

Oral Health Care for Post-Stroke Dysphagia Patients: A Systematic Review of Best Evidence

Yi Lu^{1,*}, Shoujian Zong^{2,*}, Jing Song², Yanmin Xue¹, Xiyu Wang¹, Zhongning Zhou¹, Mingxia Li¹, Wei Liu^{2,3}

¹Nursing School, Shandong University of Traditional Chinese Medicine, Jinan, Shandong, People's Republic of China; ²The Department of Neurology, The Second Affiliated Hospital of Shandong University of Traditional Chinese Medicine, Jinan, Shandong, People's Republic of China; ³Shandong Key Laboratory of Innovation and Application Research in Basic Theory of Traditional Chinese Medicine, Shandong University of Traditional Chinese Medicine, Jinan, Shandong, People's Republic of China

*These authors contributed equally to this work

Correspondence: Mingxia Li, Nursing School, Shandong University of Traditional Chinese Medicine, Daxue Road 4655, Changqing District, Jinan, Shandong, People's Republic of China, Email limx@sducm.edu.cn; Wei Liu, Shandong Key Laboratory of Innovation and Application Research in Basic Theory of Traditional Chinese Medicine, Shandong University of Traditional Chinese Medicine, Daxue Road 4655, Changqing District, Jinan, Shandong, People's Republic of China, Email weiliu800109@163.com

Abstract: This systematic review aims to synthesize the best available evidence on oral health care for patients with post-stroke dysphagia, and to provide an evidence-based framework for clinical nursing staff to reduce the risk of aspiration pneumonia. Following PRISMA guidelines, we systematically searched computerized decision systems, guideline websites, professional association websites, and comprehensive databases from inception to December 2025 for clinical decisions, guidelines, evidence summaries, best practices, expert consensus, systematic reviews, and meta-analyses. Three researchers trained in evidence-based methodology independently evaluated literature quality, extracted data, and graded the evidence. Seventeen publications were included (10 guidelines, 3 expert consensus, 1 clinical decision aid, and 3 evidence summaries), yielding 21 pieces of best evidence across four domains: team formation, screening and assessment, nursing interventions, and health education. Key evidence includes nurse-led multidisciplinary collaboration, standardized oral and swallowing assessments, twice-daily oral care with a soft-bristled toothbrush, cautious use of chlorhexidine mouthwash, and systematic caregiver training before discharge. This systematic review provides a comprehensive, nurse-centred framework; a multidisciplinary approach, structured interventions, and caregiver education are essential to lower aspiration risk and improve patient outcomes.

Keywords: oral hygiene, stroke, deglutition disorders, pneumonia, evidence-based nursing

Introduction

A stroke is a condition characterized by acute localized damage to the brain, retina, or spinal cord caused by vascular factors, leading to neurological dysfunction.¹ As an acute cerebrovascular disease, it is characterized by high incidence, high disability rates, and high mortality, and has become the leading cause of disability among adults worldwide.² Post-stroke dysphagia is one of the most common complications following a stroke. Large-scale meta-analyses, encompassing hundreds of thousands of patients, have estimated its prevalence at approximately 38.6% to 46.6%,^{3,4} highlighting the substantial global burden of this condition. Post-stroke dysphagia not only severely impacts patients' nutritional intake and quality of life, but also significantly increases their risk of aspiration and aspiration pneumonia.⁴ Aspiration pneumonia is one of the most common serious complications following stroke; it not only prolongs hospital stays and increases medical costs but is also one of the leading causes of death among stroke patients.^{5,6}

As a key habitat for the colonization of pathogenic microorganisms, oral hygiene is closely associated with the development of aspiration pneumonia.⁷ Patients with post-stroke dysphagia often experience dysfunction of oropharyngeal muscles, diminished oral sensation, reduced saliva secretion, and impaired self-cleansing ability. These factors lead to the colonization

and proliferation of large numbers of bacteria in the oral cavity. Oropharyngeal secretions containing pathogenic bacteria are highly susceptible to being aspirated into the lower respiratory tract, thereby inducing aspiration pneumonia.^{8–10} Therefore, standardized and effective oral health care is crucial for eliminating pathogens in the oropharynx, reducing the risk of aspiration, and preventing aspiration pneumonia caused by post-stroke dysphagia.^{11,12}

In recent years, there has been a significant increase in clinical evidence regarding oral health care for patients with post-stroke dysphagia. A randomized controlled trial demonstrated that oral health care can significantly reduce the incidence of stroke-related pneumonia and improve oral health and swallowing function in patients with post-stroke dysphagia.¹³ Furthermore, an observational study confirmed that poor oral hygiene is an independent risk factor for early stroke-associated pneumonia, highlighting the critical role of oral care in prevention.¹⁴ Existing studies generally emphasize the importance of multidisciplinary team collaboration and recommend the use of standardized assessment tools to accurately identify patients' oral and swallowing issues.¹⁵ Regarding the composition of the team, a multidisciplinary approach typically integrates neurologists, nurses, dentists, speech-language pathologists, and dietitians.^{16,17} For instance, Skott et al, in a clinical study of 25 stroke patients with persistent swallowing dysfunction, conducted a multidisciplinary assessment covering swallowing capacity, lip force, masticatory performance, and patient-reported outcome measures. Their findings revealed a heterogeneous pattern with no significant association between objective and subjective dysfunction, underscoring the critical importance of multidisciplinary approaches to accurately identify both objective and subjective orofacial post-stroke dysfunction in clinical practice.¹⁶ Similarly, a large prospective cohort study involving 1,616 acute stroke patients by Yoshizumi et al implemented a standardised medical-dental collaborative protocol, which resulted in significant improvements in oral hygiene, tongue mobility, and Functional Oral Intake Scale (FOIS) scores, while also reducing the total length of hospital stay.¹⁷ These findings collectively highlight the essential role of multidisciplinary team-based oral care in post-stroke rehabilitation. Regarding specific nursing interventions, the literature covers topics such as positioning, toothbrushing frequency, denture care, and oral moisturization.^{18–20} Furthermore, traditional Chinese medicine (TCM) methods, such as herbal mouthwashes,^{21,22} acupoint massage,¹³ and oral exercises,²³ have gradually been shown through research to effectively promote the recovery of swallowing function and improve oral health, demonstrating their potential for application in post-stroke oral health care.

However, the existing evidence is scattered and varies in quality, and there is a lack of systematic integration and standardized grading of oral health care evidence specifically for this unique population of patients with post-stroke dysphagia. Faced with a vast amount of literature, healthcare professionals involved in stroke care find it difficult to efficiently access authentic, reliable, and easily applicable evidence to guide their decision-making.²⁴ Evidence summaries, as focused, reliable, comprehensive, and easily understandable and disseminable evidence-based resources,²⁵ can help clinicians quickly access high-quality evidence and apply it to clinical practice to facilitate the implementation of optimal care plans.²⁶

In light of this, the aim of this study is to conduct a systematic review and rigorous evaluation of domestic and international literature on oral health care for patients with post-stroke dysphagia. By comprehensively identifying and synthesizing the best available evidence, we aim to produce a well-structured summary of evidence that is readily applicable in clinical practice. This will provide clinical nursing staff with a scientific and standardized basis for practice, with the goal of reducing the incidence of aspiration pneumonia in patients with post-stroke dysphagia and improving patient outcomes.

It is important to clarify that this review focuses primarily on oral health care—defined as procedures to clean the oral cavity, remove debris, and reduce bacterial colonization. This is conceptually distinct from swallowing rehabilitation, which refers to therapeutic exercises aimed at restoring neuromuscular swallowing function. TCM-related interventions, such as herbal mouthwashes, acupoint massage, and oral sprays, are included in this review as supplementary evidence specific to the Chinese clinical context. Specifically, TCM-based acupoint massage is conceptually distinct from oral motor exercises; the former is a passive stimulation technique, while the latter refers to active neuromuscular training for swallowing rehabilitation. They are not the primary scope of the review, but are incorporated to reflect locally relevant practice patterns and to provide a comprehensive evidence base for Chinese healthcare settings.

Materials and Methods

Establishment of the Problem

The PIPOST model (from the Center for Evidence-Based Nursing at Fudan University)²⁷ was used to formulate the evidence-based research questions for this study: (1) Population (P): Patients aged 18 years or older with post-stroke dysphagia; (2) Intervention (I): Oral health care-related measures, including assessment tools, nursing techniques, and health education, and TCM-based adjunctive therapies (eg, herbal mouthwashes, acupoint massage, oral sprays); (3) Professionals (P): Clinical healthcare personnel, particularly nurses in neurology and rehabilitation departments. (4) Outcome (O): Improvements in oral hygiene, improvements in swallowing function, and reduced incidence of aspiration pneumonia, etc. (5) Setting (S): Hospital neurology and rehabilitation wards, as well as continuing care facilities. (6) Type of evidence (T): Clinical decision-making, guidelines, evidence summaries, best practices, recommended practices, expert consensus, systematic reviews, and meta-analyses.

Evidence Sources and Retrieval Strategy

According to the “6S” pyramid model of evidence-based medicine,²⁸ searches should proceed from top to bottom, starting with computerized decision support systems, followed by guideline websites, professional association websites, and comprehensive databases. Computer-based decision support systems include BMJ Best Practice and UpToDate; guideline websites include the World Health Organization (WHO), the Global Initiative on Guidelines (GIN), the National Institute for Health and Care Excellence (NICE), the Scottish Intercollegiate Guidelines Network (SIGN), and the National Guidelines Clearinghouse (NGC), among others; professional association websites include the Registered Nurses’ Association of Ontario (RNAO), the American Heart Association (AHA), and the European Stroke Organisation (ESO); the Joanna Briggs Institute (JBI) and the Cochrane Library; and comprehensive databases include PubMed, Web of Science, Embase, CINAHL, China National Knowledge Infrastructure (CNKI), VIP Database, Wanfang Data, and Sinomend. English search terms combined MeSH subject headings with free-text terms, including “stroke”, “post-stroke”, “dysphagia”, “deglutition disorders”, “oral health care”, “oral hygiene”, “mouth care”, “oral health”, and “nursing.” All website search queries are listed in [Appendix 2](#). The search period covers the database’s inception through December 2025.

Study Inclusion and Exclusion Criteria

The inclusion criteria for the literature were as follows: (1) the study population consisted of patients with post-stroke dysphagia; (2) the study content addressed oral health care measures, including assessment tools, nursing techniques, health education, and prevention of complications; (3) the literature type was clinical decision-making documents, guidelines, evidence summaries, best practices, recommended practices, expert consensus statements, systematic reviews, or meta-analyses; (4) the language of publication was Chinese or English.

Exclusion criteria included: (1) duplicated publications; (2) guideline interpretations, conference abstracts, review articles, and research protocols; (3) publications for which the full text could not be obtained; (4) publications that failed to meet quality assessment standards.

Evaluation of Literature Quality

Before initiating the formal quality appraisal, the two reviewers (Yi and Shoujian) independently piloted the application of all three appraisal instruments on a set of five randomly selected studies that were relevant to the topic but not included in the final review. The reviewers then met to discuss discrepancies in their scoring and clarify the interpretation of each checklist item. A pre-defined consensus threshold of >80% agreement was achieved during this calibration exercise. Following this pilot phase, the two reviewers proceeded to conduct independent quality assessments for all included publications. Any disagreements that arose during the formal appraisal were subsequently resolved through discussion or by adjudication with a third reviewer. We utilized the 2024 version of the AGREE II (Appraisal of Guidelines for Research and Evaluation II) instrument to assess the quality of the included guidelines.²⁹ Two researchers independently evaluated the quality of the included literature. Domain scores were standardized as (obtained score – minimum possible score)/(maximum possible score – minimum possible score) × 100%, according to the AGREE II user manual. Inter-rater

reliability for the standardized domain scores was assessed using the intraclass correlation coefficient (ICC) with a two-way random-effects model, absolute agreement, and average measures. This model was chosen because it accounts for both systematic and random differences between raters and is appropriate for consensus-based quality appraisal. The overall ICC for the included guidelines was 0.793 (95% CI: 0.740–0.837). The underlying statistical assumptions for the ICC analysis were verified prior to computation, and no violations were detected. Evidence summaries and clinical decision-making were evaluated using the CASE criteria.³⁰ Expert consensus was evaluated using the JBI Expert Consensus Evaluation Criteria.³¹

Evidence Collection, Consolidation, and Classification

Two researchers (Yi and Jing) independently reviewed the included literature, extracted evidence relevant to the topic on a line-by-line basis, and annotated the sources of the evidence. Evidence synthesis followed the following principles: evidence with consistent content was combined using concise and clear language; evidence that was complementary was integrated to form a comprehensive statement; and for conflicting evidence, decisions were made based on the principles of prioritizing evidence-based findings, high-quality evidence, and the most recently published evidence. Evidence grading utilized the Australian JBI Center for Evidence-Based Healthcare's Evidence Pre-grading System (2014 edition),³² classifying evidence levels from highest to lowest as Levels 1 through 5. Recommendation grades were determined based on the JBI FAME framework, in conjunction with discussions by the research team, and categorized as Grade A recommendations and Grade B recommendations. To promote transparency in evidence-synthesis reporting, this review adheres to the PRISMA 2020 statement ([Appendix 1](#)).

Trial and Protocol Registration

This study was registered with the Fudan University Centre for Evidence-based Nursing, a JBI Centre of Excellence (registration number: ES20259322). The registration certificate is available in Chinese at <http://ebn.nursing.fudan.edu.cn/myRegisterList>. An English translation of the registration certificate is provided in [Appendix 3](#). The complete protocol content submitted at registration is consistent with the methods described in this manuscript.

Results

Literature Search Results and Basic Characteristics of the Included Studies

A systematic search initially identified 1,900 relevant publications. After a multi-stage screening process, 17 publications were ultimately included. These comprised 10 guidelines,^{33–42} 3 expert consensus,^{43–45} 1 clinical decision aid,⁴⁶ and 3 evidence summaries.^{47–49} The screening process is shown in [Figure 1](#), and the basic characteristics of the included publications are presented in [Table 1](#).

Among the 17 included publications, the majority (n=10, 58.8%) were guidelines, followed by evidence summaries (n=3), expert consensus (n=3), and one clinical decision aid. The publication dates ranged from 2010 to 2025. Notably, over 80% (n=14) of the included publications were released in 2020 or later, with the most recent being the 2025 JBI evidence summary and the 2023 NICE guideline. This temporal distribution indicates a growing research interest and recent efforts to standardize oral hygiene practices specifically for post-stroke dysphagia populations.

Geographically, the included guidelines and consensus statements originated from diverse international and regional organizations. European sources included the European Stroke Organisation (ESO), the National Institute for Health and Care Excellence (NICE) from the UK, and the Scottish Intercollegiate Guidelines Network (SIGN). North American contributions came from the American Heart Association (AHA) and the Registered Nurses' Association of Ontario (RNAO). Methodologically, the four international guidelines from ESO, NICE, SIGN, and RNAO all received overall Grade A ratings ([Table 2](#)), with high applicability scores, making them suitable for multidisciplinary stroke teams. Additionally, four guidelines and one expert consensus were developed by Chinese academic societies or institutions, reflecting the integration of local clinical practice, particularly in the context of TCM adjunctive therapies. Among the four Chinese guidelines assessed using AGREE II, two were rated Grade A and two Grade B, with applicability scores ranging from 50.00% to 75.00%, reflecting their adaptation to local nursing workflows and TCM contexts.

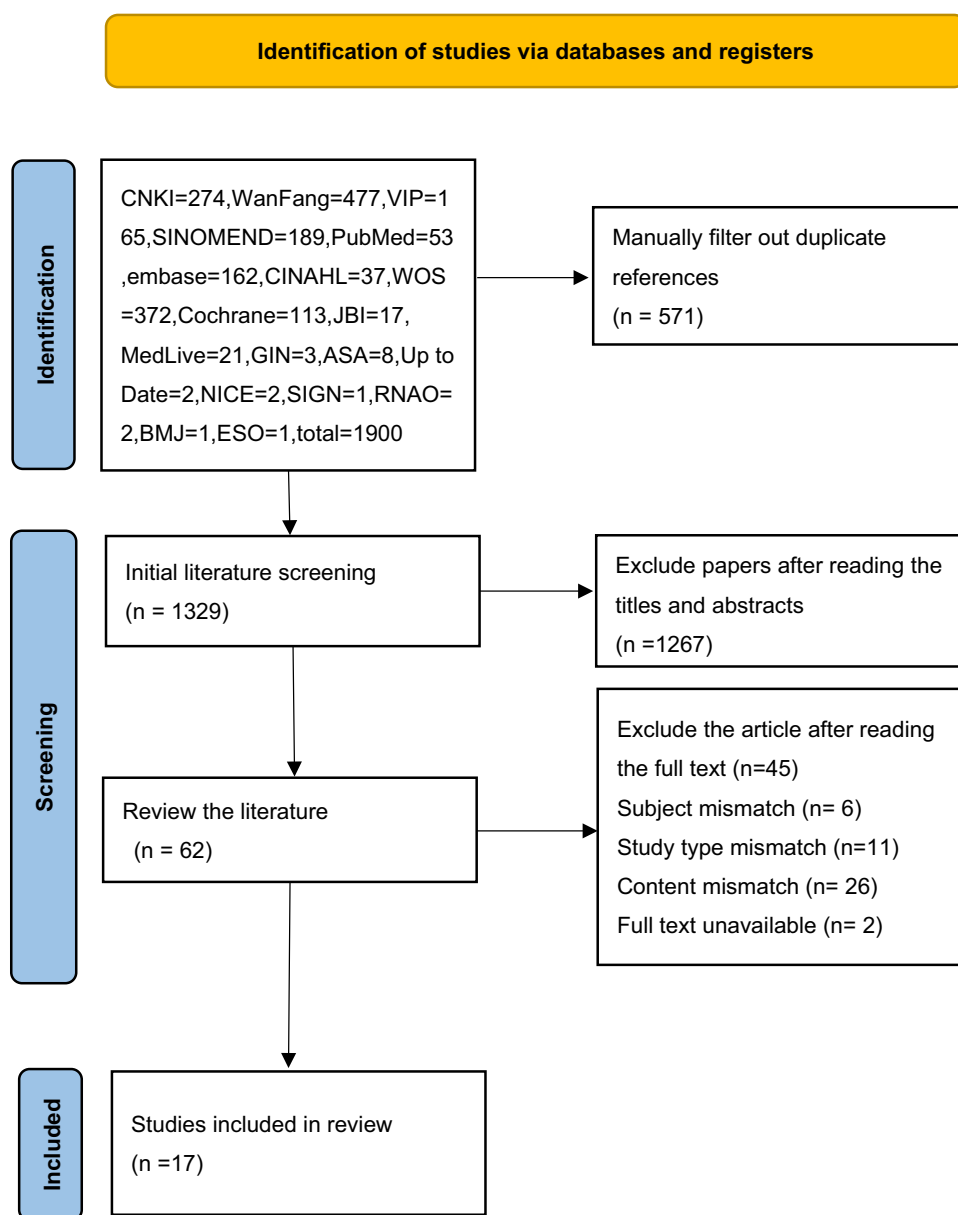


Figure 1 Research Flowchart.

Notes: PRISMA flow diagram of study selection process. A total of 1,900 records were identified through database searching. After removing duplicates (n=571), 1,329 records were screened by title and abstract, of which 1,267 were excluded. The remaining 62 full-text articles were assessed for eligibility, and 45 were excluded (6 for subject mismatch, 11 for study type mismatch, 26 for content mismatch, and 2 for full-text unavailability). Finally, 17 studies were included in this review.

In terms of document types, the 10 clinical guidelines predominantly provided comprehensive, system-level recommendations covering multidisciplinary team composition, standardized assessment procedures, and step-by-step nursing protocols. For instance, the ESO and NICE guidelines strongly emphasize instrumental swallowing assessments (eg, FEES/VFSS) and multidisciplinary decision-making, whereas the RNAO guideline focuses on practical bedside nursing protocols, including twice-daily mechanical cleaning with soft-bristled toothbrushes. In contrast, the 3 evidence summaries and 1 clinical decision aid focused on specific, actionable clinical questions—such as the use of chlorhexidine mouthwash and aspiration pneumonia prevention—making them more suitable for point-of-care decision-making. The 3 expert consensus primarily addressed nursing-sensitive outcomes and complication management in acute stroke care, complementing the broader guideline recommendations with practical, context-specific nursing strategies. Notably, the Chinese guidelines and consensus uniquely incorporate TCM adjunctive therapies (eg, herbal mouthwashes and acupoint stimulation) as supplementary Grade B recommendations for local practice, targeting nurses in stroke and rehabilitation wards.

Table 1 Included in the Final List of References After Screening

Author	Literature Name	Literature Sources	Type
Dziewas, R. et al ³³	European Stroke Organization and European Society for Swallowing Disorders guideline for the diagnosis and treatment of post-stroke dysphagia	Pub Med	Guideline
Ni, X. et al ³⁴	Evidence-based practice guideline on integrative medicine for stroke 2019	Pub Med	Guideline
British Society of Gerodontology Group ³⁵	Guidelines for the Oral Healthcare of Stroke Survivors	GIN	Guideline
Intercollegiate Stroke Working Party ³⁶	National clinical guideline for stroke for the UK and Ireland	SIGN	Guideline
Quinn, B. et al ³⁷	Non-ventilator health care-associated pneumonia (NV-HAP): Best practices for prevention of NV-HAP	Pub Med	Guideline
Registered Nurses' Association of Ontario Group ³⁸	Oral Health: Supporting Adults Who Require Assistance	RNAO	Guideline
National Institute for Health and Care Excellence ³⁹	Stroke rehabilitation in adults	NICE	Guideline
Ni, X. et al ⁴²	Clinical Practice Guideline for the Prevention and Treatment of Stroke with Integrated Traditional Chinese and Western Medicine (2023 Edition)	CNKI	Guideline
Chinese Society of Neurology et al ⁴⁰	Chinese Guidelines for Early Rehabilitation of Stroke	Med Live	Guideline
Ni, X. et al ⁴¹	Evidence-based practice guideline on integrative medicine for stroke 2019	CNKI	Guideline
Kumar, S. et al ⁴³	Addressing Systemic Complications of Acute Stroke: A Scientific Statement From the American Heart Association	ASA	Expert Consensus
Green, T. L. et al ⁴⁴	Care of the Patient With Acute Ischemic Stroke (Posthyperacute and Prehospital Discharge): Update to 2009 Comprehensive Nursing Care Scientific Statement: A Scientific Statement From the American Heart Association	ASA	Expert Consensus
Pan, Y. et al ⁴⁵	Guidelines for Stroke Critical Care Rehabilitation	Wanfang Data	Expert Consensus
BMJ Publishing Group ⁴⁶	Aspiration pneumonia	BMJ	Clinical Decision Aid
Osei SKJ ⁴⁷	Stroke: Oral Hygiene	JB	Evidence Summary
Guo, Y. et al ⁴⁸	Evidence summary of prevention of stroke associated pneumonia in patients with dysphagia	CNKI	Evidence Summary
Yan, B. et al ⁴⁹	Summary of evidence for the prevention and management of post-stroke aspiration pneumonia	CNKI	Evidence Summary

Results of the Quality Assessment of the Included Studies

Results of the Quality Assessment of the Guidelines

This study included ten guidelines.^{33–42} Inter-rater agreement was high, with an overall ICC of 0.793 (95% CI: 0.740–0.837), and individual guideline ICC values ranging from 0.673 to 0.936 (see [Table 2](#) for the ICC value of each guideline). The standardized scores for each domain and the overall quality assessment of the guidelines are presented in [Table 2](#).

Table 2 Quality Evaluation Results of Guidelines (n=10)

Study	Standardized Scores in Various Domains (%)						≥60%	≥30%	ICC	Quality Evaluation *
	Scope and Purpose	Stakeholder Involvement	Rigour of Development	Clarity of Presentation	Applicability	Editorial Independence				
Dziewas, R. et al ³³	100.00	96.44	94.79	97.22	72.92	100.00	6	6	0.886	A
Ni, X. et al ³⁴	100.00	94.44	95.83	83.33	68.75	100.00	6	6	0.769	A
British Society of Gerodontology Group ³⁵	100.00	80.56	57.29	97.22	93.75	25	4	5	0.705	B
Intercollegiate Stroke Working Party ³⁶	100.00	94.44	97.92	100	83.33	100.00	6	6	0.854	A
Quinn, B. et al ³⁷	88.89	47.22	30.21	72.22	79.17	0	3	5	0.936	B
Registered Nurses' Association of Ontario Group ³⁸	100.00	94.44	96.88	97.22	91.67	100.00	6	6	0.859	A
National Institute for Health and Care Excellence ³⁹	100.00	94.44	100.00	100	89.58	100.00	6	6	0.673	A
Chinese Society of Neurology et al ⁴⁰	100.00	72.22	62.50	83.33	50.00	4.17	4	5	0.933	B
Ni, X. et al ⁴¹	100.00	97.22	93.75	97.22	75.00	87.50	6	6	0.705	A
Ni, X. et al ⁴²	100.00	77.78	87.50	100.00	50	83.33	5	6	0.716	B

Notes: The asterisk * in the table header indicates the overall quality evaluation grade for each guideline. Studies scoring 60% or higher in all six domains were classified as Grade A recommendations. Studies that did not meet the Grade A criteria but still passed the basic quality screening (ie, scoring ≥30% in at least four domains) were classified as Grade B recommendations.

Table 3 Quality Evaluation Results of Expert Consensus Statements Using the JBI Expert Consensus Evaluation Criteria (n=3)

Study	Q1	Q2	Q3	Q4	Q5	Q6
Kumar, S. et al ⁴³	Y	Y	Y	Y	Y	Y
Green, T. L. et al ⁴⁴	Y	Y	Y	Y	Y	Y
Pan, Y. et al ⁴⁵	Y	Y	Y	Y	Y	Y

Notes: Q1–Q6 represent the six items of the JBI Expert Consensus Evaluation Criteria: Q1 = clear identification of the source of opinion; Q2 = source has standing in the field; Q3 = interests of the relevant population are the central focus; Q4 = logically defended argument; Q5 = reference to extant literature; Q6 = incongruence with literature is logically defended. Y = Yes, N = No.

Table 4 Quality Evaluation Results of Evidence Summaries and Clinical Decision Aid Using the CASE Criteria (n=4)

Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
BMJ Publishing Group ⁴⁶	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Osei SKJ ⁴⁷	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Guo, Y. et al ⁴⁸	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
Yan, B. et al ⁴⁹	Y	Y	Y	Y	Y	Y	Y	N	Y	Y

Notes: Q1–Q10 represent the ten items of the CASE criteria: Q1 = specificity of scope; Q2 = transparency of authorship; Q3 = transparency of reviewers/editors; Q4 = transparency and comprehensiveness of search methods; Q5 = evidence grading and transparency; Q6 = clarity of recommendations; Q7 = appropriate citations; Q8 = currency of recommendations; Q9 = freedom from bias; Q10 = applicability to patients. Y = Yes, N = No.

Results of the Quality Assessment of the Expert Consensus

A total of three expert consensus articles were included.^{43–45} The item-by-item evaluation results using the JBI Expert Consensus Evaluation Criteria are presented in [Table 3](#).

Results of the Quality Assessment of the Evidence Summary and Clinical Decision Aid

The single clinical decision aid⁴⁶ included in this study was assessed using the CASE criteria and was found to be of good overall quality; therefore, it was included. For the three included evidence summaries,^{47–49} one summary⁴⁷ scored “Yes” on all CASE items and was included. The other two summaries^{48,49} scored “Yes” on all items except for Item 8 (“Are the recommendations up to date?”), which was rated as “Not entirely”; however, as they still provided valuable and current evidence for the review topic, they were also included. The detailed item-by-item evaluation results for all four sources are presented in [Table 4](#).

Summary of Evidence

This study synthesized 21 pieces of evidence from four fields. The results of the evidence synthesis are presented in [Table 5](#).

Discussion

For conceptual clarity, we define oral health care in this review as preventive and supportive cleaning procedures (eg, toothbrushing, denture care, oral moisturization). Swallowing rehabilitation refers to therapeutic exercise-based interventions to restore swallowing function. Oral therapy is used only when citing specific dental or medical treatment interventions. We consistently use these terms throughout the discussion to avoid conflation.

Table 5 A Summary of the Best Evidence on Oral Health Care for Post-Stroke Dysphagia

Evidence Items	Evidence Content	Level of Evidence	Recommended Level
Team Formation	1. Establish a multidisciplinary oral health care team. Team members should include, but are not limited to: neurologists/rehabilitation physicians, neurology/rehabilitation nurses, speech-language pathologists (SLPs), dietitians, dentists, occupational therapists (OTs), and pharmacists. ^{35,38,40,44,46,48,49}	Level 2	Level A
	2. Team members must clearly define their roles and responsibilities, and through regular team meetings, jointly assess patients' conditions and develop and adjust individualized oral health care and swallowing rehabilitation plans. ^{36,45}	Level 5	Level A
	3. All healthcare personnel involved in oral health care, particularly nursing staff, should receive systematic training. ^{35,36,45,47,48}	Level I	Level A
Screening and Assessment	4. As soon as possible after admission, trained healthcare personnel should conduct a comprehensive assessment of the patient's oral health using standardized oral assessment tools. ^{35,36,38,43}	Level 5	Level A
	5. Screening can be conducted using tools such as the Oral Health Assessment Tool (OHAT) or national and local programs. ^{38,39}	Level 5	Level A
	6. Before giving a patient any food, water, or medication by mouth, a trained healthcare professional must perform a swallowing function screening as soon as possible. ^{33,44,48,49}	Level I	Level A
	7. For swallowing function screening (to confirm the presence of dysphagia in the target population), the Watanabe drinking test, Gugging Swallowing Screen (GUSS), Mann Assessment of Swallowing Ability (MASA), and similar tests may be used as preliminary screening tools. For patients who fail screening, further clinical swallowing evaluations or instrumental examinations (such as Video Fluoroscopic Swallowing Study, VFSS or Flexible Endoscopic Evaluation of Swallowing, FEES) should be conducted immediately. These tools are used to define the study population rather than to measure oral health status. ^{37,41,44,45,48,49}	Level I	Level A
Nursing Interventions	8. Patients at risk of aspiration should receive oral health care from healthcare professionals or under their supervision and assistance. ^{38,39}	Level 5	Level A
	9. When performing oral health care, unless contraindicated, the patient should be positioned in a standing, sitting, or semi-sitting position to protect the airway and prevent aspiration. ^{35,43}	Level 5	Level A
	10. Patients should receive comprehensive oral health care at least twice a day. ^{39,43}	Level I	Level A
	11. Use a small-headed toothbrush with soft bristles, a suction toothbrush, or an electric toothbrush with a small amount of low-foaming fluoride toothpaste to minimize foaming. ^{35,36,39,43,49}	Level I	Level A
	12. Use a chlorhexidine-containing mouthwash, but carefully assess the patient's swallowing function before use. ^{39,47,49}	Level I	Level A
	13. You may use dental floss, interdental brushes, or a tongue scraper for additional cleaning. ^{35,49}	Level 5	Level B
	14. If you wear dentures, you should remove them after meals and at night to clean them with water or a denture cleanser. Wear your dentures during the day and soak them in a cleaning solution at night. ^{35–37}	Level 5	Level A
	15. After nursing care or when the patient reports dry mouth, apply a non-petroleum-based lip balm and oral moisturizing gel to the lips and oral mucosa. ^{36–38}	Level 3	Level A

(Continued)

Table 5 (Continued).

Evidence Items	Evidence Content	Level of Evidence	Recommended Level
	16. Use traditional Chinese medicine for external treatment, such as oral sprays, ice lollipops, or mouthwashes. ^{34,40–42}	Level I	Level B
	17. Use acupuncture needles, fingertips, or cotton swabs to stimulate acupoints around and inside the mouth—such as Jinjin, Yuyue, and Lianquan—to promote saliva secretion and the swallowing reflex. ^{34,41,42}	Level I	Level B
	18. Use the initial assessment tool to re-evaluate the patient's oral health and swallowing function on a regular basis or whenever there is a change in their condition, and adjust the oral health care plan promptly based on the assessment results. ^{38,39}	Level 5	Level B
Health Education	19. Explain to patients and caregivers the importance of maintaining a daily oral health care routine and emphasize this point. ^{35,38,46}	Level 2	Level A
	20. Caregivers should receive training in oral health care and the management of swallowing disorders. ^{36,38–40,43,45,47,48}	Level I	Level A
	21. Teach them to recognize the early signs of oral health problems and warning signs of difficulty swallowing, and let them know when to seek professional help. ^{35,39,45}	Level 5	Level B

Stroke is one of the leading causes of dysphagia and a significant independent risk factor for aspiration pneumonia, malnutrition, and even death, placing a heavy burden on patients, their families, and the healthcare system.⁵⁰ Studies have shown that many challenging nursing issues can be effectively addressed through evidence-based nursing and practice;²⁴ however, current clinical practice still lacks systematic, standardized tools for oral health care in this population. Through systematic literature searches and rigorous evaluation, this study ultimately synthesized 21 pieces of best evidence from 17 high-quality studies, covering four domains: team formation, screening and assessment, nursing interventions, and health education. This provides comprehensive and standardized evidence-based guidance for oral health care in patients with post-stroke dysphagia. These findings not only represent a highly refined distillation of cutting-edge international clinical practice guidelines but also partially incorporate integrated traditional Chinese and Western medicine nursing approaches with Chinese characteristics.

Nurse-Led Multidisciplinary Teamwork is a Core Element in Ensuring the Quality of Oral Health Care

The evidence summary from this study clearly emphasizes the central role of multidisciplinary teams in the oral health care of patients with post-stroke dysphagia. Research indicates that oral health care teams should consist of a multidisciplinary group of professionals, including medical specialists, rehabilitation physicians, nurses, speech-language pathologists, dietitians, dentists, and pharmacists, who work together to develop individualized care plans through regular team meetings.⁵¹ This approach is highly consistent with the latest international concepts in stroke care.⁵²

In recent years, international researchers have paid close attention to the role of multidisciplinary integration in stroke rehabilitation. A multicenter prospective study by Matsuo et al enrolled 237 patients in the subacute phase of stroke. The results showed that integrating oral therapy with conventional swallowing rehabilitation led to significant improvements in both lip movement function and swallowing function.⁵³ This study clearly demonstrates that incorporating specialized interventions, such as oral therapy, into the multidisciplinary stroke rehabilitation system can effectively promote the recovery of swallowing function. Furthermore, the involvement of speech-language pathologists, dietitians, and other professionals has been shown to be crucial, as it can significantly improve patients' swallowing function and enhance their quality of life.^{54,55}

However, the implementation of multidisciplinary collaboration still faces numerous challenges in practice. A shortage of dental professionals makes it difficult to routinely provide specialized oral assessments and oral health care for stroke patients;⁵⁶ against this backdrop, nurses have become the primary providers of oral health care.⁵⁷ Curtin et al found that expanding professional roles in oral care provision and a policy focus on oral care were key facilitators for delivering oral care to patients with post-stroke dysphagia, whereas lack of time and resources, lack of confidence among staff, and competing clinical demands were the primary barriers to implementation.⁵⁸ This finding suggests that even in developed countries with relatively robust evidence for oral health care, the practical implementation of multidisciplinary collaboration remains constrained by human resource allocation and team culture development. For China, this issue is even more pronounced. Currently, most domestic stroke centers have not established routine collaboration mechanisms between dentistry and neurology; the proportion of dentists involved in stroke patient management remains extremely low, and multidisciplinary teams tend to be largely formalistic in nature.

Therefore, this study strongly recommends establishing multidisciplinary consultation teams, with nurses serving as the core operational force to lead the implementation and quality control of daily oral health care. Given the widespread shortage of dental professionals and the lack of formalized multidisciplinary collaboration, nurses are not only the primary providers of oral health care for post-stroke dysphagia but also assume key responsibilities such as the dynamic assessment of patients' oral health, the individualized adjustment of care plans, and the education of caregivers.

Standardized Screening Assessment Tools Require Further Validation

Currently, there is a wide variety of tools available for assessing oral hygiene and screening swallowing function in patients with post-stroke dysphagia, ranging from rapid bedside screenings to precise instrument-based evaluations. However, tools that truly combine universality with clinical feasibility remain relatively limited.

Bedside screening tools, such as GUSS and MASA, can be used for preliminary dysphagia screening, while patients who fail screening should undergo further clinical or instrumental swallowing assessment.^{44,48,49} Although FEES is considered one of the gold standards for swallowing assessment, its implementation in acute stroke units still faces multiple limitations, including equipment availability, operator training, and patient tolerance, resulting in a significant proportion of high-risk patients being unable to undergo timely instrumental examination.⁵⁹ Additionally, FEES with sensory testing (FEESST) evaluates laryngopharyngeal sensation, a key predictor of silent aspiration that bedside examinations cannot reliably detect.⁶⁰ A cross-sectional study of 152 acute stroke patients found that FEES evaluation led to changes in oral diet recommendations for 69.1% of patients, and these changes were associated with significantly lower pneumonia rates ($p=0.007$).⁶¹ The 2026 AHA/ASA guideline for acute ischemic stroke explicitly includes FEES as the instrumental assessment of choice for post-stroke dysphagia, underscoring its central role in guiding both swallowing and oral care decisions.⁶² These findings suggest that FEES should be considered not merely a diagnostic tool for swallowing safety, but an integral component of comprehensive oral hygiene care planning in post-stroke dysphagia patients.⁶³ Beyond its diagnostic role, FEES allows direct visualization and quantification of pharyngeal secretion pooling using the Murray Secretion Scale, identifying patients at high risk of silent aspiration of pathogen-laden secretions. This information guides tailored oral hygiene interventions—patients with significant secretion burden may need more frequent cleaning and pre-care suctioning. FEES with sensory testing (FEESST) also detects laryngopharyngeal sensory deficits, which impair patients' ability to sense and clear oral residues, increasing their dependence on caregiver-provided care.⁶³ Thus, FEES findings directly inform the frequency, method, and timing of oral hygiene care, bridging swallowing assessment with individualized care planning.

Similar issues are prominent in the field of oral assessment. A cross-sectional study by Tu et al evaluated 198 stroke patients with dysphagia using both the Modified Beck Oral Assessment Scale (BOAS) and the Oral Health Assessment Tool (OHAT). The results indicated that most scales lacked accuracy and had limited ability to identify details of complex oral problems. The study also noted that China currently lacks a unified, standardized oral assessment tool, and

that the selection of oral assessment scales for stroke patients at different disease stages needs to be further refined to more accurately assess patients' oral health status.⁶⁴

Therefore, this study recommends the use of multiple assessment tools; in complex cases, a joint evaluation by specialists should be conducted. Additionally, if better localized assessment tools are available locally, they may be used as appropriate, while ensuring accuracy and scientific rigor. Future research should focus on developing screening tools that combine sensitivity with ease of use, exploring the application of AI-assisted image interpretation in swallowing assessments, and promoting the precise integration of assessment results with nursing decisions, thereby enabling screening assessments to truly serve as an "early warning system" for risk identification.

The Critical Role of Secretion Management and Chlorhexidine Use in Oral Health Care

Effective oral care in post-stroke dysphagia must prioritize reducing the bacterial burden in oropharyngeal secretions, as pooled secretions colonized by respiratory pathogens constitute a primary pathway to aspiration pneumonia.^{65,66} Chlorhexidine gluconate, with its broad-spectrum antimicrobial activity and sustained oral substantivity, has long been considered a theoretically attractive adjunct for oropharyngeal decontamination. The American Heart Association/American Stroke Association recognizes that systematic oral care with chlorhexidine mouth rinse may be reasonable for reducing pneumonia rates after stroke.⁶⁷ However, recent evidence has tempered this enthusiasm: the CHOSEN feasibility trial found no significant difference in pneumonia rates between chlorhexidine-based and toothpaste-based regimens among dysphagic stroke patients,⁶⁵ and meta-analyses have failed to confirm definitive mortality or pneumonia benefit with routine chlorhexidine use.⁶⁸ Moreover, chlorhexidine may cause mucosal irritation and taste disturbance, and—in patients with severe dysphagia—carries a risk of direct aspiration of the solution itself.⁶⁹ Therefore, we recommend reserving chlorhexidine for selected high-risk patients (eg, recurrent infections or heavy oral colonization) with confirmed swallowing safety, while prioritizing mechanical cleaning (soft-bristled toothbrushing, tongue scraping, and denture care) as the cornerstone of daily oral hygiene.

It should also be noted that most of the evidence supporting chlorhexidine use originates from ICU settings, where patients are intubated and have higher bacterial loads; extrapolating these findings to general stroke wards requires careful risk-benefit assessment, particularly in non-ventilated patients with preserved swallowing.

The Evidence Supporting the Use of Traditional Chinese Medical Methods Needs to Be Further Strengthened

TCM-based adjunctive therapies are included in this review as supplementary, context-specific evidence, rather than as a primary focus or a separate intervention category. Some of the evidence included in this study stems from interventions based on TCM, such as herbal mouthwashes, acupoint massage, and oral sprays. These methods are widely used in clinical practice in China, and several systematic reviews of randomized controlled trials have reported their positive efficacy compared to other external treatments.^{70,71} Zhang et al conducted a systematic review of external Chinese medicine treatments for post-stroke dysphagia, incorporating 25 RCTs involving 2,159 patients. The results showed that all outcomes were significantly better than those of conventional treatment, with only 2.1% of patients experiencing mild skin irritation.⁷¹ A systematic review by Widjaja et al also confirmed the positive effects of TCM mouthwash on stomatitis.⁷² Furthermore, TCM therapies are cost-effective, easy to administer, comfortable for patients, and associated with minimal side effects and irritation.

However, among the 17 included studies, only a few domestic guidelines mention these methods, and the recommendation grades are generally Grade B. This indicates that although a large number of studies demonstrate the efficacy of TCM therapies, their methodological quality and strength of evidence are generally insufficient to support strong recommendations by guideline developers. A meta-analysis rigorously evaluated 19 studies on TCM therapies for post-stroke dysphagia, and the results showed that the overall quality of the studies was generally low, with only a few meeting moderate-quality standards.⁷³ There is an urgent need for more multicenter, large-sample, methodologically rigorous randomized controlled trials that strictly adhere to international reporting standards, so that high-quality

evidence can facilitate the inclusion of TCM methods in more international clinical guidelines. Additionally, efforts should be made to enhance cultural adaptation and promote the culture of TCM.

Inadequate Pre-Discharge Health Education Compromises the Quality of Follow-Up Care

Pre-discharge nursing education serves as a critical link between the hospital and the home; high-quality pre-discharge education is significantly associated with lower short-term mortality rates and fewer complications such as infections.⁷⁴ A randomized controlled trial conducted by Kuo et al demonstrated that family caregivers who received structured post-stroke oral health care training significantly outperformed the control group in terms of caregiving behaviors, knowledge retention, and self-efficacy.⁷⁵ Furthermore, research indicates that nurses are the primary providers of pre-discharge education, and comprehensive, detailed education can bridge the service gap in the transition of care from hospital to home for stroke patients.⁷⁶

However, post-stroke patients currently lack sufficient health knowledge, and even after receiving educational interventions guided by professional nurses, their adherence to post-stroke swallowing management recommendations remains poor.⁷⁴ Therefore, in future research, we should develop an evidence-based, systematic, and standardized pre-discharge caregiver training program and incorporate it into the core components of discharge preparation services for stroke patients to ensure continuity of care quality from the hospital to the home.

Limitations

This study has the following limitations: First, the literature search was limited to Chinese and English databases, which may have resulted in the omission of high-quality studies published in other languages, thereby introducing a certain degree of language bias. Second, given that the evidence included in this study originates from diverse research contexts both domestically and internationally, there may be some deviation when applying it in multicultural settings. It is recommended that clinical nurses, in their practice, carefully select and flexibly adapt appropriate evidence based on the specific circumstances of each patient. Additionally, although we manually browsed the websites of major international stroke associations to supplement our database searches, we acknowledge that some region-specific guidelines—such as the Canadian Stroke Best Practice Recommendations, which are primarily disseminated via organizational websites rather than indexed in conventional bibliographic databases—may have been overlooked. This potential omission is a limitation of our review.

Conclusion

This study followed an evidence-based nursing methodology, systematically searching for and rigorously evaluating relevant domestic and international literature on oral health care for patients with post-stroke dysphagia. Ultimately, 21 pieces of best evidence were synthesized across four dimensions: team formation, screening and assessment, nursing interventions, and health education. The evidence indicates that multidisciplinary team collaboration centered on nurses is the key foundation for ensuring the quality of oral health care; standardized dual screening for oral hygiene and swallowing function is a crucial prerequisite for early risk identification; comprehensive nursing interventions such as postural management, standardized toothbrushing, denture care, and oral moisturization can effectively reduce the risk of aspiration; and systematic caregiver training is a vital component in ensuring the continuity of care quality. Furthermore, this study incorporated TCM methods such as herbal mouthwashes and acupoint stimulation, demonstrating the unique value of integrated traditional and Western medicine nursing in stroke rehabilitation. With a clear structure and well-defined evidence levels, this summary provides clinical nursing staff with a scientific and standardized basis for practice. It will help advance the standardization and evidence-based practice of oral health care for patients with post-stroke dysphagia, ultimately reducing the incidence of aspiration pneumonia and improving patient outcomes.

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Disclosure

The authors declare no competing interests in this work.

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