Traditional and modified Japanese diets and the risk of hypertension among workers

Haruka Miyake (1)
Shohei Yamamoto (1), Akiko Nani (2), Maki Konishi (1), Tetsuya Mizoue (1)
1 : Department of Epidemiology and Prevention, Center for Clinical Sciences, Japan Institute for Health Security
2 : Department of Food and Health Sciences, International College of Arts and Sciences, Fukuoka Women's University

Background : While the traditional Japanese diet, rich in white rice, fish, soy products, seaweed, and green tea, has been linked to various health benefits, it may raise blood pressure due to high sodium content. To make the Japanese diet healthier, we developed a modified Japanese diet score that retains traditional elements while improving nutritional balance. This study aims to examine the association between adherence to the traditional and modified Japanese diets and the risk of hypertension.

Method : We analyzed data from 7,932 workers (87% men, mean age 39.8±11.9 years) without baseline hypertension who responded to a questionnaire (fiscal 2018-2020) of the Japan Epidemiology Collaboration on Occupational Health Study. Diet was assessed via a validated food frequency questionnaire. The traditional Japanese diet score comprised 9 items: white rice, miso soup, soy products, cooked vegetables, mushrooms, seaweed, fish, salty food, and green tea. The modified score comprised 11 items: dairy products and fruits were added; the vegetable component included raw and cooked vegetables; white rice was replaced with brown rice, and salty food scoring was reversed. Participants were grouped into quartiles by each score and followed annually for incident hypertension through 2023. Hazard ratios (HRs) and 95% confidence intervals (CIs) were estimated using multivariable Cox frailty models.

Result : During a median follow-up of 3 years, 1,478 participants developed hypertension. While no significant association was observed for the traditional Japanese diet, higher scores of the modified Japanese diet were significantly associated with a lower risk of hypertension. The adjusted HR (95% CIs) of hypertension for the lowest through highest quartiles of the modified score were 1.00 (reference), 0.85 (0.75–0.97), 0.79 (0.68–0.92), and 0.74 (0.63–0.87) (P for trend < 0.001).

Conclusion : Greater adherence to the modified Japanese diet is associated with a lower risk of hypertension.

Social Isolation and Cause-specific Mortality after the Great East Japan Earthquake

Yuka Kotozaki (1)
Masatsugu Orui (2), Mana Kogure (2), Naoki Nakaya (2), Taku Obara (2), Mami Ishikuro (2), Keiko Murakami (2)
Kumi Nakaya (2), Ippei Chiba (2), Rieko Hatanaka (2), Masato Takase (2), Sayuri Tokioka (2), Takahito Nasu (1)
Hiroshi Akasaka (1), Masato Nagai (1), Shinichi Kuriyama (2), Atsushi Hozawa (2), Kozo Tanno (1)

1 : Iwate Tohoku Medical Megabank Organization, Iwate Medical University
2 : Tohoku Medical Megabank Organization, Tohoku University

Objective : Social isolation has been reported to adversely affect health and increase the risk of mortality. This study examined the association between social isolation and cause-specific mortality after the Great East Japan Earthquake (GEJE) using data from the Tohoku Medical Megabank Project Community-Based Cohort Study.

Methods : We prospectively followed 59,301 adults (22,189 men and 37,112 women; mean age 60.3 ± 11.2 years) who participated in the baseline survey (2013–2015) for 7.2 years. Social isolation was defined as the Lubben Social Network Scale-6 < 12. The endpoints were all-cause mortality and cause-specific mortality (cancer, cardiovascular disease (CVD), and external causes), based on vital statistics. Multivariable-adjusted hazard ratios (HRs) and 95% confidence intervals (CIs) for social isolation versus no social isolation were calculated using Cox proportional hazards models, stratified by sex. Covariates included age, systolic and diastolic blood pressure, HbA1c, LDL, HDL, triglycerides, lifestyle factors (smoking habits, drinking habits, and exercise habits), social factors (marital status, cohabitation status, educational attainment, employment status), and housing damage due to the GEJE.

Results : The prevalence of social isolation was 29.3% for men and 24.1% for women. During the follow-up period, there were 1,149 deaths for men and 614 deaths for women (cancer: 601 men and 326 women; cardiovascular disease: 256 men and 129 women; external causes: 79 men and 59 women). The HRs and 95% CIs for all-cause mortality were 1.11 (0.97–1.10) for men and 1.24 (1.02–1.50) for women. For mortality from CVD, the HRs were 1.41 (1.08–1.85) for men and 1.51 (1.00–2.27) for women. No significant associations were observed for mortality from cancer or external causes in either sex.

Conclusion : Social isolation was significantly associated with an increased risk of all-cause mortality in women and mortality from CVD in men.

Prospective associations between 24-hour movement behaviors and burnout among male firefighters

Li-Jung Chen (1)
Li-Jung Chen (1), Po-Wen Ku (2)

1 : National Taiwan University of Sport / Department of Exercise Health Science
2 : National Chung Hsing University / Graduate Institute of Sports and Health Management

Objective : Firefighters face distinct occupational demands that influence their physical activity, sedentary behavior (SB), and sleep patterns. These 24-hour movement behaviors collectively affect overall health. Given the intensity and irregularity of shift work, burnout is a significant concern in this population. This prospective study aimed to examine the associations between 24-hour movement behaviors and burnout risk among male firefighters working 48-hour shifts.

Methods : A total of 200 male Taiwanese firefighters on shift-based duty participated in the study. Participants wore accelerometers for at least one full shift cycle (two on-shift days and one off-shift day) to measure moderate-to-vigorous physical activity (MVPA), SB, and sleep duration. Burnout was assessed using the Copenhagen Burnout Inventory - Personal Burnout Subscale. Covariates included age, education, body mass index, smoking status, alcohol consumption on days off, nap duration, caffeine intake, and life satisfaction, which was measured using the Satisfaction With Life Scale (SWLS). Logistic regression was used to identify predictors of burnout over a two-year period.

Results : MVPA showed a significant inverse association with burnout in univariate analysis ($p = 0.022$), but this association did not remain significant in the fully adjusted model. Neither SB nor sleep duration significantly predicted burnout after adjustments. Higher SWLS scores were significantly associated with a lower risk of burnout ($p = 0.004$), and baseline burnout emerged as the strongest predictor of future burnout ($p < 0.001$). Age also showed a modest positive association with burnout risk ($p = 0.005$).

Conclusion : Higher life satisfaction may reduce burnout risk among firefighters, whereas 24-hour movement behaviors were not significant predictors after adjustments. These findings suggest that mental well-being should be prioritized in occupational health interventions for this high-stress workforce.

Characterization of patients with TB including PLWH and mortality in Thailand: a cluster analysis

Ayu Kasamatsu (1)
Yui Tomo (1), Reiko Miyahara (1), Norio Yamada (2), Hideki Yanai (2), Supalert Nedsuwan (3), Surakameth Mahasirimongkol (4)

1 : National Institute of Infectious Diseases, Japan Institute for Health Security
2 : Japan Anti-Tuberculosis Association
3 : Chiangrai Prachanukroh Hospital, Ministry of Public Health, Thailand
4 : Department of Traditional and Alternative Medicine, Ministry of Public Health, Thailand

Background : In Thailand, while tuberculosis (TB) incidence has declined, the mortality rate remains high at around 10%. Identifying characteristics of populations at high mortality risk is critical for designing effective interventions. HIV infection is a known risk factor that increases mortality and may modify cluster composition and mortality risk distribution.

Methods : We conducted a cluster analysis among newly registered patients with TB in northern Thailand from 2005 to 2011. Clustering was based on sociodemographics, clinical information, and drug resistance. Missing values were addressed using multiple imputation with 20 iterations. For each imputed dataset, k-means++ clustering was applied, and results were integrated using a cluster ensemble approach. The optimal number of clusters was determined by silhouette and elbow methods. 6-month mortality was assessed per cluster.

Results : Among 700 patients, 22% had missing data. After imputation, 9 clusters were identified. Higher mortality (14%, 95% CI: 9–21%) was observed in a cluster including predominantly men from ethnic minority groups with histories of smoking and alcohol use, and in another cluster with a high proportion of men living with HIV (14%, 6–27%). The lowest mortality (7%, 4–12%) was found in a cluster mainly composed of women without histories of smoking or alcohol use and with drug-susceptible TB. Stratified analysis by HIV status identified 3 clusters among people living with HIV (PLWH) and 12 among those without HIV. In both groups, mortality was concentrated in clusters with shared social vulnerabilities such as male sex, minority ethnicity, substance use, and incarceration. Among PLWH, mortality was particularly elevated in drug-resistant clusters.

Conclusion : Mortality outcomes varied by HIV status, drug resistance, and social factors. These findings highlight the need to tailor support and optimize treatment strategies based on the characteristics of high-risk groups.

Diabetes, HbA1c, and Genetic Risk Scores in Relation to Cancer Risk: The J-MICC Study

Yoshifumi Hidaka (1)
Isao Oze (2), Daisaku Nishimoto (3), Shiroh Tanoue (1), Chihaya Koriyama (1), Rie Ibusuki (4), Toshiro Takezaki (5) Keitaro Matsuo (6)

1 : Kagoshima University Graduate School of Medical and Dental Sciences/Department of Epidemiology and Preventive Medicine
2 : Division of Cancer Information and Control, Aichi Cancer Center Research Institute
3 : School of Health Sciences, Faculty of Medicine, Kagoshima University
4 : Department of Community-Based Medicine, Kagoshima University Graduate School of Medical and Dental Sciences
5 : Community Medicine Support Center, Kagoshima University Hospital
6 : Division of Cancer Epidemiology and Prevention, Aichi Cancer Center

Aims : We investigated the associations of diabetes, HbA1c levels, and genetic risk scores (GRSs) for type 2 diabetes and HbA1c with all-site and site-specific cancer incidence in a Japanese population.

Methods : This prospective analysis included 45,072 participants from the Japan Multi-Institutional Collaborative Cohort Study. Baseline HbA1c levels and diabetes status were assessed, and incident cancer cases were identified during follow-up. Furthermore, a genotyped sub-cohort of 11,050 participants was analysed to examine the associations of HbA1c-GRS and T2D-GRS with cancer incidence.

Results : During a median follow-up of 11.9 years in the base cohort, 4,491 participants developed cancer. Compared with HbA1c 5.0–5.4%, HbA1c ≥6.0% was associated with higher risks of all-site, liver, and pancreatic cancers, with a significant trend for pancreatic cancer (P for trend <0.001). Diabetes was similarly associated with increased risks of all-site, liver, and pancreatic cancers. In the genotyped sub-cohort (median follow-up 11.4 years), 1,223 participants developed cancer. Compared with the low-risk T2D-GRS, intermediate- and high-risk groups showed higher pancreatic cancer risk, with a significant trend across categories (P for trend <0.001). No significant associations were observed for HbA1c-GRS.

Conclusions : Diabetes and elevated HbA1c were associated with increased risks of all-site and several site-specific cancers. Moreover, genetic predisposition to type 2 diabetes, but not to HbA1c, was linked to pancreatic cancer risk, suggesting shared genetic susceptibility between diabetes and pancreatic cancer.