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The prevalence of apathy after traumatic brain injury: a systematic review and meta-analysis

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REVIEW TITLE AND BASIC DETAILS

Review title
The prevalence of apathy after traumatic brain injury: a systematic review and meta-analysis

Review objectives
What is the prevalence of apathy after traumatic brain injury?

Keywords
apathy, TBI, Traumatic Brain Injury

SEARCHING AND SCREENING

Searches
Sources
Three databases will be searched electronically: MEDLINE, PsycINFO, and CINAHL. We will include peer-reviewed primary studies published in English and we will examine reference lists of retrieved papers to identify additional papers.
Search Date
The search will take place between 01/07/2024 and 1/09/2024 and no publication date restrictions will be used. Prior to the final analysis searches will be re-run to identify any further studies that can be included in the review.
Restrictions

• Studies unavailable in English
• Animal studies
• Studies that do not differentiate between acquired and traumatic brain injury

Study design
• Studies reporting prevalence of apathy as cases per sample

ELIGIBILITY CRITERIA

Condition or domain being studied
Apathy following traumatic brain injury (TBI).

Population
Studies of adult participants aged 18 and older who have had a traumatic brain injury.

Intervention(s) or exposure(s)
Studies measuring and reporting the prevalence of apathy via clinical assessment, validated questionnaires, structured interview measures.

Comparator(s) or control(s)
Studies with and without comparison groups

Context
There will be no restrictions by country or care setting.

OUTCOMES TO BE ANALYSED

Main outcomes
Prevalence of apathy measured using clinical classification, psychometric scale or structured interview assessment

Measures of effect
Cases per sample

Additional outcomes
None planned

DATA COLLECTION PROCESS

Data extraction (selection and coding)
Study Selection Process
Two reviewers will independently screen the titles and abstracts of all the records retrieved after removal of duplicates after automatic de-duplication. In case of disagreement, discussion will be held. A third reviewer will be consulted if a consensus cannot be reached. Then, the two reviewers will independently screen the full-text reports, and similar processes of discussion between the two reviewers and consultation with the third reviewer, in the case of disagreement,

will be held.

Data Extraction Process

A data extraction excel sheet will be developed. Two reviewers will use it to independently extract study characteristics and outcomes, and data will be compared. In cases of conflicts, discussion will be held or the third reviewer will be consulted.

Data Items

Outcomes

We will primarily extract the number of participants experiencing apathy after TBI. For a particular study, there may be a multiplicity of results, and we will follow a priori defined rules of decision to select data. (i) When both the raw number of participants experiencing apathy and the calculated statistics (e.g., odds ratios) are available, we will extract the raw number. (ii) When descriptive statistics of interval measures of apathy and the calculated statistics (e.g., p values or effect sizes) are available, we will extract the descriptive statistics. (iii) When both non-imputed and imputed data are reported, we will choose the imputed.

Exposures

We will primarily extract the number of participants experiencing TBI. If there is a multiplicity of results, and we will follow a priori defined rules of decision similar to those listed for outcome data (i.e., extracting raw values).

Study Characteristics

We will extract the (i) year and location of the study, (ii) study design, and (iii) participant characteristics (in the exposure and control groups [if any]).

Risk of bias (quality) assessment

Two reviewers will independently assess the quality of included studies using a 14-item checklist (Kmet et al., 2004) on a 3-point scale (0 = criteria not met; 1 = partially met; 2 = fully met), generating a summary score (total sum / total possible sum) ranging from 0 to 100, to categorise the low (0-49), moderate (50-74), and high (75-100) study quality. All disagreements will be resolved by consensus.

PLANNED DATA SYNTHESIS

Strategy for data synthesis

We will estimate the meta-analytic prevalence rate using the R package meta. We will use funnel plots and Egger’s test to examine potential publication bias. Afterwards, we will compute the I^2 statistic to measure heterogeneity among the included studies and we will use a random-effects model if heterogeneity is sufficiently high. We will conduct a leave-one-out sensitivity analysis to examine if the exclusion of any particular study would change the conclusions. We will make a post-hoc decision to decide whether to carry out subgroup analyses based on subgroups of study design (e.g., case-control, cohort studies), study location, and TBI severity (mild/ moderate/ severe). We will conduct sensitivity

analyses excluding studies at high risk of bias if risk of bias rating relates to outcome. If several studies report multiple apathy outcomes, we will use R package metafor to complete a multi-level meta-analysis. If there are insufficient data for any meta-analyses, we will conduct a narrative synthesis based on ESRC guidelines (Popay et al., 2006). The focus of the narrative synthesis will be the relationship between preceding TBI and subsequent apathy.

Analysis of subgroups or subsets

We will make a post-hoc decision to decide whether to carry out subgroup analyses based on subgroups of study design (e.g., case-control, cohort studies), study location, and TBI severity (mild/ moderate/ severe).

REVIEW AFFILIATION, FUNDING AND PEER REVIEW

Review team members

- Jessica Lynch, University College London
- Dr Vaughan Bell, University College London
- Dr Joe Mole, Oxford University Hospitals NHS Foundation Trust

Review affiliation

University College London

Funding source

No funders sponsored the review

TIMELINE OF THE REVIEW

Review timeline

Start date: 10 June 2024. End date: 01 January 2025

Date of first submission to PROSPERO

29 May 2024

Date of registration in PROSPERO

30 May 2024

CURRENT REVIEW STAGE

Publication of review results

The intention is to publish the review once completed.The review will be publcished in English

Stage of the review at this submission

Review stage	Started	Completed
Pilot work		

Review stage	Started	Completed
Formal searching/study identification		
Screening search results against inclusion criteria		
Data extraction or receipt of IP		
Risk of bias/quality assessment		
Data synthesis		

Review status
The review is currently planned or ongoing.

ADDITIONAL INFORMATION

PROSPERO version history

- Version 1.0 published on 30 May 2024

Review conflict of interest
None known

Country
England

Medical Subject Headings
Apathy; Brain Injuries; Brain Injuries, Traumatic; Humans; Motivation; Prevalence

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