**Title: Practice patterns, role and impact of advanced practice nurses in stroke care: A systematic review**

**Aim:**

* To systematically review the practice patterns and role of APNs in inpatient and outpatient stroke care services.
* To evaluate the impact of APN-led inpatient and outpatient stroke care services on clinical and patient outcomes.

**P**opulation: Advanced practice nurse (APN) or nurses in advanced practice

**E**xposure: Stroke (in-patient and/or outpatient)

**O**utcomes: Stroke reoccurrence, stroke-related hospitalisation, patient-reported outcomes (self-efficacy, health and stroke literacy, perceptions of care), clinical outcomes (BP, LDL/total cholesterol, HbA1c, BMI), physical activity, diet, antithrombotic adherence, smoking status.

**Databases:** PubMed, CINAHL, The Cochrane Library, Embase, PsycInfo and ProQuest Dissertations & Theses Global

**Eligibility criteria:**

Included in the review are papers that are:

* Primary studies of any design;
* Studies that explore the practice patterns, role or impact of APNs in stroke or TIA inpatient or outpatient settings;
* Studies involving nurses in advanced practice i.e. masters-prepared or DNP-prepared APN, NP, CNS;
* Published in the English language.

Excluded in the review are papers that are:

* Conference proceedings or abstracts
* Editorials or commentaries
* Studies that included other neurological conditions
* Studies that included Registered Nurses without any specialist training.

**Search Strategy**

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| --- | --- |
| **Database** | **Keywords** |
| **PubMed** | **SEARCH #1**  ((("Advanced Practice Nursing"[Mesh]) OR "Nurse Practitioners"[Mesh]) OR "Nurse Clinicians"[Mesh]) AND ("Nurse practitioner\*"[Title/Abstract] OR "Nurse clinician\*"[Title/Abstract] OR "Advance\* practice nurs\*"[Title/Abstract] OR "Clinical nurse specialist\*"[Title/Abstract] OR "Nurse Consult\*"[Title/Abstract] OR "nurse led"[Title/Abstract] OR "nurse managed"[Title/Abstract] OR "nurse run"[Title/Abstract])  **AND**  ((((((("Cerebrovascular Disorders"[Mesh]) OR "Basal Ganglia Cerebrovascular Disease"[Mesh]) OR "Carotid Artery Diseases"[Mesh]) OR ( "Brain Ischemia"[Mesh] OR "Cerebral Infarction"[Mesh] )) OR ( "Stroke"[Mesh] OR "Stroke, Lacunar"[Mesh] OR "Hemorrhagic Stroke"[Mesh] OR "Embolic Stroke"[Mesh] OR "Thrombotic Stroke"[Mesh] OR "Ischemic Stroke"[Mesh] OR "Stroke Rehabilitation"[Mesh] )) OR "Vasospasm, Intracranial"[Mesh]) OR "Intracranial Arterial Diseases"[Mesh]) OR "Intracranial Hemorrhages"[Mesh] OR stroke[Title/Abstract] OR poststroke[Title/Abstract] OR post‐stroke[Title/Abstract] OR cerebrovasc\*[Title/Abstract] OR "brain vasc\*"[Title/Abstract] OR "cerebral vasc\*"[Title/Abstract] OR cva[Title/Abstract] OR apoplex[Title/Abstract] OR SAH[Title/Abstract] OR "transient ischaemic attack\*"[Title/Abstract] OR "transient ischemic attack\*"[Title/Abstract]  (383) |
| **CINAHL** | (MH "Advanced Practice Nurses+") OR (MH "Advanced Nursing Practice+") OR AB ( “Nurse practitioner\*” OR “Nurse clinician\*” OR “Advance\* practice nurs\*” OR “Advance\* Nurs\* pract\*” OR "Clinical nurse specialist\*" OR "Nurse Consult\*" ) OR AB ( "nurse led" or "nurse managed" or "nurse run" )  AND  (MH "Cerebrovascular Disorders") OR (MH "Basal Ganglia Cerebrovascular Disease+") OR (MH "Carotid Artery Diseases+") OR (MH "Cerebral Ischemia+") OR (MH "Cerebral Vasospasm") OR (MH "Intracranial Arterial Diseases+") OR (MH "Intracranial Embolism and Thrombosis") ) OR (MH "Intracranial Hemorrhage+") OR (MH "Stroke") OR (MH "Vertebral Artery Dissections") OR (MH "Stroke Patients") OR (MH "Stroke Units") OR TI ( stroke or poststroke or post‐stroke or cerebrovasc\* or "brain vasc\*" or "cerebral vasc\*" or cva or apoplex or SAH ) OR AB ( stroke or poststroke or post‐stroke or cerebrovasc\* or "brain vasc\*" or "cerebral vasc\*" or cva or apoplex or SAH ) OR TI (“transient ischaemic attack\*” or “transient ischemic attack\*” ) OR AB ( “transient ischaemic attack\*” or “transient ischemic attack\*” )  (508) |
| **The Cochrane Library** | #1 MeSH descriptor: [Advanced Practice Nursing] explode all trees 35  #2 MeSH descriptor: [Nurse Clinicians] explode all trees 157  #3 (nurs\* near/1 (clinician\* or specialist\* or expert\* or consultant)):ti,ab 1123  #4 (advance\* practice near/1 nurs\*):ti,ab 279  #5 MeSH descriptor: [Nurse Practitioners] explode all trees 316  #6 ("nurse led" or "nurse managed" or "nurse run"):ti,ab 2253  #7 #1 or #2 or #3 or #4 or #5 or #6 3827  #8 MeSH descriptor: [Cerebrovascular Disorders] this term only 1466  #9 MeSH descriptor: [Basal Ganglia Cerebrovascular Disease] this term only 11  #10 MeSH descriptor: [Brain Ischemia] explode all trees 4077  #11 MeSH descriptor: [Carotid Artery Diseases] explode all trees 1226  #12 MeSH descriptor: [Cerebral Small Vessel Diseases] explode all trees 248  #13 MeSH descriptor: [Intracranial Arterial Diseases] explode all trees 1258  #14 MeSH descriptor: [Intracranial Embolism and Thrombosis] explode all trees 338  #15 MeSH descriptor: [Intracranial Hemorrhages] explode all trees 2201  #16 MeSH descriptor: [Stroke] explode all trees 11756  #17 MeSH descriptor: [Vasospasm, Intracranial] this term only 163  #18 MeSH descriptor: [Vertebral Artery Dissection] this term only 9  #19 (stroke\* or poststroke or apoplex\* or cerebral vasc\* or brain vasc\* or cerebrovasc\* or cva\* or SAH):ti,ab,kw 76877  #20 ((brain or cerebr\* or cerebell\* or vertebrobasil\* or hemispher\* or intracran\* or intracerebral or infratentorial or supratentorial or middle cerebral artery or MCA\* or anterior circulation or posterior circulation or basilar artery or vertebral artery or space‐occupying) near/5 (isch?emi\* or infarct\* or thrombo\* or emboli\* or occlus\* or hypoxi\*)):ti,ab,kw 26425  #21 ((brain\* or cerebr\* or cerebell\* or intracerebral or intracran\* or parenchymal or intraparenchymal or intraventricular or infratentorial or supratentorial or basal gangli\* or putaminal or putamen or posterior fossa or hemispher\* or subarachnoid) near/5 (h?emorrhag\* or h?ematoma\* or bleed\*)):ti,ab,kw 13787  #22 #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 96011  #23 #7 and #22 227 |
| **Scopus** | ( TITLE-ABS-KEY ( "Nurse practitioner\*" OR "Nurse clinician\*" OR "Advance\* practice nurs\*" OR "Advance\* Nurs\* pract\*" OR "Clinical nurse specialist\*" OR "Nurse Consult\*" ) OR TITLE-ABS-KEY ( "nurse led" OR "nurse managed" OR "nurse run" ) )  AND  ( TITLE-ABS-KEY ( stroke OR poststroke OR post‐stroke OR cerebrovasc\* OR "brain vasc\*" OR "cerebral vasc\*" OR cva OR apoplex OR sah OR "transient ischaemic attack\*" OR "transient ischemic attack\*" ) OR TITLE-ABS-KEY ( ( brain OR cerebr\* OR cerebell\* OR vertebrobasil\* OR hemispher\* OR intracran\* OR intracerebral OR infratentorial OR supratentorial OR "middle cerebral artery" OR mca OR "anterior circulation" OR "posterior circulation" OR "basilar artery" OR "vertebral artery" OR "space‐occupying" ) W/5 ( isch?emi\* OR infarct\* OR thrombo\* OR emboli\* OR occlus\* OR hypoxi\* ) ) )  (610) |
| **Embase** | 'nurse practitioner\*':ab,ti OR 'nurse clinician\*':ab,ti OR 'clinical nurse specialist\*':ab,ti OR 'advance\* practice nurs\*':ab,ti OR 'advance\* nurs\* pract\*':ab,ti OR 'advanced practice nurse'/exp OR 'advanced practice nurse' OR 'advanced practice nursing'/exp OR 'advanced practice nursing' OR 'clinical nurse specialist'/exp OR 'clinical nurse specialist' OR 'nurse led':ab,ti OR 'nurse managed':ab,ti OR 'nurse run':ab,ti  AND  'cerebrovascular disease'/exp OR 'cerebrovascular disease' OR 'brain disease'/exp OR 'brain disease' OR 'basal ganglion hemorrhage'/exp OR 'basal ganglion hemorrhage' OR 'brain hemangioma'/exp OR 'brain hemangioma' OR 'brain hemorrhage'/exp OR 'brain hemorrhage' OR 'brain infarction'/exp OR 'brain infarction' OR 'brain ischemia'/exp OR 'brain ischemia' OR 'carotid artery disease'/exp OR 'carotid artery disease' OR 'cerebral artery disease'/exp OR 'cerebral artery disease' OR 'cerebrovascular accident'/exp OR 'cerebrovascular accident' OR 'cerebrovascular malformation'/exp OR 'cerebrovascular malformation' OR 'intracranial aneurysm'/exp OR 'intracranial aneurysm' OR 'occlusive cerebrovascular disease'/exp OR 'occlusive cerebrovascular disease' OR 'vertebrobasilar insufficiency'/exp OR 'vertebrobasilar insufficiency' OR stroke:ab,ti OR poststroke:ab,ti OR apoplex\*:ab,ti OR 'cerebral vasc\*':ab,ti OR 'brain vasc\*':ab,ti OR cerebrovasc\*:ab,ti OR cva:ab,ti OR sah:ab,ti OR 'transient ischaemic attack\*':ab,ti OR 'transient ischemic attack\*':ab,ti  AND  ('article'/it OR 'article in press'/it OR 'preprint'/it OR 'short survey'/it)  (975) |
| **PsycInfo** | ("Advanced Practice Nursing" or "Nurse Practitioners" or "Nurse Clinicians").mh. OR (Nurse practitioner\* or Nurse clinician\* or Advance\* practice nurs\* or Advance\* Nurs\* pract\* or Clinical nurse specialist\* or Nurse Consult\* or (nurse led or nurse managed or nurse run)).ab.  AND  (Cerebrovascular Disorders or Basal Ganglia Cerebrovascular Disease or Carotid Artery Diseases or Brain Ischemia or Cerebral Infarction or Stroke or Stroke, Lacunar or Hemorrhagic Stroke or Embolic Stroke or Thrombotic Stroke or Ischemic Stroke or Stroke Rehabilitation or Vasospasm, Intracranial or Intracranial Arterial Diseases or Intracranial Hemorrhages).mh. OR (stroke or poststroke or post stroke or cerebrovasc\* or brain vasc\* or cerebral vasc\* or cva or apoplex or SAH or transient ischaemic attack\* or transient ischemic attack\*).ab.  (60) |
| **ProQuest Dissertations & Theses Global** | abstract((Nurse practitioner\*) or (Nurse clinician\*) or (Advance\* practice nurs\*) or (Advance\* Nurs\* pract\*) or (Clinical nurse specialist\*) or (Nurse Consult\*) or (nurse led) or (nurse managed) or (nurse run)) AND abstract(Cerebrovascular Disorders or Basal Ganglia Cerebrovascular Disease or Carotid Artery Diseases or Brain Ischemia or Cerebral Infarction or Stroke or Stroke, Lacunar or Hemorrhagic Stroke or Embolic Stroke or Thrombotic Stroke or Ischemic Stroke or Stroke Rehabilitation or Vasospasm, Intracranial or Intracranial Arterial Diseases or Intracranial Hemorrhages or stroke or poststroke or post stroke or cerebrovasc\* or brain vasc\* or cerebral vasc\* or cva or apoplex or SAH or transient ischaemic attack\* or transient ischemic attack\*)  (89) |

Duplicates: 969

Non-English: 33

After Title and abstract screening, rejected

Additional duplicates: 29

Commentary: 5

Conference abstracts/proceedings: 5

Editorial: 2

Non-English: 7

Protocol: 29

Review: 40

Included for full text review: 92

Included after full text review: 18