Relationship between physical activity and sedentary behaviour on weight gain from age 20

Kanako Nakajima (1)
Rie Kawata (1,2), Kazuto Tozuka (1), Mayuko Shibuya (1), Mizuha Maruyama (1), Kiyonori Kuriki (1,3)

1 : Laboratory of Public Health, Graduate School of Integrated Pharmaceutical and Nutritional Sciences, University of Shizuoka
2 : Faculty of Health Science and Nursing, Juntendo University
3 : Laboratory of Public Health, Division of Nutritional Sciences, School of Food and Nutritional Sciences, University of Shizuoka

Introduction : Physical activity (PA) and sitting time (ST) are known to be associated with health, but the combined effects of the two are not yet fully understood. This study investigates the relationship between PA and ST on body weight gain from age 20 (BWG_20yr) in middle-aged and older Japanese people.

Methods : Data on daily PA (heavy labor, walking, standing, sitting) was used from the baseline database of 2,761 men and 2,153 women aged 35 to 79 years from the Shizuoka Sakuragaoka J-MICC Study. After calculating the total daily PA (t-d PA; including ≧2.0 METs of PA) and ST, participants were classified into nine groups based on their tertile levels, separately for each gender. We also asked about their employment status, including retiree and homemakers. Those with BMI ≧2.5 kg/m^2 at baseline were defined as BWG_20yr case. Compared with a group with largest t-d PA and shortest ST, the odds ratio (OR) was calculated, and then the PA cutoff values for BWG_20yr case were calculated by ROC for each ST tertile.

Results : The group with the smallest t-d PA and longest ST included many full-time workers, while the group with the largest t-d PA and shortest ST included many self-employers. Regarding risk at the longest ST level, in both men and women, significant or marginal higher ORs were showed for the smallest and moderate t-d PA, but no significant trend was observed. For PA from walking or standing, no associations were observed. For case determination, however, their t-d_PA cutoff values at the longest ST level were approximately 0.4 to 0.7 times that at the other two levels.

Conclusion : Our findings revealed positive relationships between BWG_20yr risk and ST in male and female Japanese residents, independent of t-d PA level. Furthermore, while PA from standing did not affect the risk, the t-d_PA cutoff value for the longest ST level in case determination was also found to be very low.

The Interaction between personality disorders and personality type on new-onset depressive symptoms

Ya Wang (1)
Shuang Li (1), Xue Chong (1), Yangziye Guo (2), Yu Sun (2), Yi Zheng (3), Fuqin Mu (3), Yunfeng Tang (1), Yan Liu (4)

1 : Shandong Second Medical University/School of Public Health
2 : Shandong First Medical University and Shandong Academy of Medical Sciences/School of Public Health
3 : Jining Medical University/School of Mental Health
4 : Jining Medical University/School of Public Health

Background : Personality factors are significant influences on depression, but few longitudinal studies have investigated the relationship between personality factors and new-onset depressive symptoms. This study explored the impact of personality disorders, personality types, and their interaction on new-onset depressive symptoms in community residents to strengthen the prevention of mental illness in the community.

Methods : A cluster sampling method was used to randomly select community residents from three cities in Shandong province for the survey. A total of 7539 community residents were included in the data analysis. The Patient Health Questionnaire (PHQ-9) was used to assess depressive symptoms among community residents. Personality disorder types were evaluated using the personality disorders module adapted from the DSM-5. Personality types were assessed using the Eysenck Personality Questionnaire-Revised Short Scale for Chinese (EPQ-RSC). Logistic regression was used to test the multiplicative interaction between these two factors, and the Excel spreadsheet developed by ANDERSSON et al. was used to test the additive interaction.

Results : 829 respondents (11.00%) developed depressive symptoms during the one-year follow-up period. Borderline personality disorder (OR = 3.962, 95% CI: 2.129-7.371) and neuroticism (OR = 1.012, 95% CI: 1.005-1.019) were risk factors for new-onset depressive symptoms. Interaction analysis results showed a positive multiplicative interaction between borderline personality disorder and neuroticism (OR = 1.058, 95% CI: 1.012–1.105).

Conclusions : Both borderline personality disorder and neuroticism can increase the risk of depressive symptoms, and there is an interaction between the two. This finding provides an explanatory framework for the etiology of depressive symptoms from an interaction perspective, offering a theoretical basis for effectively identifying and screening high-risk populations for depression in future studies.

Detection and Psychological Support for IPV Using DS-IPV: A Case Involving a Father and Children

Masaki Shinjo (1,2)
Itsuko Akamine (1), Matsuyo Inoue (1), Hisami Shimonaka (1), Izumi Shiina (2)

1 : Okinawa Prefectural College of Nursing/Nursing/Nursing
2 : Hanna Kokoro Clinic

Introduction : Intimate partner violence (IPV) is a major public health issue affecting not only victims but also children within families. Despite its significance, standardized screening in healthcare is limited. To address this, the Detection Scale for Intimate Partner Violence (DS-IPV) was developed. The 22-item scale, rated 1–4, yields scores from 22 to 88, with a cutoff of 28 indicating IPV risk.

Aims : This study applied the DS-IPV to a male IPV victim, a father of three children, to evaluate its clinical utility.

Methods : The patient, in his 30s, had a six-month treatment history and was diagnosed at H Clinic with post-traumatic stress disorder (PTSD) and secondary depression. Psychological assessments included the DS-IPV, and counseling was the main intervention. Ethical approval was obtained from the Okinawa Prefectural College of Nursing (No. 23009), and informed consent was secured.

Results : The patient's DS-IPV score was 71, far above the cutoff and classified as "very high" (≥44). Eleven of 22 items were rated "almost always present," with four in the anxiety-inducing domain. These findings showed that his partner relationship was a persistent source of anxiety. Counseling focused on these domains, addressing trauma, coping, and parenting.

Discussion : This case illustrates the DS-IPV's value in assessing IPV severity and guiding individualized support. Focusing on intergenerational transmission highlights risks when impaired parental responsiveness affects children's development. Supporting recovery enhanced the father's ability to form stable emotional bonds, helping to break cycles of violence.

Conclusion : The DS-IPV was effective for screening IPV severity in a male victim and for guiding tailored psychological support. Considering intergenerational violence transmission and parent–child relationships adds clinical value, promoting recovery and psychological well-being for both victims and children.

Designing Subgroup Analyses for Vaccine Safety Studies: Evidence from VSD and Package Insert Reviews

Hiraku Kumamaru (1)
Yukari Uemura (2), Shiori Nishimura (1), Chieko Ishiguro (2)

1 : Graduate School of Data Science, Yokohama City University
2 : Center for Clinical Sciences, Japan Institute for Health Security

Background : Subgroup analysis is essential in vaccine safety because benefits and risks can differ across populations. Japan is developing a national Vaccine Database (VDB) linked to the National Claims Database (NDB), enabling database-based safety studies beyond spontaneous reports.

Methods : We conducted two coordinated reviews. First, we catalogued methods used to detect effect modification in United States–Vaccine Safety Datalink (VSD) publications from 2019–2023 (n=24), abstracting subgroup domains and analytic approach (simple stratification vs. formal interaction terms). Second, we reviewed 38 package inserts for vaccines approved in Japan, extracting all label-identified high-risk populations, noting clinical rationale and measurability in claims, and assessed cross-product consistency.

Results : In the VSD literature, subgroup analyses by sex and age were common, whereas formal interaction models to test effect modification were rare; most studies reported stratified estimates. The package-insert review found that label-defined high-risk groups can be categorized into two types: (1) product-specific demographic factors (e.g., older adults, pregnancy) and (2) outcome-specific factors related to susceptibility to adverse events (e.g., history of severe allergy). These high-risk groups were largely consistent across vaccines; many labels named overlapping demographic risk groups, while some products specified additional, narrower high-risk categories.

Conclusion : Database-based vaccine safety studies should prespecify core demographic subgroups aligned with labeling and add product-specific or outcome-specific subgroups where indicated and measurable. Establishing standardized, computable definitions for these groups in claims-linked data, and using interaction models when sample sizes permit, will complement stratified analyses and support transparent, reproducible assessment of effect modification in the VDB–NDB environment.

Short-Term Associations Between Multiple Air Pollutants and Lung Cancer Mortality in Japan

Tshewang Gyeltshen (1,2,3)
Phuong The Nguyen (1,3),

1 : HIAS Health, Hitotsubashi University, Tokyo Japan
2 : Department of Global Health Policy, School of International Health, The University of Tokyo, Tokyo, Japan
3 : Division of Population Data Science, National Cancer Center Institute for Cancer Control

Introduction : Lung cancer remains a leading cause of cancer-related mortality worldwide, with ambient air pollution recognized as a significant environmental risk factor. While numerous studies confirm the long-term risks of pollutants like PM2.5, NO2, SO2 , and CO, comprehensive evidence on their short-term effects on lung cancer mortality is limited, especially in Japan.

Methods : We conducted a nationwide time-series study of daily lung cancer mortality (ICD-10: C33–C34) from 2012–2022 across all Japanese prefectures. A two-stage approach was applied: (1) prefectural-level conditional quasi-Poisson regression within a time-stratified case-crossover framework, adjusting for temperature and humidity using natural cubic splines; and (2) random-effects meta-analysis to pool prefecture-specific estimates. Co-pollutant and stratified analyses by age and sex were performed. Sensitivity analyses included distributed lag non-linear models (DLNMs) to capture lagged and non-linear temperature effects.

Results : At the national level, we found significant positive associations between short-term exposure and lung cancer mortality for PM2.5 (RR = 1.006, p=0.017), SO2 (RR = 1.073, p=0.001), and CO (RR = 1.040, p=0.030). The association for NO2 was positive but did not reach statistical significance (RR = 1.007, p=0.061). Sub-group analyses revealed that males and the elderly (≥65 years) were the most vulnerable subgroups. The mortality risk associated with PM2.5 exposure was significant only among males (RR = 1.007, p=0.002) and those aged ≥65 years (RR = 1.006, p=0.050). We also observed significant regional heterogeneity in the effects of PM2.5 across prefectures, particularly among the elderly (I^2 = 21.9%).

Conclusion : This study demonstrates that short-term exposure to ambient PM2.5, SO2, and CO significantly increases daily lung cancer mortality in Japan, identifying males and the elderly as particularly vulnerable subgroups.