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**Towards the Exposome Project for Health and Occupational Research (EPHOR) Mega Cohort**

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#### **ABSTRACT**

**BACKGROUND AND AIM** - Existing cohort studies in Europe capturing occupational information enrol millions of persons. They are invaluable resources for understanding relationships between occupation and health. Within the Exposome Project for Health and Occupational Research (EPHOR) we aim to systematically construct a mega cohort combining data from multiple individual cohort studies to study the working life exposome and health. **METHODS** - Participating cohorts are registered in an open online inventory containing cohort meta-data. A set of harmonised variables is being prepared, including occupational as well as non-occupational factors (personal, lifestyle, sociodemographic, other), and a framework for de-centralized large-scale pooling of data for epidemiological analyses is being implemented. Lifetime occupational histories are being coded and harmonised across coding systems and will be linked with a European Job-Exposure Matrix (JEM) being developed. A range of harmonised outcome data including cancer, as well as respiratory, metabolic and cardiovascular, neurodegenerative, and musculoskeletal diseases, mental disorders, and work participation will be defined based on registry, record, or other follow-up methods. **RESULTS** - The EPHOR mega cohort currently includes participation of 28 cohorts from eight European countries, as well as multi-country studies, containing data on over 20 million participants. Initial cohorts were selected from the inventory with cancer diagnoses, respiratory outcomes, and/or information on working time prioritised in this first phase. Additional cohorts will be invited to participate here. The mega cohort will be used for a range of exposome analyses including 1) systematic and agnostic exploration of multiple risk factors in relation to health outcomes, 2) to identify vulnerable life stages and population subgroups, 3) to study rare exposures/outcomes. **CONCLUSIONS** - We expect collaboration to be useful to explore relationships between occupations, multiple work-related exposures and health. The mega cohort is intended to be a long-term resource for occupational health researchers.

**KEYWORDS:** Cohorts; Data pooling; Exposome; Harmonisation; Occupation

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