The asbestos legacy: An update from the Australian Mesothelioma Registry

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Objectives : The Australian Mesothelioma Registry (AMR) provides information on cases of mesothelioma that have been diagnosed in Australia from 1 July 2010 onwards. Information is also collected on possible asbestos exposures for some cases.

Methods : Mesothelioma cases are reported to the AMR by State and Territory cancer registries. Notified persons are invited to complete a questionnaire that covers their job history and other potential asbestos exposure circumstances. Based on the questionnaire responses, a structured telephone interview is conducted. Information received by the AMR to May 2025 is summarised here, with a focus on 2024.

Results : In 2024, 684 people were diagnosed with mesothelioma (additional 2024 cases are expected to be notified); 78% were male; median age was 77 years. The overall rate per 100,000 of cases in 2024 was 2.5; rates rose with age. Most (81%) people were aged 70 years or older. The (age-standardised) rate in males (3.2) was much higher than in females (0.8). The overall (and male) age-standardised rate reached a peak in about 2003, slowly decreasing since; the female rate appears to have been relatively stable since 2018. Case numbers appear to have reached a peak in the last five years and are expected to slowly decline over many decades. Detailed asbestos exposure information is available for 1,409 persons. Nearly all (94%) of these people were considered to have had possible or probable asbestos exposure above background levels – most men (77%) were assessed as having occupational exposure ('occupational exposure only' and 'both occupational and non-occupational exposure' categories), compared with women (6.3%).

Conclusion : High rates of mesothelioma in Australia reflect the past high use of asbestos in Australia. Nearly all affected persons appear to have had, or are likely to have had, asbestos exposure, usually in occupational circumstances for men and non-occupational circumstances for women.

Lifestyle Behaviors Driving Disease Progression by Initial Condition in Non-Obese Individuals

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Coexisting hypertension, hyperglycemia, and dyslipidemia elevate cardiovascular mortality risk, independent of obesity. Although associations between lifestyle and each condition have been reported, behavioral factors driving progression from a single to multiple conditions in non-obese individuals remain unclear. These factors may differ depending on the initially developed condition. This study investigated lifestyle behaviors associated with metabolic worsening, stratified by the type of initial condition in non-obese individuals.This longitudinal study analyzed health checkup data from 2015 and 2020 for National Health Insurance enrollees in Gunma Prefecture. Inclusion required the presence of only one of the three conditions, completion of a follow-up after five years, and a non-obese status (BMI < 25 kg/m² and waist circumference below standard thresholds). Disease definitions followed criteria from the Japan Society for the Study of Obesity. Ten baseline lifestyle behaviors served as independent variables, and development of two or more conditions within five years was the dependent variable. Multivariable logistic regression with age and sex adjustment was conducted using Python 3 (significance level 5%). Ethical approval was granted (Approval No. HS2023-137).Among 155,690 individuals, 9,825 satisfied all criteria. In the hypertension group, weight gain ≥10 kg since age 20 significantly increased risk (OR 1.59, 95%CI 1.35–1.88). No significant lifestyle behaviors emerged in the hyperglycemia group. In the dyslipidemia group, slow walking speed (OR 1.28, 95%CI 1.07–1.55) and alcohol consumption (OR 1.43, 95%CI 1.11–1.86) acted as risk factors, while regular physical activity reduced risk (OR 0.79, 95%CI 0.65–0.95).Behavioral risk profiles for metabolic deterioration vary with the initial condition. This variation highlights the need for condition-specific preventive strategies even among non-obese individuals.

Association of Obesity Status Trajectories with Changes in Prediabetes Glycemic Status

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Purpose : This study aimed to determine the association between trajectories of obesity status and prediabetes reversion to normoglycemia or progression to diabetes.

Materials and Methods : This study included 14,452 participants from the National Health Insurance Service-National Health Screening (NHIS-HEALS) cohort who continuously had prediabetes glycemic status during the index period (2002-2008), defined by their fasting plasma glucose. The exposure of the study was the trajectories of obesity (defined by body mass index (BMI) $\geq 25 kg/m^2$) generated by using latent class grow analysis. The outcomes were reversion to normoglycemia or progression to diabetes, whichever ascertained first during the follow up period (2009-2016). The association between trajectories and changes in prediabetes status were examined using cause-specific hazard regression by obtaining hazard ratio (HR) with a 95% confidence interval (CI).

Results : We identified three distinct trajectories which were “Stable obese”, “Stable non-obese” and “Obese to non-obese”. After a median follow-up of 2 years, 51.99% of participants had their glycemic status back to normoglycemia and 32.17% developed diabetes. Compared with participants in “Stable obese” group, those who were in “Stable non-obese” and “Obese to non-obese” group were more likely to have reversion to normoglycemia (hazard ratio (95% confidence interval) = 1.30 (1.23–1.37) and 1.15 (1.07–1.24) respectively) and lower risk of developing diabetes (0.78 (0.73–0.84) and 0.90 (0.82–0.98) respectively).

Conclusions : The findings suggested that individuals who consistently remained non-obese and those who changed from obese to non-obese were more likely to have prediabetes reversion to normoglycemia and to have lower risk of developing diabetes.

Tactile Sensation Moderates Dexterity–Executive Function Link in Older Adults With and Without MCI

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Background : Hand dexterity has been associated with executive function and processing speed in cognitively healthy older adults. Tactile sensation, a key component of sensorimotor function, also declines with age and is linked to dexterity. However, its potential moderating role in cognitive aging—across both cognitively heathy individuals and those with mild cognitive impairment (MCI)—remains underexplored.

[Objective] 1) To examine whether tactile sensation moderates the association between hand dexterity and executive function and processing speed in older adults with and without MCI. 2) To compare the magnitude of this moderating effect between cognitive groups.

Methods : Eighty-nine community-dwelling older adults aged ≥60 years (MCI=53, healthy=36), classified using MMSE ≥24 and MoCA ≤25 (female=43, mean age=72.3±4.9). Executive function was assessed with Trail Making Test-B (TMT-B), Stroop test, and letter fluency (LFT); processing speed with TMT-A, digit symbol, and category fluency (CFT). Hand dexterity and tactile sensation were measured using the Purdue Pegboard Test (PPT) and Weinstein-Semmes monofilaments. Linear mixed-effects models included cognitive group, demographics, and interaction terms. Tactile sensation was dichotomized as intact or impaired based on clinical thresholds.

Results : Significant interaction effects between hand dexterity and tactile sensation were found for TMT-B (β =–13.37) and LFT (β =1.14), both at $p<0.05$, indicating that tactile sensation moderated the dexterity-executive function link. No significant associations were found for processing speed outcomes. Stratified analyses revealed a larger interaction effect in the MCI group than in the cognitively healthy group, though not statistically significant.

Conclusion : Preserved tactile function may be associated with better executive performance, highlighting sensorimotor integrity as a potential target for early screening and intervention in cognitive aging.

Phylum-Level Gut Microbiota Alterations in Multiple System Atrophy: A Case-Cohort Study

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Background & Objective : Multiple System Atrophy (MSA) is a progressive neurodegenerative disorder characterized by autonomic dysfunction, cerebellar ataxia, and parkinsonism. While the gut-brain axis has been implicated in various neurodegenerative diseases such as Parkinson's disease, the gut microbiota profile in MSA remains largely unexplored. This study aimed to clarify the differences in gut microbiota composition at the phylum level between MSA patients and healthy controls (HC), to gain insights into the potential role of the gut microbiota in MSA pathophysiology.

Methods : We conducted a cross-sectional study including 14 patients with clinically diagnosed MSA and 400 healthy controls (HC). The HC group was consecutively recruited from the FESTA cohort study. Fecal samples were analyzed using 16S rRNA gene sequencing targeting the V3–V4 region. Taxonomic classification was performed based on the Greengenes database. The nine phyla with the highest mean relative abundance were extracted, and the remaining phyla were grouped as "others."

Results : MSA patients exhibited significantly higher relative abundances of Actinobacteria phylum (MSA vs. HC: 1.61% vs. 1.05%, $p < 0.05$) and Tenericutes phylum (MSA vs. HC: 0.37% vs. 0.12%, $p < 0.05$) compared to healthy controls. These phyla have been previously associated with pro-inflammatory properties and distinct immune responses.

Conclusion : These findings suggest that alterations in the gut microbiota, potentially reflecting intestinal dysbiosis, may contribute to the pathogenesis of MSA. This insight into the gut-brain axis may serve as a foundation for developing novel therapeutic strategies targeting the intestinal environment in neurodegenerative diseases.