Overview: The role of hyperosmolar solutions against neurological deterioration in mild and moderate traumatic brain injury: a scoping review.

|  |  |
| --- | --- |
| **Database** | **Number of hits** |
| Medline via Ovid | 1869 |
| EMBASE via Ovid | 2609 |
| Web of Science Core Collection | 2356 |
| CINAHL via Ebsco | 526 |
| PsycINFO via Ebsco | 76 |
| **Total** | **7436** |
| **Total Deduplicated in endnote** | **4454** |
| **Further deduplication in Covidence** | **4424** |

Searches run 27th Jan 2022

No limits.

Searches peer reviewed, as per [PRISMA-S recommendations](http://www.prisma-statement.org/Extensions/Searching)

PRISMA-S checklist completed

All databases run from inception to date.

# Medline

Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions(R) <1946 to January 25, 2022>

1 exp mannitol/ or exp saline solution, hypertonic/ or exp sodium chloride/ or exp Glycerol/ or hyperosmolar.ti,ab,kf. or (HTS or hypertonic saline or hypertonic solution\* or saline solution\* or mannitol or glycerol or glycerine or glycerin or sodium chloride or nacl or osmolality or osmitrol or osmofundin).ti,ab,kf. 251521

2 exp Brain Injuries/ or exp Brain Injuries, Traumatic/ or exp Craniocerebral Trauma/ or exp Brain Edema/ or exp Cerebrovascular Trauma/ or exp brain concussion/ or exp brain contusion/ or ((head or crani\* or cerebr\* or capitis or brain\* or forebrain\* or skull\* or hemispher\* or intra-cran\* or inter-cran\*) adj3 (injur\* or trauma\* or damag\* or wound\* or fracture\* or contusion\*)).ab,ti,kf. or ((head or crani\* or cerebr\* or brain\* or intra-cran\* or inter-cran\*) adj3 (haematoma\* or hematoma\* or haemorrhag\* or hemorrhag\* or bleed\* or pressure)).ti,ab,kf. or ((brain or cerebral or intracranial) adj3 (oedema\* or edema\* or swell\*)).ab,ti,kf. or ((unconscious\* or coma\* or concuss\* or persistent vegetative state) adj3 (injur\* or trauma\* or damag\* or wound\* or fracture\*)).ti,ab. or (concussion\* or contusion\*).ti,ab,kf. 320581

3 ((deteriorat\* adj5 (neurolog\* or brain\* or cognit\*)) or (declin\* adj5 (neurolog\* or brain\* or cognit\*)) or (chang\* adj5 (neurolog\* or brain\* or cognit\*)) or (impact\* adj5 (neurolog\* or brain\* or cognit\*)) or (herniat\* adj3 brain\*) or (intracranial adj3 (hypertension or pressure)) or (icu or itu or intensive care or critical care or high dependency or hdu) or anisocoria or (pupil\* adj5 (unequal\* or inequal\* or unreactive or unresponsive or react\* or respon\*)) or (intubat\* or ventilat\* or artificial respirat\*) or (Glasgow coma scale\* or Glasgow coma score\*) or (alter\* adj5 (neurolog\* or brain\* or cognit\*)) or (improv\* adj5 (neurolog\* or brain\* or cognit\*)) or (chang\* adj5 (neurolog\* or brain\* or cognit\*))).ti,ab,kf. or exp intracranial hypertension/ or exp critical care/ or exp intensive care units/ or exp anisocoria/ or exp intubation/ or exp respiration, artificial/ or exp Glasgow coma scale/ 733963

4 1 and 2 and 3 1869

# Embase

Embase <1974 to 2022 January 26>

1 exp \*mannitol/ or exp \*hypertonic solution/ or exp \*sodium chloride/ or exp \*Glycerol/ or hyperosmolar.ti,ab. or (HTS or hypertonic saline or hypertonic solution\* or saline solution\* or mannitol or glycerol or glycerine or glycerin or sodium chloride or nacl or osmolality or osmitrol or osmofundin).ti,ab. 247839

2 exp \*Brain Injury/ or exp \*traumatic Brain Injury/ or exp \*head injury/ or exp \*Brain Edema/ or exp \*brain concussion/ or exp \*concussion/ or exp \*brain contusion/ or ((head or crani\* or cerebr\* or capitis or brain\* or forebrain\* or skull\* or hemispher\* or intra-cran\* or inter-cran\*) adj3 (injur\* or trauma\* or damag\* or wound\* or fracture\* or contusion\*)).ab,ti. or ((head or crani\* or cerebr\* or brain\* or intra-cran\* or inter-cran\*) adj3 (haematoma\* or hematoma\* or haemorrhag\* or hemorrhag\* or bleed\* or pressure)).ti,ab. or ((brain or cerebral or intracranial) adj3 (oedema\* or edema\* or swell\*)).ab,ti. or ((unconscious\* or coma\* or concuss\* or persistent vegetative state) adj3 (injur\* or trauma\* or damag\* or wound\* or fracture\*)).ti,ab. or (concussion\* or contusion\*).ti,ab. 355738

3 ((deteriorat\* adj5 (neurolog\* or brain\* or cognit\*)) or (declin\* adj5 (neurolog\* or brain\* or cognit\*)) or (chang\* adj5 (neurolog\* or brain\* or cognit\*)) or (impact\* adj5 (neurolog\* or brain\* or cognit\*)) or (herniat\* adj3 brain\*) or (intracranial adj3 (hypertension or pressure)) or (icu or itu or intensive care or critical care or high dependency or hdu) or anisocoria or (pupil\* adj5 (unequal\* or inequal\* or unreactive or unresponsive or react\* or respon\*)) or (intubat\* or ventilat\* or artificial respirat\*) or (Glasgow coma scale\* or Glasgow coma score\*) or (alter\* adj5 (neurolog\* or brain\* or cognit\*)) or (improv\* adj5 (neurolog\* or brain\* or cognit\*)) or (chang\* adj5 (neurolog\* or brain\* or cognit\*))).ti,ab. or exp \*intracranial hypertension/ or exp \*intensive care/ or exp \*intensive care unit/ or exp \*high dependency unit/ or exp \*anisocoria/ or exp \*intubation/ or exp \*artificial ventilation/ or exp \*Glasgow coma scale/ 1084029

4 1 and 2 and 3 2609

# Web of Science Core Collection

* Science Citation Index Expanded (SCI-EXPANDED)--1900-present
* Social Sciences Citation Index (SSCI)--1956-present
* Arts & Humanities Citation Index (AHCI)--1975-present
* Conference Proceedings Citation Index – Science (CPCI-S)--1990-present
* Conference Proceedings Citation Index – Social Science & Humanities (CPCI-SSH)--1990-present
* Book Citation Index – Science (BKCI-S)--2008-present
* Book Citation Index – Social Sciences & Humanities (BKCI-SSH)--2008-present
* Emerging Sources Citation Index (ESCI)--2017-present
* Current Chemical Reactions (CCR-EXPANDED)--1985-present
* Index Chemicus (IC)--1993-present

1 TS=( hyperosmolar or HTS or hypertonic saline or hypertonic solution\* or saline solution\* or mannitol or glycerol or glycerine or glycerin or sodium chloride or nacl or osmolality or osmitrol or osmofundin)

2 TS=((head or crani\* or cerebr\* or capitis or brain\* or forebrain\* or skull\* or hemispher\* or intra-cran\* or inter-cran\*) and (injur\* or trauma\* or damag\* or wound\* or fracture\* or contusion\*)) or TS= ((head or crani\* or cerebr\* or brain\* or intra-cran\* or inter-cran\*) and (haematoma\* or hematoma\* or haemorrhag\* or hemorrhag\* or bleed\* or pressure)) or TS=((brain or cerebral or intracranial) and (oedema\* or edema\* or swell\*)) or TS= ((unconscious\* or coma\* or concuss\* or persistent vegetative state) and (injur\* or trauma\* or damag\* or wound\* or fracture\*)) or TS=(concussion\* or contusion\*)

3 TS=((deteriorat\* near/5 (neurolog\* or brain\* or cognit\*)) or (declin\* near/5 (neurolog\* or brain\* or cognit\*)) or (chang\* near/5 (neurolog\* or brain\* or cognit\*)) or (impact\* near/5 (neurolog\* or brain\* or cognit\*)) or (herniat\* near/3 brain\*) or (intracranial near/3 (hypertension or pressure)) or (icu or itu or intensive care or critical care or high dependency or hdu) or anisocoria or (pupil\* near/5 (unequal\* or inequal\* or unreactive or unresponsive or react\* or respon\*)) or (intubat\* or ventilat\* or artificial respirat\*) or (Glasgow coma scale\* or Glasgow coma score\*) or (alter\* near/5 (neurolog\* or brain\* or cognit\*)) or (improv\* near/5 (neurolog\* or brain\* or cognit\*)) or (chang\* near/5 (neurolog\* or brain\* or cognit\*)))

4 1 and 2 and 3

# CINAHL via Ebsco

|  |  |  |
| --- | --- | --- |
| **#** | **Query** | **Results** |
| S4 | S1 AND S2 AND S3 | 526 |
| S3 | TI ( ((deteriorat\* n5 (neurolog\* or brain\* or cognit\*)) or (declin\* n5 (neurolog\* or brain\* or cognit\*)) or (chang\* n5 (neurolog\* or brain\* or cognit\*)) or (impact\* n5 (neurolog\* or brain\* or cognit\*)) or (herniat\* n3 brain\*) or (intracranial n3 (hypertension or pressure)) or (icu or itu or intensive care or critical care or high dependency or hdu) or anisocoria or (pupil\* adj5 (unequal\* or inequal\* or unreactive or unresponsive or react\* or respon\*)) or (intubat\* or ventilat\* or artificial respirat\*) or (Glasgow coma scale\* or Glasgow coma score\*) or (alter\* n5 (neurolog\* or brain\* or cognit\*)) or (improv\* n5 (neurolog\* or brain\* or cognit\*)) or (chang\* n5 (neurolog\* or brain\* or cognit\*))) ) or AB ( ((deteriorat\* n5 (neurolog\* or brain\* or cognit\*)) or (declin\* n5 (neurolog\* or brain\* or cognit\*)) or (chang\* n5 (neurolog\* or brain\* or cognit\*)) or (impact\* n5 (neurolog\* or brain\* or cognit\*)) or (herniat\* n3 brain\*) or (intracranial n3 (hypertension or pressure)) or (icu or itu or intensive care or critical care or high dependency or hdu) or anisocoria or (pupil\* adj5 (unequal\* or inequal\* or unreactive or unresponsive or react\* or respon\*)) or (intubat\* or ventilat\* or artificial respirat\*) or (Glasgow coma scale\* or Glasgow coma score\*) or (alter\* n5 (neurolog\* or brain\* or cognit\*)) or (improv\* n5 (neurolog\* or brain\* or cognit\*)) or (chang\* n5 (neurolog\* or brain\* or cognit\*))) ) or (MH "Intracranial Hypertension+") OR (MH "Critical Care+") OR (MH "Intensive Care Units+") OR (MH "Intubation+") OR (MH "Respiration, Artificial+") OR (MH "Glasgow Coma Scale") | 266,679 |
| S2 | (MH "Brain Injuries+") OR (MH "Head Injuries+") OR (MH "Cerebral Edema+") OR (MH "Brain Concussion+") OR (MH "Brain Contusions") or TI ( ((head or crani\* or cerebr\* or capitis or brain\* or forebrain\* or skull\* or hemispher\* or intra-cran\* or inter-cran\*) n3 (injur\* or trauma\* or damag\* or wound\* or fracture\* or contusion\*)) or ((head or crani\* or cerebr\* or brain\* or intra-cran\* or inter-cran\*) n3 (haematoma\* or hematoma\* or haemorrhag\* or hemorrhag\* or bleed\* or pressure)) or ((brain or cerebral or intracranial) n3 (oedema\* or edema\* or swell\*)) or ((unconscious\* or coma\* or concuss\* or persistent vegetative state) n3 (injur\* or trauma\* or damag\* or wound\* or fracture\*)) or (concussion\* or contusion\*)) or AB ( ((head or crani\* or cerebr\* or capitis or brain\* or forebrain\* or skull\* or hemispher\* or intra-cran\* or inter-cran\*) n3 (injur\* or trauma\* or damag\* or wound\* or fracture\* or contusion\*)) or ((head or crani\* or cerebr\* or brain\* or intra-cran\* or inter-cran\*) n3 (haematoma\* or hematoma\* or haemorrhag\* or hemorrhag\* or bleed\* or pressure)) or ((brain or cerebral or intracranial) n3 (oedema\* or edema\* or swell\*)) or ((unconscious\* or coma\* or concuss\* or persistent vegetative state) n3 (injur\* or trauma\* or damag\* or wound\* or fracture\*)) or (concussion\* or contusion\*)) | 77,127 |
| S1 | (MH "Mannitol") OR (MH "Saline Solution, Hypertonic") OR (MH "Sodium Chloride+") or TI ( hyperosmolar or (HTS or hypertonic saline or hypertonic solution\* or saline solution\* or mannitol or glycerol or glycerine or glycerin or sodium chloride or nacl or osmolality or osmitrol or osmofundin)) or AB ( hyperosmolar or (HTS or hypertonic saline or hypertonic solution\* or saline solution\* or mannitol or glycerol or glycerine or glycerin or sodium chloride or nacl or osmolality or osmitrol or osmofundin)) | 17,695 |

# PsycINFO via Ebsco

|  |  |  |
| --- | --- | --- |
| **#** | **Query** | **Results** |
| S4 | S1 AND S2 AND S3 | 76 |
| S3 | TI ( ((deteriorat\* n5 (neurolog\* or brain\* or cognit\*)) or (declin\* n5 (neurolog\* or brain\* or cognit\*)) or (chang\* n5 (neurolog\* or brain\* or cognit\*)) or (impact\* n5 (neurolog\* or brain\* or cognit\*)) or (herniat\* n3 brain\*) or (intracranial n3 (hypertension or pressure)) or (icu or itu or intensive care or critical care or high dependency or hdu) or anisocoria or (pupil\* adj5 (unequal\* or inequal\* or unreactive or unresponsive or react\* or respon\*)) or (intubat\* or ventilat\* or artificial respirat\*) or (Glasgow coma scale\* or Glasgow coma score\*) or (alter\* n5 (neurolog\* or brain\* or cognit\*)) or (improv\* n5 (neurolog\* or brain\* or cognit\*)) or (chang\* n5 (neurolog\* or brain\* or cognit\*))) ) or AB ( ((deteriorat\* n5 (neurolog\* or brain\* or cognit\*)) or (declin\* n5 (neurolog\* or brain\* or cognit\*)) or (chang\* n5 (neurolog\* or brain\* or cognit\*)) or (impact\* n5 (neurolog\* or brain\* or cognit\*)) or (herniat\* n3 brain\*) or (intracranial n3 (hypertension or pressure)) or (icu or itu or intensive care or critical care or high dependency or hdu) or anisocoria or (pupil\* adj5 (unequal\* or inequal\* or unreactive or unresponsive or react\* or respon\*)) or (intubat\* or ventilat\* or artificial respirat\*) or (Glasgow coma scale\* or Glasgow coma score\*) or (alter\* n5 (neurolog\* or brain\* or cognit\*)) or (improv\* n5 (neurolog\* or brain\* or cognit\*)) or (chang\* n5 (neurolog\* or brain\* or cognit\*))) ) or ((DE "Intensive Care" OR DE "Neonatal Intensive Care") OR (DE "Artificial Respiration")) OR (DE "Intuition") | 125,270 |
| S2 | ((DE "Traumatic Brain Injury" OR DE "Brain Concussion") OR (DE "Brain Injuries" OR DE "Traumatic Brain Injury")) OR (DE "Brain Concussion") or TI ( ((head or crani\* or cerebr\* or capitis or brain\* or forebrain\* or skull\* or hemispher\* or intra-cran\* or inter-cran\*) n3 (injur\* or trauma\* or damag\* or wound\* or fracture\* or contusion\*)) or ((head or crani\* or cerebr\* or brain\* or intra-cran\* or inter-cran\*) n3 (haematoma\* or hematoma\* or haemorrhag\* or hemorrhag\* or bleed\* or pressure)) or ((brain or cerebral or intracranial) n3 (oedema\* or edema\* or swell\*)) or ((unconscious\* or coma\* or concuss\* or persistent vegetative state) n3 (injur\* or trauma\* or damag\* or wound\* or fracture\*)) or (concussion\* or contusion\*)) or AB ( ((head or crani\* or cerebr\* or capitis or brain\* or forebrain\* or skull\* or hemispher\* or intra-cran\* or inter-cran\*) n3 (injur\* or trauma\* or damag\* or wound\* or fracture\* or contusion\*)) or ((head or crani\* or cerebr\* or brain\* or intra-cran\* or inter-cran\*) n3 (haematoma\* or hematoma\* or haemorrhag\* or hemorrhag\* or bleed\* or pressure)) or ((brain or cerebral or intracranial) n3 (oedema\* or edema\* or swell\*)) or ((unconscious\* or coma\* or concuss\* or persistent vegetative state) n3 (injur\* or trauma\* or damag\* or wound\* or fracture\*)) or (concussion\* or contusion\*)) | 60,160 |
| S1 | TI ( hyperosmolar or (HTS or hypertonic saline or hypertonic solution\* or saline solution\* or mannitol or glycerol or glycerine or glycerin or sodium chloride or nacl or osmolality or osmitrol or osmofundin)) or AB ( hyperosmolar or (HTS or hypertonic saline or hypertonic solution\* or saline solution\* or mannitol or glycerol or glycerine or glycerin or sodium chloride or nacl or osmolality or osmitrol or osmofundin)) | 5,061 |

# PRISMA-S Checklist

|  |  |  |  |
| --- | --- | --- | --- |
| **Section/topic** | **#** | **Checklist item** | **Location(s) Reported** |
| **INFORMATION SOURCES AND METHODS** | | | |
| Database name | 1 | Name each individual database searched, stating the platform for each. | Page 1 |
| Multi-database searching | 2 | If databases were searched simultaneously on a single platform, state the name of the platform, listing all of the databases searched. | n/a |
| Study registries | 3 | List any study registries searched. | n/a |
| Online resources and browsing | 4 | Describe any online or print source purposefully searched or browsed (e.g., tables of contents, print conference proceedings, web sites), and how this was done. | n/a |
| Citation searching | 5 | Indicate whether cited references or citing references were examined, and describe any methods used for locating cited/citing references (e.g., browsing reference lists, using a citation index, setting up email alerts for references citing included studies). | n/a |
| Contacts | 6 | Indicate whether additional studies or data were sought by contacting authors, experts, manufacturers, or others. | n/a |
| Other methods | 7 | Describe any additional information sources or search methods used. | n/a |
| **SEARCH STRATEGIES** | | | |
| Full search strategies | 8 | Include the search strategies for each database and information source, copied and pasted exactly as run. | Pages 1-6 |
| Limits and restrictions | 9 | Specify that no limits were used, or describe any limits or restrictions applied to a search (e.g., date or time period, language, study design) and provide justification for their use. | No limits |
| Search filters | 10 | Indicate whether published search filters were used (as originally designed or modified), and if so, cite the filter(s) used. | No filters |
| Prior work | 11 | Indicate when search strategies from other literature reviews were adapted or reused for a substantive part or all of the search, citing the previous review(s). | n/a |
| Updates | 12 | Report the methods used to update the search(es) (e.g., rerunning searches, email alerts). | n/a |
| Dates of searches | 13 | For each search strategy, provide the date when the last search occurred. | Page 1  27th Jan 2022 |
| **PEER REVIEW** | | | |
| Peer review | 14 | Describe any search peer review process. | Peer review carried out independently by 2 medical librarians |
| **MANAGING RECORDS** | | | |
| Total Records | 15 | Document the total number of records identified from each database and other information sources. | Page 1 |
| Deduplication | 16 | Describe the processes and any software used to deduplicate records from multiple database searches and other information sources. | Endnote was used to deduplicate, with iterative matching of fields, as per validated, published recommendations  <https://doi.or/10.3163%2F1536-5050.104.3.014> |
|  |  |  |  |
| PRISMA-S: An Extension to the PRISMA Statement for Reporting Literature Searches in Systematic Reviews | | |  |
| Rethlefsen ML, Kirtley S, Waffenschmidt S, Ayala AP, Moher D, Page MJ, Koffel JB, PRISMA-S Group. | | |  |
| Last updated February 27, 2020. | |  |  |