The association of estimated dietary Neu5Gc intake with cognitive impairment

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Introduction : Neu5Gc (GC), a major sialic acid, is synthesized from Neu5Ac (AC) by CMAH, an enzyme present in most mammals. Because of almost no CMAH expression in the brain, GC is not synthesized there in most mammals. AC, however, is abundant in the brain and plays an important role in memory formation through sialidase activity. Intruding of GC into the brain can inhibit this activity. Humans lost CMAH activity during evolution and therefore cannot synthesize GC endogenously. Instead, GC is obtained from dietary sources such as red meat and fish roe. This study examines the association between cognitive impairment and dietary intake of GC.

Methods : Subjects in the study were 206 participants (Female: 34.5%) from the 1st follow-up of the cohort study (J-MICC study for Kyoto field) with three-day food record and completed data for current analysis. After the food items and their quantity were extracted from the records, three-day GC intake was estimated based on previous studies. Cognitive impairment was defined by scores of the Mini Mental State Examination <28. The association between cognitive impairment and estimated dietary GC intake was assessed by logistic regression model adjusted for sex, age, and BMI. Odds ratio for a doubling in GC intake was obtained using $\log_2$-transformed value.

Results : Mean age of subjects was 75.0±5.8. Among the extracted 864 food items, 62 items of red meat and fish roe contain GC. Median of the estimated GC was 9,585μg (IQR: 4,784-17,275). Cognitive impairment was observed in 55 participants (26.7%). Higher GC intake was significantly associated with cognitive impairment (adjusted OR=1.34, p=0.022).

Discussion : Daily intake of GC-containing foods may lead to persistent GC in the body, potentially increasing the risk of cognitive impairment independent of age. As a future direction, we plan to assess AC intake as well, since AC may support cognitive function and counteract the effects of GC.

Impact of the Choice of Primary Time Scale on the Estimated Effect of Smoking in Survival Analysis

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In epidemiological studies and clinical trials, age is often included in survival models as a confounder when estimating the effects of exposures or treatments. Traditionally, survival analyses have used time since study entry as the primary time scale. However, when age strongly influences the survival distribution, estimates of the effects of other factors may be biased if age is not properly accounted for. Using attained age as the primary time scale in Cox proportional hazards models has been shown to remove potential bias due to age, although the effect of age itself cannot then be directly estimated. This study aimed to examine the validity of using attained age as the primary time scale in survival analysis. We compared estimates of the smoking effect between models using time since entry and those using attained age as the primary time scale.We analyzed data from the JMS Cohort Study, which enrolled 12,490 residents attending routine health checkups between 1992 and 1995 to investigate cardiovascular and cerebrovascular risk factors in Japan, with long-term follow-up. Cox proportional hazards models were applied with either time since entry or attained age as the primary time scale. Outcomes were all-cause mortality, stroke incidence, and myocardial infarction incidence. For all-cause mortality, stroke, and myocardial infarction, the estimated hazard ratios for smoking (current vs. never, and past vs. never) showed little difference between models using time since entry and those using attained age as the primary time scale. Similar results were observed even when total cholesterol, a factor correlated with age, was additionally considered in the models. In this cohort study, the choice of primary time scale did not show substantial impact on smoking estimates for mortality, stroke, or myocardial infarction, even after accounting for total cholesterol. Further work may clarify age-dependent effects.

Association Between Blood Pressure and Food/Nutrient Intake Among Children in Aomori Prefecture

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Background : Childhood obesity is recognized as a health issue in Aomori Prefecture. Given the strong association between hypertension and obesity, understanding the blood pressure status of children in Aomori Prefecture is significant for developing obesity prevention strategies. Therefore, this study examined the relationship between blood pressure and food/nutrient intake among elementary and junior high school students in Aomori Prefecture, aiming to provide insights for lifestyle disease prevention measures starting in childhood.

Method : The participants were fourth and fifth graders in elementary school and first and second graders in junior high school in Aomori Prefecture. Height, weight, and blood pressure measurements were conducted at each school. We assessed the relationship between systolic blood pressure, diastolic blood pressure, and the intake of each food item and nutrient using Pearson's correlation coefficient. Furthermore, we performed multiple regression analysis for systolic blood pressure and diastolic blood pressure. This study was conducted with the approval of the Ethics Committee.

Results : The correlation between systolic blood pressure and obesity level was r=0.33–0.35 for males and r=0.25–0.3 for females. For diastolic blood pressure and obesity level, the correlation was r=0.12–0.13 for males and r=0.12 for females. Multiple regression analysis revealed associations with canned tuna for boys and pork/beef, tofu/fried tofu for girls, but no nutrients were associated.

Conclusion : This study is a cross-sectional survey and has limitations inherent to the self-administered dietary history method. It is difficult to say that it accurately reflects actual dietary patterns in daily life, and foods or nutrients associated with blood pressure values could not be identified. Further analysis, including lifestyle habits, is suggested, highlighting the need to advance lifestyle disease prevention measures, including obesity prevention.

Traditional Mochi-tsuki and Health and Well-being Implications: A Cross-Sectional Study in Takayama

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Background : Traditional cultural practices can foster community cohesion and individual well-being. Mochi-tsuki (rice cake pounding), a Japanese New Year ritual with agrarian roots, persists in rural regions such as Takayama City, Gifu. This study examines the association between annual participation in mochi-tsuki and indicators of health, well-being, and social connectedness.

Methods : A cross-sectional survey was conducted as part of the 2024 "Takayama City Genki Project." A total of 899 residents completed questionnaires on demographics, household structure, physical and mental health, social ties, cultural engagement, and perceived life meaning. Participants were classified into two groups: those who participated in mochi-tsuki every year and those who did so rarely or never. Statistical analyses included chi-square tests, unpaired t-tests, logistic regression for loneliness (a dichotomous variable from the Three-Item UCLA Loneliness Scale), and linear regression for happiness (a continuous variable from the Interdependent Happiness Scale; IHS).

Results : Only 11% reported annual mochi-tsuki participation. Compared to others, they were more likely to work in agriculture, forestry, or fisheries, live in multigenerational households, and report higher happiness (Coefficient = 1.51, 95% CI: 0.18–2.84). They also showed greater interest in local festivals and a stronger personal connection to regional traditions. Moreover, they had lower odds of loneliness (OR = 0.42, 95% CI: 0.23–0.79). No clear associations were found in BMI or physiological health markers.

Discussion : Engagement in mochi-tsuki may be linked with enhanced social and psychological well-being. The present findings suggest that traditional rituals could strengthen community ties and alleviate loneliness. While these results highlight potential public health value in cultural continuity, further longitudinal research is needed to confirm and extend these insights.

Exploratory Analysis of Participation in “Kayoi-no-ba” and Health Outcomes in Older Adults

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In Japan, “Kayoi-no-ba,” a community salon for health promotion and social interaction, has been implemented, but evidence on long-term effects remains limited. This study examined the impact of participation in Kayoi-no-ba on health indicators among older residents in Town A, where the older adult population was about 3,500 in 2000. We linked data from the 2020 and 2024 Community Needs Surveys with rosters of Kayoi-no-ba participants. After excluding those with missing data, non-independent ADL, or long-term care certification, respondents were matched 1:1 using propensity scores for sex, age, baseline care-risk score, and social participation. The final analytic sample comprised 130 individuals (65 participants and 65 non-participants). Group differences were tested primarily at the 5% significance level; with a limited sample size, results with $p<0.10$ were noted as exploratory. At the 5% level, no statistically significant differences were detected for key health outcomes. Nevertheless, several outcomes showed trends favoring participants: functional decline (16.9% vs. 26.2%, $p=0.07$), forgetfulness (49.2% vs. 61.5%, $p=0.07$), and poor self-rated health (12.3% vs. 27.7%, $p=0.08$). Social participation was consistently higher among participants—hobbies ($p<0.001$), sports, learning activities, senior club membership, and volunteer work ($p<0.05$). Although findings did not reach 5% significance under propensity score matching, analyses in other municipalities and alternative methods have shown significant associations. Outcomes may vary by local context and analytic strategy. Evaluation should proceed cautiously and requires long-term, multi-site studies using multiple approaches. These findings should be regarded as preliminary and hypothesis-generating.