CO134

Systematic Review of the Impact of Early Versus Late Diagnosis and/or Haematopoietic Stem Cell Transplantation (HSCT) for Severe Combined Immunodeficiency (SCID)

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Background

- SCID is an inherited inborn error of immunity. It is one of the most severe forms of primary immunodeficiency.
- SCID is caused by genetic mutations and is characterised by T-cell lymphopenia, an absence of or significantly depleted level of functioning T-cells.
- HSCT is considered the gold standard treatment for infants with SCID.
- This study aimed to determine whether or not age at diagnosis and or HSCT may impact clinical outcomes.

Methods

- A systematic search of the literature was carried out up to 1 November 2021.
- Electronic searches were conducted using online databases, including forward and backward searches, which were supplemented with grey literature and hand-searching.
- While the primary outcome was survival, secondary outcomes including immune reconstitution and morbidity post HSCT were also included.

Figure 1 PRISMA flow diagram

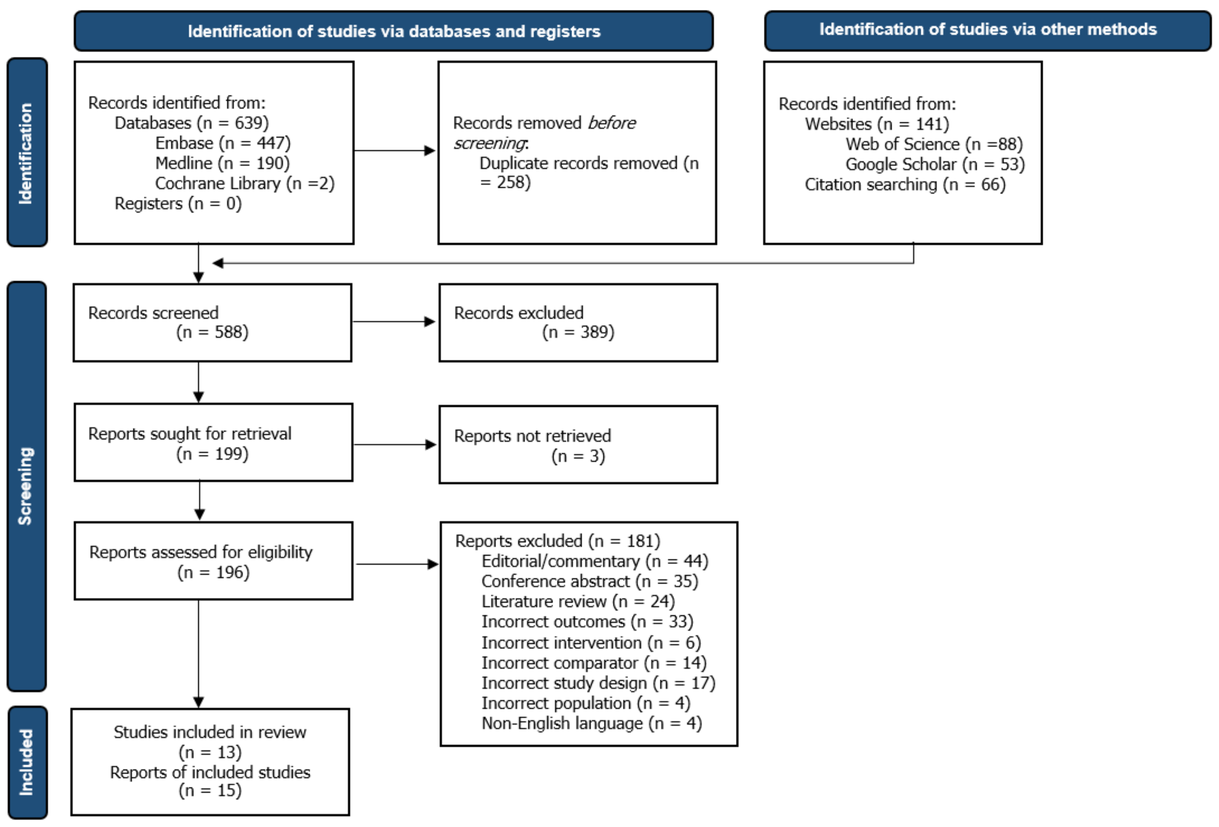
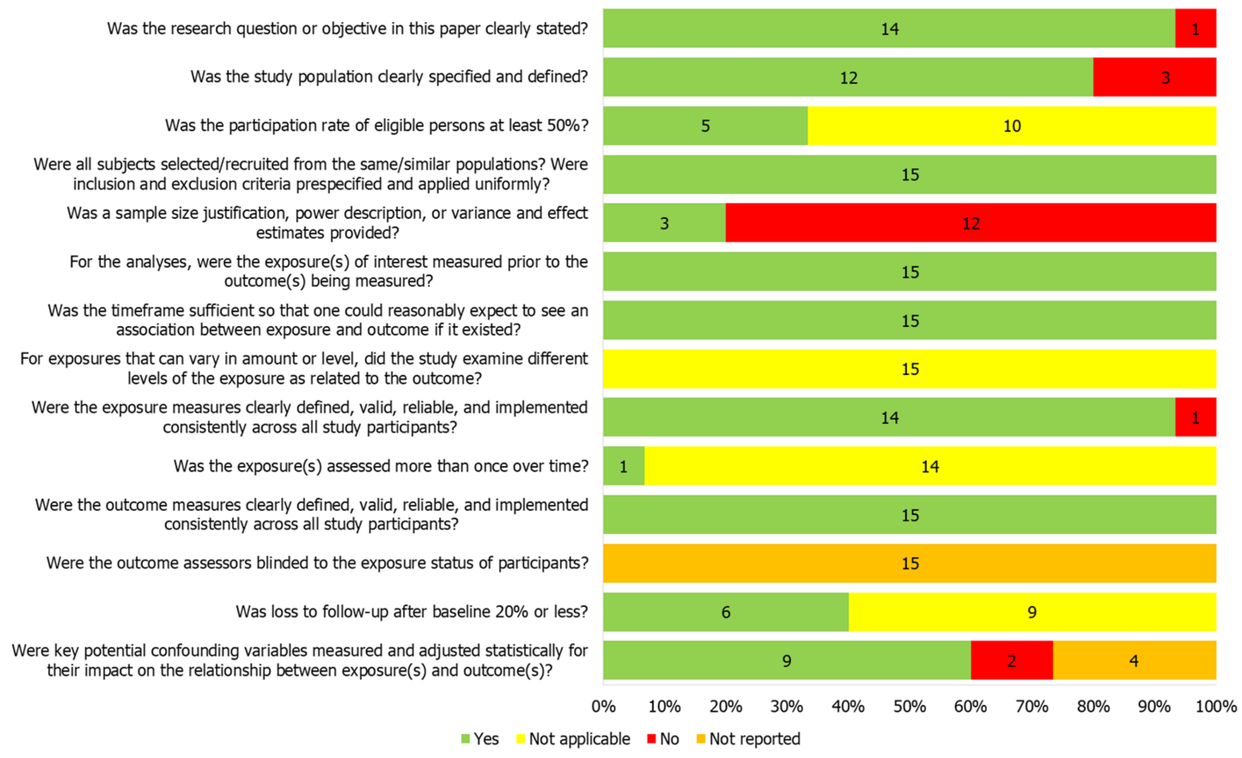


Figure 2 Summary risk of bias plot



Results

- Fifteen publications included, representing 13 unique cohorts (Figure 1).
- The description of early versus late diagnosis and or HSCT varied.
- Twelve of 13 independent studies had presented evidence suggesting early diagnosis and or HSCT led to improved survival outcomes.
- Eight studies reported the effect of pre-HSCT infections on survival outcomes; all observed that infections prior to HSCT negatively impacted survival with evidence to suggest that age may be a proxy for infection status up to the point of HSCT.
- Eight studies conducted sub-cohort analyses to investigate whether time period influenced outcomes, 5 found that survival outcomes improved over time.
- Lower rates of repeat HSCT were noted for those receiving HSCT earlier.
- Results for immune reconstitution were inconsistent, and data for neurological and developmental outcomes were limited.

Key findings

- Identified studies were limited by their observational nature, primarily involved retrospective review across multiple international settings and several decades, and were not designed to identify a causal relationship for the question of interest (Figure 2).
- Despite its limited nature, the evidence was relatively consistent in demonstrating that earlier diagnosis and or HSCT are associated with improved survival for children with SCID.
- The findings of this review indicate the likely effectiveness of newborn screening for SCID, however other factors may also need to be assessed.

Related HIQA Activity

Health Information and Quality Authority

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