Exploring wealth-related inequalities in measles immunisation in Lao PDR, Thailand, and Viet Nam

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Background : Recent surges of measles in Southeast Asia highlight the importance of equitable immunisation coverage. However, inequalities in access to measles vaccines persist in the region, influenced by various social determinants. This study aims to explore wealth-related inequalities in receiving the first dose of measles vaccine (MCV1) among children aged 9-23 months.

Methods : We utilised the most recent Multiple Indicators Cluster Survey (MICS) of Lao PDR (2023), Thailand (2022), and Viet Nam (2020-21). We used multivariable regression models to identify predictors of receiving MCV1. We analysed wealth-related inequalities in receiving MCV1 using concentration index (CIX) and concentration curve (CCX).

Results : Our study included the following samples of children: Lao PDR=1,393; Thailand=1,646, and Viet Nam=752, of which 71.21%, 85.54%, and 74.34% were vaccinated with MCV1, respectively. We found that child's age is associated with receiving MCV1 in all countries, while parity was correlated with MCV1 inoculation in Lao PDR and Thailand. Additionally, maternal education and wealth quintiles were predictors of receiving MCV1 in Thailand and Lao PDR, respectively. Our analyses of CIX and CCX showed that wealth-related inequalities in the receipt of MCV1 was significant in Lao PDR (CIX: 0.052, 95% CI: 0.031 – 0.074, $p<0.0001$) with CCX appearing below the Line of Equality (LE); while in Thailand (CIX: 0.001, 95% CI: -0.20 – 0.022, $p<0.952$) and Viet Nam (CIX: 0.018, 95% CI: -0.016 – 0.052, $p<0.306$), wealth inequalities in receiving MCV1 appear to be insignificant with both CCX overlapping with LE.

Conclusion : Wealth inequalities significantly influence measles immunisation coverage in countries with relatively suboptimal primary healthcare system. Strengthening of UHC, which plays a critical role in reducing health disparities between rich and poor, is essential to drive equitable access to immunisation and mitigate the threats of future outbreaks.

Epidemiological study of primary biliary cirrhosis in Japan

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Objective : Primary biliary cholangitis (PBC) is a chronic, progressive cholestatic liver disease, and is designated as an intractable disease, with the majority of cases progressing slowly. The prevalence and incidence of PBC are increasing worldwide, including in Japan, but few nationwide epidemiological studies have been conducted in Japan. This study aims to clarify the characteristics of PBC patients in Japan.

Method : We extracted clinical data from Medical Certificates of Designated Intractable Diseases provided when PBC patients applied to receive public financial aid between 2015 and 2019. Demographic data, clinical symptoms, and laboratory data of newly registered patients were analyzed.

Results : Over a five-year period, 7,021 patients (1,321 men and 5,700 women) were newly registered. Patient characteristics included a median age at onset of 61 years (interquartile range 51-69 years), and a median duration since onset was 13 months (interquartile range 3-36 months). Familial occurrence was observed in 6% of cases. Symptomatic PBC was present in 74%. Clinical symptoms included skin pruritus in 65% of patients, esophagogastric varices in 13%, and jaundice in 10%. Laboratory data showed decreased albumin in 54% of patients and elevated ALT, AST, γ-GTP, and ALP in over 60% of patients.

Conclusion : The number of newly registered PBC patients over a 5-year period was 7,021, with a male-to-female ratio of 1:4.3, which was similar to a previous study using same clinical data in 2004.

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Specific Comorbidities and Polypharmacy in Cancer: 6NC-EHRs Analysis

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Background : With the aging of the cancer population, comorbidities and polypharmacy have become critical concerns. Although comorbidities may contribute to polypharmacy, the specific types and strengths of association remain unclear. We investigated these associations using the 6NC-EHRs, an integrated electronic health record database from the 6 National Centers for Advanced and Specialized Medicine in Japan.

Methods : We conducted a cross-sectional analysis of 6NC-EHRs (Apr 2015–Mar 2018). Patients aged ≥40 years with cancer and ≥1 prescription were included. 13 chronic comorbidities were identified from ICD-10 codes before or at diagnosis. Polypharmacy was defined as ≥6 concurrent regular medications. Associations between comorbidities and polypharmacy were estimated by multivariable logistic regression adjusted for age, sex, comorbidity count, cancer type, institution, and anticancer pharmacotherapy. Comorbidities with significant associations were simultaneously included to assess independence.

Results : Among 5,588 patients, 41.1% were women, median age 69 years (IQR 61–76). Common comorbidities were gastrointestinal (70.3%), hypertension (37.3%), and cardiovascular diseases (30.1%). Median medication count was 3 (IQR 1–5), and 20.3% met polypharmacy. Polypharmacy was associated with osteoporosis (OR 1.61, 95% CI 1.20–2.15), gastrointestinal disorders (OR 1.33, 95% CI 1.08–1.63), neurological disorders (OR 1.75, 95% CI 1.21–2.53), and psychiatric disorders (OR 1.66, 95% CI 1.38–1.99), independent of covariates. Polypharmacy prevalence increased stepwise with the number of the 4 independently associated comorbidities, exceeding 50% with ≥3 (p for trend <0.001).

Conclusions : Specific comorbidities were independently associated with polypharmacy. Recognizing these conditions may support patient stratification and targeted reviews to enhance medication safety in cancer care.

Machine learning for classifying multiple type of mental disorders: a cross-sectional study

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Objective : In epidemiological research, using machine learning to solve binary classification problem—determining the presence or absence of a single disease – is relatively straightforward. However, in real-world scenarios, multi-class classification problem such as determining the presence or absence of multiple diseases simultaneously, are often experienced and more complex. Distinguishing between different diseases that present with similar symptoms is particularly challenging. This study aimed to construct a classification model capable of identifying cases with multiple types of mental disorders.

Method : We conducted two large-scale online surveys of the general Japanese population in 2022 and 2024. In 2022, data were collected from 236 subjects with schizophrenia and 1,776 subjects without a mental disorder; in 2024, data were collected from 250 subjects with bipolar. Self-reported diagnoses of schizophrenia or bipolar were treated as response variables, while demographic characteristics as well as physical, psychiatric, and social comorbidities were treated as feature variables. The dataset was split into training (70%) and test (30%) sets. A ternary classification model (schizophrenia, bipolar, or no mental disorder) was constructed using a 5-hidden-layer artificial neural network. Model performance was evaluated using F1 score, positive predictive value (PPV) for each class, and macro F1 score for overall performance.

Results : The performance indices of were as follows: subjects without mental disorder–PPV: 0.88, F1 score: 0.88; subjects with schizophrenia–PPV: 0.80, F1 score: 0.46; subjects with bipolar–PPV: 0.32, F1 score: 0.40. The overall macro F1 score was 0.58.

Conclusion : The ternary classification model achieved a macro F1 score of 0.58, which exceeds the random baseline of 0.33 for a three-class problem. The results suggest that the model possesses certain classification ability, although several limitations and challenges remain to be addressed.

Health Disparities in Korean Society: The Role of Social Capital and Global Citizenship Education

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Widening income inequality in South Korea has produced sharp health disparities, with lower-income groups facing shorter life expectancy, higher chronic disease rates, limited healthcare access, and greater psychosocial stress. These inequities can be explained through several income inequality–health mechanisms and are compounded by deficits in social capital, further deepening health disparities.

This conceptual study employs a theoretical synthesis of three domains: (1) social epidemiology, to explain structural mechanisms by which income inequality shapes health; (2) social capital theory, which differentiates bonding and bridging networks and analyzes their implications for social equity; and (3) the global citizenship education (GCE) framework articulated by Daisaku Ikeda, a Buddhist philosopher, educator, and third president of Soka Gakkai International (SGI). Drawing on secondary sources and illustrative case examples, the analysis integrates empirical findings with Ikeda's framework, which identifies wisdom, courage, and compassion as essential qualities of GCE. It then explores how these values can contribute to addressing structural health disparities by encouraging solidarity, moral responsibility, and social inclusion at the community level. The study positions GCE not as an abstract philosophy, but as a practical tool for building social capital and linking individual transformation to systemic change, including the structural determinants of health. Public health scholar Ichiro Kawachi has also emphasized SGI's unique role in fostering bridging social capital across diverse racial and socioeconomic lines, further validating its relevance to health equity.

Future research should design GCE-based curricula for schools, communities, and local governments, pilot them to assess impacts, and evaluate outcomes such as social trust, community ties, health behaviors, and care access, informing policies to reduce socioeconomic and health inequalities.