Associations between Pain and Instrumental Activities of Daily Living in Older Adults: A Systematic Review

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Background : Pain is a common complaint among community-dwelling older adults and frequently interferes with daily functioning. Limitations in Instrumental Activities of Daily Living (IADL) can compromise independence and quality of life.

Objective : This systematic review aimed to synthesize evidence from the existing literature on the associations between pain and IADL disability among community-dwelling adults aged 60 years and older.

Methods : A literature search of PubMed was conducted on 27 July 2025. Eligible studies were required to (1) examine the association between pain and IADL disability, (2) include community-dwelling adults aged 60 years or older, and (3) be published in English.

Results : A total of 400 records were identified, of which 29 studies met the eligibility criteria. Among these, 23 studies (18 cross-sectional and 5 cohort) reported significant associations between pain and IADL disability, whereas 6 cross-sectional studies found no such relationship. Pain was assessed using heterogeneous instruments with variations in recall periods and severity thresholds, and IADL was evaluated using different scales. This methodological heterogeneity precluded conducting quantitative meta-analysis.

Discussion : Overall, the findings suggest that pain is a consistent predictor of IADL disability across diverse populations and study designs. However, the lack of standardized instruments for assessing pain and functional status, combined with limited adjustment for potential confounders such as multimorbidity, polypharmacy, and treatment, hampers accurate estimation of the strength of this association.

Conclusion : Pain appears to play an important role in the onset and progression of IADL disability among community-dwelling older adults. Future studies should adopt harmonized and multidimensional assessment tools, adjust for relevant confounders, and conduct meta-analyses where feasible to clarify the true impact of pain on functional independence.

Impact of Vegetable Intake on Skin Carotenoids and Urinary Na/K Ratio in Young Adults

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Background : Japanese diets face two key issues: low vegetable intake and high salt consumption. The recommended daily intake of vegetables is 350g, but the actual intake falls short of this target. Increased vegetable intake may raise carotenoid and potassium levels, potentially lowering the urinary sodium-to-potassium ratio (Na/K), a cardiovascular risk marker.

Objective : This study investigated the relationship between skin carotenoids and vegetable intake in Japanese university students. It also assessed the effects of a two-week intervention involving daily consumption of 350g of vegetables on skin carotenoids and urinary Na/K.

Methods : Carotenoid levels were measured using the Veggie Meter®, a non-invasive device that provides a 'Vege Score (VS)'. The study had two phases. In Survey 1, data from 115 of 125 participants (41 men, 74 women) were analyzed. Participants completed a food frequency questionnaire, and VS was measured to assess correlations. In Survey 2, a subset underwent a two-week intervention. Weekday meals with 350g of vegetables were provided by a dietitian, and participants were instructed to maintain similar intake on weekends. VS and urinary Na/K were measured at three points: pre-, mid-, and post-intervention.

Results : Survey 1 showed weak but significant correlations between estimated vegetable intake and VS ($r = 0.227$), and green/yellow vegetable intake and VS ($r = 0.283$) ($P < 0.05$). In Survey 2, average VS increased by 6% from pre- to post-intervention. Urinary Na/K dropped by 41% from pre- to mid-intervention, then rose by 68% from mid- to post-intervention, resulting in a net 1% decrease.

Conclusion : Daily intake of 350g of vegetables improved VS, especially in participants with low baseline scores. Although urinary Na/K temporarily improved, the effect was not sustained. These findings suggest short-term vegetable interventions can enhance nutritional biomarkers, but maintaining these effects is challenging.

Association between work and health and well-being among older adults: An outcome-wide study

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Background : Work in later life may promote health and well-being by providing financial stability, daily activity, and opportunities for social participation. However, its impact may depend on work frequency. We examined the associations between work frequency and subsequent multidimensional health and well-being among older adults in Japan.

Methods : We analyzed longitudinal data from the Japan Gerontological Evaluation Study (JAGES) collected in 2016, 2019, and 2022. Two analytic samples were used: (1) 41,758 adults aged ≥65 who completed all three waves and were not certified as requiring long-term care (LTC) in 2016; and (2) 56,153 adults who participated in 2016 and 2019 and were linked to 2022 LTC insurance records. Work frequency in 2019 was categorized as none, a few times per year, 1–3 times/week, or ≥4 times/week. In 2022, 46 outcomes were assessed across seven domains (happiness and life satisfaction; mental and physical health; meaning and purpose; character and virtue; close social relationships; health behaviors; social capital). Regression models adjusted for 46 covariates, including demographics and 2016 values of exposures and outcomes. A Bonferroni-corrected significance threshold of $p < 0.0011$ was applied. Ethical approval was obtained from Chiba University.

Results : In older adults working 1–3 times/week or ≥4 times/week, significant associations were observed with 26 of 46 outcomes (56.5%), including lower risks of dementia and LTC certification and higher psychological well-being. However, working ≥4 times/week showed negative associations with both social participation and smoking.

Conclusion : In older adults working 1–3 times/week or ≥4 times/week, work was generally associated with better health and well-being across multiple domains. For those engaged in high-frequency work, complementary support to sustain social participation and to encourage smoking cessation outside of work may be warranted.

Identifying Space-Time Clusters at City Level During the COVID-19 Pandemic in Japan

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Background : Understanding the spatial-temporal dynamics of COVID-19 is essential for targeted interventions. We aimed to identify space-time clusters at municipalities level across 7 epidemic waves in Japan.

Methods : We analyzed individual-level COVID-19 cases from HER-SYS (2020–2022), geocoding 1,907 municipalities by residential address. Daily case counts were aggregated at the municipality level, and space–time cluster detection was performed for each epidemic wave by SaTScan. Municipalities included in clusters with relative risk over 1 were considered hot spots (high risk clusters), while those in clusters with relative risk less than 1 were considered cold spots (low risk clusters). We summarized their timing, location, and spatial extent across epidemic waves.

Results : In the first wave, hot spots were concentrated in the Tokyo metropolitan area and Kyushu. In the second wave, clusters extended from southern regions toward Tokyo. The third wave showed a north–south spread, while the fourth wave shifted from central Japan to both northern and southern regions. The fifth wave again centered on Tokyo before moving into central areas. In sixth and seventh waves, hot spots became more widespread but generally decreased in number. Cold spots typically covered larger geographic areas and were before surges in reported case numbers.

Conclusion : Using a clearly defined space-time scan statistics, we identified COVID-19 hot spots and cold spots across Japanese municipalities and showed that their locations and scales changed markedly across waves.

Social activity patterns and associated factors among community-dwelling older adults with dementia

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Background : Social engagement is important for psychological well-being in people with dementia. However, little is known about social activity patterns and their determinants in community settings. We aimed to identify patterns among community-dwelling older adults with dementia and examine associated factors.

Methods : We used data from the 2022 Japan Gerontological Evaluation Study–Home Care, a survey of older adults receiving long-term care at home. The sample comprised 2,163 older adults with dementia (mean age, 86.2; 67.7% female), defined as Level II or higher on the Dementia Independence Scale. Fourteen activities were analyzed with latent class analysis. Multinomial logistic regression estimated RRRs for class membership associated with individual and environmental factors, using the *low-activity* class as reference.

Results : A four-class model best fit the data: *low-activity* (64.8%), *hobby-centered* (7.7%), *outdoor-activity* (1.8%), and *interaction-focused* (25.4%). Compared with the *low-activity* class, the *hobby-centered* class was more likely among younger individuals (RRR=0.94, p<0.001), those with better walkable environments (RRR=1.89, p=0.001), but less likely in rural areas (RRR=0.55, p=0.011) and among those with greater ADL (RRR=0.77, p<0.001) and IADL impairments (RRR=0.68, p<0.001). The *outdoor-activity* class was more likely among younger individuals (RRR=0.95, p=0.044) and in better walkable environments (RRR=2.32, p=0.018). The *interaction-focused* class was more likely among women (RRR=1.34, p=0.021), younger individuals (RRR=0.98, p=0.004), rural residents (RRR=1.47, p=0.026), but less likely among severe dementia (RRR=0.71, p=0.006).

Conclusions : Older adults with dementia showed heterogeneous social engagement patterns. Recognizing conditions enabling social engagement may help design supportive environments for people with dementia to remain connected to society.