

Symptom-related risk factors for early retirement in multiple sclerosis patients with low disability and disease duration under 15 years

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Disclosure of conflict of interest

Mathia Kirstein has no personal financial interests to disclose other than being employees of the German MS Registry (MS Forschungs- und Projektentwicklungs-gGmbH – MSFP) and receiving anECTRIMS 2025 travel grant as the presenting author. None resulted in a conflict of interest.

Melanie Peters, Fneish Firas and David Ellenberger had no personal financial interests to disclose other than being employees of the German MS Registry (MS Forschungs- und Projektentwicklungs-gGmbH – MSFP).

Niklas Frahm is an employee of the German MS Registry. Moreover, he is an employee of Rostock's University Medical Center. None resulted in a conflict of interest.

Alexander Stahmann has no personal pecuniary interests to disclose, other than being the lead of the German MS Registry, which receives (project) funding from a range of public and corporate sponsors, recently including The German Innovation Fund (G-BA), The German Retirement Insurance, The German MS Trust, The German MS Society, Bristol Myers Squibb, Merck Healthcare Germany GmbH, Novartis Pharma GmbH, Roche Pharma AG and TG Therapeutics/Neuraxpharm. None resulted in a conflict of interest.

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Michaela Mai is an employee of the German MS Society, federal association, which receives funding from a range of public and corporate sponsors, recently including BMG, G-BA, the German MS Trust, Biogen, BMS, Merck Serono, Novartis, Roche, Sanofi, and Viatrix. None resulted in a conflict of interest.

Dagmar Krefting reports nothing to disclose.

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Jeff Rodgers and Elaine Craig as part of the UK MS Register, have received grants from the MS Society. None resulted in a conflict of interest

Amber Salter receives research funding from National Multiple Sclerosis Society, CMSC and the Department of Defense Congressionally Directed Medical Research Program, is a member of editorial board for Neurology, she serves as a consultant for Gryphon Bio, LLC, Abata Therapeutics and Sora Neuroscience and has equity in Owl Therapeutics, is a member of the Data and Safety Monitoring Board for Central Vein Sign: A Diagnostic Biomarker in Multiple Sclerosis (CAVS-MS), Video Telehealth Pulmonary Rehabilitation to Reduce Hospital Readmission in Chronic Obstructive Pulmonary Disease (Tele-COPD), P3 EQUATE Health Equity Research Network and Methotrexate treatment of Arthritis caused by Chikungunya virus (MARCH), and holds the Kenney Marie Dixon-Pickens Distinguished Professorship in Multiple Sclerosis Research. None resulted in a conflict of interest.

Background

- Disease progression can exert a significant impact on people's working life
 - Job loss, reduced working hours, job change or early retirement

Early retirement

- **unable to work** or can only **work to a limited extent** due to their disease and haven't reached the regular retirement age yet
 - Country-specific: application for income-replacement benefit (reduced earning capacity pension or Social Security Disability Insurance)

Consequences

- Decline in pwMS's **quality of life** and **financial security**
 - Employment → vital aspect of patient's well-being

Which symptoms are associated with early retirement in pwMS with mild disability who are in their first 15 years of the disease?

German MS Register

- **Initiated 2001:** Recruitment of 86,000+ patients
- **Documentation:** mainly clinician-driven (center visits via online portal) with increasingly patient self documentation
- **Currently:** Data from 186 MS centers

UK MS Register

- **Initiated 2011:** Recruitment of 17,000+ patients
- **Documentation:** both patient- and clinician-driven (semi-annual surveys and site visits via online portal)
- **Currently:** Data from 62 National Health Service (NHS) sites + patient self-documentation

NARCOMS

- **Initiated 1993:** Recruitment of 43,000+ patients
- **Documentation:** patient-driven (semi-annual surveys) via mail or online portal
- **Currently:** Data from patient self-documentation

Inclusion criteria and group selection



* Expanded Disability Status Scale

Early Retirees

- Full- or partial retired or unemployed **due to disease or medical reasons** (excl. retirement due to age)
- Identification: presence of a **retirement date** or a documented **change** in the job description
- Data use: visit closest to the retirement date (within 1 year) or when the change occurred

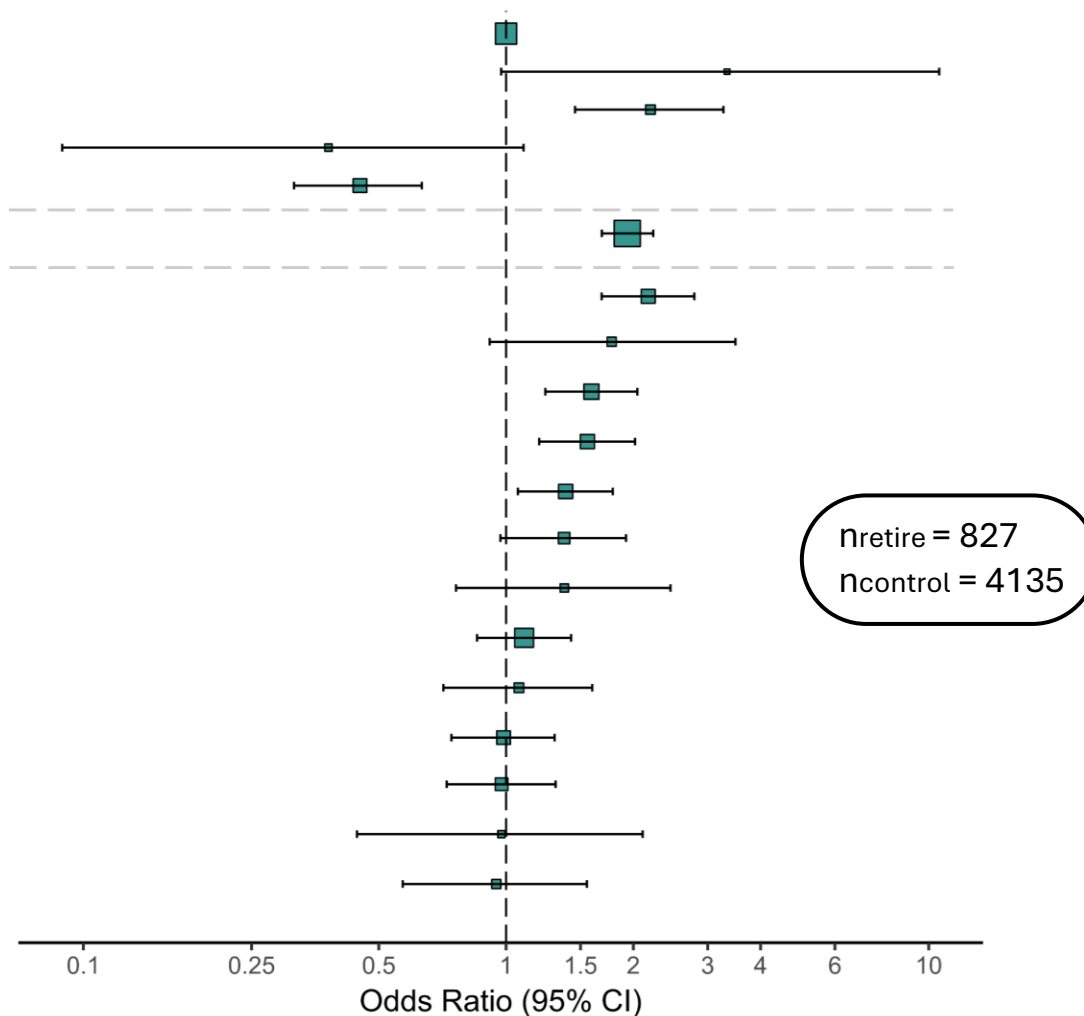
Control cohort

- Full-time or part-time employed with **no history of early retirement**
- 1:5 matching by age, sex, visit year, disease course and duration via **highest matching score**

Results of the GMSR analysis

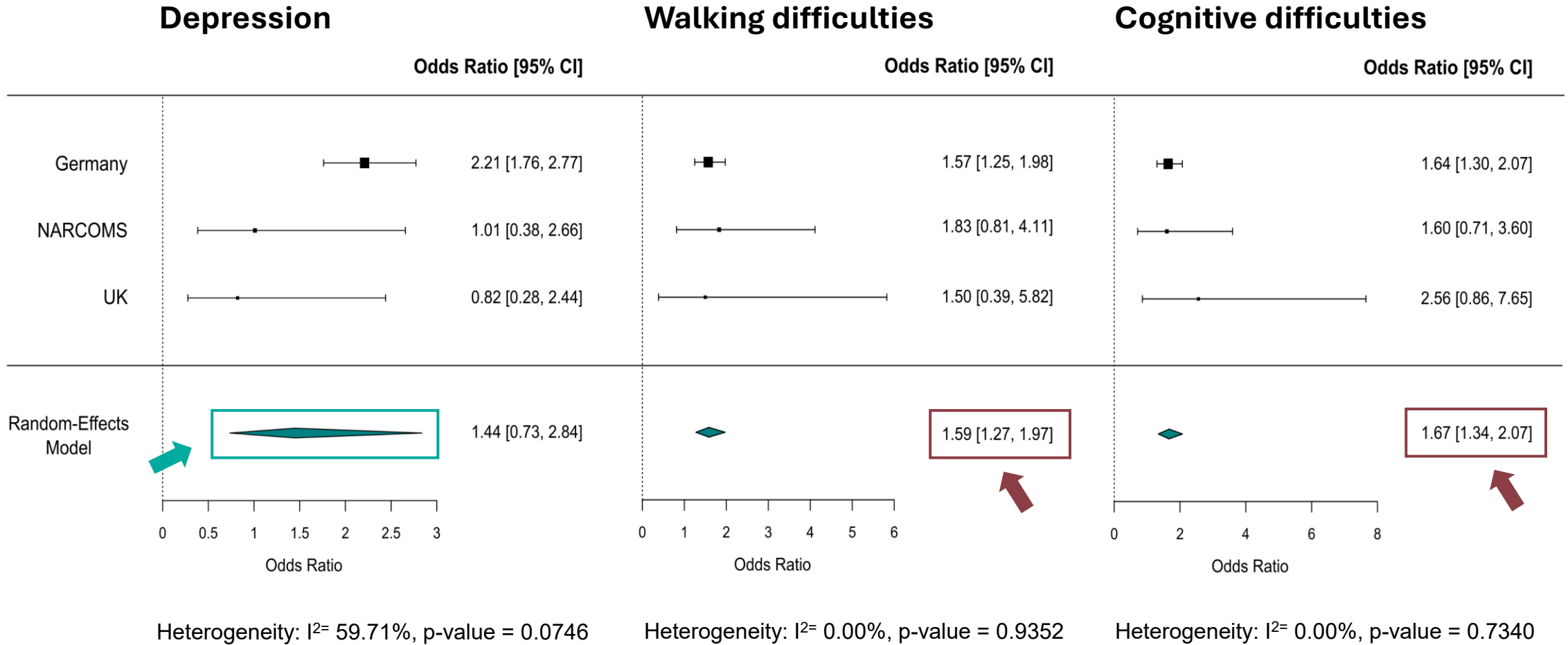
Variable: OR (95% CI, p-value)

ISCED score *	4	Ref
	1	3.33 (0.97-10.59, p=0.045)
	2	2.20 (1.46-3.27, p<0.001)
	3	0.38 (0.09-1.10, p=0.119)
	6	0.45 (0.32-0.63, p<0.001)
EDSS score	[0.0,3.5]	1.94 (1.68-2.23, p<0.001)
Depression	yes	2.17 (1.68-2.79, p<0.001)
Sensory dysfunction	yes	1.78 (0.91-3.49, p=0.091)
Walking difficulties	yes	1.59 (1.24-2.04, p<0.001)
Cognitive difficulties	yes	1.56 (1.20-2.02, p=0.001)
Pain	yes	1.38 (1.07-1.79, p=0.014)
Vision problems	yes	1.37 (0.97-1.92, p=0.070)
Dysarthria	yes	1.37 (0.76-2.45, p=0.285)
Fatigue	yes	1.10 (0.85-1.43, p=0.451)
Sexual dysfunction	yes	1.07 (0.71-1.60, p=0.735)
Bladder problems	yes	0.99 (0.74-1.30, p=0.925)
Spasticity	yes	0.98 (0.72-1.31, p=0.872)
Dysphagia	yes	0.98 (0.44-2.10, p=0.949)
Bowel problems	yes	0.95 (0.57-1.55, p=0.836)

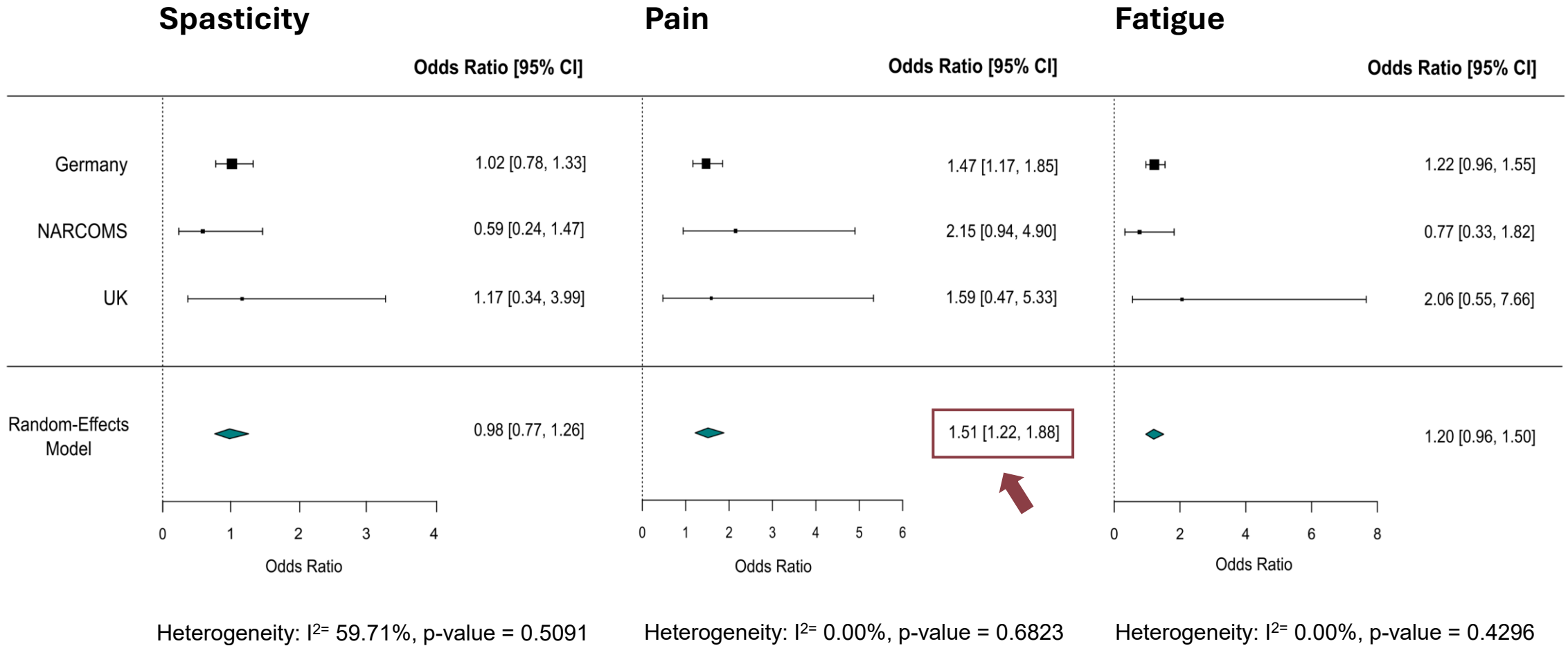


* International Standard Classification of Education

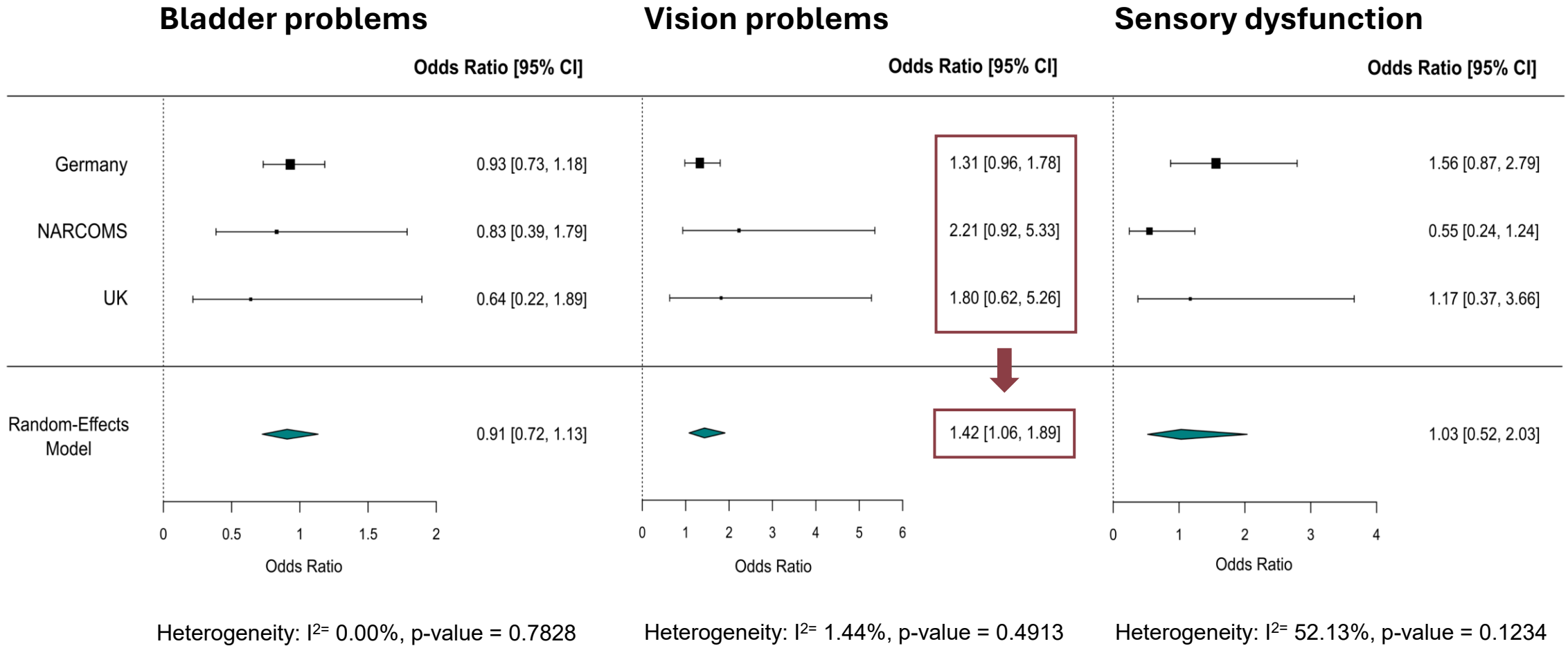
Results of the meta-analysis



Results of the meta-analysis



Results of the meta-analysis



- **Depression, walking- & cognitive difficulties and pain** have been identified as risk factors of early retirement
- Pooled multivariable models showed **similar effects** for majority of the symptoms
 - Vision problems has been also identified as a risk factor
 - High heterogeneity for some symptoms indicates that the results may not be entirely consistent across all data sources.
- **Higher education** → more resources to overcome the challenges in maintaining employment
- Investigate whether other factors such as **symptomatic treatment, disease-modifying therapies (DMTs) or access to healthcare** are associated with early retirement

Thank you for your attention!

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