

Exposure to high-risk substances occupationally may increase severity of small vessel disease in workers

Stroke, small vessel disease and occupation: systematic review and data analysis

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Introduction

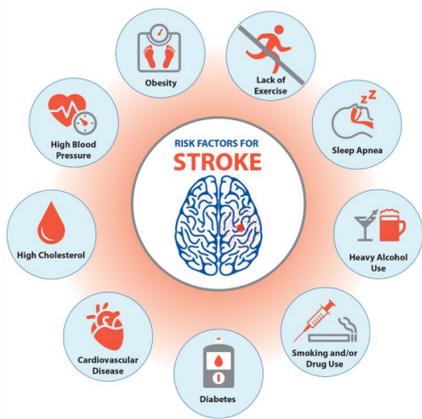


Figure 1: Graph of traditional risk factors for stroke

- **Cerebral small vessel disease (SVD)** affects the brain's arterioles, venules, and capillaries
- **Occupation** is an understudied **risk factor**
- **Aim of systematic review:** to investigate interactions between stroke and occupation
- **Aim of data analysis:** to investigate SVD related stroke and imaging features of SVD

Methods: Systematic review

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- **Inclusion criteria:** Primary research studies that assessed both occupation and stroke risk
- **Search terms:** Cerebrovascular disease, ischemic stroke, lacunar stroke, occupational exposure, workplace etc.
- **Exclusion criteria:** Non-English language papers

Methods: Data analysis

- Data was collected from **Mild Stroke Study 2 and 3**: two observational cohort studies investigating patients presenting with non-disabling stroke (mRS<3)
- Patients were scanned with **MRI** to obtain data: white matter hyperintensity (WMH) volumes adjusted for intracranial volume (ICV), total SVD score (WMH, lacunes, microbleeds, perivascular spaces)
- Patients were also subtyped into lacunar (SVD) or cortical strokes
- **Two analyses performed using:** (1) Standard occupational classifications and (2) Occupational risk using COSHH guidelines
- **Against three outcomes:** (1) WMH, (2) stroke subtype and (3) SVD score
- Multivariate and univariate analyses performed
- **Confounders:** age, vascular risk factors, deprivation measure

High risk vs low risk occupation example:



Results: Systematic review

1224 papers



32 papers included

- **Themes identified:** (1) Occupation, (2) Psychosocial work-related factors, (3) Exposure to hazardous substances
- Some associations found

Results: Data analysis

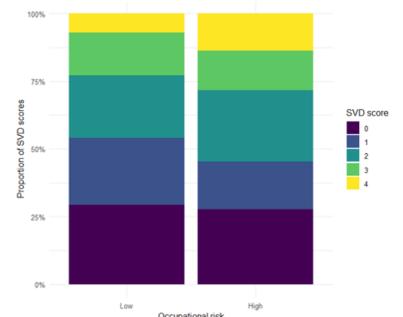


Figure 2: Graph showing distribution of SVD score by occupational risk

- **Univariate analyses:** No associations found for WMH volume, stroke subtype or SVD score
- **Multivariate analyses (n=494):** An association was found between high-risk occupations and a higher SVD score (OR =1.65 [95% CI 1.07, 2.55]) (Figure 2)
- No other associations found

Conclusions

- Systematic review shows limited knowledge on stroke subtypes and occupation
- Exposure to high-risk substances occupationally may be associated with higher SVD severity
- Further research should consider challenges in accurately measuring exposures and investigating midlife exposures