# Health Changes and Present Bias During the Pandemic: Longitudinal Study of Older Japanese Adults

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**Background** : The global pandemic has greatly impacted people's lifestyles and health behaviors. However, people respond differently to environmental changes. While previous studies have focused on socioeconomic status and psychological stress as explanatory factors, the influence of cognitive and decision-making tendencies (for example, present bias is the tendency to prioritize immediate rewards over future benefits) on health behavior changes remains underexplored.

**Objective** : This study aimed to examine changes in health behaviors before and after the onset of the pandemic and to explore the role of present bias in explaining individual differences in these changes.

**Methods** : We used data from the Japan Gerontological Evaluation Study (JAGES), a large-scale cohort survey. The study population consisted of community-dwelling adults aged 65 and older who were not certified as needing long-term care. We analyzed data from individuals who responded in both 2019 (pre-pandemic) and 2022 (post-pandemic). Outcome variables included post-pandemic mental health (measured using the Geriatric Depression Scale, GDS-15). The key explanatory variable was present bias, which was assessed using six intertemporal choice questions (e.g., "Would you prefer ¥20,000 now or ¥25,000 in one month?"). Covariates included gender, age, current medical treatment status, education, income, and marital status, among others.

**Results** : Regression analyses that controlled for baseline depressive symptoms showed that the main effect of present bias was not statistically significant ($\beta$ = -0.017, 95% confidence interval [CI]: -0.463 to 0.429). However, an interaction analysis revealed a gender difference; present bias was significantly associated with increased depressive symptoms among women ($\beta$ = 0.379, 95% CI: 0.052 to 0.706).

**Conclusions** : These findings support the development and evaluation of personalized mental health programs that address these biases in a gender-specific way.

# Socioeconomic Status and Motor Coordination Difficulties in Children: Japan Birth Cohort Consortium

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**Background** : Developmental coordination disorder (DCD) is linked to adverse academic, social, and mental health outcomes. Socioeconomic status (SES) has been suggested as a risk factor, but evidence remains inconsistent. This study examined the association between prenatal SES and children's motor coordination development in two large-scale Japanese birth cohorts.

**Methods** : We analysed data from 4,236 children participating in the Hokkaido Study and the Hamamatsu Birth Cohort (HBC) Study, both members of the Japan Birth Cohort Consortium (JBiCC). Motor coordination was assessed using the Japanese version of the Developmental Coordination Disorder Questionnaire (DCDQ-J), administered at ages 5–6 (Hokkaido) and 9 years (HBC). SES was measured by household income (<3 million JPY vs. ≥3 million) and maternal education (≤12 vs. ≥13 years). Multivariable linear regression was conducted within each cohort, followed by an individual participant data (IPD) meta-analysis adjusting for maternal age, smoking during pregnancy, marital status, child's sex, and gestational age.

**Results** : In the Hokkaido Study, lower household income was significantly associated with lower total DCDQ-J scores ($\beta$ =1.50, 95% CI: 0.60–2.39, p<0.01). Subscale analyses indicated that household income was associations with Fine Motor/Handwriting and General Coordination. Maternal education showed weaker or inconsistent associations. In contrast, no significant SES associations were observed in the HBC Study. In the pooled IPD analysis, lower household income remained significantly associated with poorer motor coordination ($\beta$ =1.44, 95% CI: 0.57–2.30, p<0.01), particularly in Fine Motor/Handwriting and General Coordination domains.

**Conclusions** : Prenatal economic disadvantage may contribute to disparities in children's motor coordination development. Regional differences in SES distribution and timing of outcome assessment may partly explain inconsistencies across cohorts.

# Bias in vaccination coverage from incomplete in-migrant records in Japan: the VENUS Study

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**Background :** In Japan, vaccination records are not centrally managed. Consequently, the vaccination status of in-migrants from other municipalities can be unknown. This limitation may affect the planning and evaluation of immunization programs and pose public health risks.

**Objective :** To evaluate how in-migrants without vaccination records affect the reliability of vaccination coverage estimates.

**Methods :** We analyzed data from one municipality (FY2018–2021) in the VENUS Study database, which includes anonymized resident registry and vaccination records. The study population was children born in FY2018. Target vaccines were Bacillus Calmette–Guérin (BCG) and hepatitis B. After identifying residents monthly, we calculated monthly coverage by birth month cohort and then averaged them by month age. Coverage was calculated by two methods: (a) treating in-migrants who had no vaccination records as unvaccinated and (b) correcting their status based on vaccination proportion in the continuous residents (i.e., Coverage = (number of vaccinated identified by records + number of in-migrants without records × vaccination proportion in the continuous residents) ÷ total number of residents × 100).

**Results :** Treating all in-migrants without vaccination records as unvaccinated led to declining coverage after the routine vaccination period for BCG and the third hepatitis B dose, and during the period for the first and second hepatitis B doses. One year after the end of the period, coverage was lower than that with correction: by 9.2% for BCG and by 10.5%, 10.1%, and 8.3% for the first, second, and third hepatitis B doses, respectively.

**Discussion :** Vaccines with longer schedules may be more affected by in-migrants. Municipalities with higher in-migrant proportions may have larger bias in coverage.

**Conclusion :** Active consideration should be given to the implementation of centralized vaccination record systems and to the use of corrected indicators.

# Drivers of holiday–circulatory mortality association: multi-country study

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**Background** : The risk of circulatory mortality associated with holidays has been studied for decades. However, the associations have varied across countries and regions, and there has been limited effort to comprehensively examine these patterns while considering contextual factors. In this study, we examined the role of the country-level indicators on holiday-related circulatory mortality risk using the multi-county dataset.

**Method** : We performed a two-stage analysis. In the first stage, we estimated association between circulatory mortality and holidays for each country, using a time-series regression with quasi-Poisson distribution. We focused on most commonly celebrated holiday season, defining it as December 25 to January 7, including Christmas to New Year. In the second stage, we conducted meta-regression models to evaluate the effect modification of country-level indicators obtained from the OECD database. We also derived the best linear unbiased predictor for each country.

**Result** : Without adjustment for country-level indicators, relative risks of circulatory mortality associated with holidays ranged from 0.973 (95% CI: 0.930-1,018) in China to 1.112 (95% CI: 1.075-1.149) in Ireland. With indicator variables from 516 cities across 21 countries, we found negative associations of holiday-related circulatory mortality risk with the number of surgical physicians, hospital average length of stay, public healthcare coverage, and GDP per capita. In contrast, indicators including perceived health status, waiting times for cardiac surgeries, and employment rate showed positive associations with this risk.

**Conclusion** : We found that country-specific factors, including healthcare capacity, socioeconomic context, and population health, modified holiday-related circulatory mortality in diverse manners. These findings can support the development of effective interventions that account for specific national and regional contexts.

# Absorbed radiation doses and childhood thyroid cancer: The Fukushima Health Management Survey

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**Background :** Childhood thyroid cancers identified after the Chornobyl nuclear accident raised concerns about long-term radiation effects following the Fukushima Daiichi Nuclear Power Plant accident in Japan. We examined whether municipality-level absorbed thyroid dose was associated with thyroid cancer detected by ultrasonography among individuals aged 0–18 years at the time of the accident.

**Methods :** The study population comprised approximately 300,000 residents aged 0–18 years who had no thyroid cancer at the baseline examination (fiscal years 2011–2013). Participants underwent follow-up ultrasound examinations approximately every two years (second through fifth rounds) through 2024. Fifty-nine municipalities in Fukushima Prefecture were assigned to quartiles of estimated absorbed thyroid dose based on the 2020 report of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR). Sex- and age-adjusted odds ratios (ORs) for detected thyroid cancer were estimated by logistic regression, using the lowest-dose quartile as the reference.

**Results :** During follow-up, 207 thyroid cancers were detected. Detection rates per 100,000 person-years across increasing dose quartiles were 12.8, 15.4, 12.0, and 12.0. Adjusted ORs did not exhibit a monotonic dose–response pattern; estimates for higher-dose quartiles were close to unity relative to the lowest quartile.

**Conclusion :** In this large, prefecture-wide cohort, municipality-level absorbed thyroid dose (UNSCEAR 2020) was not associated with the detection of thyroid cancer 4–13 years after the Fukushima Daiichi Nuclear Power Plant accident. Continued surveillance is warranted to clarify potential long-term effects of low-dose radiation exposure.