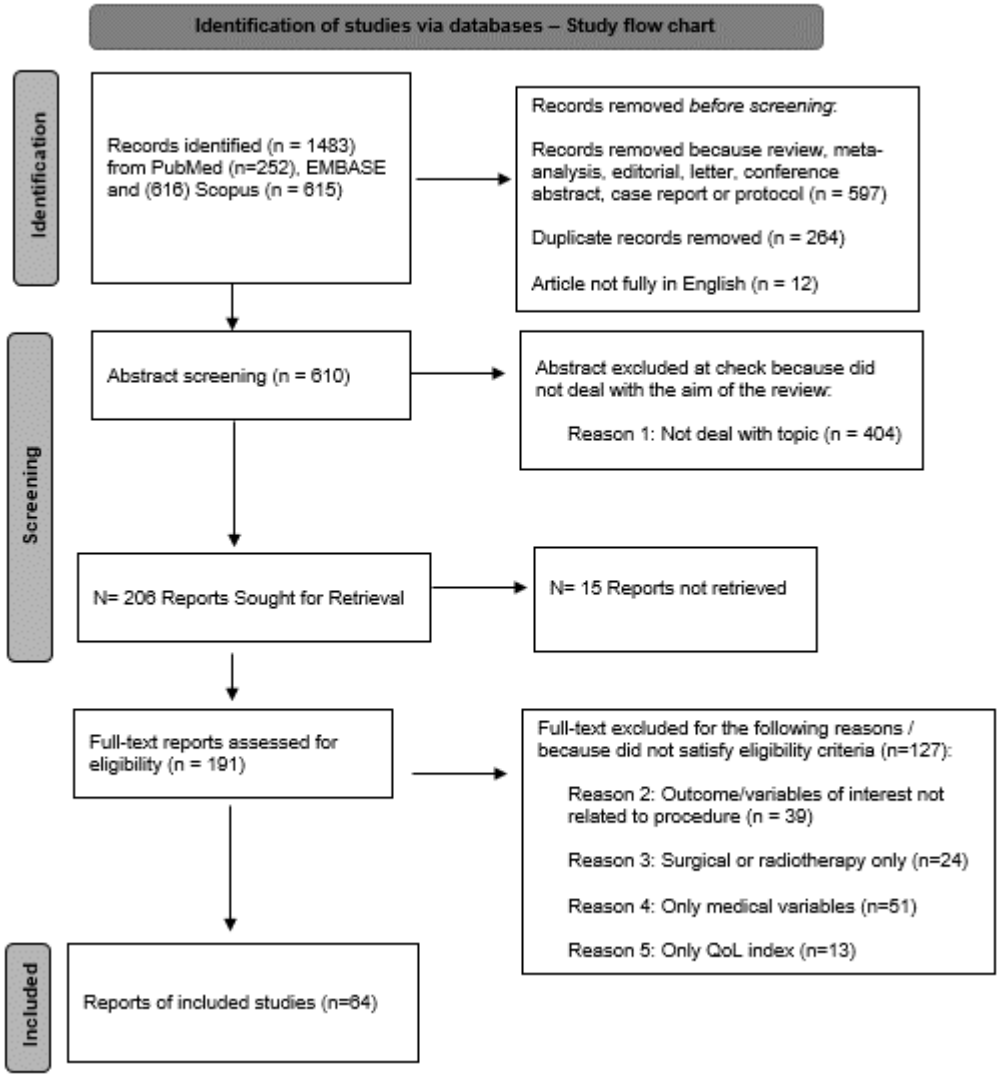

Figure 1. *PRISMA study selection diagram.* Study flow chart.

Table S1. *Articles based on psychological investigations focused on RIA/ UIA/CBVD/ IS patient outcome.* Retrospective and prospective studies in chronological order.

Focus on Psychological investigation (12 studies)				
Authors	**Study Population**	**Study Design**	**Timing and Measures of Assessment**	**Relevant results**
Schaaf et al 2006[10]	69 RIA (35 new aneurysm at FU)	Retrospective	6/12-month FU: Anxiety/Depression (HADS), QoL (SF-36, EQL)	In treated RIA pts, finding a new aneurysm had no major impact on anxiety/depression and QoL score.
Wostrack et al 2014[9]	63 RIA (35 EC vs 28 SC)	Retrospective	12/17-month FU: MR-DTI, Anxiety/Depression (HADS, BDI)	In SC pts, more anxiety/depression score and DTI changes (hippocampal neuronal loss).
Buijs et al 2012[22]	173 UIA: 92 treated (57 EC/ 73 SC) vs 81 untreated	Retrospective	6-month/19-year: Anxiety/Depression (HADS), QoL (SF-36, EQL)	In both groups, no significant differences in anxiety/depression and QoL score.
Fontana et al 2015[6]	45 UIA (22 EC/ 25 SC) vs 58 controls (meningioma)	Retrospective	6-month FU: psychiatric history, Headache (KHQ), Sleep (PSQI), Fatigue (CFS), QoL (SF-36, EQL).	In both groups, no significant differences in headache, sleep, chronic fatigue and QoL, excluding psychiatric history.
Wenz et al 2016[11]	45 UIA (22 EC/ 25 SC) vs 58 controls (meningioma)	Retrospective	1/2-year and 3/7-year FU: Depression (BDI), Subjective trauma (IES), PTSD (PCL)	In UIA group, significantly higher rate of psychiatric symptoms. Good acceptance of early psychological consultation.
Lombardo et al 2020[21]	349 CBVD (UIA, AVM, IPH, CAS, IS) after DSA/ EV/ NS	Retrospective	30-day/6-month FU: Anxiety/Depression GHQ (GMH-GPH)	In self-reporting anxiety/depression pts, GMH impaired at 30-day, with normalization at 6-month.
Schneider et al 2002[7]	30 DSA: 15 Exp. Group vs 15 controls (tumour, IPH, AVM, vasculitis, aneurysm)	Prospective (RCT)	Pre/Peri/Post DSA: Anxiety (STAI), Stress (BP, cortisol level) During DSA: Music vs Standard Care	In EG pts, anxiety correlate with low levels of cortisol and BP, the opposite in controls. In both groups, significant effect in reducing stress and anxiety with music intervention.
Vanderboom et al 2012[25]	48 DSA: 24 Exp. Group vs 24 controls (aneurysm, AVM)	Prospective (RCT)	Pre/Post DSA: Anxiety (STAI), Stress (HR, BP) During DSA: Music vs Standard Care	In both groups, no significant differences on reducing stress response, anxiety or medication requirements with music intervention.
Sayadi et al 2018[24]	88 DSA: 44 Exp. Group vs 44 controls	Prospective (RCT)	Pre/Post DSA: Anxiety (STAI), Stress (HR, BP) Pre DSA: Multimedia vs Standard Care	In both groups, no significant effects on reducing anxiety with multimedia education, but significant effects on physiological stress (HR, BP).
Kolahi et al 2020[26]	120 DSA: 60 Exp. Group vs 60 controls	Prospective (RCT)	Pre/Post DSA: DASS-21 Pre DSA: Room orientation	In both groups, significant effects on reducing anxiety with room orientation.
Choi et al 2022[23]	55 DSA: 27 Exp. Group vs 28 controls	Prospective	Pre DSA: Multimedia vs Standard care Pre/Post DSA: Anxiety (STAI)	In both groups, significant effects on reducing anxiety/discomfort increasing care satisfaction with multimedia education.
Polding et al 2021[27]	182 IS: 92 MT+Med Tx vs 90 Med Tx	Prospective (RCT)	90-day FU: Neuro-QoL	In MT pts, better mobility, more social participation, superior cognition, and less depression.

Table S2. *Articles based on cognitive investigations focused on RIA/ UIA/ IS/ ICAO and AVM/DAVF patient outcome*. Retrospective and prospective studies in chronological order.

Focus on Cognitive investigation (52 studies)				
Authors	**Study Population**	**Study Design**	**Timing and Measures of Assessment**	**Relevant results**
Tab. S2a: same outcome after EC vs SC treatments (9 studies)				
Ma et al 2021[28]	126 R-ACoA (27 EC vs 99 SC)	Retrospective	24-month FU: General cognition (TICS), Daily Life (IADL)	In both groups, no significant differences.
Koivisto et al 2002[30]	109 RIA (52 EC vs 57 SC)	Prospective	3/12-month FU: Memory (story recall, ROCF), Language (word fluency, Boston naming test), Attention (Stroop, TMT, FTT).	In both groups, no significant differences.
Preiss et al 2007[32]	75 RIA (40 EC vs 35 SC)	Prospective	12- month FU: General cognition (WAIS-III), Memory (AVLT), Attention (TMT)	In both groups, no significant differences.
Proust et al 2009[33]	50 R-ACoA (14 EC vs 36 SC)	Prospective	14- month FU: Frontal battery (TMT, Stroop, Baddley, verbal fluency, WCST), Behavioural dysexecutive syndrome (ISDC), QoL	In both groups, no significant differences.
Mukerji et al 2010[31]	77 RIA (EC vs SC) vs 30 controls	Prospective	1-year FU: General cognition (MMSE), Attention (Star cancellation, Line bisection, Elevator test), Executive Function (BADS)	No significant differences between EC and SC.
Preiss et al 2012[35]	65 UIA (32 EC vs 33 SC)	Prospective	Pre at 1-month/ Post at 12-month: Memory (RAVLT), Psychomotor Speed (TMT-A), Executive Function (TMT-B).	In both groups, no significant differences.
Bründl et al 2018[29]	26 RIA (9 EC, 6 SC, 6 Med Tx)	Prospective	11-35-day and 6-month FU: Symptom burden (ISR), QoL (SF-36)	In both groups, no significant differences.
Proust et al 2018[34]	41 RIA (20 EC vs 21 SC)	Prospective (RCT)	12-month FU: General cognition (MMSE), Daily Life (ADL), Disability (mRS)	In both groups, no significant differences.
Zabyhian et al 2018[13]	50 RIA (20 EC vs 30 SC)	Prospective	6-month FU: General cognition (MMSE), Anxiety and Depression (HADS), QoL (SF-36)	In both groups, no significant differences.
Tab. S2b: better outcome after EC vs SC treatments (11 studies)				
Latimer et al 2013[36]	23 RIA (14 EC vs 9 SC)	Retrospective	12-month FU: Screening (WASI), Attention (TEA), Executive Function (DEX), Memory (WMS), HADS, BICRO-39	In EC group, better cognitive outcome.
Chan et al 2002[3]	18 R-ACoA (9 EC vs 9 SC)	Prospective	12-month FU: General Cognition (MMSE)	In EC group, better cognitive outcome.

Fontanella et al 2003[38]	37 R-ACoA (17 EC vs 20 SC) vs controls (16 SAH sine materia vs 18 healthy controls)	Prospective	Discharge/1/6-month FU: Attention (visual search), Memory (word repetition, Corsi, visual and spatial learning), Executive Function (picture arrangement, literal, associative, category fluency), Language (sentence construction), Intelligence (Raven, verbal judgment)	In EC group, better memory/executive /language outcome.
Frazer et al 2007[39]	23 RIA (11 EC vs 12 SC)	Prospective	2-week/6-month FU: Intelligence (IQ, matrices), Memory (RMT, ROCF delayed recall), Language (graded naming test, spelling, calculation), Perception (silhouettes, cube analysis), Executive Function (COWA, MCST, Stroop, TMT-B), Processing speed (TMT-A, digit copy, number cancellation, SDMT)	In EC group, in early post-op better cognitive outcome. Differences reduced at long-term FU.
Bendel et al 2009[41]	37 R-ACA (20 EC vs 17 SC) vs 30 healthy controls	Prospective (RCT)	12-month FU: MRI (VBM), Screening (WAIS), Verbal (Boston naming test), Memory (WMS), Executive Function (TMT)	In EC group, better executive outcome and fewer areas of grey matter atrophy.
Vieira et al 2012[40]	151 RIA (29 EC vs 122 SC)	Prospective	Pre/Post at discharge): Language (Montreal–Toulouse Protocol: Aphasia Test), Fluency and Verbal Memory (CERAD battery, Edinburgh Handedness)	In EC group, no additional cognitive deficits, better language and verbal memory outcome. No differences at baseline.
Beeckmans et al 2020[37]	35 R-ACoA (16 EC vs 19 SC) vs 20 healthy controls	Prospective	1-week FU:: Attention (Digit symbol, Stroop, BWT), Memory (Story recall, RAVLT, ROCF), Visuospatial (JLOT, ROCF) and Executive Function (Category test, Maze test)	In EC group, better auditory /verbal and visuospatial memory outcome.
Gao et al 2022[42]	144 RIA (72 EC vs 72 SC)	Prospective (RCT)	Pre/3-month FU: General cognition (MOCA, MMSE), Daily Life (ADL)	In EC group, better cognitive outcome.
Scott et al 2010[43]	474 UIA (262 EC vs 212 SC)	Prospective	12-month FU: Intelligence and Memory (RMT, CVLT, AMPIB, WAIS, ROCF recall), Language (phonemic and semantic fluency, Boston naming test), Attention (ROCF copy) and Executive Function (SDMT, CANTAB)	In EC group, better cognitive outcome.
Bründl et al 2016[44]	30 UIA (10 EC vs 10 SC) vs 10 controls (spine disease)	Prospective	Pre/6-week FU: Memory (LG memory of WMS-IV, ROCF, Corsi and WM with Digit Span back & forward), Psychomotor functioning (TMT-A), Executive Function (TMT-B; verbal fluency, RWF)	In EC group, better executive /auditory /verbal and semantic memory outcome.
Caveney et al 2019[45]	128: 85 UIA (35 EC vs 50 SC) vs 43 healthy controls	Prospective	Pre/2-week/3/6/12-month FU: Global Health (GOS; NIHSS, mRS, IADL), Memory (RAVLT; ROCF), Motor (GP Dom – non Dom), Processing Speed (SPD, COWA, TMT-A, Digit Symbol), Executive Function (TMT B, CW Stoop, Grot Maze Recall Errors)	In EC group, fewer cognitive deficits in short term FU. No differences between EC/SC/controls at 12-month FU.

Tab. S2c: outcome after endovascular treatments on aneurysm, stroke and vascular malformation (15 studies)				
Sousa et al 2019[49]	14 RIA, EC	Retrospective	10/12-year FU: General cognition (MOCA, SMCS), QoL (SF-36), Daily Life (IADL)	In this group, more cognitive deficits in younger and professionally active pts.
Manning et al 2005[47]	35 RIA, EC (ACoA vs MCA)	Prospective	12-month FU: Memory (RMT, GB, Word List), Executive Function (London tower, Stroop, Luria, Fluency, MCST)	In both groups, better memory than executive outcome w/o significant differences.
Shen et al 2018[48]	152 RIA, EC	Prospective	6-month FU: General cognition (MOCA)	In this group, aneurysm site, ischemia or hydrocephalus had no impact on cognitive outcome.
Bründl et al 2018[46]	26 RIA, EC	Prospective	11-35-day/6-month FU: Burden symptom (ISR), QoL (SF-36) CSF analysis daily for 10 days (NPY peptide)	In this group, cognitive deficits correlated with increased levels of NPY in CSF.
Pang et al 2020[52]	128 RIA/ UIA (EC vs stent+EC)	Retrospective	12-month FU: General cognition (MMSE)	In EC group, better cognitive outcome.
Kang et al 2013[50]	40 UIA, EC	Prospective	Pre/1/4-month FU: Memory (RAVLT, ROCF) Executive Function (Stroop, FAB), Attention (Choice reaction time), Psychomotor processing speed (Spatial Span, Stop Signal, Stockings of Cambridge and Paired-Associates Learning) 1-day FU: MR-DWI	In this group, cognitive functions resumed or improved to baseline at 1-month. No significant relationships between cognitive outcome and lesions at MR-DWI.
Wagner et al 2019[54]	51 UIA, FD	Prospective	Pre/1/6-month FU: General cognition (MOCA)	In this group, no impact on cognitive outcome.
Srivatsan et al 2021[51]	33 UIA, EC	Prospective	Pre/1/3-month FU: General cognition (MOCA)	In this group, no impact on cognitive outcome.
Ishii et al 2021[53]	23 UIA (4 EC/ 1 stent+ EC/ 7 FD/ 11 WEB)	Prospective	Pre/40–55-day FU: General cognition (MOCA)	In this group, the use of monitored anesthesia versus general anesthesia improved cognitive outcome.
Lopez-Cancio et al 2017[55]	206 IS (MT vs Med Tx)	Prospective	3/12-month FU: Attention and Executive Function (TMT)	In MT group, better attention and executive outcome in pts with good functional recovery (mRS < 2).
Xu et al 2017[57]	90 IS (33 MT/CT guided vs 34 MT/MRI guided vs 23 IVT)	Prospective (RCT)	90-day FU: General cognition (MMSE, MOCA)	In MT groups, better cognitive outcome.
Lattanzi et al 2020[4]	88 IS (38 IVT vs 50 IVT+MT)	Prospective	6-month FU: Memory (Digit span, ROCF, RAVLT), Attention (Stroop, TMT)	In MT groups better cognitive outcome.

Strambo et al 2020[56]	106 IS (20 MT±IVT vs 34 IVT+51 Conservative Tx)	Retrospective	3-month FU: Language, Praxia, Visual agnosia (overlapping figures, face recognition), Neglect (exploration picture, line bisection), Memory (word recognition), Executive Function, Attention, mRS.	In MT + IVT group, better disability, visual, and cognitive outcome.
Korno et al 2020[17]	29 (11 AVM vs 18 healthy controls)	Retrospective	12-month FU: fMRI and neuropsychological testing (speech block paradigm, Counting test, Optical functions, visual memory)	In AVM patients, decrease in fMRI network activation in prefrontal and limbic areas.
Sekar et l 2022[58]	66 (33 DAVF vs 33 healthy controls)	Prospective	Pre/1-month FU: Functional Connectivity (rsfMRI), General Cognition (ACE), Memory (RAVLT, WMS), Attention and Executive Function (TMT)	In this group, cognitive score changes correspond to cerebral network modifications.
Tab. S2d: outcome after vessel stenosis treatments (17 studies)				
Moftakhar et al 2005[59]	21 (10 ECS/ 4 ICS/ 7 VBS)	Retrospective	3/14-month FU: General Cognition (IQ-CODE) Pre/4-hour/3-month FU: CT or MRI-PWI	In this group, stenting improved cerebral perfusion with better cognitive outcome.
Grunwald et al 2006[12]	10 CAS	Prospective	Pre/2-day FU: General cognition (MMSE), Memory (CERAD)	In this group, stenting improved cognition and memory outcome.
Witt et al 2007[73]	45 (21 CAS vs 24 CEA)	Prospective (RCT)	Pre/6/30-day FU: Verbal memory (RAVLT); Nonverbal memory (ROCF); Attention (PVSAT, TMT); Executive functioning (FTT, RNGT)	In both groups, no significant differences on cognitive outcome.
Xu et al 2007[74]	120 (54 CAS vs 66 DSA)	Prospective	Pre/1/12-week FU: General Cognition (WAIS, MMSE), Memory (RAVLT), Language (Boston Naming test), Attention (ROCF, TMT)	In CAS group, better verbal memory outcome compared to DSA patients.
Raabe et al 2010[67]	62 CAS	Prospective	Pre/1-year FU: General Cognition (CDRS)	In this group, unchanged or improved cognition outcome.
Gupta et al 2020[62]	31 CAS	Prospective	Pre/3-month FU: General Cognition (ACE III)	In this group, improved cognition and memory outcome.
Corriere et al 2014[60]	16 CAS	Prospective	Pre and Post MRI (only in 8/16 patients) Pre/1/6-month FU: Language (WAIS), Memory (RAVLT), Attention & Psychomotor (TMT, Grooved, Finger tapping, Digit Symbol)	In this group, cognitive deficits occurred in 2/16 pts, even with increased cerebral perfusion w/o lesions at MR.
Kim et al 2015[64]	38 (26 CAS vs 12 CEA)	Prospective	Pre/6/12/60 month FU: Speed (TMT A, Stroop), Executive Function (TMT B, WCST, Verbal Fluency), Attention (Digit span), Language (Boston naming test), Memory (ROCF, RAVLT), Motor (FTT)	In both groups, better memory and executive outcome.
Varetto et al 2015[71]	35 CAS	Prospective	Pre/2-day FU: DWI-MRI Pre/1-month FU: Memory (RAVLT), Echo-Doppler Ultrasound	In this group, unchanged cognitive outcome. Carotid plaque contrast-

				enhancement strongly associated with micro-embolization.
Hitchner et al 2016[63]	80 (40 CAS vs 40 CEA)	Prospective	Pre/1/6-month FU: General cognition (MMSE), Memory (RAVLT, Digit Span), Attention and Executive Function (TMT, ROCF, Grooved, Digit symbol, Category Fluency)	In both groups, microembolization and stenosis independently predicted the worst cognitive outcome.
Tanashyan et al 2019[69]	90 (73 CAS vs 27 CEA)	Prospective	Pre/3/6/9-month FU: General cognition (MMSE)	In both groups, minor cognitive deficit at 3/6-month FU. Return to baseline at 9-month FU.
Whooley et al 2020[72]	75 (11 CAS/ 53 CEA/ 11 Med Tx)	Prospective	Pre/1-month FU: MRA Pre/1/6/12-month FU: Attention (TMT A), Executive Function (TMT B), Verbal fluency (FAS), Memory (Hopkins test)	In this group, MCA revascularization associated with better executive outcome.
Piegza et al 2022[66]	47 CAS	Prospective	Pre/12-month FU: Attention (DSMT), Memory (ROCF), Executive Function (WCST, Verbal Fluency)	In this group, better psychomotor speed/ visuospatial episodic memory/ executive outcome.
Turowicz et al 2021[70]	70 CAD (50 CEA/ 20 CAS) vs 35 controls (limb disease/inguinal hernia)	Prospective	Pre/6month FU: General cognition (MOCA, CANTAB)	In both groups, CAS and CEA better cognitive outcome, with better effects in younger pts with worst pre-treat status.
Lin et al 2011[65]	CAS in chronic ICAO/ IS	Prospective	Pre/3-month FU: General cognition (ADAS, MMSE), Attention and Executive Function (TMT, Verbal Fluency)	In this group, better cognition and attention outcome in successful CAS (12/20).
Fan et al 2014[61]	40 chronic ICAO (18 PTA/ stent vs 22 Med Tx)	Prospective	Pre/1-week/1/3/6-month FU: General cognition (MOCA)	In this group, better cognitive outcome in 16/18 PTA and 3/6 Med Tx.
Song et al 2019[68]	79 CAD (48 CAS vs 31 Med Tx)	Prospective	Pre/1/12-month FU: General cognition (MOCA)	In this group, CAS better cognition outcome.

Table S3. *List of future research opportunities on psychological and cognitive factors in patients undergoing Interventional Neuroradiology procedures.*

• To create a minimum common set of neuropsychological tests to study CBV patients undergoing INR procedures, in order to make all the cognitive and the psychological outcomes comparable.
• To demonstrate the positive influence of the "non-pharmacological intervention" in the management of stress and anxiety in a large sample of patients undergoing invasive INR procedures, convincing to include such interventions in standard care, as in the cardiovascular field.
• To acquire large sample of baseline cognitive assessment on homogeneous INR elective procedures, comparing pre, post-procedure and follow-up.
• To compare the psychological status in a large sample of patients with the same CBV pathology undergoing endovascular versus surgical treatment, in order to highlight significant advantages and disadvantages. It is advisable to increase RCT studies.
• To associate neuroimaging analysis with psychological and cognitive outcome variables in a large sample of patients with CBV in relation to INR interventions, in order to further understand the functional brain networks.

Legends

ACE, Addenbrooke's Cognitive Examination
ADAS, Alzheimer disease assessment scale;
AIS, Acute Ischemic stroke;
BADS, Behavioural Assessment of the Dysexecutive Syndrome;
BDI, Beck Depression Inventory;
BWT, Bourdon–Wiersma Test;
CANTAB, Cambridge Neuropsychological Test Automated Battery;
CAD, carotid artery disease
CAS, Carotid Stenting;
CBV, Cerebrovascular;
CBVD, Cerebrovascular diseases
CEA, Carotid Endarterectomy;
CERAD, Consortium to Establish a Registry for Alzheimer's Disease;
COWA, Controlled World Association Test,
CVLT-II, California verbal learning test;
CT, Conservative Treatment
DASS-21, Depression Anxiety Stress Scale;
DAVF, Dural Arterial Venous Fistula;
DEX, Dysexecutive Questionnaire;
DSMT, Digit Symbol Modalities Test;
EC, Endovascular Coiling;
ECS, extracranial carotid stents;
Exp. Group, Experimental Group;
EQL, EuroQuol questionnaire;
EV, Endovascular;
FTT, Finger Tapping Test;
GB, Grober and Buschke Test;
GHQ, General Health questionnaire;
GMH, General Mental Health
GPH, General Physical Health
GOS, Glasgow Outcome Scale;
GP Dom H, GP Non-Dom H, Grooved Pegboard, Dominant and Non-Dominant Hands;
HADS, Hamilton Anxiety Depression Scale;
HCG, Healthy control group;
HR, Heart Rate;
IADL, Instrumental activities of Daily Living;
ICAO, Internal Carotid Artery Occlusion
ICS, intracranial carotid stents;
IES, Impact of Event Scale;
IPH, Intraparenchymal haemorrhage;
IS, Ischemic Stroke;
ISDC, Inventaire du Syndrome Dysexécutif Comportamental;
ISR, CD-10-Symptom-Rating questionnaire;
IVT, Intravenous Thrombolysis;
KHQ, Kieler-Headache-Questionnaire;
JLOT, Judgement of Line Orientation Test;
LG WMS-IV, Logic memory subtest of Wechsler Memory Scale, Fourth Edition;
MCI, Mild Cognitive Impairement;
Med, Medical
MCST, Modified Card Sorting Test;
MOCA, Montreal Cognitive Assessment;
MT, Mechanical Thrombectomy;
Med, Medical
NPI, Neuropsychiatric Symptoms;
NPY, Neuropeptide Y;
NS, neurosurgery
PCL, Post-traumatic-Stress-Disorder Check List;
PSQI, Pittsburgh Sleep Quality Index
PTSD, Post Traumatic Stress Symptom;
PVSAT, Paced Visual Serial Addition Test
QoL, Quality of Life;
R-ACoA, Rupted Aneurysms of ACoA
RAVLT, Rey Auditory Verbal Learning Test;
RCT, Randomized Control Trial;
RIA, Rupted Intracranial Aneurysm
ROCF, Rey–Osterrieth complex figure;
RMT, Warrington Recognition Memory Test;
RNGT, Random Number Generation Task;
rs-fMRI, Resting State Functional MRI;
RWF, Regensburg Word Fluency Test;
BP, Blood Pressure;
SC, Surgical Clipping;
SF-36, Short Form Health Survey 36;
SDMT, Symbol digit modalities test
SMCS, Subjective Memory Complaints Score;
SPD, Speed processing Detection;
STAI, State Trait Anxiety Inventory;
TEA, Test of Everyday Attention;
TICS, Telephone Interview for Cognitive Status;
TMT, Trial Making Test (part A and B);
Tx, treatment
UIAs, Unrupted Intracranial Aneurysms;
VBM, Voxel-based morphometric;
VBS, vertebrobasilar stents;
w/o, without
WAIS-III, Wechsler Adult Intelligence Scale;
WASI, Weschler Abbreviated Scale of Intelligence;
WCST, Wisconsin Card Sorting Test;
WEB, Woven EndoBridge;
WM, Working Memory.

Specific search terms in the Web sites for this review.
Search Strategy: MEDLINE (EMBASE)

#1 (cerebrovascular AND ('anxiety'/exp OR anxiety) OR 'depression'/exp OR depression OR 'quality of life'/exp OR 'quality of life') AND 'interventional neuroradiology' AND [2002-2022]/py

#2 (endovascular AND ('neuropsychological assessment'/exp OR 'neuropsychological assessment') OR 'embolization':ab,ti) AND 'cognitive':ab,ti AND [2002-2022]/py

#3 (cerebrovascular AND ('anxiety'/exp OR anxiety) OR 'depression'/exp OR depression OR 'quality of life'/exp OR 'quality of life') AND ('aneurysm'/exp OR aneurysm) AND 'interventional neuroradiology' AND [2002-2022]/py

Search Strategy: SCOPUS

#1 (TITLE-ABS-KEY (aneurysm) AND TITLE-ABS-KEY (aneurysms) AND TITLE-ABS-KEY ('health-related AND quality AND of AND life')) AND PUBYEAR > 2001 AND PUBYEAR < 2023 AND PUBYEAR > 2001 AND PUBYEAR < 2023

#2 (TITLE-ABS-KEY (endovascular) OR TITLE-ABS-KEY (embolization) AND TITLE-ABS-KEY (neuropsychological) OR TITLE-ABS-KEY ('cognitive AND sequelae') OR TITLE-ABS-KEY ('cognitive AND outcome')) AND PUBYEAR > 2001 AND PUBYEAR < 2023 AND PUBYEAR > 2001 AND PUBYEAR < 2023

Search Strategy: PUBMED

#1 (((((('cerebral angiography'[Title/Abstract])) OR ('interventional neuroradiology')) AND (psychological)) AND (neuropsychological))

#2 (((((anxiety[Title/Abstract])) AND (depression[Title/Abstract]) AND ('quality of life'[Title/Abstract]) AND ('cerebrovascular diseas*[Title/Abstrac])

#3 (((((psychological[Title/Abstract]) OR (anxiety[Title/Abstract])) OR (depression[Title/Abstract])) OR ("quality of life"[Title/Abstract])) AND (angiography[Title/Abstract])) AND (cerebral angiography[MeSH Terms

#4 ((((ANGIOGRAPHY[Title/Abstract]) OR (cerebral angiography[MeSH Terms])) AND (anxiety[Title/Abstract])) AND (depression[Title/Abstract])) AND (quality of life[MeSH Terms])

#5 (((endovascular[Title/Abstract]) OR (embolization[MeSH Terms])) AND (neuropsychological[Title/Abstract])) OR ('cognitive outcomes'[MeSH Terms])

#6 ((((('interventional neuroradiology'[Title/Abstract]) OR (angiographies, cerebral[MeSH Terms])) OR (endovascular[Title/Abstract])) AND (neuropsychological[Title/Abstract])

PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Pag. 1
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Pag. 1
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Pag. 2-3
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Pag. 2-3
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Pag. 3-4
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Pag. 3-4
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Pag. 3-4
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Pag. 3-4
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Pag. 3-4
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Pag. 3-4
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Pag. 3-4
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Pag. 3-4
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Pag. 3-4
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Pag. 3-4
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Pag. 3-4
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Pag. 3-4
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Pag. 3-4
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	Pag. 3-4
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	Pag. 3-4
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	Pag. 3-4
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	Pag. 3-4

PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Pag. 4-7
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Pag. 4-7
Study characteristics	17	Cite each included study and present its characteristics.	Pag. 4-7
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Pag. 4 and tables
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Pag. 4-7
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	Pag. 5-9
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Pag. 7-11
	23b	Discuss any limitations of the evidence included in the review.	Pag. 7-11
	23c	Discuss any limitations of the review processes used.	Pag. 7-11
	23d	Discuss implications of the results for practice, policy, and future research.	Pag. 7-11
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	
Competing interests	26	Declare any competing interests of review authors.	Pag.12
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

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