Trends in Pancreatic Cancer Mortality in Japan from 1995 to 2023: a prefecture-level comparison

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Background : Pancreatic cancer is widely considered a malignancy with poor prognosis, characterised by difficulties in early detection and limited treatment options. While survival has improved for many other cancers, the 5-year survival rate for pancreatic cancer remains low, contributing to its substantial global burden. In Japan, demographic shifts, Westernised lifestyles, and disparities in healthcare access may influence geographic differences in pancreatic cancer mortality; however, long-term mortality trends at the prefectural level remain underexplored. We therefore aimed to descriptively examine the pancreatic cancer mortality trend in Japan, with the goal of identifying regional patterns and informing public health strategies.

Methods : We obtained mortality data from the Cancer Information Service of the National Cancer Center, Japan, and Vital Statistics of Japan from the Ministry of Health, Labour and Welfare. Pancreatic cancer deaths (ICD-10: C25) from 1995 to 2023 were analysed using age-standardised mortality rates (ASRs), stratified by gender and prefecture. Joinpoint regression models were applied to detect significant temporal changes in ASRs.

Results : The national ASR for pancreatic cancer increased from 6.2 in 1995 to 11.5 in 2023 for both genders combined (Annual Percent Change [APC]: 0.81%). Among men, ASR rose from 12.6 to 13.7 (APC: 0.43%), as well as for women from 7.0 to 9.4 (APC: 1.20). Okinawa showed the highest APCs across all groups (both genderds: 2.14; men: 1.64; women: 2.52). Joinpoint analysis indicated sustained increasing trends in most prefectures, while no prefecture showed a statistically significant decline.

Conclusion : Pancreatic cancer mortality has steadily increased in Japan over the past three decades, with notable regional and sex-specific differences. These findings highlight the need for targeted public health strategies and further investigation into risk factors to help reduce the growing burden of pancreatic cancer.

Dietary Acid Load and Mortality in Japanese Adults: The Japan Collaborative Cohort Study

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Introduction : Dietary acid load can impact glucose metabolism and ultimately mortality. Nevertheless, prospective data for Asian populations are still insufficient.

Methods : From the Japan Collaborative Cohort Study (baseline: 1988–1990), we excluded participants with missing dietary data, prior stroke, myocardial infarction or cancer, or extreme energy intake (± 3 SD), resulting in 58439 adults (23055 men; 35384 women). Deaths until 2009 were identified through national vital statistics records. A validated food frequency questionnaire yielded potential renal acid load (PRAL) and net endogenous acid production (NEAP), each of which was divided into quartiles. Using Cox proportional hazard models, we estimated the hazard ratios (HRs) and 95 % confidence intervals (CIs) of all-cause, cancer, and cardiovascular mortality across the PRAL and NEAP quartiles. We adjusted for age, survey area, body mass index, education, occupation, alcohol use, smoking status, exercise, walking, and history of kidney disease, liver disease, and diabetes. We also adjusted for intakes of energy, fat, carbohydrates, zinc, vitamins B1 and D, folate, β -carotene, n-3 polyunsaturated fatty acids, and dietary fiber. All nutrients were energy-adjusted using the residual method.

Results : At baseline, men exhibited a higher mean dietary acid load than women for both PRAL (4.5 vs 1.5) and NEAP (46.2 vs 42.7). During the follow-up period, 6286 deaths occurred in men and 5343 in women. In men, the highest versus lowest quartile of PRAL and NEAP showed no significant association with all-cause, cancer, or cardiovascular mortality. By contrast, women in the highest quartile were linked to a higher risk of all-cause (PRAL HR[95% CI]: 1.22[1.07-1.39]; NEAP: 1.18[1.04-1.33]) and cardiovascular mortality (PRAL: 1.38[1.09-1.73]; NEAP: 1.37[1.11-1.70]), but not cancer mortality.

Conclusion : In Japanese women, a high dietary acid load is linked to higher all-cause and cardiovascular mortality.

Alcohol, Tobacco, and Menstrual Health Trends in Japan's Adolescents: 2024 Nationwide School Survey

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Background : Adolescence is a critical period for establishing health risk behaviors such as alcohol and tobacco use managing reproductive health. Japan has seen a decline in underage drinking and smoking, yet electronic cigarettes and peer and family influences remain concerns. Menstrual health also affects well-being and school engagement. This study contributes to SDG 3.5 and 3.a on substance use prevention and tobacco control, and SDG 3.7 and 5.6 on reproductive health and gender equality, providing data from a high-income country.

Methods : A nationwide cross-sectional survey was conducted in 2024 among middle and high school students in Japan. Of 480 randomly selected schools, 84 participated (17.5%). A total of 37,677 students provided valid responses, covering 70.4% of enrolled students in participating schools. The anonymous survey was implemented using both mailed paper questionnaires and web-based forms on school devices. It included alcohol and tobacco use (including electronic and heated products), menstrual health, and psychosocial factors. This abstract reports raw observed prevalence without weighting.

Results : In total, 669 (1.7%) students reported drinking alcohol at least once in the past 30 days, while 298 (0.8%) reported smoking, including cigarettes, heated, and e-cigarettes, continuing a downward trend since 2017. Many students reported drinking or smoking with peers or being encouraged by friends, while family influences were also noted. Menstrual issues, such as irregular cycles and related absenteeism, were reported by around 40% of female students.

Conclusion : Adolescent drinking and smoking in Japan have reached low levels, yet emerging products such as heated and e-cigarettes and peer influences remain concerns. Menstrual health issues are common and may affect educational outcomes. Such data from high-income countries remain scarce and support international comparisons of adolescent health behaviors.

Association of TAS1R2 polymorphism and DNA methylation with T2DM among Japanese population

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Background : Taste receptor type 1 member 2 (TAS1R2) is a protein that is related to sweet taste sensitivity. Given that both *TAS1R2* polymorphism and DNA methylation (DNAm) were associated with carbohydrate intake, those factors may affect the onset of type 2 diabetes mellitus (T2DM). Therefore, we aimed to examine whether *TAS1R2* polymorphism and DNAm were associated with T2DM in the Japanese population.

Method : We targeted for 725 participants (320 men and 405 women) who took part in health check-ups in Yakumo town, Hokkaido, in either 2016 or 2022, and from whom leukocyte DNA was extracted. The history of T2DM was determined with a self-administered questionnaire. Single nucleotide polymorphism in *TAS1R2* (rs12033832, G>A) were genotyped using TaqMan SNP Genotyping Assays (GG: n=239 and GA/AA: n=486). *TAS1R2* DNAm levels (cg15743657) were measured by pyrosequencing method. All participants were categorized into tertiles based on *TAS1R2* DNAm levels: lowM (n=243), middleM (n=240), and highM (n=242). Adjusted odds ratios (OR) and 95% confidence intervals (CI) for T2DM were calculated using logistic regression analysis, adjusting for potential confounders.

Result : The prevalence of T2DM was varied by rs12033832 genotypes (GG: 11.3% and GA/AA: 7.8%). The lower *TAS1R2* DNAm levels was also associated with the higher prevalence of T2DM (highM: 5.4%, middleM: 8.8%, and lowM: 12.8%). An integrated analysis of genetic variation and DNAm in TAS1R2 showed a higher OR [95%CI] for T2DM in GG-lowM group compared to GA/AA-highM group (3.91 [1.49-11.10]). Meanwhile, we observed no significant associations (GA/AA-middleM: 2.11 [0.85-5.76], GA/AA-lowM: 1.77 [0.70-4.93], GG-highM: 1.78 [0.54-5.72], and GG-middleM: 1.95 [0.58-6.35]).

Conclusion : We found a higher prevalence of T2DM among individuals with the TAS1R2 rs12033832 G/G genotype and low levels of DNAm at cg15743657 in the Japanese population.

Association between TXNIP DNA methylation in leukocytes and MASLD in a Japanese population

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Background : Metabolic dysfunction–associated steatotic liver disease (MASLD) is a type of fatty liver disease characterized by metabolic abnormalities. Oxidative stress plays an essential role in the onset and progression of it. Thioredoxin-interacting protein (TXNIP), a negative regulator of thioredoxin activity that promotes oxidative stress, is suppressed by DNA methylation (DNAm) of the TXNIP gene. This study aimed to investigate the associations between TXNIP DNAm levels in leukocytes and MASLD in a cross-sectional study of the Japanese population.

Methods : This study included residents of Yakumo Town, Hokkaido, who underwent a health check-up in 2015. Of 525 participants, 319 (116 men; mean age, 62.7 yrs) without a history of cancer, cardiovascular disease, stroke, or alcohol-related liver disease were included in our analysis. Those who did not provide consent or had missing TXNIP DNAm or ultrasound examination data were excluded. Hepatic steatosis was based on ultrasound examination, and MASLD was defined according to the AASLD guideline. Leukocyte TXNIP DNAm levels were measured using pyrosequencing. Participants were divided into tertiles according to TXNIP DNAm in our analysis. The associations between TXNIP DNAm levels and MASLD was analyzed using logistic regression analysis with adjustment for age, sex, smoking status, alcohol habits, physical activity, and percentage of neutrophils.

Results : There were 64 participants (20.1%) with MASLD. TXNIP DNAm levels (mean ± SD) were lower in the MASLD group than in the non-MASLD group (76.1 ± 5.0% vs 77.8 ± 4.7%, p=0.013). Compared with the highest TXNIP DNAm tertile, the adjusted odds ratio for MASLD was 1.60 (95%CI: 0.74-3.53) in the middle tertile and 2.17 (95% CI: 1.02–4.78) in the lowest tertile.

Conclusions : Leukocyte TXNIP DNAm levels were independently associated with the presence of MASLD in a Japanese population.