Cardiovascular mortality risk of hyperuricemia and chronic kidney disease in a general population

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Background : The relationship between hyperuricemia (HU) and cardiovascular disease (CVD) remains controversial, whereas HU is definitively associated with chronic kidney disease (CKD), a well-established risk factor for CVD. This study aimed to assess the effects of HU and CKD on long-term CVD mortality in a nationwide Japanese cohort.

Methods : This study prospectively followed Japanese adults aged 30 years or older who were enrolled in the NIPPON DATA90 cohort in 1990 for a period of 30 years. HU was defined as a serum uric acid value of ≥7.0 mg/dL, and CKD as an estimated glomerular filtration rate (eGFR) of <60 mL/min/1.73m² or positive urine protein test. Participants were classified as neither (reference), HU alone, CKD alone, or both conditions. A multivariable Cox proportional-hazards model with log(time) interactions to address non-proportional hazards adjusted for HU-CKD interaction, age, sex, diabetes, hypertension, dyslipidemia, obesity, smoking, and alcohol intake estimated hazard ratios (HRs) for CVD mortality, with model discrimination evaluated using Harrell's C-index. Statistical analyses were conducted using R version 4.5.0.

Results : A total of 7336 participants (58.5% female; mean age 52.5±13.7 years) were analyzed, with a mean follow-up of 24.2±8.1 years and 807 recorded CVD deaths. At baseline, 86.6% of participants were neither, 4.9% HU alone, 7.1% CKD alone and 1.5% both conditions. Adjusted HRs (95% confidence interval) were non-significant for HU [1.14 (0.81–1.60)], while significantly elevated for CKD [1.27 (1.03–1.58)] and both conditions [2.18 (1.49–3.17)]. The model also demonstrated excellent discrimination with a C-index of 0.865±0.006, although interaction between HU and CKD was not significant.

Conclusions : This 30-year cohort study indicated HU as amplifying CVD risk among individuals with CKD. These findings warrant further investigations of kidney dysfunction and high uric acid as determinants of CVD prognosis.

Preprint publication in epidemiology journals is not always clearly defined: An exploratory study

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Background : Preprint publication has been becoming increasingly common in the health sciences since the launch of medRxiv by Cold Spring Harbor Laboratory, Yale University, and BMJ. The adoption of preprints further accelerated following the COVID-19 pandemic. However, the current status of preprint publication in epidemiology journals remains unclear.

Methods : We conducted an exploratory study focusing on the Instructions for Authors of journals. We selected the top five journals in the Scopus highest percentile categorized under "Epidemiology" (a subfield of Medicine), and further narrowed down the targets to those that include "Epidemiology" in the journal title.

Results : Of the five journals included in this study—a) *Journal of Epidemiology and Community Health*, b) *Social Psychiatry and Psychiatric Epidemiology*, c) *International Journal of Epidemiology*, d) *Journal of Exposure Science and Environmental Epidemiology*, and e) *European Journal of Epidemiology*—only two (a and c) explicitly mentioned preprint publication in their Instructions for Authors, and both accepted it.

Conclusion : Our findings suggest that, even in so-called "top journals," preprint publication in epidemiology journals is not always clearly defined. Given its potential to influence individual behavior and policy making, the academic community needs to carefully reflect on its position.

Optimal Blood Pressure Cutoffs for Cardiovascular Disease Prevention in Patients with MASLD

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Given the increasing prevalence of metabolic dysfunction-associated steatotic liver disease (MASLD), this study aims to explore the optimal blood pressure (BP) targets for preventing CVD in patients with MASLD. Our cohort study used data from the Korean National Health Insurance Service. Participants were adults aged 40 or older diagnosed with MASLD in health examination conducted in 2012, identified by a Fatty Liver Index ≥60 and ≥1 cardiometabolic risk factor. The primary outcome was major adverse cardiovascular events (MACE): myocardial infarction, heart failure, ischemic stroke, or cardiovascular-related mortality. Systolic (SBP) and diastolic blood pressure (DBP) levels were measured during the health examination. We used Cox proportional hazard models to evaluate adjusted hazard ratio (aHR) and 95% confidence interval (CI) between BP categories (<120, 120-129, 130-139, 140-149, and ≥150mmHg for SBP; <70, 70-79, 80-89, 90-99, and ≥100mmHg for DBP) and MACE risk. The SBP 120–129 mmHg and DBP 70–79 mmHg categories were set as the reference groups. We also used restricted cubic splines (RCS) to examine non-linear dose-response relationships. Among 966,307 patients with median 10-year follow-up (median age 52), MACE occurred in 76,515 (7.9%). We found a significant dose-dependent relationship between SBP and MACE risk (aHR [95% CI]: 0.96 [0.94-0.99] for <120mmHg, 1.09 [1.07-1.11] for 130-139mmHg, 1.19 [1.17-1.22] for 140-149 mmHg, and 1.37 [1.34-1.41] for ≥ 150 mmHg), while the relationship between DBP and MACE risk exhibited a J-shaped association (aHR [95% CI]: 1.05 [1.02-1.08] for <70mmHg, 1.09 [1.07-1.11] for 80-89mmHg, 1.23 [1.20-1.26] for 90-99 mmHg, and 1.49 [1.45-1.54] for ≥ 100 mmHg). RCS analysis reproduced results similar to the main analysis. Our findings suggest that optimal blood pressure for cardiovascular health in MASLD patients might be below 130/80 mmHg, with caution to avoid excessively low diastolic pressure.

Prenatal Particulate Matter Exposure and Child Developmental and Behavioral Outcomes

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Recent epidemiological studies suggest that prenatal exposure to air pollution affects children's developmental and behavioral outcomes, but the evidence on the adverse effects of exposure to air pollution on child neurobehavioral development remains limited. We therefore examined the association prenatal particulate matter exposure and child developmental and behavioral outcomes using data from a nationwide population-based longitudinal survey in Japan, where participants were recruited in 2010 and are continuously followed. Suspended particulate matter (SPM) during the 9months before birth were obtained at municipality level and assigned to those participants born in the corresponding municipality. We analyzed data from singleton births with linked pollution data available (n = 29,340). We used responses to survey questions about behavioral development at 2.5 and 5.5 years, as well as behavioral problems at 8 years of age. We conducted multilevel logistic regression analysis, adjusting for individual and data-level confounders, and estimated adjusted odds ratios (ORs) with 95 % confidence intervals (CIs) following a one-interquartile-range increase in SPM. Prenatal exposure to SPM was positively associated with risk for delayed language development at 2.5 years of age (e.g., inability to say one's own name) with an OR of 1.07 (95%CI: 1.01–1.14). Prenatal exposure was also positively associated with risk for attention problems as well as with aggressive behaviors at 8 years of age: inability to wait one's turn during play (OR 1.04, 95%CI: 1.00–1.09); failure to pay attention when crossing a street (OR 1.05, 95%CI: 1.01–1.11); destroying toys and/or books (OR 1.05, 95%CI: 1.01–1.11); and hurting other people (OR 1.05, 95%CI: 1.00–1.09). Prenatal exposure to particulate matter was associated with unfavorable developmental and behavioral outcomes from early childhood through school age, highlighting the importance of air pollution control measures.

A longitudinal study of Childcare happiness and Social capital among parents raising children

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Background : Japan's total fertility rate was hit a record low of 1.15 in 2024. As child-rearing policies are strengthened, the basic direction of measures to combat the declining birthrate is to support individuals in their pursuit of happiness. In social epidemiology, social capital is considered to be one of the determinants of subjective well-being. However, it is difficult to say that there has been sufficient research into happiness focusing on parents raising children.

Objective : This study aims to clarify the changes over time in the impact of social capital on childcare happiness among parents.

Methods We conducted an online survey of parents raising children in November 2023 and November 2024. We conducted a logistic regression analysis, with childcare happiness as the dependent variable and social capital, "attachment to the community," and "ease of raising children" as explanatory variables adjusting for age, gender, marital status, and number of children.

Results : The first analysis collected data from 1,615 individuals, of whom 838 were able to be followed up and were included in this study. The mean age of the individuals was 39.65 ± 8.53 years. The factors that continued to influence childcare happiness in the second analysis were "ease of raising children" (OR: 1.14 in 2024) and "community attachment" (OR: 1.42 in 2024). Furthermore, all social capital factors were higher in the high childcare happiness group than in the low childcare happiness group, and higher in 2024 than in 2023, with significant interactions ($p<0.05$).

Discussion : It is possible that "ease of raising children" and "attachment to the community" have a positive impact on childcare happiness among parents raising infants and young children. It has been suggested that parents with higher levels of childcare happiness are likely to foster social capital alongside growing as a parent and their children's development.