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What should nurses do on post-stroke depression? A global systematic assessment of clinical practice guidelines

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ABSTRACT

Objectives Post-stroke depression (PSD) is the most common mental disorder in post-stroke patients. Yet, the recommendations related to nursing in clinical practice guidelines (CPGs) have not been systematically sorted out. This study aimed to assess the methodological quality of current CPGs related to PSD and develop an algorithm using nursing process as a framework for nurses.

Design A systematic assessment of CPGs.

Interventions A systematic search for relevant CPGs published between 2017 and 2022 was conducted. Appraisal of Guidelines for Research and Evaluation II instrument was used to assess methodological quality. Recommendations related to nursing practice from high-quality CPGs were summarised and developed into an algorithm to provide reference for the standardised construction of nursing practice scheme.

Results 497 records were initially identified from database searches and other sources. Finally, 12 CPGs were included, of which 6 were rated as high quality. A total of 35 recommendations from the 6 highest-scoring CPGs were summarised and used to develop an algorithm.

Conclusions This study indicated deficiencies and variability in current available CPGs. Based on six high-quality CPGs, we developed an algorithm to facilitate nurses' adherence to CPGs and contribute to evidence-based nursing. In the future, more nursing specialists should participate in the formulation of the CPGs to provide nursing insights.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ According to literature search, this is the first study to systematically review clinical practice guidelines (CPGs) and develop an algorithm for the nursing of post-stroke depression within the framework of nursing process.
⇒ Only English and Chinese language CPGs were searched, which may lead to a sampling bias.
⇒ Despite two reviewers assessing the quality of the methodology independently, some subjectivity might exist. To avoid this, all authors participated in frequent discussions on any discrepancies, and high interobserver agreement was acquired to maintain consistency.
⇒ High methodological quality of CPGs does not necessarily represent high availability and general adaptability in a clinical setting. Thus, nurses need to comprehensively consider the medical environment, patients' values, as well as the quality of recommendation in order to achieve satisfactory nursing effect.

INTRODUCTION

Post-stroke depression (PSD) is the most common mental disorder in post-stroke patients, also known as depression following stroke. It is mainly manifested by significant and lasting depressed mood together with several other symptoms, such as loss of appetite, insomnia, low self-evaluation, diminished concentration, suicidal thoughts, etc.[1] According to a meta-analysis, PSD occurred in 33.5% of patients after stroke, of which severe depression accounted for 17.7%.[2] PSD is associated with higher mortality, poorer recovery, more pronounced cognitive deficits and lower quality of life than stroke without depression.[3 4] It is also associated with a shorter interval to recurrence of stroke. The time of early recurrence of patients with non-depressive stroke is 9.63–9.75 years, and the time of recurrence of patients with PSD can be advanced to 8.15 years,[5] which will increase the hospitalisation cost of patients who had a stroke. Nichols *et al*'s study[6] showed that the medical expenditure of patients with PSD is 54% higher than that of patients who had a stroke without depression. Despite its detriment, PSD is vastly underdiagnosed and undertreated.[3] Only 6% of patients who had an acute stroke and 32% of convalescent patients received professional psychological evaluation and counselling.[7] In view of the various nursing problems shown by patients with PSD, nurses need to have a considerable understanding of PSD, pay full attention to it, establish the priority of nursing problems, and take the emotional management contents

such as early identification, prevention, intervention and patient education as the focus of nursing work.[8 9]

Clinical practice guidelines (CPGs) are statements that include recommendations intended to optimise patient care that are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options.[10] Several nations and institutions have invested a lot of human and financial resources to develop and update CPGs for stroke management to improve patient outcomes, which contain recommendations on PSD management.[1 11 12] This approach can create a bridge between theoretical achievements and clinical practice and eventually accelerate the transition of the former into the latter.[13] Various studies have shown that CPGs can improve healthcare.[14 15] However, compared with physicians, nurses had a lower perception towards CPGs.[16] Besides, the target population of these CPGs are mainly clinicians, thus they lack specificity for nurses. The recommendations related to nursing in the CPGs have not been systematically sorted out, so they are difficult for nurses to use to guide clinical nursing practice.

In this study, the Appraisal of Guidelines for Research and Evaluation II (AGREE II) instrument was used to evaluate the quality of published CPGs related to PSD. Then, recommendations related to nursing practice from high-quality CPGs were extracted and summarised. Finally, an algorithm was formulated to promote the clinical application of CPGs and provide reference for the standardised construction of nursing practice scheme for patients with PSD.

METHODS

Search strategy

Electronic databases (PubMed, Medline, EBSCO and China National Knowledge Infrastructure) and guideline repositories (Guidelines International Network, Scottish Intercollegiate Guidelines Network, National Institute for Health and Clinical Excellence, National Guideline Clearinghouse, Joanna Briggs Institute, World Stroke Organization, Chinese Stroke Association (CSA)) were comprehensively searched in March 2022 by using relevant keywords (online supplemental file 1). The search was limited to CPGs involving management of PSD written in the English and Chinese languages and published from 2017 to 2022. Reference lists of included CPGs were also reviewed.

Inclusion and exclusion criteria

Inclusion criteria were as follows: (1) the most recent version of CPGs, including published guidelines, consensus statements, position statements, recommendations and care pathways; (2) those published in English or Chinese, from 1 January 2017 to 31 March 2022; (3) those that contain systematically developed statements on nursing of PSD.

Exclusion criteria were as follows: (1) CPGs of duplicate publication; (2) CPGs of translated version; (3) CPGs of old version.

Selection process and data extraction

Titles and abstracts were screened by the first author (LJ) and full-text papers were reviewed independently by two authors (LJ and LC) using the inclusion and exclusion criteria.

Two authors (LJ and LC) independently extracted data from each CPG including: title, year of publication, country, organisation, target users and search strategy for evidence.

Discrepancy was resolved by discussion or adjudicated by an independent author (JY).

Quality appraisal and data analysis

AGREE II[17] was used by two authors (LJ and LC) to evaluate the methodological quality of the included CPGs. It contains a 23-item checklist rated on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree) and categorised into six domains: scope and purpose, stakeholder involvement, rigour of development, clarity and presentation, applicability and editorial independence. The scaled percentage score was calculated as follows: (obtained score−minimum possible score)/(maximum possible score−minimum possible score)×100%, where the obtained score is the sum of the appraisers' scores per each item. In addition, AGREE II includes two global rating items (overall assessments): overall quality and recommendation for use. However, the AGREE II instrument does not set minimum domain scores or patterns of scores across domains to differentiate the quality of CPGs. The decisions ought to be made by the authors and guided by the context. After reviewing the literature,[18 19] the overall quality and recommendation of CPGs were both divided into three levels. The authors considered a CPG with values >60% in five or six domains as high quality, that with values >60% in three or four domains as average quality and that with values >60% in one or two domains as low quality. After evaluating all 23 items, we provided the overall assessment of each CPG, determining it as 'recommended', 'recommended with modification' or 'not recommended'.

The intraclass correlation coefficient (ICC) statistic[20] was calculated to measure interobserver agreement across the ordinal categories of the AGREE II ratings. If ICC <0.7, domain scores would be re-evaluated and discussed by the authors until greater concordance (0.7 or over) was reached. SPSS V.17.0 was used for ICC analysis.

Development of the algorithm

Recommendations from high-quality CPGs were summarised and used to develop a draft algorithm using nursing process (including nursing assessment, nursing diagnosis, nursing planning and implementation, and nursing evaluation) as a framework for clinical nursing practice of PSD. After that, the draft algorithm was reviewed by nine clinical experts (two neurologists, two psychologists and five nurse specialists). Their feedback was received through a four-item survey assessing their agreement with the algorithm and the tendency to use it,

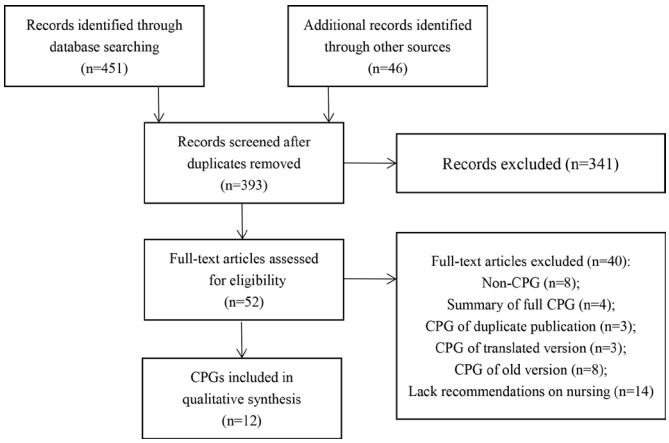

Figure 1 Flow chart of papers through the review. CPGs, clinical practice guidelines.

as well as an open question inquiring their proposals. The draft algorithm was then revised by the authors based on expert feedback to form the final version.

Patient and public involvement

No patients or members of the public were involved in the design, conduct or dissemination of results for this paper.

RESULTS

Search results and CPG characteristics

A total of 497 records were initially identified from database searches and other sources, and 104 duplicates were filtered automatically by the NoteExpress software. After screening titles and abstracts, we excluded 341 records because these papers were non-CPGs, or aimed at incorrect patient population. The full texts of 52 potential records were then reviewed for eligibility. Afterwards, an additional 40 records were excluded because they were non-CPGs, summary of full CPG, duplicate publication, translated version, old version or short on recommendations related to nursing. Finally, 12 CPGs[1 11 12 21–29] were included (figure 1).

The characteristics of each CPG are provided in table 1. Of the 12 CPGs, 6 provided recommendations to both health professionals, patients and their families,[1 11 12 25–27] 3 provided recommendations especially for health professionals[22 24 28] and 3 focused on clinicians.[21 23 29] Guideline development groups were from China (n=6),[21 23–25 28 29] the USA (n=2),[11 26] Canada (n=2)[1 27] the UK (n=1)[12] and Australia (n=1).[22] All CPG developers conducted a systematic literature search.[1 11 12 21–29]

Methodological quality of CPGs

The AGREE II domain scores and overall assessment for each CPG (n=12) are shown in table 2. The ICC values showed that the consistency of the subjective evaluation of two reviewers (LJ and LC) ranged from 0.74 to 0.94 (table 2).

Scope and purpose

The median score for this domain was 76.9%±9.5%, with only one CPG[24] (52.8%) scoring less than 60%, indicating that most CPGs were considered to have an adequate report of this domain. CPG from the American Heart Association/American Stroke Association (AHA/ASA)[26] (88.9%) scored the highest.

Stakeholder involvement

The median score for this domain was 62.9%±18.3%, with nine CPGs[1 11 12 22 24 26–29] scoring over 60%. The Stroke Foundation CPG[22] (91.7%) was the highest-scoring CPG for this domain. Most CPGs did not clearly describe their members' roles in the development process.

Rigour of development

The median score for this domain was 59.8%±15.1%, with five[1 11 25 26 29] of the included CPGs scoring over 60%. CPG from Chinese Society of Neurology (CSN)[29] (89.6%) scored the highest. The main limitation lied in that it was unclear how most CPGs assessed the potential harms of the screening and diagnostic recommendations. Besides, some CPGs did not describe their procedures for updating guidelines.

Clarity of presentation

The median score for this domain was 70.7%±18.2%. Most CPGs presented specific and clear recommendations. CPG from AHA/ASA[26] (94.4%) scored the highest. Only three[23–25] scored <60%.

Applicability

The median score for this domain was 46.3%±23.6%. Only three CPGs [26–28] scored >60%. Most CPGs did not describe the facilitators and barriers of their applications and they failed to sufficiently assess the implications of use of resources or the auditing criteria.

Editorial independence

The median score for this domain was 62.5%±23.8%, with eight CPGs[1 11 12 22 26–29] scoring over 60%. Some CPGs did not clearly provide financial support information and their possible influence on the CPG content or failed to clearly report the potential conflicts of interest of authors or developers.

Overall assessment

Based on the six domain scores and personal judgement, six CPGs[1 11 26–29] were considered as 'high quality' (recommended), two[12 22] as 'average' (recommended with modification) and four[21 23–25] as 'low quality' (not recommended).

Guideline content and algorithm development

A total of 35 recommendations from the 6 highest-scoring CPGs[1 11 26–29] were identified and summarised in table 3. Guideline content varied in regard to nursing practice field topics. The most comprehensive CPGs were Canadian Stroke Consortium (CSC)[1] and CSA[28] with

Table 1 Characteristics of the included CPGs (n=12)

Title	Year of publication	Country	Organisation	Target users	Search strategy for evidence
Clinical practice guidelines of Chinese medicine rehabilitation for ischemic stroke (cerebral infarction)[21]	2021	China	Traditional Chinese medicine Clinical Research Base	Clinicians	Systematic literature review
Clinical Guidelines for Stroke Management[22]	2020	Australia	Stroke Foundation	Varied health professionals	Systematic literature review
Clinical diagnosis and treatment guidelines for post-stroke depression[23]	2020	China	Henan Stroke Association	Clinicians	Systematic literature review
Evidence-based practice guideline on integrative medicine for stroke 2019[24]	2020	China	China Association of Chinese Medicine	Varied health professionals	Systematic literature review
Chinese Evidence-based Clinical Practice Guideline for Aquatic Therapeutic Exercise in Patients with Stroke (2019 version)[25]	2019	China	Chinese Medical Association	Varied health professionals, patients and their families	Systematic literature review
Guidelines for the Early Management of Patients With Acute Ischemic Stroke[26]	2019	USA	American Heart Association/ American Stroke Association (AHA/ ASA)	Varied health professionals, patients and their families	Systematic literature review
Canadian Stroke Best Practice Recommendations: Rehabilitation, Recovery, and Community Participation following Stroke[27]	2019	Canada	Canadian Stroke Consortium (CSC)	Varied health professionals, patients and their families	Systematic literature review
Canadian Stroke Best Practice Recommendations: Mood, Cognition and Fatigue following Stroke[1]	2019	Canada	CSC	Varied health professionals, patients and their families	Systematic literature review
Guidelines for the Clinical Management of Cerebrovascular diseases in China[28]	2019	China	Chinese Stroke Association	Varied health professionals	Systematic literature review
Chinese guidelines for diagnosis and treatment of acute ischemic stroke[29]	2018	China	Chinese Society of Neurology	Clinicians	Systematic literature review
Guidelines for Adult Stroke Rehabilitation and Recovery[11]	2018	USA	AHA/ASA	Varied health professionals, patients and their families	Systematic literature review
The latest national clinical guideline for stroke[12]	2017	UK	Intercollegiate Stroke Working Party	Varied health professionals, patients and their families	Systematic literature review

CPGs, clinical practice guidelines.

recommendations in four categories (nursing assessment, nursing planning, nursing implementation and nursing evaluation), whereas CSC[27] merely concentrated on the category of nursing assessment. AHA/ASA[11] and CSN[29] made recommendations in three categories (nursing assessment, nursing planning and nursing implementation). AHA/ASA[26] made recommendations in two categories (nursing assessment and nursing evaluation). No CPG had recommendations in the category of nursing diagnosis. Each CPG used different evidence levels and recommendation classes. This study retained the evidence levels and recommendation classes of the original CPGs.

The summaries from the six high-quality CPGs were used to develop an algorithm for the standardised construction of nursing practice scheme for patients with PSD. The algorithm was formulated strictly in accordance with the flow of nursing process to ensure practicability. The draft algorithm was refined slightly in accordance with experts' (neurologists, psychologists and nurse specialists) feedback to facilitate implementation. All

Table 2 CPG assessment according to the AGREE II instrument (n=12)

Title of CPG	Domain 1: scope and purpose	Domain 2: stakeholder involvement	Domain 3: rigour of development	Domain 4: clarity of presentation	Domain 5: applicability	Domain 6: editorial independence	Total score mean (SD) (%)	Overall quality	Whether to recommend	Agreement between appraisers ICC (95% CI)
Clinical practice guidelines of Chinese medicine rehabilitation for ischemic stroke (cerebral infarction)[21]	75.0%	55.6%	53.1%	77.8%	35.4%	29.2%	54.3 (20.0)	Low	Not recommended	0.83 (0.67 to 0.92)
Clinical Guidelines for Stroke Management[22]	80.6%	91.7%	57.3%	77.8%	58.3%	87.5%	75.5 (14.6)	Average	Recommended with modification	0.88 (0.75 to 0.95)
Clinical diagnosis and treatment guidelines for post-stroke depression[23]	75.0%	13.9%	30.2%	38.9%	0	25%	30.5 (25.6)	Low	Not recommended	0.94 (0.85 to 0.97)
Evidence-based practice guideline on integrative medicine for stroke 2019[24]	52.8%	66.7%	45.8%	38.9%	10.4%	29.2%	40.6 (19.5)	Low	Not recommended	0.90 (0.77 to 0.95)
Chinese Evidence-based Clinical Practice Guideline for Aquatic Therapeutic Exercise in Patients with Stroke (2019 version)[25]	69.4%	52.8%	70.8%	50%	56.3%	45.8%	57.5 (10.3)	Low	Not recommended	0.74 (0.47 to 0.88)
Guidelines for the Early Management of Patients With Acute Ischemic Stroke[26]	88.9%	66.7%	70.8%	94.4%	75%	79.2%	79.2 (10.7)	High	Recommended	0.75 (0.50 to 0.89)
Canadian Stroke Best Practice Recommendations: Rehabilitation, Recovery, and Community Participation following Stroke[27]	75.0%	72.2%	57.3%	69.4%	66.7%	83.3%	70.5 (8.7)	High	Recommended	0.78 (0.54 to 0.90)
Canadian Stroke Best Practice Recommendations: Mood, Cognition and Fatigue following Stroke[1]	86.1%	66.7%	62.5%	77.8%	58.3%	79.2%	71.8 (10.9)	High	Recommended	0.76 (0.52 to 0.89)

Continued

Table 2 Continued

Title of CPG	Domain 1: scope and purpose	Domain 2: stakeholder involvement	Domain 3: rigour of development	Domain 4: clarity of presentation	Domain 5: applicability	Domain 6: editorial independence	Total score mean (SD) (%)	Overall quality	Whether to recommend	Agreement between appraisers
										ICC (95% CI)
Guidelines for the Clinical Management of Cerebrovascular diseases in China[28]	80.6%	75%	56.3%	77.8%	68.8%	62.5%	70.3 (9.5)	High	Recommended	0.87 (0.71 to 0.94)
Chinese guidelines for diagnosis and treatment of acute ischemic stroke[29]	75.0%	63.9%	89.6%	77.8%	35.4%	66.7%	68.1 (18.4)	High	Recommended	0.93 (0.84 to 0.97)
Guidelines for Adult Stroke Rehabilitation and Recovery[11]	77.8%	66.7%	70.8%	88.9%	35.4%	79.2%	69.8 (18.5)	High	Recommended	0.87 (0.71 to 0.94)
The latest national clinical guideline for stroke[12]	86.1%	61.1%	53.1%	77.8%	58.3%	83.3%	70.0 (14.1)	Average	Recommended with modification	0.89 (0.75 to 0.95)
Mean (SD) (%)	76.9 (9.5)	62.9 (18.3)	59.8 (15.1)	70.7 (18.2)	46.3 (23.6)	62.5 (23.8)				

AGREE II, Appraisal of Guidelines for Research and Evaluation II; CPG, clinical practice guideline; ICC, intraclass correlation coefficient.

nurse specialists declared that the algorithm of the final version (figure 2) was of clinical value, convenient and they would like to apply it in a clinical context.

DISCUSSION

A systematic search of CPGs related to PSD was performed in this study. Previous studies have demonstrated an association between patient outcomes and quality of CPGs.[30 31] Thus, providing nurses with a synthesised set of recommendations (from highly rated CPGs) is the first step in ensuring quality of PSD nursing, irrespective of severity of depression or medical locations. The results demonstrated differences between CPGs which could be expected to significantly impact nursing care of PSD. In particular, the methodological quality of the reviewed CPGs varied, and only half of them achieved high ratings in five or six AGREE II domains. Among all evaluated CPGs, the highest domain score was for 'scope and purpose' (76.9%), while the lowest was for 'applicability' (46.5%) and 'rigour of development' (59.8%), indicating that most CPGs fail to provide information to nurses for translating theoretical recommendations into clinical nursing practice. The results of methodological quality assessment are consistent with a previous systematic review which found 'domains 3 and 5 have the strongest influence on the results of the two overall assessments'.[32] A low score in 'rigour of development' suggests methodological deficits, for example, insufficient methodological expertise in CPG developing teams or an inadequate literature search because of a lack of resources.[33] With regard to 'applicability', if a CPG is insufficiently implemented in clinical practice owing to inadequate implementation instructions, it could lead to a series of problems, such as omission of beneficial therapies, suboptimal patient outcomes or waste of resources.[34]

Nursing process is a classic set of working procedures used by nurses to provide care to nursing objects. It represents the systematic, rigorous and efficient method of organising thought processes for effective clinical decision-making, focused on problem-solving and the provision of individualised nursing care.[35] The whole nursing process includes five essential steps: nursing assessment, nursing diagnosis, nursing planning, nursing implementation and nursing evaluation. In this study, we believed that nursing planning and nursing implementation are the selection and application stages of nursing interventions, respectively, which can be identified as one step.

Nursing assessment is the first step in the nursing process. This study summarised 19 recommendations related to nursing assessment of PSD from six aspects, involving all six high-quality CPGs.[1 11 26–29] Depression can occur at any stage after stroke. Nurses, as health professionals who have the longest contact time with patients, should make full use of their work advantages, pay attention to observe the psychological state of patients and identify depressive symptoms, especially in patients with

Table 3 Summary of recommendations related to nursing practice from the highest scoring CPGs for post-stroke depression (PSD)

Title of CPG (organisation)	Nursing assessment	Nursing diagnosis	Nursing planning and implementation	Nursing evaluation
Guidelines for the Early Management of Patients With Acute Ischemic Stroke (AHA/ASA)[26]	1. Administration of a structured depression inventory is recommended to routinely screen for PSD.*†	No recommendation	No recommendation	1. Treatment effect should be closely monitored to verify effectiveness.*†
Canadian Stroke Best Practice Recommendations: Rehabilitation, Recovery, and Community Participation following Stroke (CSC)[27]	1. People with stroke should be screened and treated for PSD.† 2. Validated screening tools or approaches can be used to identify potential issues during transitions.‡ 3. Screening of depression should be considered within 2 weeks of stroke onset.‡	No recommendation	No recommendation	No recommendation
Canadian Stroke Best Practice Recommendations: Mood, Cognition and Fatigue following Stroke (CSC)[1]	1. Depression can occur at any stage after stroke.§ 2. All people who have experienced a stroke should be screened for PSD if deemed medically appropriate.† 3. Screening should be undertaken by trained professionals using a validated screening tool.*† 4. Stroke assessments should include evaluation of risk factors for depression, particularly a history of depression.‡ 5. Risk factors include increasing stroke severity, functional dependence, cognitive impairment and history of depression.‡ 6. Communication deficits and social isolation may also be considered as possible risk factors for depression.‡ 7. A stroke survivor whose screening indicates a high risk of depression should be assessed in a timely manner by a healthcare professional with expertise in management of depression.‡ 8. Timing of screening can vary and include transfer from an inpatient acute setting to an inpatient rehabilitation setting, following discharge to the community, follow-up visits.¶ 9. Appropriate strategies that do not rely on verbal communication are recommended for the assessment of patients with communication deficits.‡	No recommendation.	1. Psychological intervention, such as cognitive–behavioural therapy or interpersonal therapy, can be provided by nurses prior to medication.† 2. People who have experienced a stroke should be given information and education about the potential impact of stroke on their mood.‡ 3. People who have experienced a stroke and families should be provided with the opportunity to talk about the impact of stroke on their lives at all stages of care.‡ 4. The involvement and feedback of people who have experienced a stroke, family and caregivers is an important component of ongoing monitoring for post-stroke mood changes and conditions.¶ 5. Counselling and education should include information about potential relapse or recurrence of symptoms, signs to be aware of, the importance of adherence to prescribed medication regime, and contacting their primary care physician or mental health expert should those signs reappear.¶	1. Response to treatment should be monitored regularly by a health professional. Monitoring should include evaluation of any changes in the severity of depression, review of potential side effects and update of ongoing management plans.‡ 2. Following initial treatment for PSD, people who have experienced a stroke should continue to be monitored for relapse or recurrence of depression.‡

Continued

Table 3 Continued

Title of CPG (organisation)	Nursing assessment	Nursing diagnosis	Nursing planning and implementation	Nursing evaluation
Guidelines for the Clinical Management of Cerebrovascular diseases in China (CSA)[28]	1. Administration of a structured depression inventory such as the Patient Health Questionnaire-2 is recommended to routinely screen for PSD.*† 2. Appropriate strategies that do not rely on verbal communication are recommended for the assessment of patients with communication deficits.‡ 3. People who have experienced a stroke whose screening indicates a high risk of depression should be assessed in a timely manner by a healthcare professional with expertise in diagnosis, management and follow-up of depression.‡	No recommendation	1. Psychological intervention, such as cognitive–behavioural therapy or interpersonal therapy, can be provided by nurses prior to medication.† 2. Set up a multidisciplinary team to develop and implement personalised intervention programmes.†** 3. Consultation by a qualified psychiatrist or psychologist for stroke survivors with mood disorders causing persistent distress or worsening disability can be useful.‡**	1. Treatment effect should be closely monitored to verify effectiveness.*†
Chinese guidelines for diagnosis and treatment of acute ischemic stroke (CSN)[29]	1. All people who have experienced a stroke should be screened for PSD.†	No recommendation	1. Early intervention of depression should be taken.†**	No recommendation
Guidelines for Adult Stroke Rehabilitation and Recovery (AHA/ASA)[11]	1. Periodical reassessment of depression may be useful in the care of stroke survivors.†** 2. Administration of a structured depression inventory is recommended to routinely screen for PSD.*† 3. If a patient has depressive symptoms, anxiety should also be assessed.‡	No recommendation	1. Patient education, counselling and social support may be considered as components of treatment for PSD.†** 2. Consultation by a psychiatrist or psychologist for stroke survivors with mood disorders causing persistent distress or worsening disability can be useful.‡**	No recommendation

*Class I.
†Evidence Level B.
‡Evidence Level C.
§Evidence Level A.
¶Clinical considerations.
**Class II.
AHA/ASA, American Heart Association/American Stroke Association; CPGs, clinical practice guidelines; CSA, Chinese Stroke Association; CSC, Canadian Stroke Consortium; CSN, Chinese Society of Neurology.

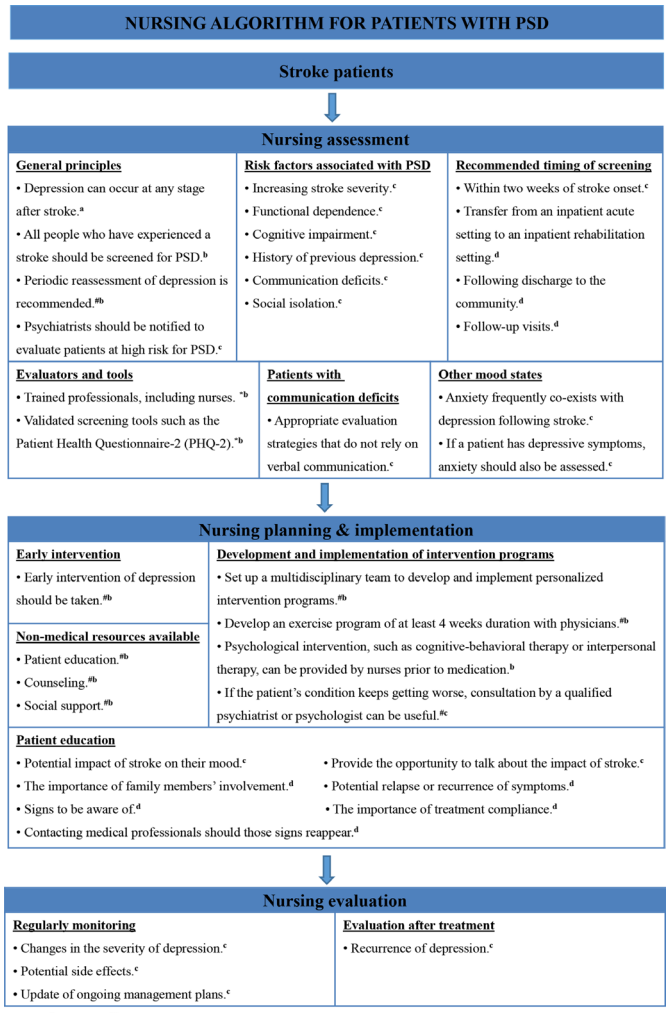

Figure 2 Nursing algorithm for patients with PSD. PSD, post-stroke depression.

acute ischaemic stroke.[8 9] The purpose of nursing assessment is to let nurses perceive the emotional changes of patients in advance, quickly identify the symptoms of depression of patients, and lay a foundation for the formation of nursing diagnosis and nursing plan.[36] In addition, it can promote multidisciplinary collaboration and provide a basis for further detailed assessment and intervention by physicians. At present, the Hamilton Depression Scale is the most widely used assessment tool in clinical practice or research.[37–39] The scale has good reliability and validity, but its large content is not conducive to the practical application of clinical nurses.[9] AHA/ASA[11] recommend the use of the Patient Health Questionnaire-2 scale for rapid recognition and preliminary judgement, which contains only two items and is suitable for clinical promotion.

In this study, 15 recommendations related to nursing planning and implementation of PSD were collected from four aspects, involving four CPGs.[1 11 28 29] For patients with mild to moderate PSD, cognitive–behavioural therapy and other mental interventions can be adopted. Previous studies[40–42] have shown that the level of depression of patients with mild to moderate PSD was significantly reduced after the intervention contents such as problem-solving or motivational interview by trained nurses. Patient education is an important part of nursing interventions, which helps patients and their families or caregivers achieve early prevention, early detection and early intervention through the guidance and knowledge dissemination of medical staff, so as to reduce the impact on patients.[43 44] The recommendations in the CPGs include a lot of interaction with patients and their families. Considering the clinical significance of this part, the authors organised this part into patient education for patients with PSD, guiding patients and their families to correctly treat and deal with PSD, and actively participate in the treatment and nursing of PSD, so as to promote the recovery of patients.

This study summarised four recommendations related to nursing evaluation of PSD from two aspects, involving three CPGs.[1 26 28] Antidepressant treatment is the focus of PSD clinical treatment,[45] but due to the lack of nurse prescribing authority, we did not put relevant content of drug treatment into the algorithm. Nevertheless, it is the nurse's responsibility to measure the efficacy and adverse effects of both pharmacological and non-pharmacological treatments. The results suggested that although nurses play an indispensable role in the clinical treatment and management of PSD, they still need to cooperate with clinicians and other health professionals to provide complete healthcare services for patients.

Unfortunately, we did not find any recommendations related to nursing diagnosis from the CPGs, which is consistent with the findings of previous studies.[9 19] The results suggested that nurses need to take PSD itself or nursing diagnoses related to PSD (eg, grieving, powerlessness, chronic sorrow, etc) as a diagnostic result, as this may lack accuracy and specificity for nursing diagnosis. Nursing diagnoses are clinical judgements about current or potential reactions to the health problems of individuals, families or communities. They are the basis for the choice of nursing interventions to achieve nursing outcomes for which the nurse is responsible.[46] However, nurses' behaviours towards nursing diagnoses are still unclear, thus, the use of nursing diagnoses is not systematic and difficulties still exist in its use.[47 48] To solve this problem, on the one hand, nursing administrators and educators should promote the application of nursing diagnosis. They should consider nurses' beliefs about nursing diagnosis in the design of tailored interventions when, for example, electronic health records that use a nursing standard terminology such as nursing diagnosis are introduced.[47] On the other hand, more nursing specialists should participate in the formulation of the guidelines to provide nursing insights, thus enriching the connotation of the guidelines and reflecting the professionalism of nursing.

According to literature search, this is the first study to systematically review CPGs and develop an algorithm for the nursing of PSD within the framework of nursing

process. We searched English and Chinese medical databases, guideline repositories and websites of professional societies, and then assessed methodological quality by using the AGREE II approach. Lastly, we extracted recommendations from high-quality CPGs and developed an algorithm. This algorithm could help to improve the nursing quality of PSD and lay a solid foundation for the establishment of PSD nursing norms in the future. However, our study had some limitations. First, only English and Chinese language CPGs were searched, which may lead to a sampling bias. Second, despite two reviewers assessing the quality of the methodology independently, some subjectivity might exist. To avoid this, all authors participated in frequent discussions on any discrepancies, and high interobserver agreement was acquired to maintain consistency. Third, high methodological quality of CPGs does not necessarily represent high availability and general adaptability in a clinical setting. Thus, nurses need to comprehensively consider the medical environment, patients' values, as well as the quality of recommendation in order to achieve satisfactory nursing effect.

CONCLUSIONS

This study indicated deficiencies and variability in current available PSD CPGs, including methodological quality, breadth and detail of recommendations. Based on six high-quality CPGs, we developed an algorithm using nursing process as a framework to facilitate nurses' adherence to CPGs and contribute to evidence-based nursing. According to the algorithm, nurses can use appropriate evaluation tools at the recommended time for evaluation. They should intervene early, make full use of non-medical resources and do well in patient education. After implementation, they need to regularly evaluate the recurrence of depressive symptoms. In the future, more nursing specialists should participate in the formulation of the CPGs to provide nursing insights, thus enriching the connotation of the CPGs and reflecting the professionalism of nursing.

Contributors LJ and JY conceived of and designed the study. LJ developed search strategy. LC and XL developed inclusion and exclusion criteria. LJ, LC and JY conducted study selection and data extraction. LJ and LC conducted quality appraisal and data analysis. LJ, LC and XL developed the algorithm. All authors drafted the manuscript. LJ, LC and XL revised the manuscript. All authors approved the final draft of the manuscript. LJ is the guarantor and accepts full responsibility for the overall content.

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