PROSPERO Registration Protocol: Mixed-Methods Systematic Review on Cancer Mortality in Individuals with an Intellectual Disability.

1. Title

Cancer Mortality in Individuals with a Learning Disability: A Mixed-Methods Systematic Review

2. Background and rationale

Cancer remains a leading cause of morbidity and mortality worldwide. While cancer survival outcomes have improved in the general population over recent decades, evidence suggests that people with a learning disability may experience poorer cancer-related outcomes compared to those without a learning disability. Learning disabilities are marked by limitations on intellectual function and affect approximately 1-2.5% of the Western population (Gillberg & Soderstrom, 2003).

Emerging evidence suggests that people with a learning disability may have higher cancer mortality rates and poor cancer-related survival outcomes when compared to the general population, and this may be due to delayed diagnoses, disparities in healthcare access, barriers to accessing screening programmes, and differences in treatment pathways (Afshar et al., 2020). Despite growing awareness of health inequalities in this population, the extent to which cancer-related outcomes differ from those in the general population remains unclear. In addition, there is a paucity of studies exploring how various factors may contribute to the observed differences in cancer mortality and survival. A mixed-methods approach is needed to integrate statistical evidence on disparities with qualitative insights into patient and system-level barriers.

This systematic review aims to synthesise available evidence on mortality outcomes of patients with a learning disability and cancer. Specifically, it will explore whether people with a learning disability experience different overall mortality or cancer-specific survival rates and explore underlying factors contributing to these differences. The findings from this integrated approach could inform healthcare policy, clinical guidelines, and future research focused on improving equitable cancer care and outcomes.

3. Review Questions

Main question:

Do individuals with a learning disability have a higher cancer mortality and poorer overall survival following diagnosis compared to those without, and what factors contribute to these differences?

Sub-questions:

Quantitative:

1. What are the reported cancer mortality and overall survival following diagnosis among people with a learning disability compared to the general population, according to quantitative studies?

Qualitative:

1. According to qualitative evidence, what factors are associated with cancer mortality and overall survival following diagnosis in people with a learning disability?
2. What are the barriers and facilitators for people with a learning disability in relation to cancer diagnosis, treatment and end of life care?

4. Objective

This mixed-methods systematic review aims to:

Quantitatively:

- Investigate whether cancer-specific mortality or overall survival following a cancer diagnosis differs in people with and without a learning disability.
- Systematically review the existing literature to determine the mortality and overall survival rates following diagnosis of people with a learning disability with cancer compared to the general population.

Qualitatively: Identify and synthesise qualitative evidence describing:

- Factors associated with cancer mortality and overall survival following diagnosis among people with a learning disability

- Barriers and facilitators influencing cancer diagnosis, treatment, and end-of-life care for this population.

5. Inclusion and exclusion criteria

Inclusion criteria for the review	
i. Population and exposure	Individuals of any age and sex with a learning disability
ii. Outcomes	• Cancer-specific mortality • Overall survival following a diagnosis of cancer
iii. Study types	• Quantitative observational studies (e.g. cohort, case-control, cross-sectional) • Qualitative studies • Publications from 2000-2025

Exclusion criteria for the review	
i. Non-original studies	Editorials, reviews, and commentaries
ii. Full-text unavailable	Incomplete articles or conference/meeting abstracts

6. Search Strategy

A comprehensive search will be conducted in the following electronic databases:

- EBSCO Host (Medline with full text, Cinahl, PsycINFO)
- OVID – Embase
- Scopus

Literature search terms will be developed using keywords and subject headings (MeSH) will include terms related to:

- Cancer (e.g., malignancy)
- Intellectual or learning disabilities (e.g., developmental disabilities, Down syndrome, learning disorder)
- Mortality and survival outcomes (e.g., survival rate, mortality, prognosis, hazard ratio)

The above will be supplemented by a keyword search of Google.

An example search strategy from EBSCO Host can be found in Appendix 1

7. Data Extraction and Management

Two independent reviewers will screen titles and abstracts, followed by full-text screening using Covidence software. The study selection process will be conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA, 2020). The PRISMA 2020 flow diagram will be included to present the numbers of records identified, included and excluded, and reasons for exclusions at each stage. A standardised data extraction form will be used to collect the following:

- **Study characteristics**: date of publication, design, setting, country
- **Population characteristics**: demographic information, sample size, cause and severity of learning disability and definition of learning disability used
- **Cancer-related details**: cancer type, stage at diagnosis, treatment, route to diagnosis

- **Effect estimates related to overall survival following diagnosis**: hazard ratios, odds ratio etc., cancer-specific mortality rates, survival times

8. Risk of Bias Assessment

The risk of bias and methodological quality of included studies will be assessed using the relevant Joanna Briggs Institute (JBI) critical appraisal checklists appropriate for each study design (e.g. cohort studies, cross-sectional studies, qualitative research). This approach ensures that both quantitative and qualitative studies are appraised in a standardised and transparent manner. To minimise selection and reviewer bias, critical appraisal will be conducted independently by at least two reviewers, with any disagreements resolved through discussion to reach consensus.

9. Strategy for Data Synthesis

Data synthesis will follow the JBI convergent segregated approach for mixed methods systematic reviews, which involves conducting separate syntheses of quantitative and qualitative evidence before integrating the findings narratively.

Quantitative data:

The characteristics and findings of included studies will be extracted and presented in tabulated form. Quantitative estimates (e.g. hazard ratios, mortality rates) will be pooled using random-effects meta-analyses. If data permit, subgroup analyses will be performed based on cancer type, age group, sex, and cause and severity of learning disability.

Qualitative data:

Data from the qualitative studies will be thematically analysed following Braun and Clarke's (2006) framework, specifically using their updated seven-phase process described in Braun and Clarke (2019). Two reviewers will independently carry out the analysis to identify recurring concepts and synthesise them into overarching themes.

Finally, the separate quantitative and qualitative syntheses will be integrated narratively to provide a comprehensive understanding of cancer mortality among people with a learning disability, drawing on both statistical trends and contextual insights.

10. Dissemination Plans

The findings will be submitted for publication in a peer-reviewed journal. Results may also be presented at relevant academic conferences and shared with stakeholders in healthcare, policy, and patient advocacy, and of note to the Convention on the Rights of Persons with Disabilities. An accessible format will be created and made available.

11. Anticipated Start and Completion Dates

- **Start date**: July 2025

12. Funding

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13. Conflicts of Interest

All authors will declare any conflicts of interest. At present, no conflicts of interest are known.

Appendix 1

Example of Database Specific Search Terms (EBSCO Host)

((MH "Neoplasms") OR TI (cancer OR malignan* OR tumour OR tumor OR carcinoma OR sarcoma OR lymphoma OR leukaemia OR leukemia OR melanoma OR glioma OR astrocytoma OR mesothelioma OR "germ cell") OR AB (cancer OR malignan* OR tumour OR tumor OR carcinoma OR sarcoma OR lymphoma OR leukaemia OR leukemia OR melanoma OR glioma OR astrocytoma OR mesothelioma OR "germ cell"))

AND

((MH "Intellectual Disability") OR TI ("learning disabilit*" OR "intellectual disabilit*" OR "developmental disabilit*" OR "mental retardation" OR "intellectual disorder*" OR "developmental disorder*" OR "learning disorder*") OR AB ("learning disabilit*" OR "intellectual disabilit*" OR "developmental disabilit*" OR "mental retardation" OR "intellectual disorder*" OR "developmental disorder*" OR "learning disorder*"))

AND

((MH "Mortality") OR (MH "Survival") OR TI (mortality OR death OR survival) OR AB (mortality OR death OR survival))