studies in Japan

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Cigarette smoking and alcohol drinking are both major modifiable risk factors for cancer, and interactions between these two risk factors have been reported for specific cancer types, such as esophageal and head and neck cancers. However, few studies have evaluated their interaction on overall cancer risk, despite its importance for comprehensive cancer prevention strategies. We conducted a pooled analysis of 11 population-based cohort studies including 500,056 Japanese individuals. Study-specific hazard ratios (HRs) and 95% confidence intervals (CIs) for cumulative smoking (pack-years) and alcohol consumption (g/day) were estimated using Cox proportional hazards regression and pooled through meta-analysis for four overall cancer outcomes: incidence, mortality, and all-cause and cancer-specific mortality of cancer cases. Interactions were assessed on both additive and multiplicative scales. During 7,142,360 person-years of follow-up, we identified 56,111 cancer incident cases, 30,989 cancer deaths, 26,416 all-cause deaths, and 21,281 cancer-specific deaths among cancer cases. Dose-dependent positive associations with all four overall cancer outcomes were observed for both smoking and alcohol consumption. Among men, a statistically significant but negligible additive interaction was observed on overall cancer incidence (relative excess risk due to interaction [RERI] = 0.002; 95% CI: 0.001-0.004), while no significant multiplicative interaction was found. No significant interactions were observed for other outcomes in men and for any outcomes in women. In this large-scale pooled analysis, smoking and alcohol independently and substantially increased the risk of overall cancer outcomes, with little evidence of interaction. These findings highlight that eliminating either risk factor alone is insufficient—maximal cancer prevention requires tackling both behaviors in parallel.

Sex- and menopause-specific associations of protein intake with epigenetic aging: J-MICC Study SAGA

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Background : DNA methylation–based epigenetic clocks are recognized as biomarkers of biological aging. Diet is a modifiable factor, and protein intake, while crucial for maintaining muscle mass, may also promote aging by activating IGF-1/mTOR pathways. However, evidence on the link between protein intake and epigenetic age acceleration (EAA) is limited and inconsistent, possibly due to biological differences such as sex and menopausal status.

Objective : To examine the association between protein intake (g/kg/day) and EAA using PhenoAge and GrimAge Version 1 (GrimAge V1), stratified by sex and menopausal status in a Japanese cohort.

Methods : We analyzed data from 866 participants in the J-MICC Study SAGA (475 men, 80 premenopausal women, and 311 postmenopausal women). Energy intake and protein intake were assessed via a 46-item food frequency questionnaire and normalized by body weight. EAA was calculated as the residual from regressing DNA methylation age on chronological age. Associations were evaluated using restricted cubic spline models, adjusting for age, BMI, education, smoking, alcohol consumption, physical activity, total energy intake, carbohydrate and fat intake, and array type.

Results : Premenopausal women had lower BMI and energy intake. Smoking and alcohol consumption use were more common in men. EAA values were higher in men and lower in women, especially postmenopausal women (GrimAge V1: 2.1 ± 5.0 vs. -3.0 ± 4.2; $p < 0.001$). In postmenopausal women, protein intake was linearly and inversely associated with EAA in both PhenoAge and GrimAge V1 clocks. Premenopausal women and men showed no statistically significant associations.

Conclusions : The association between protein intake and EAA differs by sex and menopausal status. These findings highlight the importance of hormone-sensitive dietary strategies for promoting healthy aging.