Association of El Niño-Southern Oscillation and monsoon phases on diarrhea mortality in Malaysia

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Background : The local climate in Malaysia is influenced by the El Niño-Southern Oscillation (ENSO) and seasonal monsoon. While both have been linked to increased risk of diarrheal mortality through their influence on local weather change, their impact in Malaysia remains unknown. This study aims to investigate the influence of ENSO and monsoon on diarrhea mortality in Malaysia.

Methods : We conducted a time series analysis using monthly diarrhea death cases obtained from the Department of Statistics, Malaysia, and Oceanic Nino Index (ONI) from the U.S. National Oceanic and Atmospheric Administration, from 2000 to 2019. We fitted a quasi-Poisson model with a 12-month distributed lag to estimate the ENSO-diarrhea mortality association and assessed potential effect modification by monsoon phases: Northeast (NE) monsoon (Nov-Mar), Southwest (SW) monsoon (May-Sep) and the transition period (baseline; Apr and Oct). El Niño effect was interpreted at ONI 1.5°C in reference to 0.5°C, whereas for La Niña was at ONI -1.5°C in reference to -0.5°C.

Results : The overall cumulative association between ENSO and diarrhea mortality showed increased risk with higher ONI values. The association was lower (Relative Risk [RR]: 0.73; 95% CI: 0.57-0.94) during La Niña but not statistically significant during El Niño (RR: 1.08; 95% CI: 0.96-1.21). When monsoon phases were considered, the risk curve during the NE monsoon remained similar, with RRs of 1.26 (95% CI: 0.89-1.77) and 0.71 (95% CI: 0.39-1.28) during El Niño and La Niña, respectively. In contrast, during the SW monsoon, the risk pattern associated with El Niño showed an inverted-U shape across the ONI range. Meanwhile, a significantly decreased risk was observed during La Niña (RR: 0.46; 95% CI: 0.23-0.92).

Conclusion : The results indicate a tendency toward increased diarrheal mortality with rising ONI, suggesting a possible role of ENSO and monsoon phases in shaping health risks, warranting further investigation.

Modelling the transmission of human papillomavirus in the presence of vaccination in Japan

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Background : Human papillomavirus (HPV) is a sexually transmitted pathogen, causing a persistent infection with high-risk genotypes and inducing cervical cancer. Since the mid-1990s, Japan witnessed a notable increase in cervical cancer incidence, particularly among women aged from 15-39 years. Due to seven-year suspension of recommending HPV vaccination, the vaccination coverage remained extremely low among those who spent adolescence in the moratorium period, allowing the epidemic to grow and cervical cancer to steadily occur.

Objective : The present study aimed to investigate the transmission dynamics of high-risk HPV infections and cervical cancer in Japan, and to predict the epidemiological impact of vaccination.

Method : We developed a compartmental deterministic model to describe the transmission dynamics and natural history of HPV infection and carcinogenesis. The population was stratified by age and sexual activity level. Model was quantified with reference to demographic dynamics and behavioral evidence associated with sexual contact. Age- and genotype-specific cervical cancer incidence under different vaccination scenarios was explored. Investigating counterfactual scenarios, we estimated the potential impact of vaccination on the epidemiology.

Results : Model predictions from 1975 to 2020 were consistent with reported cancer incidence across age groups. We then projected outcomes from 2020 to 2120 under various vaccination scenarios. If the coverage of the 9-valent HPV vaccine reached 90% among adolescent girls prior to sexual debut, cervical cancer elimination could be achieved by 2064 (provisional). Implementing catch-up vaccination program could accelerate the timeline.

Discussion : Sustaining high vaccination coverage is critical to substantially reduce, and ultimately eliminate cervical cancer in Japan.

Association Between Sleep Duration and Frailty in Older Japanese Adults: The Aidai Cohort Study

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Background : Frailty is a major public health concern among older adults, and sleep duration has been associated with several health outcomes; however, its relationship with frailty remains unclear. This study examined the association between sleep duration and frailty and explored sex-specific differences.

Methods : We used baseline data from the Aidai Cohort Study. Among 3,962 participants aged ≥65 years, 3,362 with complete data on study variables were analyzed (1,464 men and 1,898 women). Frailty was assessed using a 20-item subset of the Kihon Checklist (KCL), a validated screening tool widely used in Japan. Frailty was defined as a score of 7 or more out of 20 items. Sleep duration was categorized as <5, 5–<7, 7–<9, and ≥9 hours. Multiple logistic regression was used to estimate adjusted odds ratios (ORs) and 95% confidence intervals (CIs), adjusting for age, sex, smoking, alcohol consumption, physical activity, subjective health, depression, polypharmacy, cardiovascular disease, hypertension, hypercholesterolemia, diabetes, chronic kidney disease, insomnia medication use, income, and education. Analyses were stratified by sex, and interaction was tested. A sensitivity analysis using multiple imputation for missing data was also performed.

Results : Frailty prevalence was 7.7%. Compared with 7–<9 hours, adjusted ORs (95% CIs) were 2.19 (1.25–3.74) for <5 hours, 1.56 (1.15–2.13) for 5–<7 hours, and 3.65 (1.94–6.57) for ≥9 hours. In men, no significant associations were observed. Among women, ORs were 3.16 (1.56–6.24), 2.00 (1.32–3.07), and 8.52 (3.15–21.36), respectively. Interaction between long sleep and sex was significant (P=0.024). Sensitivity analysis produced similar findings.

Conclusions : Both short and long sleep durations were associated with higher frailty prevalence, particularly among women. Sleep duration may be an important sex-specific factor in frailty prevention.

Care needs and caregiving time among CSHCN in Japanese out-of-home care: a cross-sectional study

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Background : Children with special health care needs (CSHCN) in out-of-home care (OOHC) require substantial daily support, yet quantitative evidence on caregiving time and its correlates in early childhood OOHC is limited.

Objective : To quantify caregiving time by domain and total among CSHCN versus non-CSHCN in OOHC, and to identify factors associated with a decrease in total caregiving time over six months among CSHCN.

Methods : We conducted a cross-sectional survey in Japan (N=213). CSHCN were identified using the CSHCN Screener. Weekly hours were recorded for routine care and health/coordination tasks (e.g., medication, hospital visits, rehabilitation). Group differences were examined using χ^2 and Mann–Whitney U tests; total time was further assessed by Quade's non-parametric ANCOVA (adjusted for sex and age). Among CSHCN residing ≥6 months (n=73), we examined predictors of decrease in total time using modified Poisson regression with robust variance. Covariates included child sex, age (months), race, diagnosis, condition changes, and baseline total care time.

Results : CSHCN comprised 39.9% (85/213). Median total weekly time was 21.5 h (IQR 18.8–26.0) in CSHCN and 16.0 h (12.1–22.0) in non-CSHCN ($p<0.001$). CSHCN had higher values in all health/coordination items. In the regression model, older age predicted a lower probability of decrease (RR 0.94/month, 95% CI 0.89–0.98), while higher baseline care time predicted a higher probability (RR 1.07/hour, 95% CI 1.01–1.14); other covariates were not significant.

Conclusion : OOHC includes many CSHCN with high caregiving demands. Modified Poisson regression enabled interpretable risk estimates. Results support (i) function-based eligibility criteria, (ii) integration of brief CSHCN screeners into monitoring, and (iii) prospective cohort studies and registry development to standardize data and support needs-based care planning.

Weaker Friendship Ties and High HbA1c in Women: A Cross-Sectional Study in Kyoto

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Background : Social isolation has been associated with diabetes. However, it takes various forms, making preventive strategies difficult without considering them.

Objective : To examine the association between HbA1c levels and social isolation, stratified by sex.

Methods : We analyzed data from 957 community-dwelling adults (668 women) with complete data. HbA1c levels ≥6.5% were defined as "high." Logistic regression was performed using the Lubben Social Network Scale-6 (LSNS-6) score, adjusting for age, body mass index (BMI), antidiabetic medication use, dietary habits, and physical activity. Odds ratios (OR) were estimated per one-point decrease in LSNS-6 score. In the final model, we divided LSNS-6 into subscales for family and friend ties to assess their associations.

Results : The mean age was 64.1 years for women and 67.5 years for men. The mean LSNS-6 total score was 14.5 for women and 12.7 for men; friend subscale scores were 6.8 for women and 5.6 for men, and family subscale scores were 7.8 for women and 7.1 for men. In women, lower LSNS-6 scores were significantly associated with high HbA1c levels after adjusting for age and BMI (OR 1.08, 95% CI:1.02–1.15). This association remained significant after adjusting for antidiabetic medication use, dietary habits, and physical activity (OR 1.12, 95% CI: 1.03–1.22). When analyzed separately, the friend subscale was significantly associated with high HbA1c levels in all adjusted models (OR 1.20, 95% CI: 1.06–1.38), whereas the family subscale was not (OR 1.10, 95% CI: 0.96–1.28). In men, no significant associations between social isolation and high HbA1c were found.

Conclusion : The association between social isolation and HbA1c levels differed by sex, with weaker friendship ties significantly associated with high HbA1c levels in women. Friendships may play an important role in blood glucose levels. Further research with additional covariates and diabetes severity is warranted.